GENERAL MOTORS CRUISE MASTER

Buick
Chevrolet
Oldsmobile
Pontiac

DESCRIPTION & OPERATION

The cruise control system is operated by a switch on end of turn signal or shift lever. Some models also have a system "ON-OFF" control on the instrument panel. Riviera models with "Resume" feature use a unique turn signal switch.

ON-OFF SWITCH

This switch is mounted on instrument panel and includes an indicator light. It controls current to cruise control system. With the switch in "ON" position, cruise control can be engaged at any speed over 30 mph.

ENGAGEMENT SWITCH

The switch has three positions. To operate the system, driver accelerates to desired speed and presses switch to first detent position. When switch is released, system will maintain vehicle speed. To reduce speed or disengage system, switch is depressed to second detent position. When speed has dropped to desired rate, button is released and cruise control takes over.

Models with "Resume" feature have an additional switch on turn signal lever. Moving this switch to "ON" position allows normal system operation. If system has been disengaged by brake pedal, moving the slider to "RESUME" will bring vehicle speed back to pre-set level. When slider is moved to "OFF" position, system is disengaged and speed memory is erased.

BRAKE RELEASE SWITCH & VALVE

The cruise control can be disengaged by depressing brake pedal lightly. A set of contacts in brake light switch open and cut power to system. A vacuum valve at pedal also opens to ensure system disengagement if brake switch fails.

SERVO UNIT

Unit is a vacuum actuated variable position diaphragm assembly which operates carburetor throttle when system is in operation. It is powered by controlled vacuum from transducer and operates throttle linkage by means of a chain or rod.

TRANSDUCER

Unit has two primary functions controlled by pull-in of solenoid. First, it is a vacuum switch and when engaged, it supplies vacuum to a "T" fitting. Second, it allows a metering valve clutch spring to grasp the rubber clutch which is fixed to speed cup spindle. A variation in speed results in a slight rotation of rubber clutch which moves air valve and meters a variable quantity of air to system where it blends with vacuum. Servo unit receives this controlled vacuum and maintains selected speed. Speedometer cable from transmission drives transducer speed sensing unit and transducer output cable drives speedometer head.

TROUBLE SHOOTING & DIAGNOSIS

WILL NOT ENGAGE — SYSTEM INOPERATIVE

ON-OFF switch (if used) is OFF. Brake switch circuit open. Fuse blown. Defective engagement switch. Vacuum leak in Servo and/or brake switch and connecting lines. Vacuum hose not connected to vacuum switch. Vacuum release switch misadjusted (always open). Crossed hose at regulator. Open in wiring harness. Pinched or plugged hose supplying servo. Defective regulator.

DOES NOT CRUISE AT ENGAGEMENT SPEED

Orifice tube misadjusted.

SYSTEM HUNTS, PULSES OR SURGES

Bead chain loose. Kinked or deteriorated hoses (air leak). Defective and/or improperly positioned drive cables and/or casing assemblies. Defective transducer.

SYSTEM DOES NOT DISENGAGE WITH BRAKE PEDAL

Brake switches misadjusted or defective.

SYSTEM ACCELERATES OR APPLIES FULL THROTTLE WHEN ENGAGED

Manifold vacuum connected directly to servo. Defective transducer.

CANNOT ADJUST SPEED DOWNWARD WITH ENGAGE BUTTON

Defective engagement switch or wiring.

SYSTEM CAN BE ENGAGED AT IDLE BY DEPRESSING SWITCH, BUT DROPS OUT WHEN SWITCH IS RELEASED

Wires reversed at transducer.

SYSTEM OPERATES CORRECTLY, BUT VACUUM BLEEDS OFF WHEN SYSTEM DISENGAGED

Crossed vacuum hoses at transducer.

DOES NOT ENGAGE OR ENGAGES AT SPEEDS LOWER THAN 30 MPH

Defective transducer.

TESTING

ELECTRICAL TEST — STANDARD SYSTEM

1) Check all fuses and connections. Adjust brake release valve and switch. Disconnect switch harness 3-wire connector at lower end of steering column.

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2) Connect an ohmmeter between Brown and Blue wires. Continuity should exist until switch is pressed in completely. Connect ohmmeter between Brown and Black wires; continuity should exist only when button is halfway depressed. Connect ohmmeter between Blue and Black wires; continuity should exist when button is depressed both halfway and completely.

3) With switch disconnected, remove battery ground cable. Connect ohmmeter between Dark Green wire and ground. Resistance should measure 42-49 ohms. If not, check transducer ground connection and measure Dark Green wire between switch connector and transducer. Resistance should measure 38-42 ohms; if not, replace wiring harness.

4) Measure between transducer "Hold" terminal and ground. Resistance should be 5-6 ohms. If not, check ground connection and replace transducer if necessary.

5) Connect ohmmeter between terminals on brake switch. Continuity should exist with pedal released, and infinity when pedal is depressed. If not, replace switch.

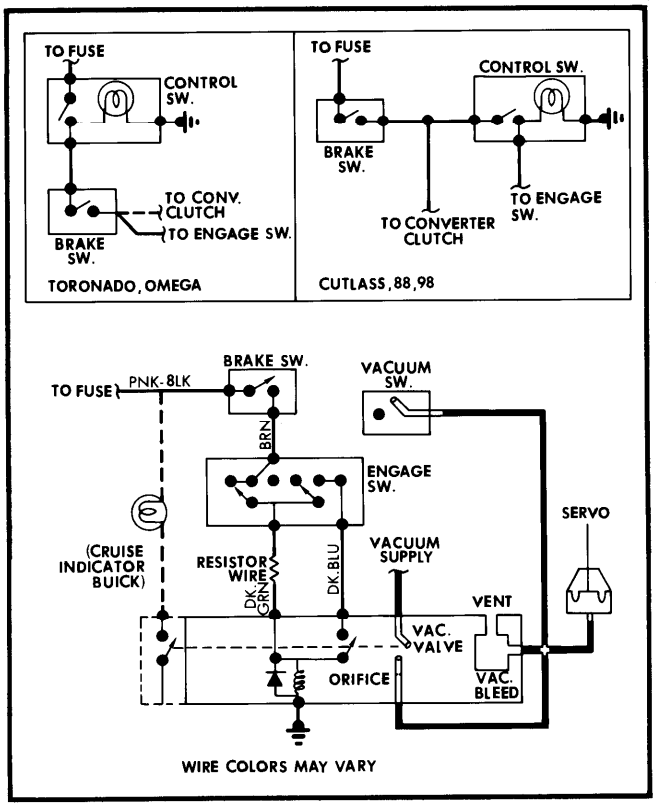

Fig. 1 General Motors Cruise Master Vacuum and Wiring Diagram

ELECTRICAL TEST — "RESUME" SYSTEM

1) Check all fuses and connections. Adjust brake release valve and switch. Disconnect switch harness 3-wire connector at lower end of steering column. Check switch continuity using continuity chart.

"Resume" Switch Continuity Chart

Button	Slider	Continuity
Released	OFF	None
Released	ON	Blu-Blk
Released	RESUME	Brn-Blu-Blk
Half In	ON	None
Full In	ON	Brn-Blu
Releasing	ON	Brn-Blu-Blk

2) Disconnect resume connector at transducer. Inside passenger compartment, connect an ohmmeter between Dark Green wire (in engage switch connector) and ground. Resistance should measure 31-35 ohms. If not, check transducer ground.

3) Disconnect main wiring connector at transducer. With resume connector still unplugged, measure between Dark Green wire (in engage switch connector) and each terminal of resume connector. One terminal should have between 25-29 ohms resistance, which will drop to zero when brake pedal is depressed.

4) The other terminal in resume connector should have continuity to ground. If not, repair brake switch or harness. Connect resume wiring on transducer. Measure resistance between "Hold" terminal on transducer and ground. If not 5-7 ohms, check ground connection.

5) Apply battery voltage to "Hold" terminal. Resume valve should pull in, and solenoid in transducer engage. If not, replace resume valve or transducer as necessary.

SERVO & VACUUM

To determine the condition of the diaphragm, remove hose from the servo unit and apply 14 inches of vacuum to the tube opening and hold for one minute. The vacuum should not leak down more than five inches in one minute. If leakage is detected, replace servo. To utilize the engine as a vacuum source, proceed as follows:

1) Disconnect servo bead chain and hose from servo unit, connect engine vacuum directly to the servo fitting.

2) Note position of servo diaphragm. Start engine and note that diaphragm pulls in. Clamp off engine vacuum supply line and check for leakage.

VACUUM BRAKE SWITCH

The Cruise Master vacuum operated release brake switch and connecting hoses can be checked with the aid of a vacuum pump.

ADJUSTMENTS

NOTE — *The components of this system are designed to be replaced should they become inoperative. However, the following adjustments may be made to correct speed drop or increase, or misalignment of brake switch.*

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BRAKE AND VACUUM SWITCHES

With pedal fully depressed, push switches into holder until fully seated. Pull pedal back to move switches to proper position. Depress and pull pedal to stop once more to ensure switches are seated in proper adjusted position.

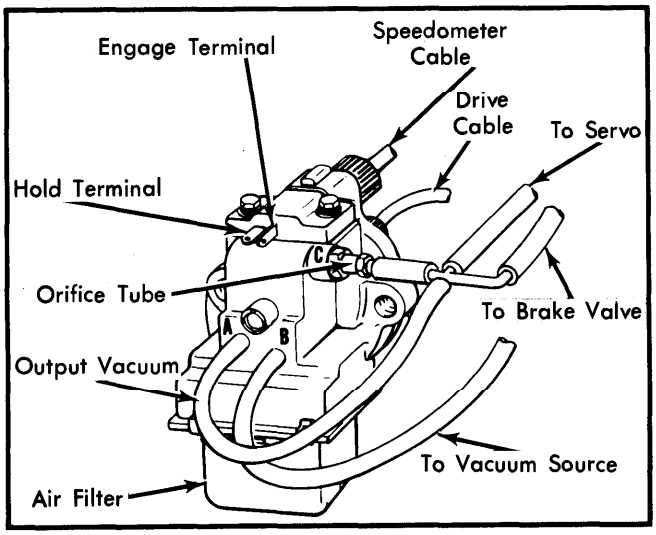

Fig. 2 Cruise Master Transducer (Without Resume)

VACUUM RELEASE BRAKE SWITCH

All Vehicles — The vacuum release switch is adjusted the same way as the Electric Brake Release switch.

ENGAGEMENT SWITCH

The engagement switch can only be serviced by replacement.

SERVO UNIT

Servo-throttle linkage adjustment is made by bead chain, turnbuckle type link, cable-jam nut or holes in the servo rod-power unit link. Engine must be hot, idle speed properly adjusted, throttle closed and ignition OFF prior to adjustment.

Bead Chain — Check bead chain slack by un-snapping swivel from ball stud and holding chain tight at ball stud. Center of swivel should extend 1/8" beyond center of ball stud. Adjust slack, if necessary, by removing retainer from swivel and chain assembly and position chain into a cavity that will allow a slight amount of slack in chain. Install retainer over swivel and chain assembly.

Link — Adjust servo link by turning on rod to obtain 0.5 - 1.0 mm (.02" - .04") clearance. Replace link and link retainer.

Cable Jam Nut — Install second ball of bead chain into pocket on servo cable. Adjust cable jamb nuts until servo chain has a slight amount of slack. Tighten jamb nuts and pull servo rubber boot over washer on chain.

Servo Link-Rod Hole — Remove retainer clip from servo rod. Select a hole in rod or servo tab that will provide slight clearance between clip and servo bushing when clip is installed.

CAUTION — *Do not stretch cable to make holes and rod align. This will prevent engine from returning to idle.*

TRANSDUCER

1) Before any adjustment is made to transducer, inspect all vacuum hoses for damage. All hoses should be properly connected, not kinked or pinched, and no leaks should be detected. Check, and if necessary, adjust electric and vacuum brake release switches (as previously outlined). Check, and if necessary, adjust servo bead chain (as previously outlined).

2) If cruising speed is lower than the engagement speed, loosen the orifice tube locknut and turn outward slightly. If cruising speed is higher than engagement speed, turn tube inward. Each 1/4 turn will alter engagement speed 1 mpn. Tighten locknut and test at 55 mph.

CAUTION — *Do not attempt to remove orifice tube. Once removed, it cannot be installed.*