GENERAL MOTORS CRUISE MASTER

Buick
Chevrolet
Oldsmobile
Pontiac

DESCRIPTION & OPERATION

The cruise control system uses engine manifold vacuum to control the throttle servo unit. The servo moves the throttle by receiving controlled vacuum from a transducer. The system is operated by a switch on the end of the turn signal lever.

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. Moving switch to "RESUME" position allows normal 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

The transducer provides the servo unit with controlled vacuum which will maintain driver selected speed. If vehicle speed drops, the transducer supplies less air bleed, and vacuum in servo increases to open the carburetor throttle valve. When vehicle speed increases, air bleed increases and vacuum in servo drops to close carburetor throttle valve. The transducer also drives the speedometer. The speedometer cable from the transmission drives the transducer, which drives a second cable within the unit at a one-to-one ratio.

TROUBLE SHOOTING & DIAGNOSIS

WILL NOT ENGAGE — SYSTEM INOPERATIVE

Throttle linkage disconnected. Vacuum leak in servo unit. Restricted or plugged vacuum line. Brake pedal vacuum valve out of adjustment. Resume solenoid valve inoperative. Blown fuse. Loose electrical connections. Open in wiring. Engagement switch malfunction.

DOES NOT CRUISE AT ENGAGEMENT SPEED

Orifice tube misadjusted. Speedometer cable kinked. Transducer malfunction. Throttle linkage too loose. Vacuum leak.

SYSTEM HUNTS, PULSES OR SURGES

Bead chain loose. Air leak in hoses. Defective or improperly positioned drive cables and/or casing assembly. Defective transducer.

BRAKE PEDAL DOES NOT DISENGAGE SYSTEM

Brake switches misadjusted or defective.

SYSTEM ACCELERATES OR APPLIES FULL THROTTLE WHEN ENGAGED

Defective transducer. Improperly connected manifold vacuum.

CANNOT ADJUST SPEED DOWNWARD

Defective engagement switch or wiring.

VACUUM BLEED OFF WHEN SYSTEM DISENGAGED

Crossed vacuum hoses at transducer.

DOES NOT ENGAGE, OR ENGAGES AT SPEEDS LOWER THAN 30 MPH

Defective transducer.

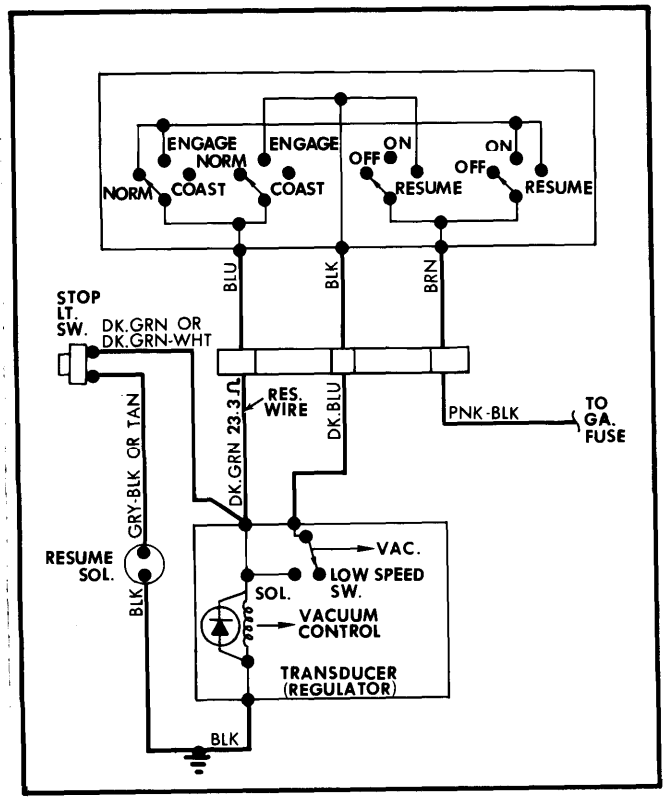

Fig. 1 Typical GM Cruise Master Wiring Diagram

GENERAL MOTORS CRUISE MASTER (Cont.)

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 electrical connector at resume valve. With transducer well grounded, connect an ohmmeter between ground and Brown/White wire in main wire harness. Resistance should read 27-31 ohms.

3) Disconnect main wiring harness from transducer. Connect ohmmeter between Dk. Green wire at transducer and Gray/Black wire at resume solenoid. Resistance should be 21-25 ohms. If not, check brake switch operation. If brake switch is okay, repair or replace harness as required.

4) Check for continuity between resume valve ground wire and ground. Repair if no continuity. Reconnect electrical connector at resume valve. With harness disconnected from transducer, connect battery voltage to Dk. Green wire. Resume valve should pull in. If not, replace valve.

5) Check transducer by measuring resistance from Dk. Green wire to ground. Resistance should be 5.3-6.3 ohms. Apply battery voltage to transducer hold terminal. Transducer solenoid should engage, and release upon removal of battery voltage. If not, replace solenoid.

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.*

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.

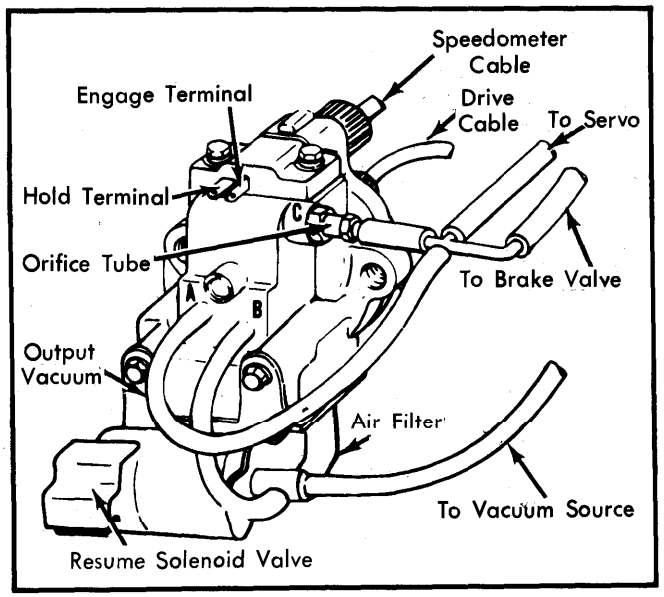

Fig. 2 Cruise Master Transducer

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.

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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 ¼ 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.*

REMOVAL & INSTALLATION

SWITCH

Removal (All Models) — 1) Disconnect battery ground cable. Remove lower instrument panel trim panel and disconnect switch harness connector.

2) Place shift lever in "L" position and turn signal in right turn position. On tilt column models, place column in full up position. Connect a 24" piece of wire to connector and wrap it with tape.

3) Pull turn signal lever straight out of column. Pull engagement lever and harness out of column and disconnect follower wire. Leave follower wire in column to guide new harness back in.

Installation (All Models) — To install, reverse removal procedure, using follower wire to guide harness in column.

TRANSDUCER

Removal (All Models) — Disconnect battery ground cable. Disconnect speedometer cables at transducer. Disconnect vacuum and wiring harness from transducer. Remove transducer-to-bracket mounting screws, and remove transducer.

Installation (All Models) — To install, reverse removal procedure.