

Camaro Headlamp Door Wiring—System in "Closed" Position

HEADLAMP DOOR DIAGNOSIS

FUNCTIONAL TEST

The following three steps should be performed during new car preparation or before any detailed diagnosis is performed.

- I. Start with ignition switch and headlamp switch both "OFF."
- II. Pull headlamp switch to headlamp position and check to see that:
 - A. Headlamps come on. This circuit is needed to close the doors.
 - B. Headlamp doors open —
 1. If they open, one-half of the control circuit is okay — go to step III.
 2. If they don't open, the add-on harness for this option may not be connected at:
 - a. Double connector under dash.
 - b. Main light switch (light blue wire).
 3. If they don't open [and step (2) is okay] turn the ignition key to "ON" and observe the doors.
 - a. If they open, the one-way diode is shorted or,
 - b. There may be a short in the brown wire to the ignition switch or,
 - c. The circuit breaker may be defective (possibly caused by shorted diode or low relay voltage).
- III. Start the engine and operate the light switch a number of times to test the lamp and door operation. This eliminates a possible marginal voltage condition at the relays if the battery is slightly low. Listen for relay click noise as the headlamp switch is operated from on to off. Also listen for circuit breaker click if the doors fail to function in either direction. A circuit breaker click noise indicates a short in the system.

DETAILED DIAGNOSIS

If the above mentioned steps do not pinpoint the problem, continue diagnosis as follows:

If neither door opens; look for a defect in an area common to both motors:

- A. Check black ground wire from relay R3 to ground at radiator support. This is the motor ground path.
- B. Check to see that Relay R1 is energized by unplugging the two-wire connector. The relay should click as connector contact is broken and made. If not, use a test lamp between the two terminals of the two-wire connector. The lamps should light up if wiring is okay and headlamp switch is on. If it does, replace relay R1.

- C. Check to see that relay R3 is *not* energized by unplugging the two-wire connector. The relay should not click when connector contact is broken and made. If the relay does click, there is a possible short in the brown wire to the ignition switch in combination with a broken wire such as might occur in a pinch condition. Check with a test light between ground and each terminal of the two-wire connector. The test light should light both times.
- D. Use a test light and check from ground to the following terminals (test light should light up):

Terminal	Problem if test light does not light.
Horn relay junction	Open circuit between battery and horn relay.
Circuit breaker red wire terminal	Bad red wire or connector.
Circuit breaker orange wire terminal	Bad circuit breaker.
Relay R1 orange wire	Bad orange wire.

If **neither door closes when lights are turned off**, check for voltage at the green wire terminal on relay R1 (use test lamp to ground). Note: Ignition switch must be "ON" to energize system and the engine should be running during checking operation.

- A. If there is voltage at green terminal, check for voltage further along the harness towards the motors. If there is no voltage at the brown wire terminal of relay R2, then R2 and R3 (they are wired in parallel) are not actuated. Check for 12 volts across the two-terminal connectors of both relays (use one test light lead at each terminal of connector).
 - 1. If voltage is present, replace R2.
 - 2. If no voltage, check wiring back to the ignition switch making sure that the diode is not open or in backwards.
- B. If voltage is pulsating, due to action of circuit breaker, then R2 has pulled in but R3 has not. Check for 12 volts across the two-terminal connector of R3 (one test light lead at each terminal of connector). If voltage is present, replace R3. If no voltage, check wiring.
- C. If there is no voltage at green wire terminal of relay R1 (use test light to ground), check for voltage at orange wire terminal of R1.
 - a. If voltage is present, replace R1.
 - b. If voltage is not present, check for open circuit breaker or wiring.

If one door does not operate the same as the other, look for a malfunction in that particular door's motor, switches, or wiring.

Door does not open

- A. Check for a mechanical binding. If motor is being prevented from turning, a flashing blue light in its terminal housing will indicate that the motor's thermal overload switch is operating.
- B. Check for voltage between limit switch (on radiator support) and motor. Use test light from top limit switch terminal to ground.
 - 1. If no voltage is present:
 - a. Check connections at top and bottom of limit switch.
 - b. Check wiring from relay R1 to bottom of limit switch using test light at bottom terminal of limit switch. Test light should light.
 - c. Replace limit switch if bad.
 - 2. If there is voltage present, check for voltage between motor and limit switch on headlamp assembly. If voltage is present:
 - a. Check connections at top and bottom of limit switch.
 - b. Check wiring between bottom of limit switch and ground at relay R3.
 - c. Replace limit switch on headlamp assembly if bad.

Door does not close

- A. Check for mechanical binding.
- B. Check for voltage between limit switch at headlamp assembly and motor:
 - 1. If no voltage is present:
 - a. Check limit switch connections top and bottom.
 - b. Check wiring from relay R2 to bottom of limit switch. Use test lamp from terminal to ground.
 - c. Replace switch if bad.
 - 2. If there is voltage present, check for voltage between motor and limit switch at radiator support. If voltage is present:
 - a. Check limit switch connections — top and bottom.
 - b. Check wiring from bottom of limit switch to ground at relay R3.
 - c. Replace limit switch if bad.

Motor does not stop running at end of door travel.

After a few second of stall, the motor's thermal overload will start flashing in the terminal housing of the motor. Check for sufficient contact between the door mechanism and the appropriate limit switch for proper

switch operation. Push in the switch button to insure operation; if motor continues to flash (operate) replace switch.

Door moves jerkily.

- A. Check for loose connection in circuit.
- B. Check for mechanical bind in the door mechanism (the motor's thermal overload will probably be flashing).

HEADLIGHT DOOR ADJUSTMENT

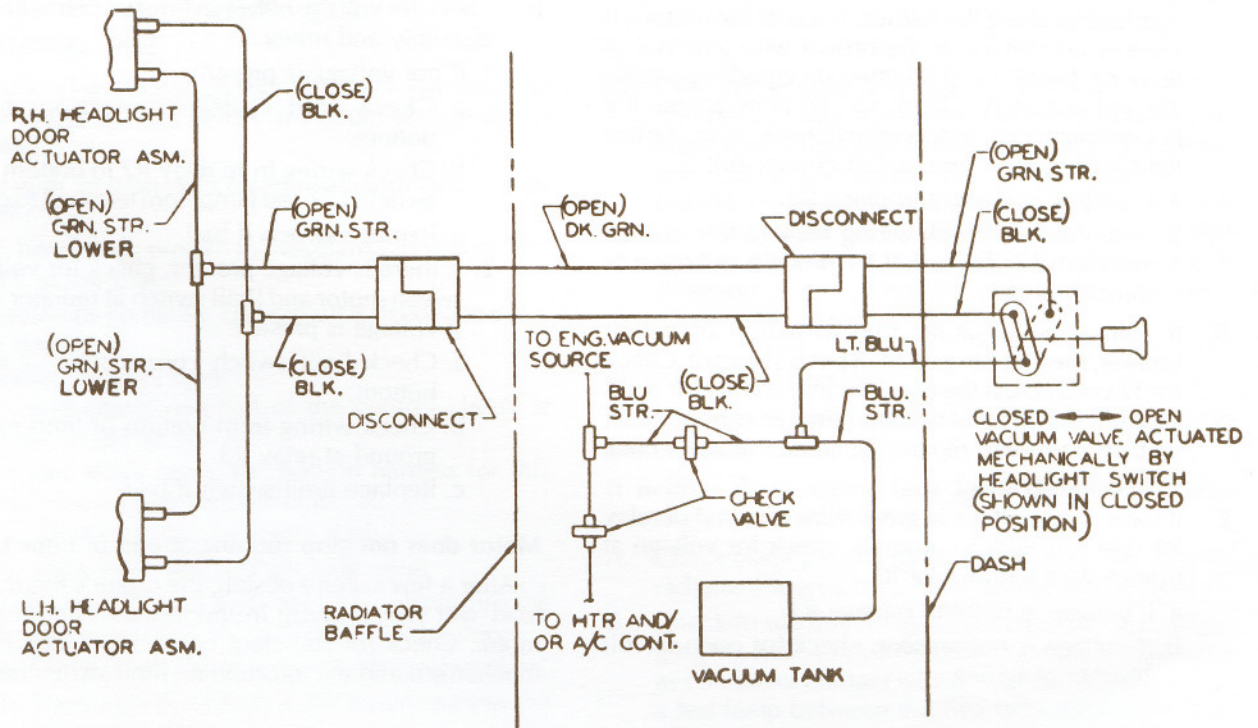
The headlight door adjustment is proper when:

- A. There is clearance all the way around the door in the closed position.
- B. The limit switch is actuated to shut off the door motor.
- C. The door is flush in the opening.

Adjustment can be made as follows:

- A. The door cover is retained by 4 screws threaded into caged nuts. These nuts have up to .090" movement for door cover adjustment when the screws are loosened. Use this adjustment to square the door in the opening by measuring clearance (.025" — .050") all the way around.
- B. If the door assembly is cocked at an angle (down or up) in the opening, shim the assembly at its radiator support mounting screws.
- C. Adjustment of the limit switch, if needed, can be obtained by slotting the mounting bracket holes with a round file. This should be used only when the other adjustments fail to provide better than marginal clearance around the door.

1968-69 CAMARO RS HEADLAMP DOORS



NOTE: VACUUM HOSES ROUTED WITH FRONT END HARNESS