

CRUISE CONTROL SYSTEM

1988 Jeep Cherokee

1988 Cruise Control Systems
JEEP CRUISE COMMAND

All Models

DESCRIPTION & OPERATION

Jeep vehicles use an electro-mechanical servo system. The system consists of a control module, speed sensor, servo, control switch assembly, vacuum storage canister, check valve and release system. Release system consists of a mechanical vacuum vent valve and brake and clutch (M/T) release switches.

Cruise control switch is an integral part of turn signal switch lever and consists of 2 separate switches. First is an "ON-OFF" and "RESUME" slide switch located on flat of directional switch lever.

Second is "SET/COAST" push button switch located at end of directional switch lever. To engage system, move slide switch to "ON" position and accelerate to desired speed. Depress and release "SET/COAST" button on end of switch lever. System will now maintain selected speed.

System will automatically disengage when brake or clutch pedal is depressed. It can be re-engaged to previously selected speed by accelerating to 30 MPH and moving slide switch to "RESUME" position, then releasing switch.

NOTE: When slide switch is moved to "OFF" position, pre-set speed of "RESUME" function is canceled from memory and must be reset when system is reactivated.

Higher speed can be set by pressing on accelerator pedal until new speed is reached and then pushing "SET/COAST" button. Lower speed can be obtained by lightly depressing brake pedal, allowing the vehicle to slow to desired speed and then depressing and releasing "SET/COAST" button.

CONTROL MODULE

Control module receives input voltage representing vehicle speed from speed sensor, which is driven by the speedometer cable. Control module has a low speed circuit that prevents operation at speeds below 30 MPH. See Fig. 1.

SERVO

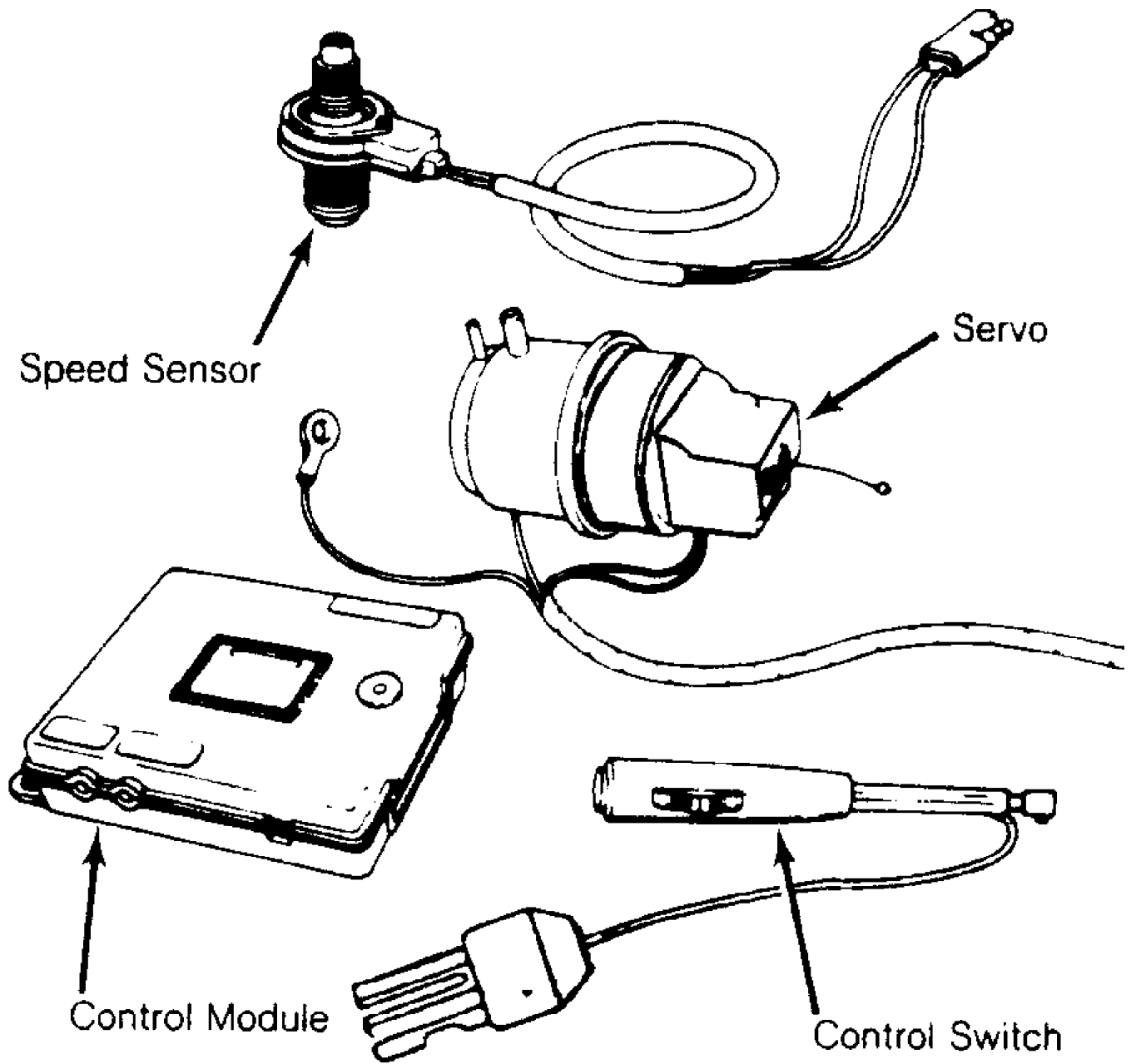
Servo is controlled by control module and uses manifold vacuum to control throttle. Bead-link chain connects servo cable to throttle linkage. See Fig. 1.

CONTROL SWITCH

Control switch assembly is an integral part of turn signal switch lever. See Fig. 1.

RELEASE SYSTEM

Release system deactivates cruise control system when brake or clutch pedal is depressed. Either servo vent valve or mechanical vacuum vent switch admits atmospheric pressure into servo when brake pedal is depressed.



17056

Fig. 1: Cruise Control System Components
Courtesy of Chrysler Motors.

TRUBLE SHOOTING

NOTE: Vehicles with computerized engine controls, should be tested for stored computer codes. Codes and related problems must be repaired prior to cruise control diagnosis and repair. For additional information, see COMPUTERIZED ENGINE CONTROLS section.

SYSTEM WILL NOT ENGAGE

Restricted vacuum hose or no vacuum. Control switch or control module defective. Speed sensor defective. Clutch or brake light switch defective or misadjusted. Brake light switch wire disconnected. Open circuit between brake light switch and brake lights.

RESUME FEATURE INOPERATIVE

Defective servo ground connection. Defective control switch.

ACCELERATE FUNCTION INOPERATIVE

Accelerate circuit in control module inoperative. Defective control switch.

SYSTEM RE-ENGAGES WHEN BRAKE PEDAL IS RELEASED

Defective control module. Mechanical vent valve not opening. Kink in mechanical vent valve hose. Brake light switch defective.

CARBURETOR THROTTLE DOES NOT RETURN TO IDLE POSITION

Improper linkage adjustment.

ROAD SPEED CHANGES 2 MPH OR MORE WHEN SETTING SPEED

Centering adjustment wrong. Servo link misadjusted.

ENGINE ACCELERATES WHEN STARTED

Improper servo chain adjustment. Vacuum hose connections reversed at servo. Defective servo.

SYSTEM DISENGAGES ON LEVEL ROAD WITHOUT APPLYING BRAKES

Loose wire connection. Loose vacuum hose connection. Servo linkage broken. Defective brake light switch.

ERRATIC OPERATION

Reverse polarity of system wiring. Defective servo. Defective control module.

VEHICLE CONTINUES TO ACCELERATE WHEN "SET" BUTTON IS RELEASED

Servo or control module defective.

SYSTEM ENGAGES BUT SLOWLY LOSES SET SPEED

Air leak at connections or in vacuum hoses. Air leak on vent valve on brake pedal.

ADJUSTMENTS

CONTROL MODULE ADJUSTMENT

NOTE: Control module adjustments are preset by manufacturer. If other components in system appear to be functioning properly

and cruise control remains inoperative, perform following adjustments to determine if control module is functional.

1) Remove control module attaching screws or tie straps and move control module downward for adjustment access. Turn centering adjustment screw to 10 o'clock position. Turn low speed adjustment screw to 10 o'clock position. Turn sensitivity adjustment screw fully clockwise.

CAUTION: Adjustment potentiometers are extremely delicate. Carefully insert screwdriver and do not push or turn screws excessively hard. Maximum movement is 3/4 turn.

2) Adjustments are not precisely correct for vehicle, but are acceptable to determine if control module is functioning. Perform precise adjustments by road testing vehicle on level road. If adjustments have no effect on cruise control, replace control module.

3) If actual engagement speed is 2 MPH or more above selected speed, stop vehicle and turn centering screw 1/16 of a turn counterclockwise. Recheck engagement speed and adjust as necessary.

4) If engagement speed is 2 MPH or more below selected speed, turn centering screw 1/16 of a turn clockwise. Recheck engagement speed and adjust as necessary.

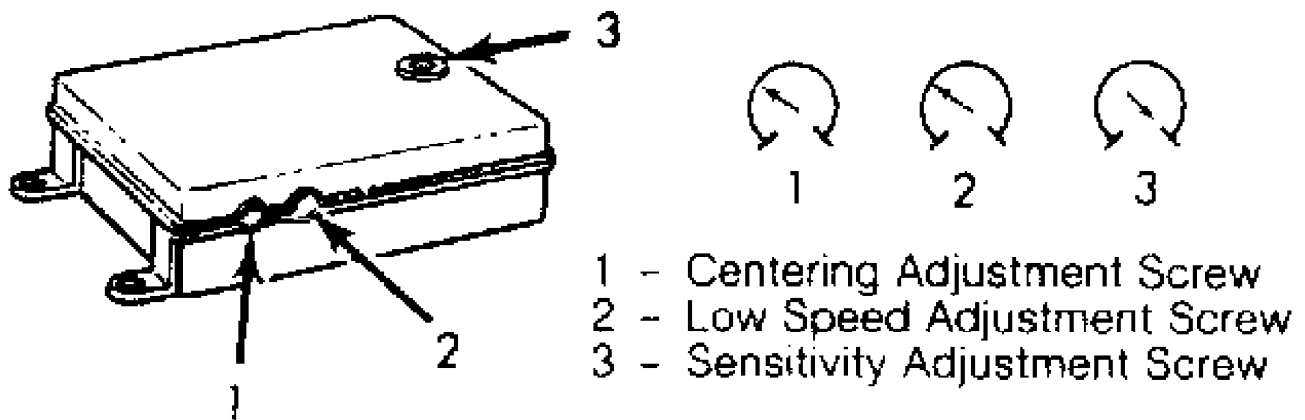


Fig. 2: Control Module Adjustment Screws
Courtesy of Chrysler Motors.

VACUUM VENT VALVE

Depress brake or clutch pedal and hold in depressed position. Move vacuum vent valve toward bracket on pedal as far as possible. Release brake or clutch pedal.

TESTING

NOTE: Vehicles with computerized engine controls, should be tested for stored computer codes. Codes and related problems must be repaired prior to cruise control diagnosis and repair. For additional information, see COMPUTERIZED ENGINE CONTROLS section.

PRELIMINARY INSPECTION

Ensure cruise control wire harness is properly connected to

control module before starting diagnosis or repair procedure, as this connection is disturbed when Cruise Command System Tester (AM PC-1-R) is used. Poor connection at this point may be improperly diagnosed as control module malfunction.

Brake light and clutch switches should be properly adjusted. Ensure that all vacuum lines are correctly routed and tightly connected.

CRUISE COMMAND SYSTEM TESTS

Testing is performed with Cruise Command System Tester (AM PC-1-R). Remove wire harness connector from control module. Connect tester to wire harness connector. Perform tests as part of service diagnosis to determine cause and correction of system malfunction. Various tester lights are associated with specific components, circuits, etc.

CONTROL SWITCH CONTINUITY

NOTE: Wrangler
Voltage checks should show battery voltage. If resistance readings are incorrect, check circuit for an open or a short. Cruise control module terminal No. 1 grounds through connector at engine block.

Light No. 1 "OFF" (Set Switch)
With control switch in "ON" position, check for battery voltage between HAZ/STOP and in-line fuse, terminal No. 14 and ground terminal No. 1

Light No. 2 "OFF" (Control Switch & Speed Sensor)
With control switch in "ON" position, check for battery voltage between HAZ/STOP and in-line fuse, terminal No. 5 and ground terminal No. 1. With ignition switch in "OFF" position, check resistance between terminals No. 2 and No. 3. Resistance should be 15-50 ohms.

Light No. 3 "OFF" (Brake Light Ground)
With ignition switch in "ON" position, install jumper wire between terminals No. 7 and No. 13. If brake lights do not turn on, check fuses and brake light switch connections.

Light No. 4 "OFF" (Throttle Position Feedback Sensor)
With ignition switch in "ON" position, check for battery voltage between gauge fuses at terminals No. 7 and No. 1.
With ignition switch in "OFF" position, check resistance between terminals No. 2 and No. 11. Resistance should be 2400-4000 ohms. At idle resistance should be 2800-4300 ohms and at wide open throttle resistance should be 4000 ohms.

Light No. 5 "OFF" (Resume/Accel/Vent Valve)
With control switch in "RESUME/ACCEL" position, check for battery voltage between HAZ/STOP and in-line fuse, terminal No. 10 and ground terminal No. 1. With ignition switch in "OFF" position, check resistance between terminals No. 6 and No. 12. Resistance should be 30-50 ohms. Resistance between terminals No. 6 and ground, and terminal No. 12 and ground should be infinite (open).

Light No. 6 "OFF" (Resume/Accel/Charge Valve)
With control switch in "RESUME/ACCEL" position, check for battery voltage between HAZ/STOP and in-line fuse, terminal No. 10 and ground terminal No. 1. With ignition switch in "OFF" position, check resistance between terminals No. 4 and No. 12. Resistance should be

30-50 ohms. Resistance between terminals No. 4 and ground, and terminal No. 12 and ground should be infinite (open).

WRANGLER CRUISE CONTROL TESTING

Conditions	Lights "ON"
Control Switch "ON" & Set Switch Depressed	No. 1
Control Switch "ON"	No. 2
Ignition "ON" & Brake or Clutch Pedal Depressed	No. 3 & No. 4
Cruise Control & Resume/Accel "ON"	No. 5 & No. 6
Cruise & Resume/Accel "ON" & Engine Running (1)	No. 5 & No. 6

(1) - Servo will pull throttle wide open. Keep RPM at a safe level by releasing cruise control switch.

Except Wrangler

Use 12-volt test light to test control switch continuity.

Connect test light to wires as indicated in CONTROL SWITCH CONTINUITY TEST CHART. See Figs. 3 or 4.

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

O - Open

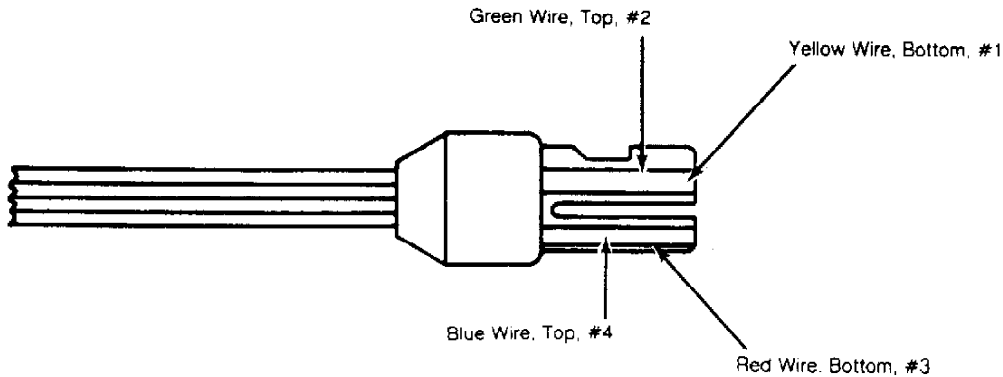


Fig. 3: Cherokee, Comanche & Wagoneer Control Switch Continuity Test Chart
 Courtesy of Chrysler Motors.

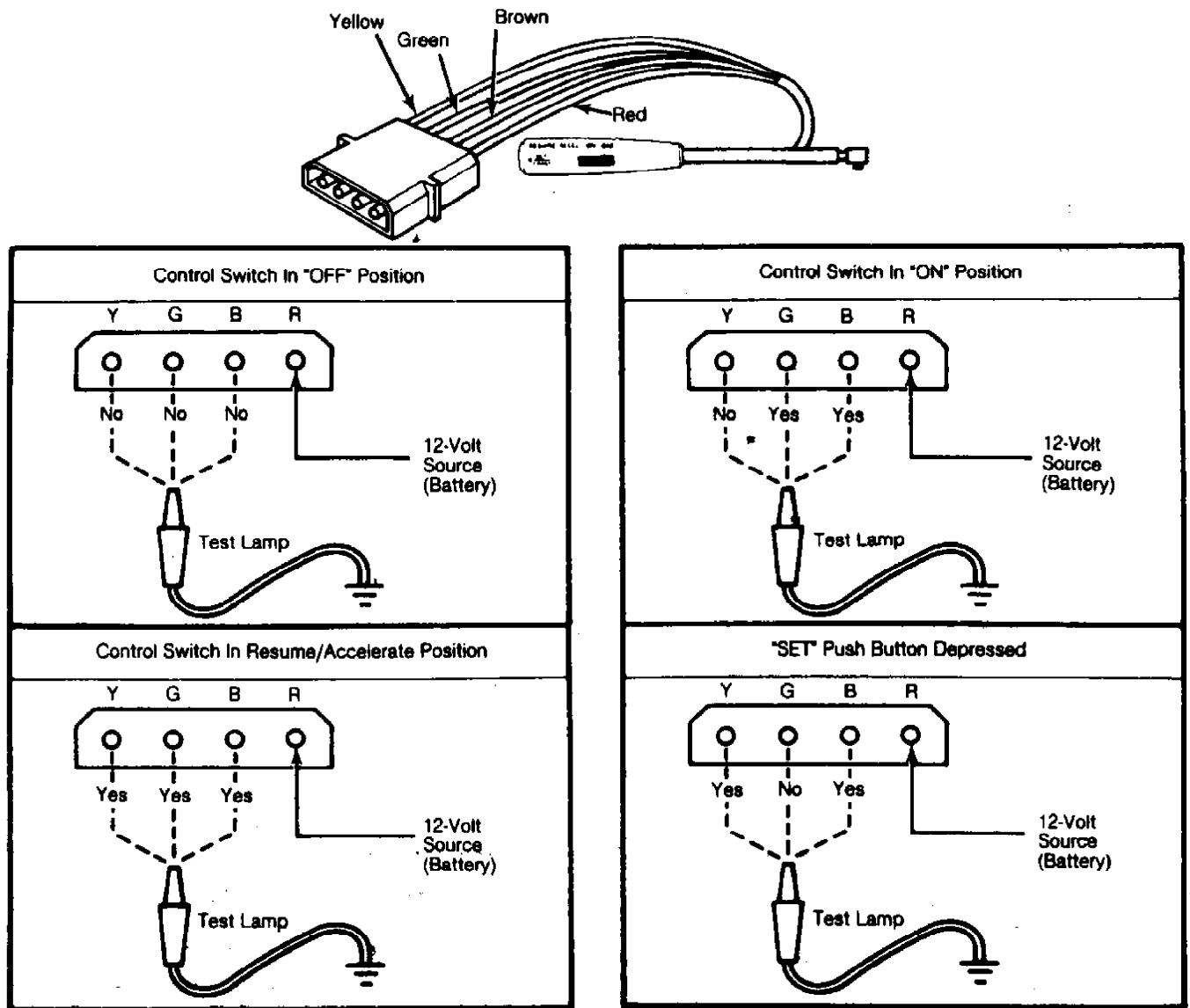


Fig. 4: Grand Wagoneer Control Switch Continuity Test Chart
 Courtesy of Chrysler Motor.

CORRECT POWER SOURCE

Cherokee, Comanche & Wagoneer

1) With ignition switch and control switch "OFF", all test lights should be off. If any light is on, check Brown (7) wire is not connected directly to source of voltage.

2) Check for bad control switch. With ignition switch in "OFF" position, and control switch "ON". Light No. 2 should be on and lights No. 1, 3, 4, 5 and 6 should be off.

3) If light No. 2 is off, check speed sensor continuity, check speed sensor terminals to Gray and Drk. Blue wires, and check that terminals No. 2, 3, 5 and 7 (Gray, Drk. Blue and Lt. Green wires are not grounded).

Grand Wagoneer

With ignition and control switches in "OFF" position, test lights should be off. If one or more lights are on, remove Brown (5) wire at control module connector and check for direct source of voltage or repair defective control switch.

SYSTEM ELECTRICAL CONTINUITY

Cherokee, Comanche & Wagoneer

1) With ignition and control switches in "ON" position, lights No. 2, 3 and 4 should be on. Lights No. 1, 5 and 6 should be off. If light No. 2 is off, check speed sensor continuity, check speed sensor terminals to Gray and Drk. Blue wires, and check terminals No. 2, 3, 5 and 7 (Gray, Drk. Blue and Lt. Green wires are not grounded).

2) If light No. 3 is off, check brake light switch and all Brown, Lt. Blue and Lt. Green wire connections. If light No. 4 is off, check terminals No. 2 and No. 11 at control module connector. Check continuity of throttle position feedback rheostat of servo.

Grand Wagoneer

1) With ignition and control switches in "ON" position, lights No. 1, 2, 3, and 4 should be on. Lights No. 5 and 6 should be off. If light No. 1 is off, check for blown fuse in brake light switch to control switch circuit. Check Red, Brown and Green wires at control switch for continuity to switch. Check Drk. Green wire (14) at control module connector for continuity to control module.

2) If light No. 2 is off, check speed sensor for correct output voltage. Check Gray and Drk. Blue wire at speed sensor connector for continuity to control module connector. Check terminals No. 2, 3, 5 and 7 at control module connector for proper connection to wires.

3) If light No. 3 is off, check brake and clutch switch adjustment. If light No. 4 is off, check for defective connection at terminals No. 2 and 11 on control module connector. Check operation of throttle position feedback rheostat on servo.

COAST CONTINUITY TEST

Cherokee, Comanche & Wagoneer

1) With ignition and control switches in "ON" position, depress and hold "SET/COAST" button. Lights No. 1, 2, 3 and 4 should be on. Lights No. 5 and 6 should be off. If light No. 1 is off, check voltage from brake light switch, check 4-amp in-line fuse of Pink wire, and check Pink, Brown and Drk. Green wires at control switch connector and Drk. Green (14) wire at control module connector for good connections.

2) If light No. 2 is off, check speed sensor continuity, check speed sensor terminals to Gray and Drk. Blue wires, and check terminals No. 2, 3, 5 and 7 (Gray, Drk. Blue and Lt. Green wires) for ground.

3) If light No. 3 is off, check brake light switch, check all Brown, Lt. Blue and Lt. Green wire connections. If light No. 4 is off, check terminals No. 2 and 11 at control module connector, and check continuity of throttle position feedback rheostat of servo.

SERVO CHARGE VALVE SOLENOID CONTINUITY

CAUTION: If engine is running, servo will move throttle to wide open position.

Grand Wagoneer

1) With ignition and control switches in "ON" position, depress and hold "SET/COAST" button. Lights No. 2, 3, 4, 5 and 6 should be on. Light No. 1 should be off. Light No. 4 will dim when

servo moves throttle to wide open position with engine operating.

2) If light No. 2 is off, check speed sensor for correct output voltage. Check Gray and Drk. Blue wire at speed sensor connector for continuity to control module connector. Check terminals No. 2, 3, 5 and 7 at control module connector for proper connection to wires.

3) If light No. 3 is off, check brake and clutch switch adjustment. If light No. 4 is off, check for defective connection at terminals No. 2 and 11 on control module connector. Check operation of throttle position feedback rheostat on servo.

4) If light No. 5 is off, check for defective connections at terminals No. 4 and 12 on control module connector. If necessary, replace defective servo. If light No. 6 is off, check for defective connection at terminals No. 6 and 12 on control module connector. If necessary, replace defective servo.

5) If all lights are off after depressing set/coast speed switch, check for blown fuse. Check for short circuits in Red, Pink and Brown wire circuits at control switch. If necessary, replace defective servo.

SYSTEM DISENGAGEMENT WITH BRAKE PEDAL DEPRESSED

Cherokee, Comanche & Wagoneer

1) With ignition and control switches in "ON" position and brake pedal depressed, lights No. 2 and 4 should be on. Lights No. 1, 3, 5 and 6 should be off. Light No. 3 should be on when brake pedal is released.

2) If light No. 2 is off, check speed sensor continuity, check speed sensor terminals to Gray and Drk. Blue wires, and check terminals No. 2, 3, 5 and 7 (Gray, Drk. Blue and Lt. Green) for ground.

3) If light No. 4 is off, check terminals No. 2 and 11 at control module connector, and check continuity of throttle position feedback rheostat of servo.

Grand Wagoneer

1) With ignition and control switches in "ON" position and brake pedal depressed, lights No. 1, 2 and 4 should be on. Lights No. 3, 5 and 6 should be off. Light No. 3 should be on when brake pedal is released.

2) If light No. 1 is off, check for blown fuse in brake light switch to control switch circuit. Check Red, Brown and Green wires at control switch connector for continuity to switch. Check Drk. Green wire (14) at control module connector for continuity to control module.

3) If light No. 2 is off, check speed sensor for correct output voltage. Check Gray and Drk. Blue wire at speed sensor connector for continuity to control module connector. Check terminals No. 2, 3, 5 and 7 at control module connector for proper connection to wires.

4) If light No. 4 is off, check for defective connection at terminals No. 2 and 11 on control module connector. Check operation of throttle position feedback rheostat on servo. If light No. 3 is off when brake pedal is released, check brake light switch adjustment.

"RESUME/ACCEL" FUNCTION

CAUTION: If engine is running, servo will move throttle to wide open position.

Cherokee, Comanche & Wagoneer

1) With ignition and control switches in "ON" position, slide and hold control switch in "R/A" position. Lights No. 2, 3, 4, 5 and 6

should be on. Light No. 1 should be off. Light No. 4 will dim when servo moves throttle to wide open position, if engine is running.

2) If light No. 2 is off, check speed sensor terminal connections to control module through Gray and Drk. Blue wires. Check terminals No. 2, 3, 5 and 7 (Gray, Drk. Blue and Lt. Green wires) for ground.

3) If light No. 3 is off, check brake light switch, and check all Brown, Lt. Blue and Lt. Green wire connections. If light No. 4 is off, check terminals No. 2 and 11 at control module connector. Check continuity of throttle position feedback rheostat of servo.

4) If light No. 5 is off, check for bad connection at White (6) and Orange (12) wire terminals. If necessary, replace defective servo.

5) If all lights are off after moving control switch to "R/A" position, check for blown fuse or fuses, and check Red, Pink, Brown or White wires for shorts. If necessary replace defective servo.

Grand Wagoneer

1) With ignition and control switches in "ON" position, slide control switch to "R/A" position. All test lights should be on. Light No. 4 will dim when servo moves throttle to wide open position, if engine is running.

2) If light No. 1 is off, check for blown fuse in brake light switch to control switch circuit. Check Red, Brown and Green wires at control switch for continuity to switch.

3) If light No. 2 is off, check Gray and Drk. Blue wire at speed sensor connector for continuity to control module connector.

4) If light No. 3 is off, check brake light switch adjustment. If light No. 4 is off, check for defective connection at terminals No. 2 and 11 on control module connector. Check operation of throttle position feedback rheostat on servo.

5) If light No. 5 is off, check for defective connections at terminals No. 4 and 12 on control module connector. If necessary, replace defective servo. If light No. 6 is off, check for defective connection at terminals No. 6 and 12 on control module connector. If necessary, replace defective servo.

6) If all lights are off after moving control switch to "R/A" position, check for blown fuse. Check for short circuits in Red, Pink and Brown wire circuits at control switch. If necessary, replace defective servo.

SPEED SENSOR TEST

1) Disconnect wire harness connector at speed sensor. Connect a voltmeter (set on low AC scale) to terminals from speed sensor.

2) Raise front and rear wheels of vehicle off ground and support vehicle with safety stands. Run engine (wheels spinning freely) at 30 MPH and note voltage.

3) Voltage should be approximately .9 volts. Increases of .1 volts per each 10 MPH increase in speed should also be noticed. Turn off engine and stop wheels. Lower vehicle. Connect speed sensor wire harness.

SERVO TEST

1) With ignition switch in "OFF" position, disconnect servo wire harness connector. Remove vacuum hose from brake pedal vent valve nipple on servo. Disconnect servo cable from throttle linkage at carburetor.

2) Connect an ohmmeter between ground and Red. Ground and Orange. And Ground and White wire terminals of servo wire harness connector. See Fig. 5. Observe ohmmeter during each test. An infinite (open circuit) resistance should be indicated for each wire terminal.

3) If ohmmeter indicates less than infinite resistance on any terminal, servo has short circuit to ground and must be replaced. Short circuit will also cause damage to control module and it must be replaced.

NOTE: Without sufficient load, solid state circuitry in control module will be damaged by excessive current flow.

4) If servo does not have any short circuits to ground, connect a vacuum gauge to brake pedal vent valve nipple. Connect a jumper wire from chassis ground to Orange wire terminal of servo wire harness connector.

5) Connect a second jumper wire to battery positive terminal and start engine. Momentarily connect jumper wire and simultaneously touch Red and White wire terminals in servo wire harness connector.

6) Vacuum should be indicated on gauge while jumper wire is in contact with wire terminals. Perform this test several times to make sure that solenoid valves are working properly.

7) With no voltage applied, solenoid charge valve is closed and solenoid vent valve is open. With 12 volts applied, solenoid charge valve is open and vent valve is closed.

8) Turn engine off and remove jumper wires. If servo is defective, replace it. If okay, connect vacuum hose, wire harness connector and throttle linkage to servo.

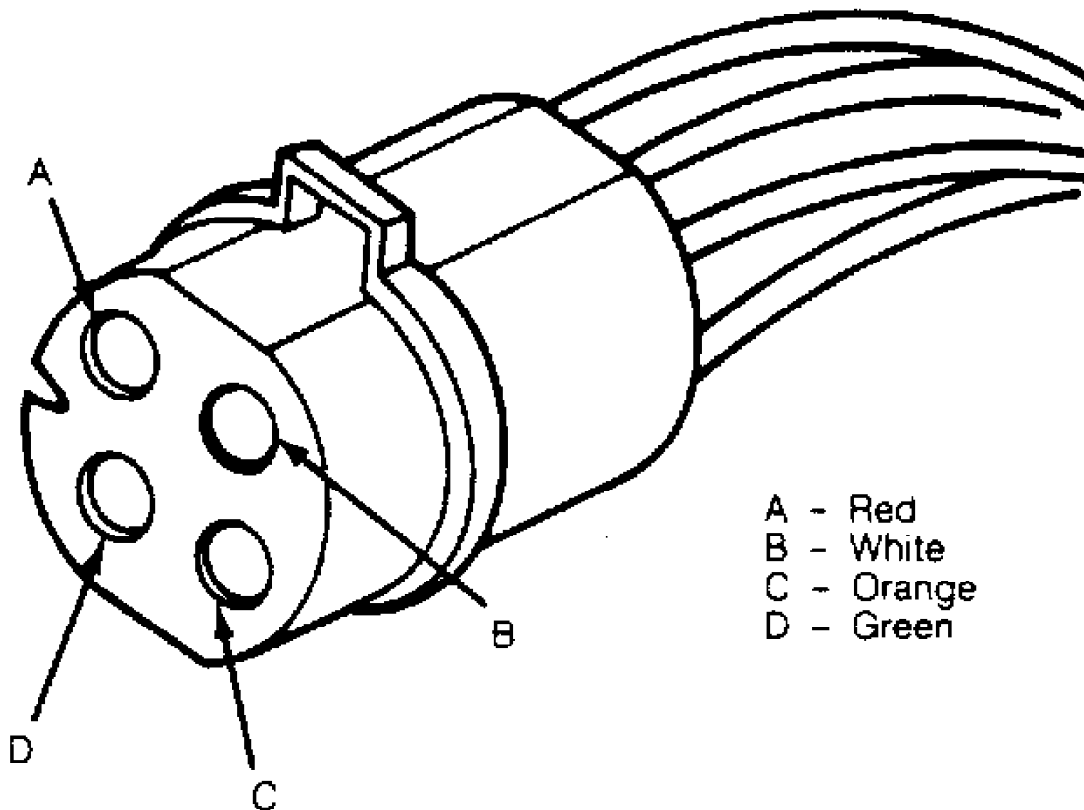


Fig. 5: Servo Wire Harness Connector (Except Grand Wagoneer)
Courtesy of Chrysler Motors.