VEHICLE SPEED CONTROL SYSTEM

CONTENTS

GENERAL INFORMATION

The vehicle speed control system (Fig. 1) is electrically actuated and vacuum operated. The turn signal lever on the steering column incorporates a slide switch that has three positions OFF, ON or RESUME. A SET button is in the end of the lever. This device is designed to operate at speeds above approximately 35 mph.

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.

TO ACTIVATE: Put ON/OFF switch in ON position. When the desired speed is achieved, push and release the SET button to turn on and engage the system. Remove foot from accelerator. Speed will be maintained at this level.

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 speed may be experienced if the clutch pedal is depressed while the speed control system is engaged. Moving the slide switch to the OFF position or turning the ignition OFF also disengages the system and in addition erases the memory.

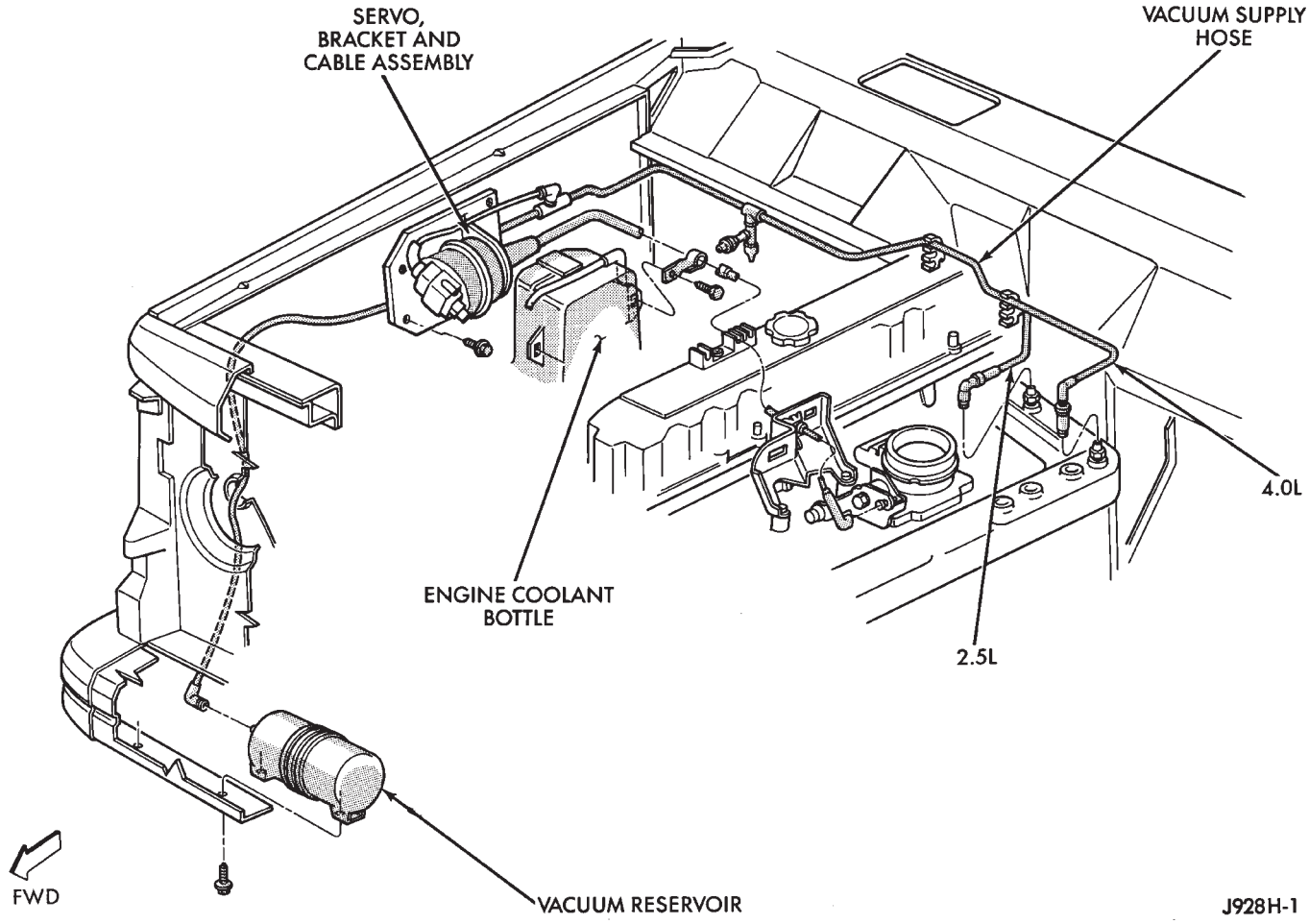


Fig. 1 Speed Control System

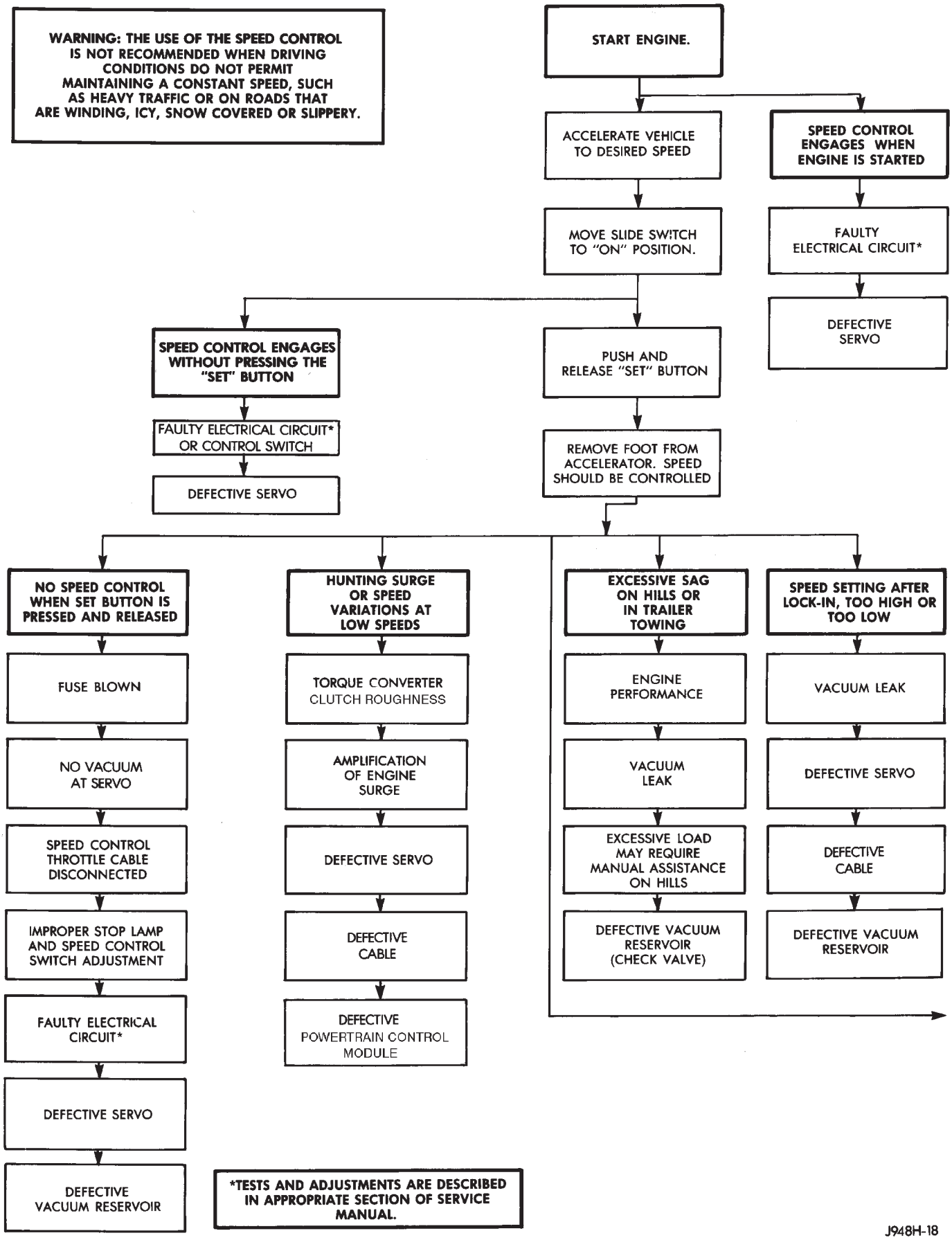
TO RESUME AFTER BRAKING: After disengaging the speed control system by tapping the brake pedal or clutch pedal, push the RESUME/ACCEL button to return vehicle to the previously set speed.

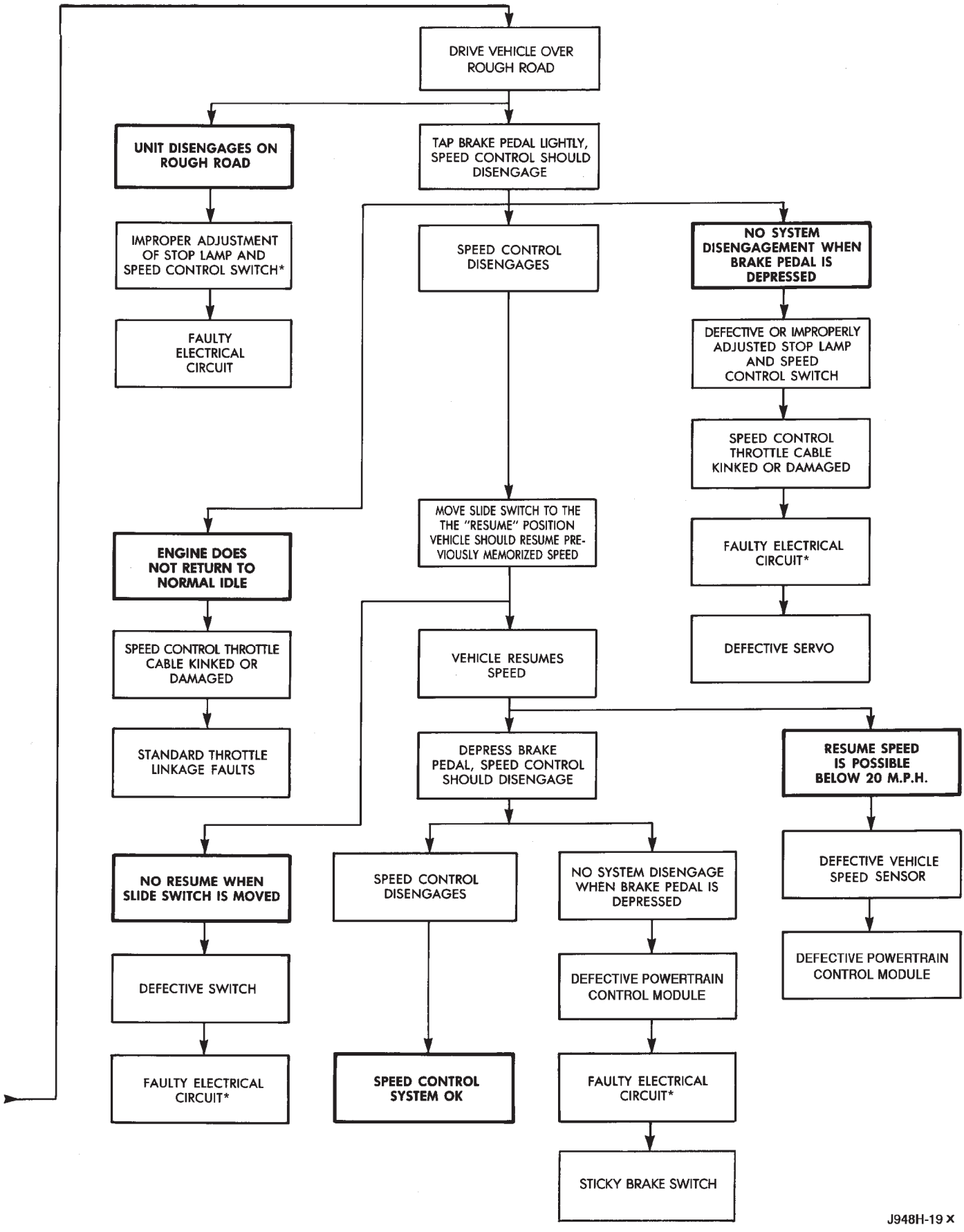
SET/COAST: Speed can be decreased by holding SET button against stop until desired speed is attained. Releasing the button engages the system at that speed. A decrease in speed also can be attained by tapping brake pedal lightly disengaging system. When desired speed has been obtained push and release SET button.

TO ACCELERATE FOR PASSING: Depress accelerator as needed. When passing is completed, release accelerator and vehicle will return to previous speed setting. There may be a slight (3-7 mph) speed loss before the vehicle recovers to the set speed.

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: 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.


WARNING: THE USE OF THE 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.
START ENGINE.
ACCELERATE VEHICLE TO DESIRED SPEED
SPEED CONTROL ENGAGES WHEN ENGINE IS STARTED
MOVE SLIDE SWITCH TO "ON" POSITION.
FAULTY ELECTRICAL CIRCUIT*
DEFECTIVE SERVO
SPEED CONTROL ENGAGES WITHOUT PRESSING THE "SET" BUTTON
FAULTY ELECTRICAL CIRCUIT* OR CONTROL SWITCH
DEFECTIVE SERVO
PUSH AND RELEASE "SET" BUTTON
REMOVE FOOT FROM ACCELERATOR. SPEED SHOULD BE CONTROLLED
NO SPEED CONTROL WHEN SET BUTTON IS PRESSED AND RELEASED
FUSE BLOWN
NO VACUUM AT SERVO
SPEED CONTROL THROTTLE CABLE DISCONNECTED
IMPROPER STOP LAMP AND SPEED CONTROL SWITCH ADJUSTMENT
FAULTY ELECTRICAL CIRCUIT*
DEFECTIVE SERVO
DEFECTIVE VACUUM RESERVOIR
HUNTING SURGE OR SPEED VARIATIONS AT LOW SPEEDS
TORQUE CONVERTER CLUTCH ROUGHNESS
AMPLIFICATION OF ENGINE SURGE
DEFECTIVE SERVO
DEFECTIVE CABLE
DEFECTIVE POWERTRAIN CONTROL MODULE
EXCESSIVE SAG ON HILLS OR IN TRAILER TOWING
ENGINE PERFORMANCE
VACUUM LEAK
EXCESSIVE LOAD MAY REQUIRE MANUAL ASSISTANCE ON HILLS
DEFECTIVE VACUUM RESERVOIR (CHECK VALVE)
SPEED SETTING AFTER LOCK-IN, TOO HIGH OR TOO LOW
VACUUM LEAK
DEFECTIVE SERVO
DEFECTIVE CABLE
DEFECTIVE VACUUM RESERVOIR
*TESTS AND ADJUSTMENTS ARE DESCRIBED IN APPROPRIATE SECTION OF SERVICE MANUAL.
J948H-18


DRIVE VEHICLE OVER ROUGH ROAD
UNIT DISENGAGES ON ROUGH ROAD
IMPROPER ADJUSTMENT OF STOP LAMP AND SPEED CONTROL SWITCH*
FAULTY ELECTRICAL CIRCUIT
TAP BRAKE PEDAL LIGHTLY, SPEED CONTROL SHOULD DISENGAGE
SPEED CONTROL DISENGAGES
MOVE SLIDE SWITCH TO THE THE "RESUME" POSITION VEHICLE SHOULD RESUME PREVIOUSLY MEMORIZED SPEED
VEHICLE RESUMES SPEED
DEPRESS BRAKE PEDAL, SPEED CONTROL SHOULD DISENGAGE
SPEED CONTROL DISENGAGES
SPEED CONTROL SYSTEM OK
NO SYSTEM DISENGAGEMENT WHEN BRAKE PEDAL IS DEPRESSED
DEFECTIVE OR IMPROPERLY ADJUSTED STOP LAMP AND SPEED CONTROL SWITCH
SPEED CONTROL THROTTLE CABLE KINKED OR DAMAGED
FAULTY ELECTRICAL CIRCUIT*
DEFECTIVE SERVO
ENGINE DOES NOT RETURN TO NORMAL IDLE
SPEED CONTROL THROTTLE CABLE KINKED OR DAMAGED
STANDARD THROTTLE LINKAGE FAULTS
NO RESUME WHEN SLIDE SWITCH IS MOVED
DEFECTIVE SWITCH
FAULTY ELECTRICAL CIRCUIT*
NO SYSTEM DISENGAGE WHEN BRAKE PEDAL IS DEPRESSED
DEFECTIVE POWERTRAIN CONTROL MODULE
FAULTY ELECTRICAL CIRCUIT*
STICKY BRAKE SWITCH
RESUME SPEED IS POSSIBLE BELOW 20 M.P.H.
DEFECTIVE VEHICLE SPEED SENSOR
DEFECTIVE POWERTRAIN CONTROL MODULE

J948H-19 X

TEST PROCEDURES

INDEX

ROAD TEST

Refer to Operational Check (Road Test) section to verify reports of speed control system malfunction.

INOPERATIVE SYSTEM

Road test vehicle to verify reports of speed control system malfunction. An inspection should be made for loose electrical and vacuum connections at the servo.

Check for correct installation 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.

Corrosion should be removed from electrical terminals and a light coating of Mopar MultiPurpose Grease, or equivalent, applied.

Inspection also should be made to verify that both ends of the speed control cable are securely attached.

CHECKING FOR DIAGNOSTIC TROUBLE CODE

(1) When trying to verify a speed control system electronic malfunction use a DRB scan tool to find the cause (refer to Powertrain Diagnostic Procedures manual).

If DRB is not available, the Diagnostic Trouble Code (DTC) may be determined with the following method:

(a) With key inserted in ignition switch, cycle switch to ON position 3 times. On third cycle, leave switch in ON position.

(b) After switch has been cycled 3 times, observe Malfunction Indicator Lamp (**CHECK ENGINE)** on instrument cluster. If a DTC is present, the code will be displayed in a series of flashes representing digits. Three flashes in rapid succession, a slight pause, then 4 flashes in rapid succession would indicate DTC 34.

(2) If a DTC 34 is observed, perform tests in the sections Electrical Tests at Servo and Electrical Tests at Powertrain Control Module.

If a DTC 15 is observed, perform test for a faulty vehicle speed sensor.

(3) Correct any problems found when performing these tests and recheck for DTC if changes were made.

VEHICLE SPEED SENSOR TEST

For testing of the vehicle speed sensor and related components, refer to Powertrain Diagnostic Procedures manual.

VEHICLE SPEED CONTROL SYSTEM ELECTRICAL TESTS

Vehicle speed control systems may be tested using two different methods. One involves use of a DRB scan tool. If this test method is desired, refer to Powertrain Diagnostic Procedures manual.

The other test method uses a voltmeter. The voltmeter method is described in the following tests.

If any information is needed concerning wiring, refer to Section 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.

ELECTRICAL TESTS AT SERVO

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

(2) Disconnect 4-way connector going to servo (Figs. 2 and 3). Blue wire with red tracer of main harness 4-way connector should read approximately battery voltage. If not, check for loose connections, brake switch adjustment or, repair main harness as necessary.

(3) Connect a jumper wire between male and female terminals of blue wire with red tracer. The other 3 male terminals from servo should show battery voltage. If not, replace servo.

(4) Using an ohmmeter, connect one lead to a good body ground. Touch other lead to black wire terminal in 4-way connector of main harness. Meter should show continuity. If not, repair ground circuit as necessary.

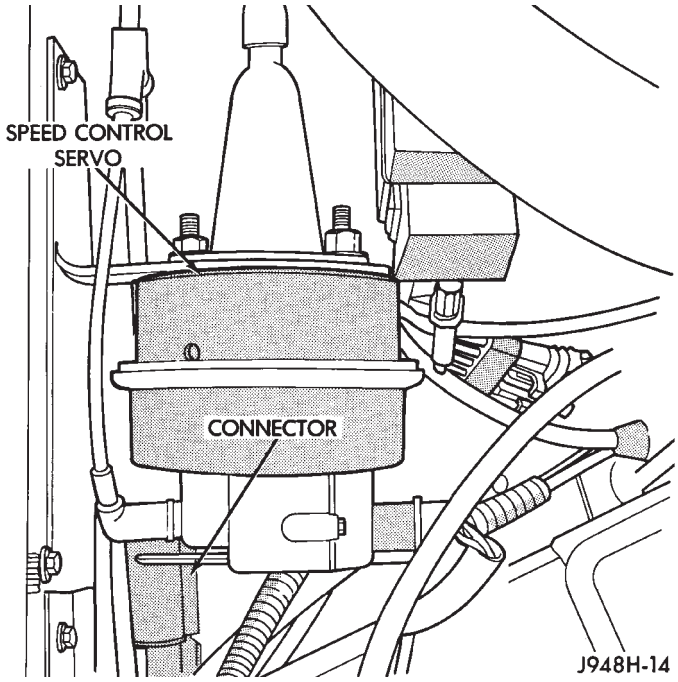


Fig. 2 Servo And Harness Connector—Left Hand Drive

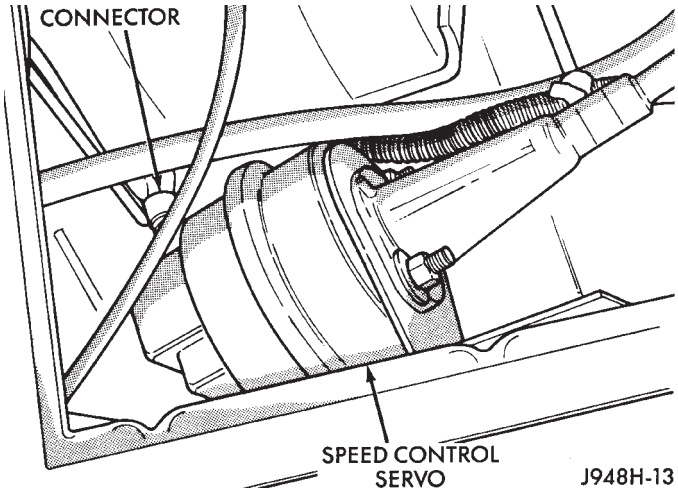


Fig. 3 Servo And Harness Connector—Right Hand Drive

ELECTRICAL TESTS AT POWERTRAIN CONTROL MODULE

(1) Unplug 60-way connector from Powertrain Control Module, located on drivers side fender (Fig. 4).

(2) Connect negative lead of voltmeter to a good body ground near module.

(3) For the following tests, ignition switch must be in ON position. Refer to Fig. 5 for controller terminal locations. Touch positive lead of voltmeter to terminal in cavity number 33. With speed control switch in OFF position, voltmeter should read 0 volts. With speed control switch in ON position, voltmeter should read battery voltage. If not, repair main harness as necessary.

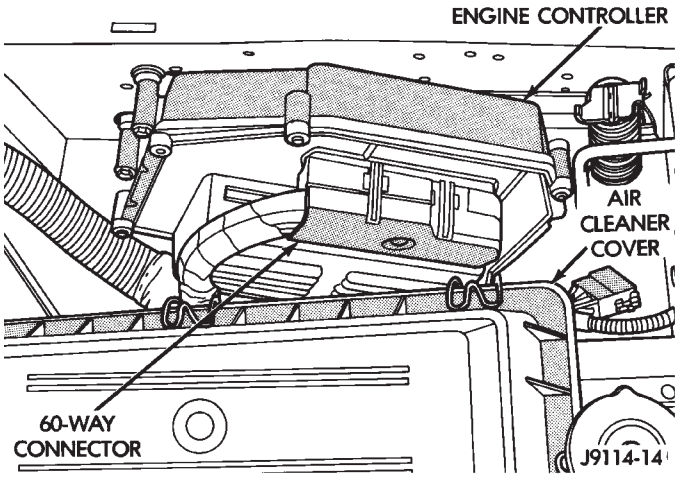


Fig. 4 Powertrain Control Module and Connector Location

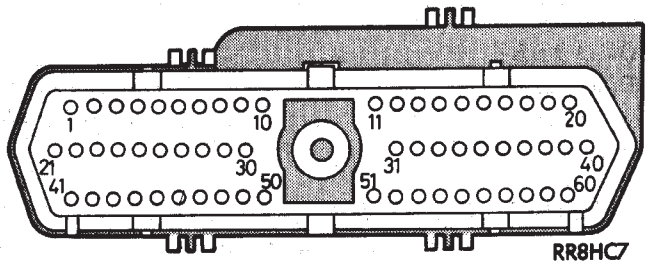


Fig. 5 Powertrain Control Module 60-Way Connector Shown from Terminal End

(4) Touch positive lead of the voltmeter to terminal in cavity number 53. As in step (3), voltmeter should read 0 volts with switch in OFF position and battery voltage with switch in ON position.

(5) Touch positive lead of voltmeter to terminal in cavity number 48. With speed control switch in OFF position, voltmeter should read 0 volts. With switch in ON position, voltmeter should read battery voltage. Pressing SET button should cause voltmeter to change from battery voltage to 0 volts for as long as the switch is held. If not, perform the speed control switch test. If the switch is not at fault, then check main harness and repair as necessary.

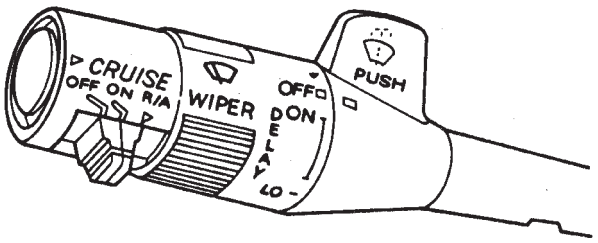
(6) Touch positive lead of voltmeter to terminal in cavity number 50. The voltmeter should read 0 volts with speed control switch in either OFF or ON position. With switch in either RESUME or SET position, voltmeter should read battery voltage. If not, perform the speed control switch test. If the switch is not at fault, then check main harness and repair as necessary.

(7) Touch positive lead of voltmeter to terminal in cavity number 49. The voltmeter should read 0 volts with switch in OFF position. With switch in ON position, voltmeter should read battery voltage. The voltmeter will continue to read battery voltage when either the SET or RESUME switch is pressed. If not,

perform the speed control switch test. If switch is not at fault, then check main harness and repair as necessary.

(8) Using an ohmmeter, connect one lead to a good body ground and touch other lead to terminal in cavity number 29. With brake pedal released, meter should show continuity. When pedal is depressed, meter should show open circuit.

SPEED CONTROL SWITCH (TURN SIGNAL LEVER) TEST



J898H-17

STOP LAMP SPEED CONTROL SWITCH TEST

(1) Disconnect double connector at switch pigtail and connect a 12 volt source to either terminal. Connect a test lamp between other terminal and a good ground. The test lamp should be on when brake pedal is in normal position. The test light should go off when brake pedal is depressed approximately 3/8 of an inch.

(2) If test lamp does not respond properly, the stop lamp switch is defective or out of adjustment.

(3) Stop lamp switch adjustment is detailed in Group 5 - Brakes section of this manual.

VACUUM SUPPLY TEST

(1) Disconnect vacuum hose at servo or vacuum reservoir and install a vacuum gauge in hose (Fig. 6).

(2) Start engine and observe gauge at idle. Vacuum gauge should read at least ten inches of mercury.

(3) If vacuum does not meet this requirement, check for vacuum leaks or poor engine performance.

OPERATIONAL CHECK (ROAD TEST)

The following sequential checks are performed with the speed switch ON and vehicle speed faster than 35 mph:

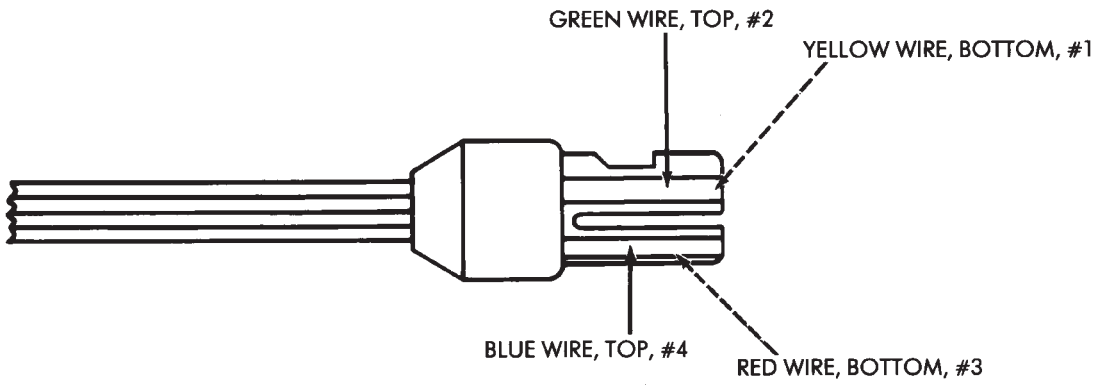
(1) Press the SET button in end of multi-function lever. Vehicle should maintain set speed.

(2) Hold SET button in, and remove foot from accelerator. Vehicle should coast to a slower speed.

(3) Release SET button. Speed control will engage and hold a slower speed, provided the speed remains above 35 mph.

SET/COAST (S/C) SW	POSITION SLIDER	1-2	1-3	1-4	2-3	2-4	3-4
Normal	Off	O	O	O	O	O	O
Normal	On	O	O	O	O	C	O
Normal	R/A	C	O	C	O	C	O
Depressed	Off	O	O	O	C	O	O
Depressed	On	O	O	O	C	C	C
Depressed	R/A	C	C	C	C	C	C

C —CLOSED (ZERO OHMS)
O —OPEN (∞ (INFINITE))



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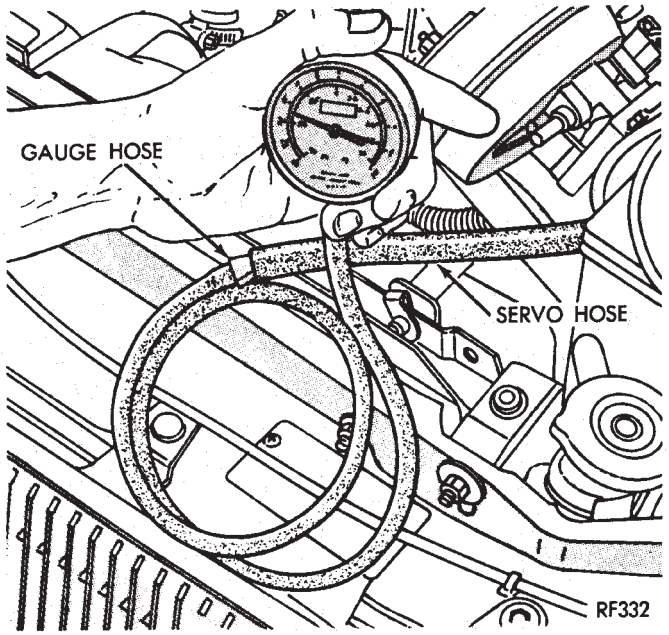

Fig. 6 Vacuum Gauge Test

(4) Slide speed switch to RESUME/ACCEL and hold it there. Vehicle should accelerate.

(5) Release speed switch back to ON. Vehicle will hold the new faster speed, if SET speed button has been pressed.

(6) Tap brake pedal. Vehicle will decelerate.

If vehicle has a manual transmission, repeat test, but depress the clutch pedal.

(7) Slide speed switch momentarily RESUME/ACCEL. Vehicle will accelerate to former set speed.

(8) While cruising, accelerate, then remove foot from accelerator. Vehicle will coast back to set speed.

(9) While speed control is engaged, tap SET button. Vehicle speed will increase 2 mph for each time SET button is tapped.

Diagnostic Trouble 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*	Speed Control Solenoid Circuits	An open or shorted condition detected in the Speed Control vacuum or vent solenoid circuits.
	or	
	Speed Control Switch Always Low	Speed Control switch input below the minimum acceptable voltage.
	or	
	Speed Control Switch Always High	Speed Control switch input above the maximum acceptable voltage.
55*	N/A	Completion of fault code display on Check Engine lamp.

* 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.

J948H-17

SERVICE PROCEDURES

INDEX

SPEED CONTROL SERVO REPLACEMENT

REMOVAL

(1) Disconnect vacuum hose at servo (Figs. 1 and 2).
(2) Disconnect electrical connector at servo.
(3) Remove 2 nuts from cable sleeve.
(4) Pull speed control cable away from servo to expose cable retaining clip.
(5) Remove clip attaching cable to servo.
(6) Pull servo away from mounting bracket.

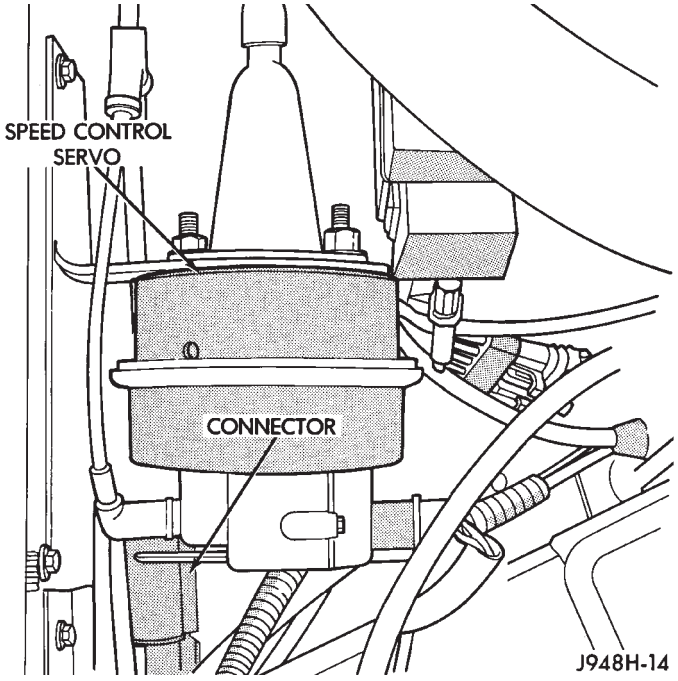

Fig. 1 Speed Control Servo—Left Hand Drive

INSTALLATION

(1) Insert servo studs through holes in servo mounting bracket.
(2) With throttle blocked to full open position, align hole in cable sleeve with hole in servo pin and install retaining clip.
(3) Insert servo studs through holes in cable sleeve.
(4) Install 2 attaching nuts and tighten to 6 N·m (50 in. lbs.).
(5) Connect vacuum hose to servo.
(6) Connect electrical connector to servo terminals.

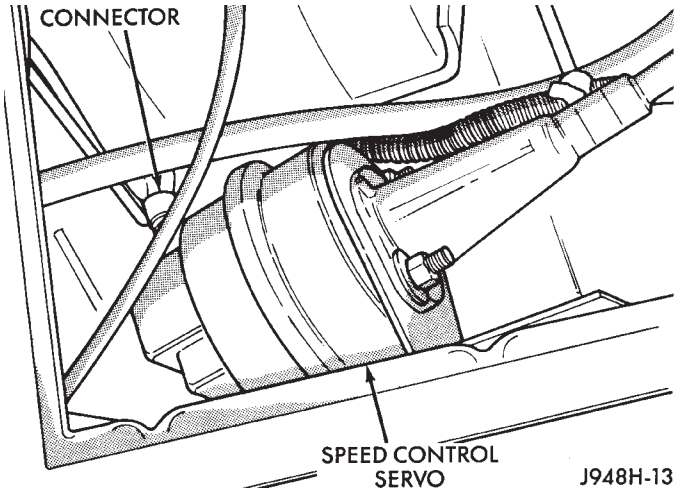

Fig. 2 Speed Control Servo—Right Hand Drive

SERVO CABLE REPLACEMENT

CAUTION: Use finger pressure only to remove the speed control cable connector at the bell crank. Pliers or screwdriver can break connector requiring complete cable replacement.

(1) Using finger pressure only, remove speed control cable connector at bell crank by pushing connector off the bell crank (Fig. 3). DO NOT try to pull connector off perpendicular to the bell crank.
(2) Squeeze tabs on speed control cable and push out of locking plate (Fig. 4).
(3) Pull cable out of cable guide.
(4) Remove 2 nuts and cable housing from servo.
(5) Release cable clip from servo cable and remove servo cable.
(6) To install, reverse the removal procedure.

SPEED CONTROL SWITCH REPLACEMENT

(1) Disconnect negative cable from battery.
(2) Remove horn button with a push and turn motion.
(3) Remove horn button components (Fig. 5).
(4) Turn ignition switch to LOCK position and remove steering wheel nut and washer.
(5) Scribe an alignment mark on the steering in line with the mark already existing on the end of the steering column.

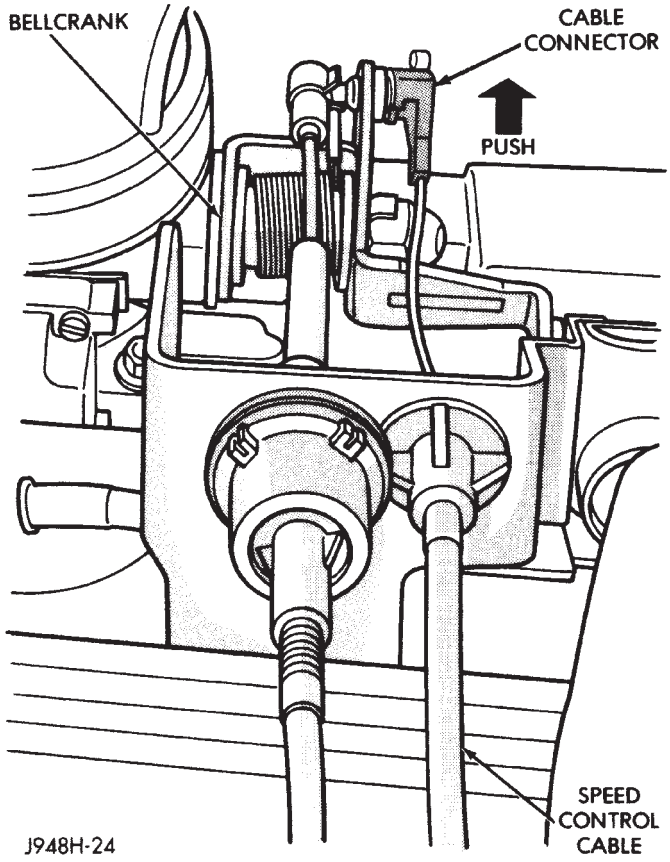

Fig. 3 Remove Bell Crank Connector

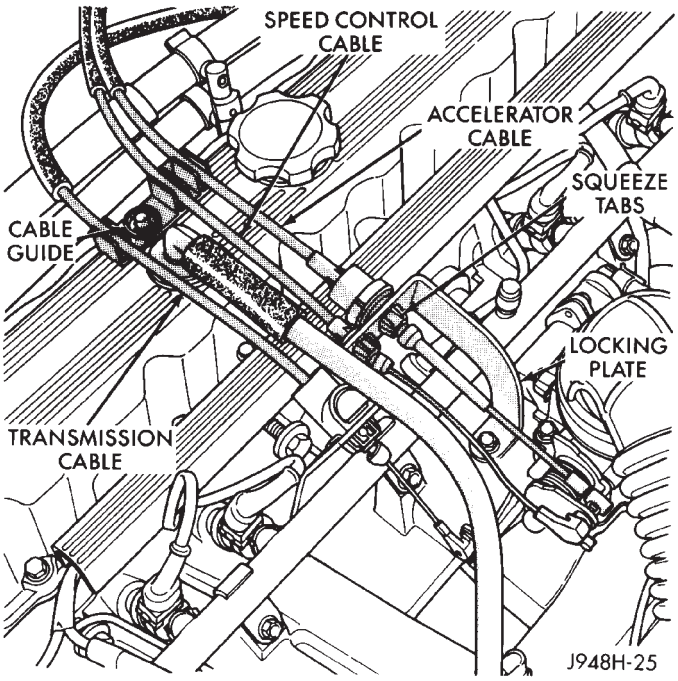

Fig. 4 Remove/Install Speed Control Cable to Locking Plate

(6) Remove vibration damper from the steering column hub, if equipped.

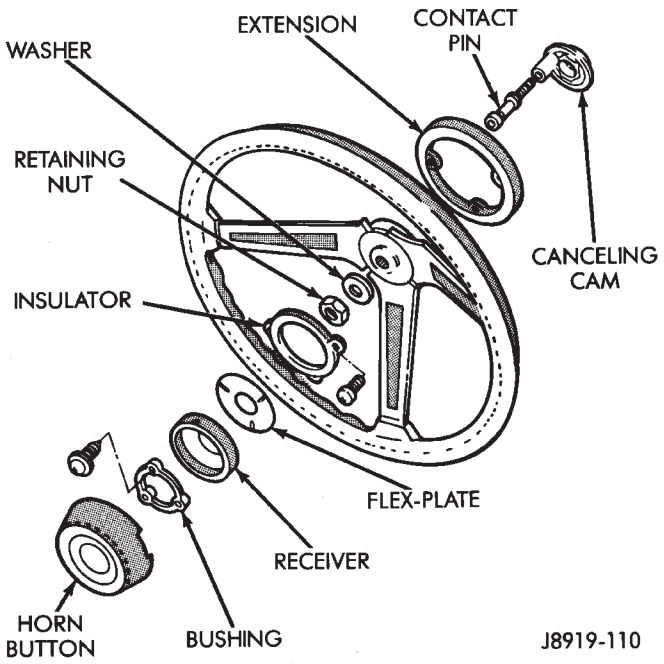

Fig. 5 Steering Wheel Removal/Installation

(7) Remove steering wheel using a steering wheel puller.

WARNING: TO REMOVE THE STEERING SHAFT SNAP RING IN THE FOLLOWING STEP, THE LOCKPLATE MUST BE COMPRESSED. DO NOT ATTEMPT TO REMOVE THE LOCKPLATE WITHOUT COMPRESSOR TOOL C4156 AS THE LOCKPLATE IS UNDER HEAVY SPRING TENSION.

(8) Compress lockplate with compressor tool C4156.

(9) Remove steering shaft snap ring (Fig. 6). Discard snap ring. It is not reusable.

(10) Remove compressor tool.

(11) Remove lockplate, cancelling cam, and upper bearing preload spring.

(12) Remove horn button components from canceling cam.

(13) Remove screw and hazard warning switch knob.

(14) Remove actuator arm attaching screw.

(15) Remove turn signal switch attaching screws.

(16) Unplug speed control switch connector.

(17) Pull speed control harness out of the column.

(18) Insert ignition key in lock cylinder and turn key to ON position.

(19) Remove key warning buzzer switch and retaining clip with a paper clip inserted below retainer so that retainer is flattened (Fig. 7).

Do not attempt to remove buzzer switch and clip separately. The clip could fall into the column jacket.

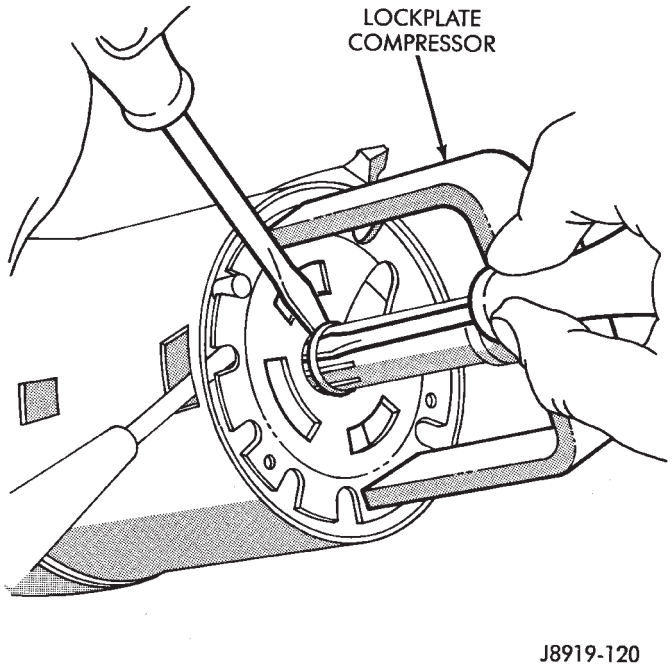

Fig. 6 Lockplate Removal

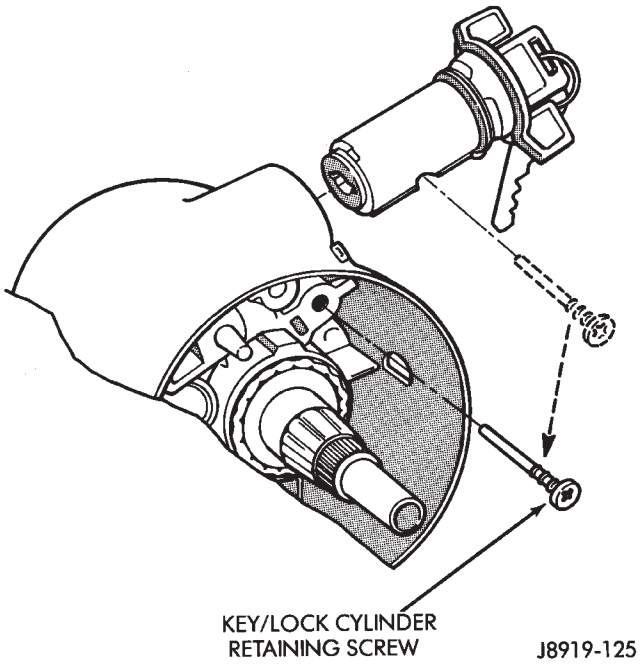

Fig. 8 Lock Cylinder Removal/Installation

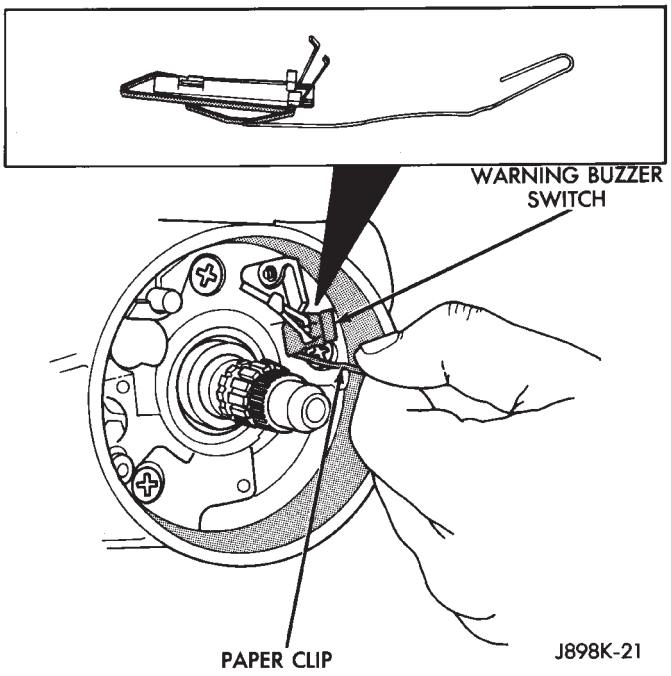

Fig. 7 Buzzer Switch Removal

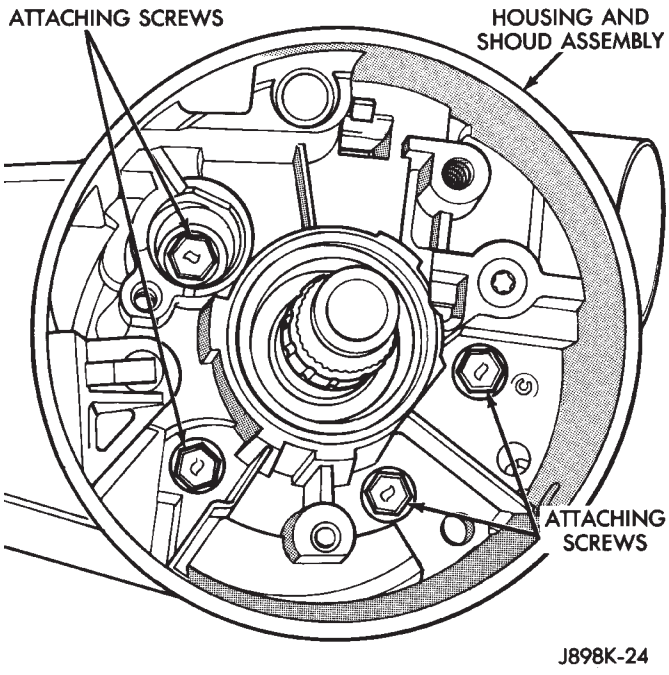

Fig. 9 Steering Column Housing Removal/Installation

(20) Remove ignition lock cylinder retaining screw and pull lock cylinder out of column housing (Fig. 8).

(21) Remove screws that attach housing and shroud assembly to column jacket and carefully remove housing and shroud assembly (Fig. 9).

Do not let dimmer switch rod, lock pin or lock rack fall out.

(22) Remove turn signal/wiper lever by pulling it straight out of column.

(23) Remove wiper switch cover from back of housing and shroud assembly (Fig. 10). If equipped with column shift, remove screw holding the cover on.

(24) Remove pivot screw from housing and remove wiper switch.

(25) Install a new switch and switch cover.

(26) Push on dimmer switch rod to make sure it is connected then carefully position housing and shroud assembly to column (Fig. 11).

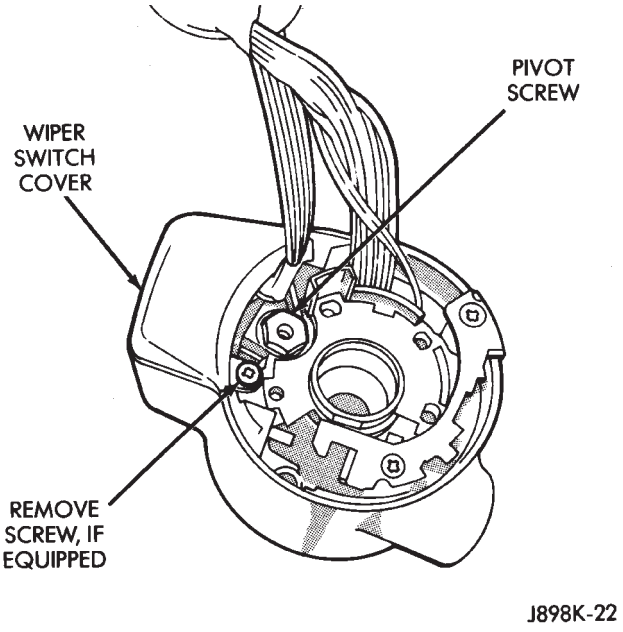

Fig. 10 Remove Pivot Screw

Make sure nylon spring retainer on the lock pin is positioned forward of retaining slot of lock rack (Fig. 11).

Position the first tooth of gear (farthest from the block tooth) with the most forward tooth of lock rack.

(27) Install screws that attach housing and shroud assembly to column jacket and carefully mate housing and shroud assembly.

(28) Insert key and lock cylinder and test that the lock pin extends fully when key is moved to lock position.

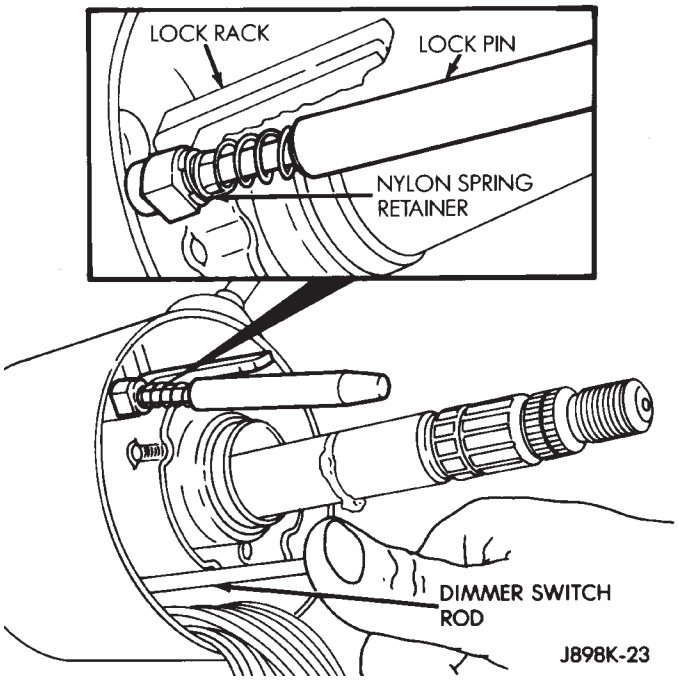

Fig. 11 Check Dimmer Switch Rod and Lock Pin

(29) To install remaining parts, reverse the removal procedures.

CAUTION: When installing a wiper switch, make sure wires are laying flat on bottom inside column.

On vehicles equipped with column shift, install PRNDL cable clip with shift indicator on N. Move selector through the range and make sure it lines up with each letter.

(30) Install steering wheel. Tighten steering wheel nut to 34 N·m (25 ft. lbs.) torque.