

VEHICLE SPEED CONTROL SYSTEM

CONTENTS

	page		page
CHECKING FOR FAULT CODE	5	SERVO ELECTRICAL TESTS	5
DIAGNOSIS PROCEDURES	2	SERVO UNIT	8
ELECTRICAL TEST:	5	SERVO VACUUM TEST	8
GENERAL INFORMATION	1	SPEED CONTROL SWITCH	8
INOPERATIVE SYSTEM	5	SPEED CONTROL SWITCH TEST	7
POWERTRAIN CONTROL MODULE ELECTRICAL TEST	6	STOP LAMP SPEED CONTROL SWITCH TEST ..	7
ROAD TEST	5	VACUUM SUPPLY TEST	7

GENERAL INFORMATION

The speed control system is electronically controlled and vacuum operated. The electronic control is integrated into the powertrain control module, located next to battery. The controls are located on the steering wheel and consist of the ON/OFF, RESUME/ACCEL and SET/DECEL buttons (Fig.1). For identification and location of the major components (Fig. 2 through 4).

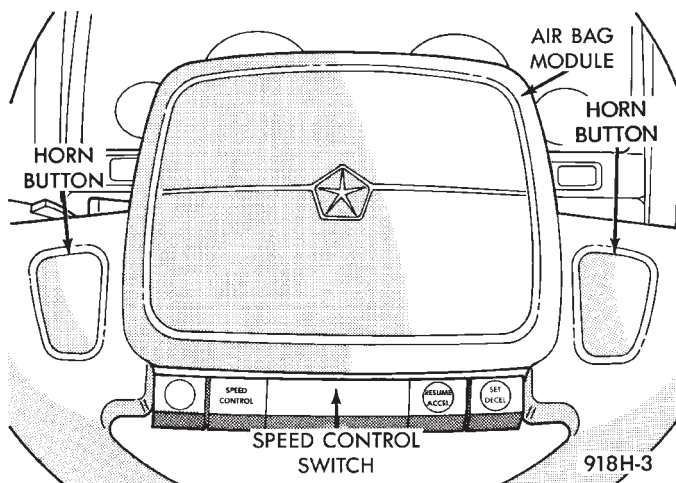


Fig. 1 Speed Control Switch

The system is designed to operate at speeds above 35 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.

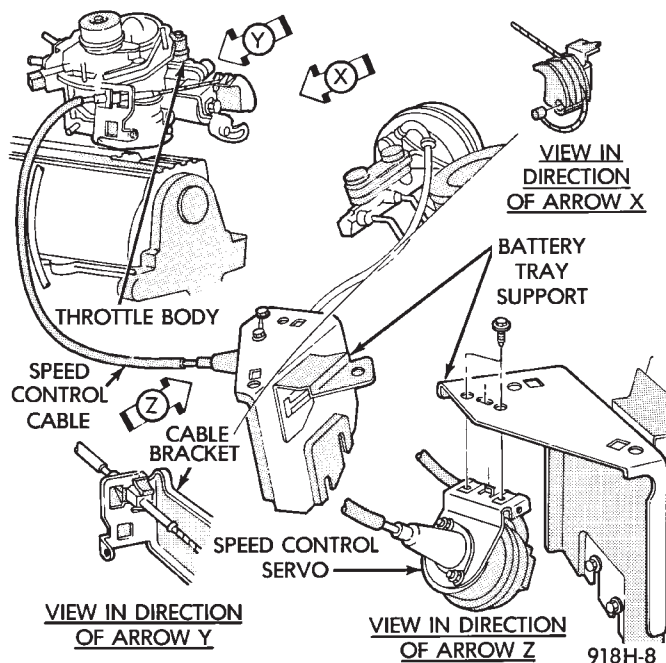


Fig. 2 Speed Control System—2.5L

TO ACTIVATE:

the ON/OFF button to the depressed latched position, ON, the speed control function is now ready for use.

TO DEACTIVATE:

A soft tap of the brake pedal, normal brake application or depressing the clutch pedal while the system is engaged will disengage speed control without erasing memory. A sudden increase in engine rpm may be experienced if the clutch pedal is depressed while the speed control system is engaged. Pushing the ON/OFF button to the unlatched position or turning off the ignition erases the memory.

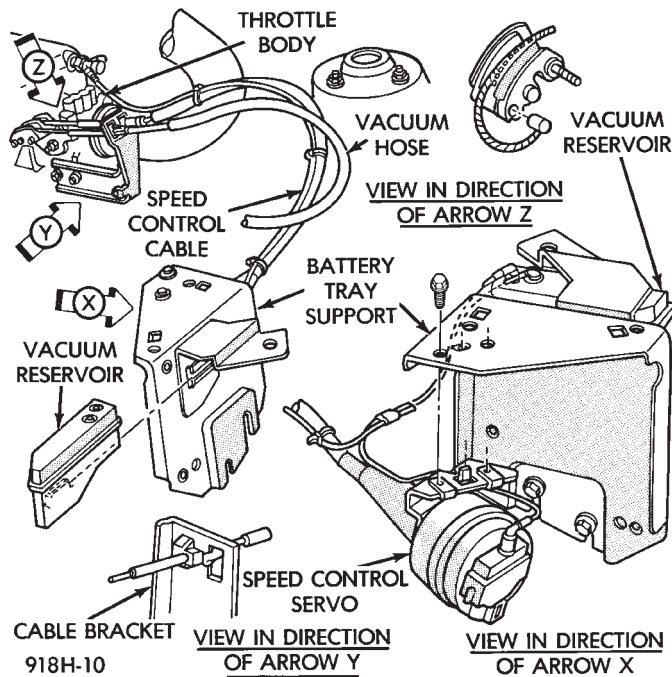


Fig. 3 Speed Control System—3.0L

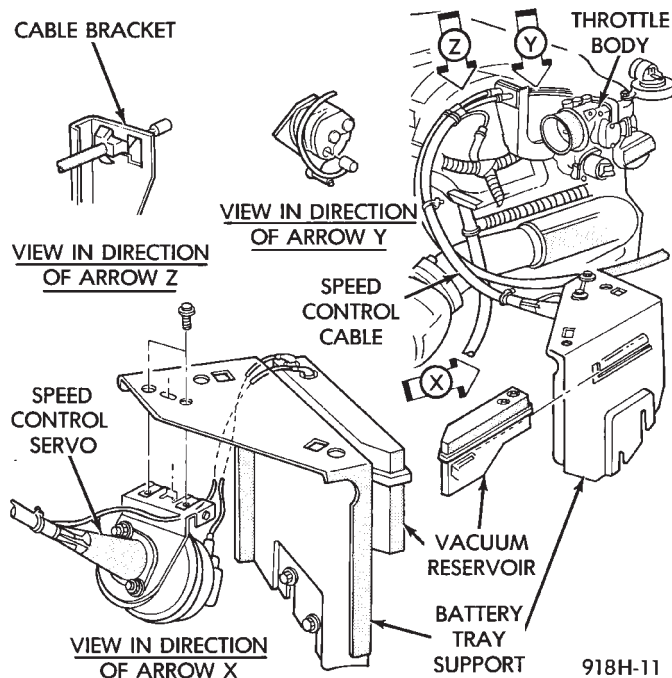


Fig. 4 Speed Control System—3.3L

TO SET SPEED:

When the vehicle has reached the desired speed push the SET/DECEL button to engage system which, will then automatically maintain the desired speed.

TO DECELERATE:

When speed control is engaged, holding the SET/DECEL button depressed allows the vehicle to coast to a lower speed setting.

TO RESUME:

After disengaging the speed control system by tapping the brake pedal or clutch pedal, push the RESUME/ACCEL button to return vehicle to the previously set speed.

TO ACCELERATE:

While speed control is engaged, hold the RESUME/ACCEL button depressed and release at a new desired speed. This will allow the vehicle to accelerate and set at a higher speed setting.

TAP-UP:

When the speed control system is engaged, tapping the RESUME/ACCEL button will increase the speed setting by 2 mph (3 km/h). The system will respond to multiple tap-ups.

TO ACCELERATE FOR PASSING:

Depress the accelerator as you would normally. When the pedal is released the vehicle will return to the speed setting in memory.

DIAGNOSIS PROCEDURES

Whenever a speed control malfunction occurs, first verify that the speed control wire harness is properly connected to all connectors before starting normal diagnosis and repair procedures. Refer to Electronic Speed Control System Diagnosis Chart or Speed Control Circuit (Fig. 5).

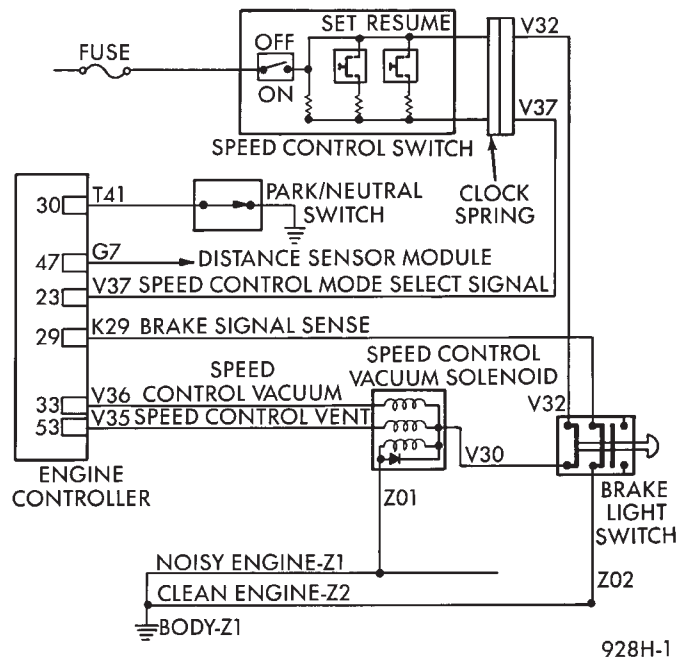


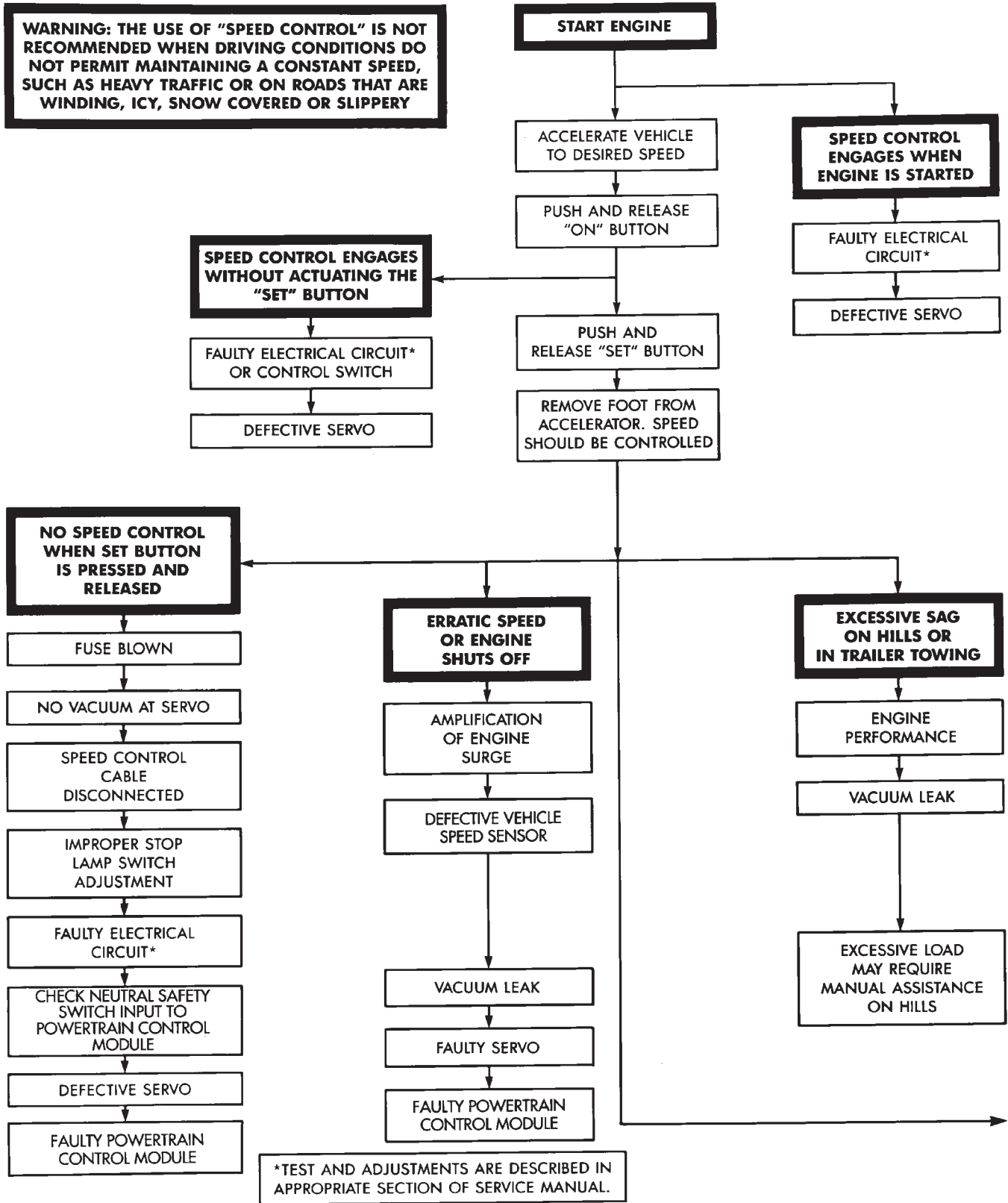
Fig. 5 Speed Control Circuit

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

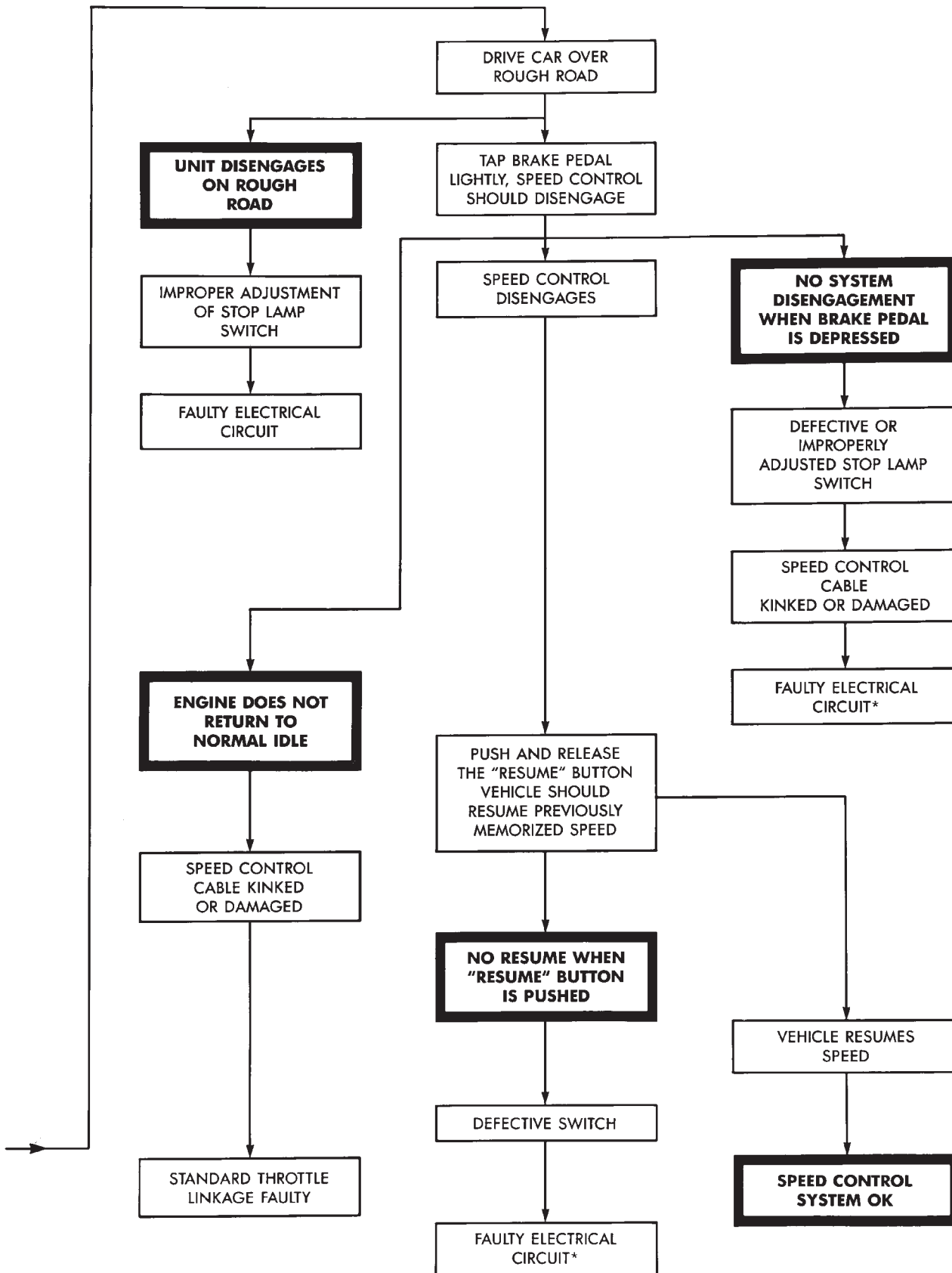
Also, check all vacuum connections for tightness and cracked hoses.

SYSTEM DIAGNOSIS

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



SYSTEM DIAGNOSIS—CONTINUED



ROAD TEST

Road test vehicle 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 shows a problem which, might cause surging in the speed control system. The cause of any speedometer deficiencies should be corrected before proceeding.

INOPERATIVE SYSTEM

If road test verifies an inoperative system with a correct speedometer operation:

- Inspect fuse
- Check for loose electrical and vacuum connections at the servo
- Check for correct position of the vacuum check valve in the hose from servo to vacuum source. The word VAC on the valve must point toward the vacuum source.
- Inspection also should be made to verify that both ends of the speed control cable are securely attached. If either end is loose, the speed control system will be inoperative.

CHECKING FOR FAULT CODE

(1) When trying to verify a speed control system electronic malfunction:

- (a) Connect a DRB II if available.
- (b) Plug DRB II into the diagnostic connector in the engine compartment.
- (c) Check that either a Fault Code 34 or Fault Code 15 is shown.
- (d) An inoperative speed control may still occur without either fault code being shown.
- (e) If DRB II is not available perform steps f and g.
- (f) With key inserted in ignition switch, cycle switch to ON position three times. On third cycle, leave switch in ON position.
- (g) After switch has been cycled three times, observe Malfunction indicator (CHECK ENGINE) lamp on instrument cluster. If a Fault Code is present, the indicator will flash (blink) in a series and will show which Fault Code is the problem. EXAMPLE: A series of three flashes in rapid succession, a slight pause, then four flashes in rapid succession would show a Fault Code 34.

(2) If no Fault Code appears, or Fault Code 34 is observed, refer to:

- The Servo Electrical Test.
 - The Powertrain Control Module Electrical Test.
- (3) If a fault code 15 is observed, test vehicle speed sensor.

For testing vehicle speed sensor and related components refer to the Powertrain Diagnostics Test Procedure Manual.

(4) Correct any problems found when performing these tests and recheck for Fault Code if changes were made.

(5) If no problems were found above, replace powertrain control module.

ELECTRICAL TEST:

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

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

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

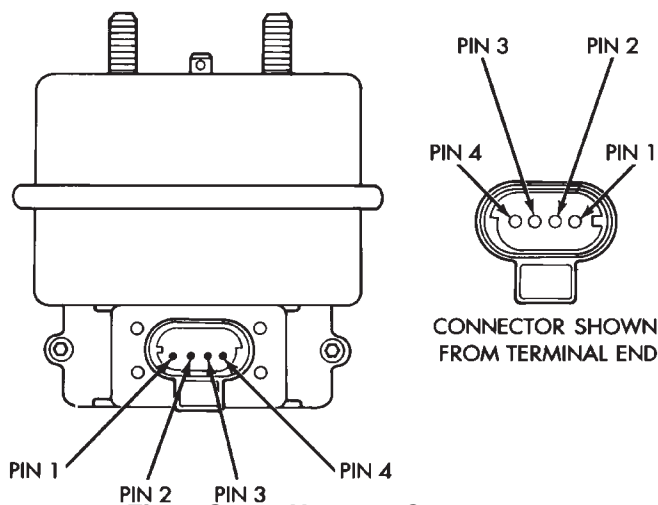
CAUTION: When test probing for voltage or continuity at electrical connectors, care must be taken not to damage connector, terminals, or seals. If these components are damaged, intermittent or complete system failure may occur.

SERVO ELECTRICAL TESTS

WARNING: ON VEHICLES EQUIPPED WITH AIRBAG, SEE GROUP 8M, RESTRAINT SYSTEMS FOR AIRBAG, STEERING WHEEL OR COLUMN REMOVAL PROCEDURES.

(1) Turn ignition switch to the ON position. With the speed control switch in the ON position, set up a voltmeter to read battery voltage and connect the negative lead to a good chassis ground.

(2) Disconnect the four-way connector going to the servo (Fig. 6). Test pin 2 of the main harness four-way connector for battery voltage. If not OK go to step 3. If voltage is OK go to step 4.



(3) Perform the following tests.

(a) Disconnect the six-way connector at the stop lamp switch and test pin 1 of the main harness for battery voltage. If voltage is OK perform the stop lamp switch test. Refer to Stop Lamp Speed Control Switch Test.

(b) If the stop lamp switch tests OK; repair wire between the servo and the stop lamp switch.

(c) If no voltage at pin 1 at the 6-way stop lamp connector, remove the speed control switch and disconnect the four-way connector. Test pin 1 of main harness for battery voltage.

(d) If voltage is OK perform the speed control switch test. Refer to Stop Lamp Speed Control Switch Test.

(e) If speed control switch is OK, test continuity across the clockspring.

(f) If clockspring OK, repair as required, wire between stop lamp switch and clockspring.

(g) If no voltage at pin 1 of the 4-way speed control switch connector.

- Test for battery voltage between the ignition and the fuse
- If voltage OK, check fuse
- If fuse OK, repair wire between fuse and clockspring

(4) Connect a jumper wire between pin 2 of the four-way servo connector of the main harness and pin 2 of the speed control servo (Fig. 6). The other three pins from the servo should show battery voltage. If not, replace the servo.

(5) Using an ohmmeter, connect one lead to a good body ground. With the other lead touch pin 1 in the four-way servo connector of the main harness. The meter should show continuity. If not, repair the ground circuit as necessary.

POWERTRAIN CONTROL MODULE ELECTRICAL TEST

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAG, SEE GROUP 8M, RESTRAINT SYSTEMS FOR AIRBAG, STEERING WHEEL OR COLUMN REMOVAL PROCEDURES.

(1) Unplug 60-way connector from the powertrain control module, located next to the battery (Fig. 7).

(2) Remove speed control switch. Refer to Speed Control Switch Removal. Disconnect the 4-way connector.

(3) Using an ohmmeter test continuity between pin 23 of powertrain control module and pin 4 of the speed control switch harness. Refer to Fig. 8 for controller terminal locations.

(a) If no continuity, repair wire circuit as necessary.

(b) Continuity OK, refer to Speed Control Switch Test.

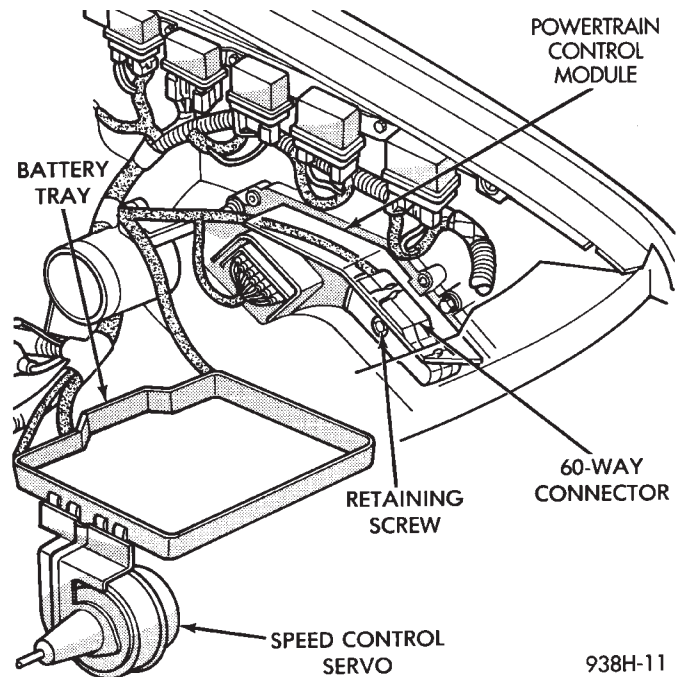


Fig. 7 Powertrain Control Module and Connector Location

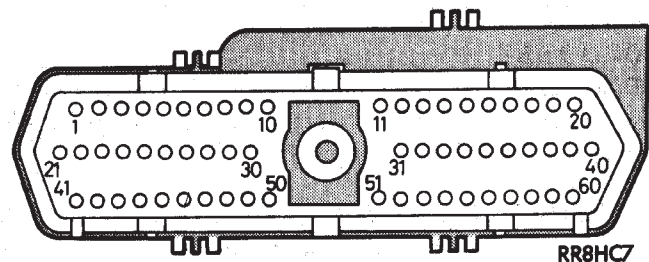


Fig. 8 Powertrain Control Module 60-Way Connector Shown from Terminal End

(4) Connect the 4-way connector to speed control switch.

(5) Connect negative lead of voltmeter to a good body ground near the powertrain control module.

(6) Turn ignition switch ON.

(7) Place speed control switch in the OFF position. Touch the positive lead of the voltmeter to pin 53, the voltmeter should read 0 volts.

(8) Place speed control switch in the ON position. Touch the positive lead of the voltmeter to pin 53, the voltmeter should read battery voltage.

(9) If voltage is OK go to step 10. If no voltage, check for voltage at pin 3 of the speed control servo (Fig. 6). If no voltage perform servo electrical test. If voltage OK, repair wire between pin 5 of powertrain control module and pin 3 of the servo.

(10) Place speed control switch in the OFF position. Touch the positive lead of the voltmeter to pin 33, voltmeter should read 0 volts.

(11) Place speed control switch in the ON position. Touch the positive lead of the voltmeter to pin 33, the voltmeter should read battery voltage.

(12) If voltage is OK go to step 13. If no voltage, check for voltage at pin 4 of the servo. If no voltage, perform servo electrical test. If voltage OK, repair the wire between pin 33 and pin 4 of the speed control servo (Fig. 6).

(13) Using an ohmmeter, connect one lead to a good body ground and touch the other lead to pin 29. With the brake pedal released, the meter should show continuity. When the pedal is depressed, the meter should show no continuity. If no continuity perform the following test:

(a) Using an ohmmeter test continuity between pin 29 of powertrain control module and pin 3 of the stop lamp switch connector.

(b) If no continuity, repair as necessary.

(c) If continuity, refer to Stop Lamp Switch Test.

(d) If stop lamp switch test OK, Test continuity between pin 6 of stop lamp switch and ground.

(14) Using an ohmmeter, touch one lead to a good body ground and touch the other lead to pin 30. 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 DRB II.

SPEED CONTROL SWITCH TEST

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

(1) Remove the switch and disconnect 4-way connector.

(2) Using an ohmmeter, test continuity at the four pins of the speed control switch. Refer to Speed Control Switch Continuity (Fig. 9).

(3) If there is no continuity or incorrect continuity at any one of the switch positions, replace the switch.

STOP LAMP SPEED CONTROL SWITCH TEST

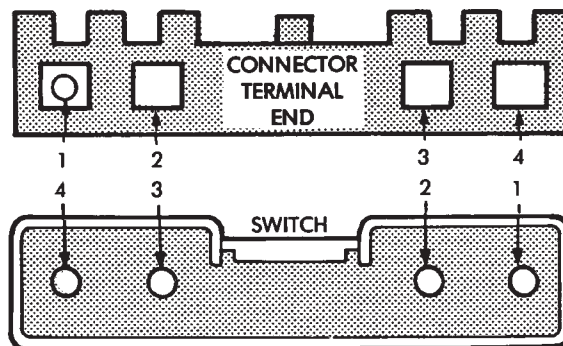
(1) Disconnect the six way connector at the stop lamp switch (Fig. 10). Using an ohmmeter, continuity may be checked at the switch side of the connector as follows:

(a) With brake pedal released, there should be continuity:

- Between pin 1 and pin 4.
- Between pin 3 and pin 6.
- No continuity between pin 2 and pin 5.

(b) With brake pedal depressed, there should be no continuity:

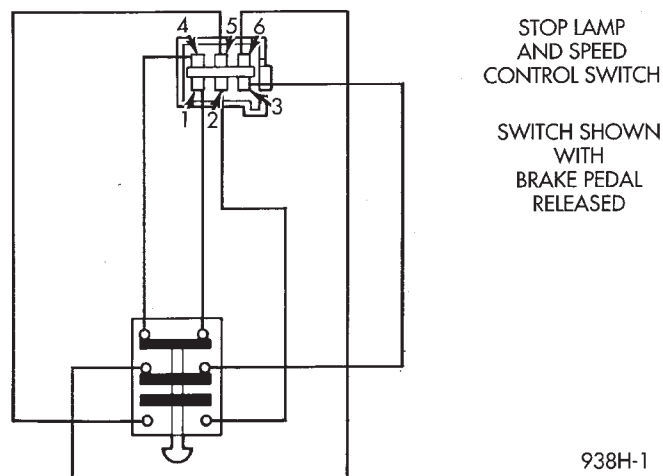
- Between pin 1 and pin 4.
- Between pin 3 and pin 6.
- Continuity between pin 2 and pin 5.



SWITCH POSITION	CONTINUITY BETWEEN	RANGE
OFF	PIN 3 AND PIN 4	5890-6510 Ω
	PIN 1 AND PIN 3	NO CONTINUITY
ON	PIN 1 AND PIN 4	5890-6510 Ω
	PIN 1 AND PIN 3	CONTINUITY
ON/SET	PIN 3 AND PIN 4	1020-1130 Ω
ON/RESUME	PIN 3 AND PIN 4	2040-2260 Ω

938H-9

Fig. 9 Speed Control Switch Continuity



938H-1

Fig. 10 Stop Lamp and Speed Control Switch Wiring

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

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

VACUUM SUPPLY TEST

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

(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:

- Vacuum lines
- Check valve
- Vacuum reservoir

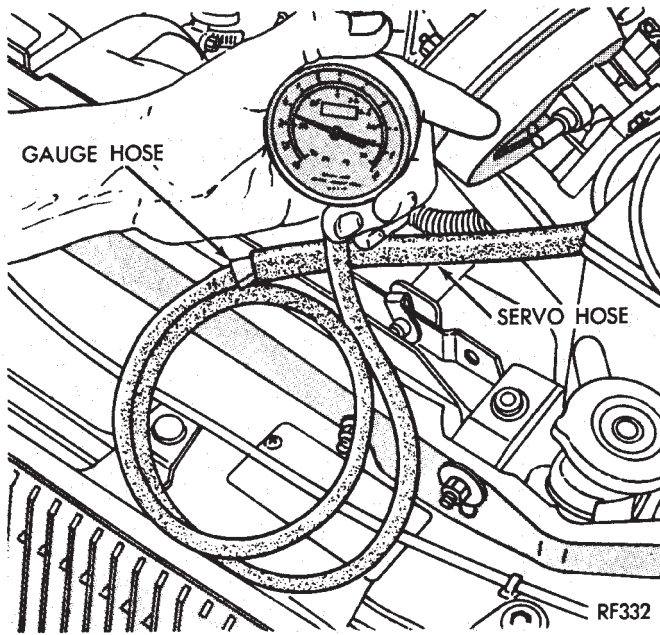


Fig. 11 Vacuum Gauge Test

- Servo Vacuum, refer to Servo Vacuum Test
- Poor engine performance.

SERVO VACUUM TEST

- (1) Remove the speed control cable at the throttle body end.
- (2) Disconnect the 4-way electrical connector and the vacuum harness at the servo (Refer to Fig. 6).
- (3) Connect battery voltage to pin 2 of the servo.
- (4) Ground the remaining three servo pins 1, 3 and 4.
- (5) Connect a hand held vacuum pump to the servo vacuum nipple and apply 10 to 15 inches of vacuum.
- (6) The cable should pull in and hold for as long as vacuum is applied.

SERVO UNIT

REMOVAL

- (1) Remove two nuts attaching speed control cable and mounting bracket to servo.
- (2) Remove screws attaching servo mounting bracket.
- (3) Remove servo mounting bracket.

- (4) Disconnect electrical connectors and vacuum hose.

- (5) Pull cable away from servo to expose retaining clip and remove clip attaching cable to servo.

INSTALLATION

- (1) With throttle in full open position align hole in speed control cable sleeve with hole in servo pin and install retaining clip.

- (2) Connect vacuum hose to servo.

- (3) Connect electrical connector.

- (4) Position mounting bracket and install screws attaching bracket. Tighten screws to 12 N•m (105 in. lbs.) torque, if mounted to shock tower 5 N•m (45 in. lbs.) torque.

- (5) Insert servo studs through holes in speed control cable and mounting bracket.

- (6) Install nuts, tighten to 7 N•m (60 in. lbs.) torque.

SPEED CONTROL SWITCH

The speed control switch is mounted in the steering wheel and wired through the clock spring device under the steering wheel hub (Fig.1).

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

REMOVAL

- (1) Turn off ignition.
- (2) Remove two (2) screws from back side of steering wheel.
- (3) Rock switch away from air bag or horn pad while lifting switch out of steering wheel.
- (4) Disconnect 4-way electrical connector.

INSTALLATION

- (1) Turn off ignition.
- (2) Connect 4-way electrical connector from clock spring to switch.
- (3) Place switch in steering wheel, sliding the forward edge of switch under air bag or horn pad. Line up locating pins on switch with holes in steering wheel frame.
- (4) Attach switch to wheel with two screws starting with the screw at the left end of the switch.