

# Cruise Control Systems

6-35

## GENERAL MOTORS CRUISE MASTER

### Chevrolet, GMC

#### DESCRIPTION

System uses manifold vacuum to power a throttle servo unit. When speed adjustment is necessary, the servo moves the throttle by receiving a varying amount of controlled vacuum from a transducer.

The speedometer cable from transmission drives the transducer. A cable from the transducer drives instrument panel speedometer. There are 2 control switches operating speed control. The first is a "CRUISE" slide switch with "OFF", "ON" and "RESUME" positions.

The second is a "SET-COAST" button switch located on the end of turn signal lever. It controls engagement of transducer. Two brake release switches are provided.

An electric switch disengages transducer. A vacuum valve (switch) decreases vacuum in the servo unit to quickly return throttle to idle position when the brake pedal or clutch is depressed.

#### OPERATION

This system is designed to operate at speeds above 30 MPH. "CRUISE" switch must be in "ON" position to activate speed control system. Driver accelerates to desired speed, then partially depresses and slowly releases speed control "SET-COAST" switch button.

To change speed setting to higher speed, depress accelerator until desired speed is reached, then fully depress and slowly release "SET-COAST" switch.

To change speed setting to lower speed, depress "SET-COAST" switch fully. Hold in this position until vehicle has decelerated to new desired speed setting. Then, release "SET-COAST" switch slowly to re-engage speed control.

Speed control system is disengaged by applying brakes. To accelerate vehicle to previously set speed in memory, slide "CRUISE" switch to "RESUME" position.

Accelerator pedal may be depressed at any time to override speed control system. Release of accelerator returns speed to previous level. Sliding "SET-COAST" switch to "OFF" position or turning ignition "OFF" will also disengage the system and erase the "RESUME" memory.

#### TROUBLE SHOOTING & TESTING

##### ELECTRICAL SYSTEM

1) Check fuse and connector. Unplug electric brake switch connector at switch, and connect ohmmeter at 2 terminals on switch. Ohmmeter must indicate no continuity when pedal is depressed and continuity when pedal is released.

2) Replace switch if necessary. Check clutch release brake switch in same manner. Make sure transducer is well grounded. Disconnect "SET-COAST" switch wire harness connector from main harness connector (Red, Brown/White, and White wires). Connect ohmmeter between Brown/White striped wire in main wiring harness and ground.

3) Ohmmeter should read 42-49 ohms. If resistance is not within specifications, disconnect the connector from transducer, and measure resistance of Brown/White striped wire. Resistance should be 38-42 ohms. If not within specifications, replace main wiring harness.

4) Measure solenoid coil circuit resistance between "Hold" terminal and ground. Resistance should be 5-6 ohms. A reading of less than 4 ohms indicates shorting of coil circuit. A reading of more than 7 ohms indicates excessive coil circuit resistance.

5) Either high or low condition indicates replacement of transducer assembly. Check White wire of main harness from engagement switch to transducer for continuity.

##### CONTROL SWITCHES

Refer to Fig. 1 to test "SET-COAST" and "CRUISE" switches.

##### SERVO & VACUUM CHECK

1) To determine condition of diaphragm, remove hose from servo unit and apply 15" of vacuum to tube opening and hold in for 1 minute. Vacuum should not leak down more than 5" in 1 minute. If leakage is excessive, replace servo. Cruise vacuum switch can be tested in a similar manner.

2) Cruise release brake valve, resume valve, and connecting hoses can be tested by applying 15" of vacuum to each component and then sealing them off. Vacuum leakage should not exceed 5" in a 1 minute interval.

##### ERRATIC CRUISE PERFORMANCE

1) Check servo, brake release switch, and vacuum release switch adjustments. Check for operation of engagement switch. Check for pinched, kinked, plugged or damaged vacuum hoses.

2) Check speedometer cable routing and ensure that the turning radius of cable is not less than a 6" (152 mm) radius. Check for binding throttle linkage. Check for plugged transducer filter. Check if transducer has correct part number.

##### INOPERATIVE CRUISE CONTROL

**NOTE:** Make all tests with transmission shift lever in "PARK" position and parking brake "ON".

1) Check "Gauges" fuse. If fuse is blown, check speed control wiring for short circuit. If fuse is not the problem and Erratic Cruise Performance Trouble Shooting checks out O.K., turn ignition to "RUN" position. Slide "CRUISE" switch to "ON" position.

2) Disconnect the 2 wire connector from transducer. Connect 12 volt test light to "Engage" terminal in connector and ground. Repeat using "Hold" connector terminal.

3) If test light was off in step 2), check for open circuit in wire. See Fig. 1. Perform "SET-COAST" Switch Test. If test light is on in step 2), check to make sure transducer is well grounded. If transducer is grounded, remove it for repair.

4) If test light was off in steps 2) and 3), check for open circuit in Brown wire, between engagement

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switch connector and brake switch. Check brake switch for voltage at both terminals, with ignition in "RUN" position and "CRUISE" switch in "ON" position.

5) Check for open circuit in wire from brake release switch to "CRUISE" switch and fuse panel plug-in. Check engagement switch operation, and replace if necessary.

### ADJUSTMENTS

#### BRAKE RELEASE SWITCHES

1) The design of the electric switch and vacuum valve mounting provides for automatic adjustment when brake pedal is manually returned to its stop.

2) Depress brake pedal fully and push switch and valve forward until they stop against bracket or arm. Pull brake pedal back up toward its stop with 15-20 lbs. (6.8-9.1 kg) of force.

#### SERVO UNIT

1) Disconnect idle stop solenoid. With air conditioning off, adjust engine curb idle speed to 500 RPM. Shut engine off. To check bead chain slack, unsnap swivel from ball stud and pull chain tight.

2) Center of swivel on chain should extend  $\frac{1}{8}$ " (3.2 mm) beyond center of ball stud. To adjust bead chain slack, remove retainer from chain and swivel. Adjust chain in swivel to remove slack, and re-install retainer.

#### TRANSDUCER

1) Before adjusting transducer, be sure servo adjustment is correct. Check all hoses for proper routing and good condition. Ensure electric and vacuum release switches are properly adjusted.

2) To adjust transducer, note cruising speed. If it is lower than engagement speed, loosen orifice tube lock nut, and turn tube outward. If cruising speed is high, turn tube inward. Each  $\frac{1}{4}$  turn will change engagement speed by 1 MPH. Tighten lock nut and check operation.

Fig. 1: General Motors Cruise Master Wiring Diagram

