# TWILIGHT SENTINEL

**WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM, DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF ANY ACCESSORY OR COMPONENTS WHICH WOULD REQUIRE REMOVAL OR DISCONNECTING OF ANY COMPONENT OF THE AIR CUSHION RESTRAINT SYSTEM UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS.**

A.C.R.S. DISCONNECTION PROCEDURE

1. Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

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## DESCRIPTION AND OPERATION

### THEORY OF OPERATION

The twilight Sentinel is an optional convenience that provides light sensitive automatic on-off control of lights normally controlled by the regular light switch. Also, for night visibility when leaving the vehicle, it will keep the lights turned on for a preselected period of time after the ignition is turned off. Lights will automatically turn off after the preselected time elapses.

The system consists of a light sensitive photocell assembly, transistorized amplifier, and a time-delay control which includes an on-off switch (figure 9G-1). Connections to the vehicle lights parallel the regular light switch connections requiring the light switch to be turned off to obtain automatic control.

The photocell assembly is mounted with the sensitive surface facing up to obtain an unobstructed view of

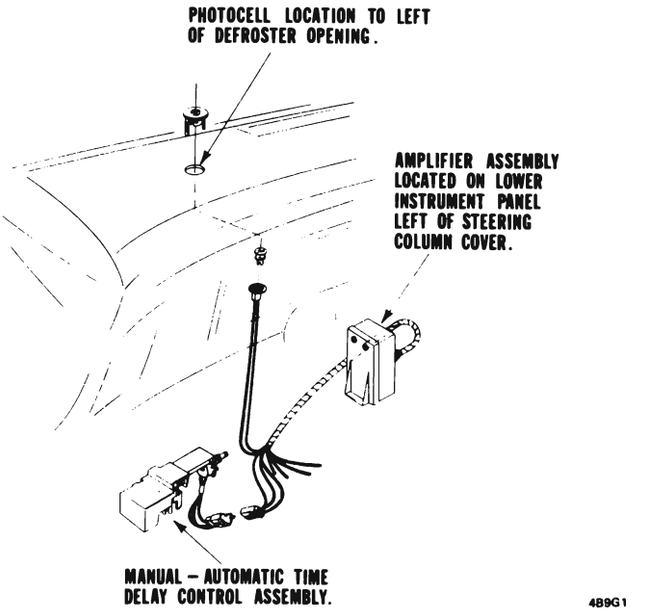
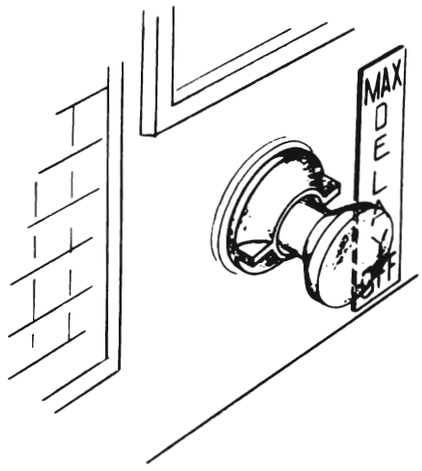



Figure 9G-1 Twilight Sentinel Components

skylight through the windshield. Mounting location is adjacent to the radio front left hand speaker grille or left hand defroster opening.

The amplifier unit is mounted on the lower instrument panel to right of steering column. A serial number label is attached to the amplifier.

The time delay and on-off switch control is located directly behind and concentric with the regular light switch knob (figure 9G-2).

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The electrical circuit is shown in Figure 9G-4.

### AUTOMATIC -OPERATION

1. Rotate time delay turn-off control ring pointer to "on" position (anywhere counterclockwise from "off" position.

2. Ignition switch on.

3. Headlight switch off.

The Twilight Sentinel will now automatically turn lights on when evening daylight reduces to the point where road illumination is necessary. As morning daylight increases to the point where road illumination is no longer necessary, it will turn lights off.

A non-adjustable time delay circuit in the amplifier reduces possibility of undesired switching on or off of lights when passing under viaducts, trees, bright lights, etc. The time delay is nominally 10 to 30 seconds, but in some units could be as high as 60 seconds.

The variable time delay control ring, pointer adjusts only time delay period during which lights will remain on after ignition is turned off. The driver may preselect desired time delay from a few seconds to a maximum of 1-1/2 to 4-1/2 minutes. Additional side lighting during this time delay can be obtained by turning on a cornering light.

### MANUAL - OPERATION

If lights are desirable during daylight hours, the driver may use either of the two methods listed below:

1. Cover up the photocell assembly to block light exposure. This will permit lights to turn on and still permit the Twilight sentinel to turn lights off in normal manner when ignition is turned off. (If cell has been exposed to light, remember the time delay must elapse before lights will turn on.)

2. Turn on lights by operating regular light switch. This by-passes the Twilight Sentinel and lights will remain on after ignition is turned off. However, the warning buzzer will gently remind the driver to turn his lights off when he opens the door after the ignition is off.

Should there be an occasion when lights are undesirable such as in tunnels requiring lights off, or if Twilight Sentinel malfunctions:

1. Rotate time delay turn-off control ring pointer to "off" position. This disables the Twilight Sentinel by disconnecting the ground circuit. Lights will now operate only by use of the regular light switch.

## DIAGNOSIS

### SYSTEM FUNCTIONAL CHECK

When system malfunction is unknown or serviceman is not familiar with the circuit, follow functional checkout procedure below to isolate problem to a specific condition.

1. Check possibility the unit is turned off at time delay control, photocell covered with something to block light, or unit is being operated with regular light switch on. If so, proper operation should be explained to owner. If not, proceed to Step 2.

2. Light switch and ignition must be "off" and Sentinel "on" (time delay pointer extreme counterclockwise). Cover photocell and turn ignition on. Lights should turn on within 10 seconds. (Battery voltage should be at least 11.5 volts.) If lights turn on ok, proceed to Step 3. If not, see Diagnosis Chart Condition - "Lights Will Not Turn On In Darkness."

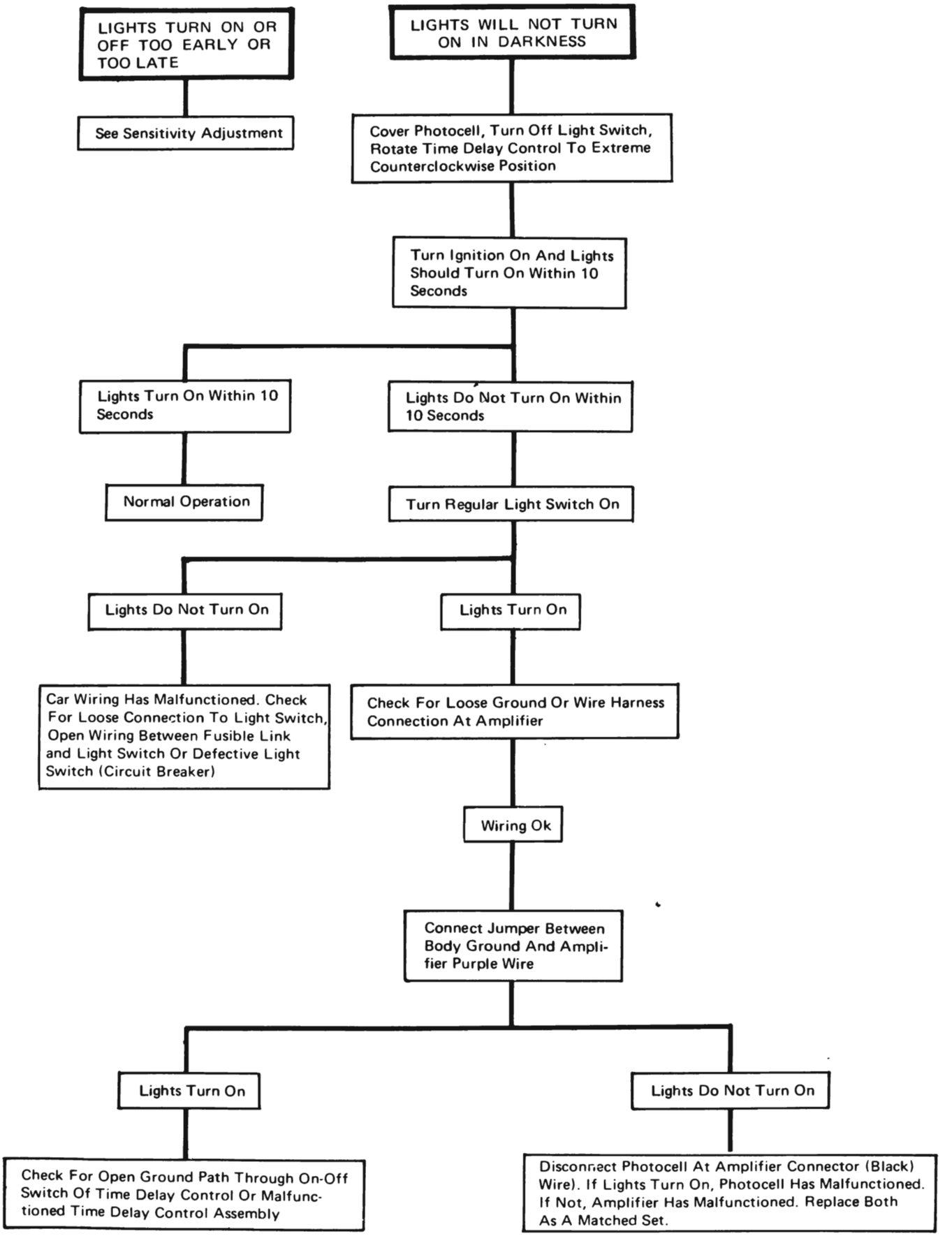
3. Remove black cloth and shine bright light (flashlight) on photocell (can be seen by looking down through windshield). Lights should turn off within

10 to 60 seconds. If so, proceed to Step 4. If not, see Diagnosis Chart Condition - "Lights Will Not Turn Off In Daylight."

4. Cover photocell again and allow time delay to elapse (10-60 seconds) and lights turn on. Now turn ignition off and lights should remain for 1-1/2 to 4-1/2 minutes and then turn off. If so, proceed to Step 5. If not, see Diagnosis Chart Condition - "Lights Will Not Turn Off After Ignition Is Turned Off" - or "Lights Will Not Stay On For 1-1/2 to 4-1/2 Minutes After Ignition Is Turned Off." 5. With ignition off and key removed (to prevent ignition buzzer from sounding), turn regular light switch to park or headlight position. Open a door and warning buzzer should sound. If so, proceed to Step 6. If not, see Diagnosis Chart Condition - "Warning Buzzer Will Not Operate."

6. Satisfactory performance of the above function tests 2 through 5 indicates unit is functionally ok. Perhaps owner should be contacted regarding need for sensitivity adjustment.

## TWILIGHT SENTINEL DIAGNOSIS

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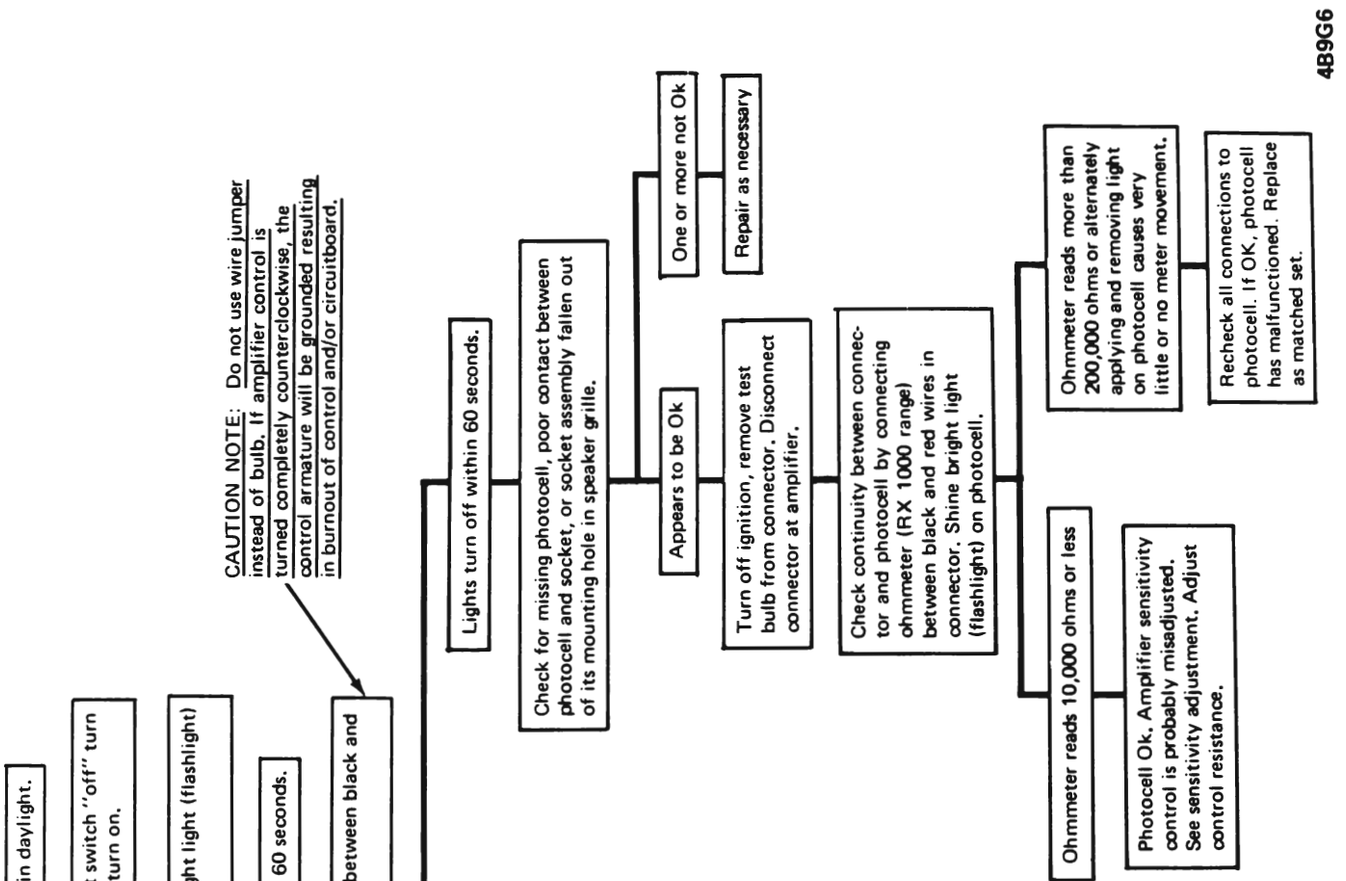

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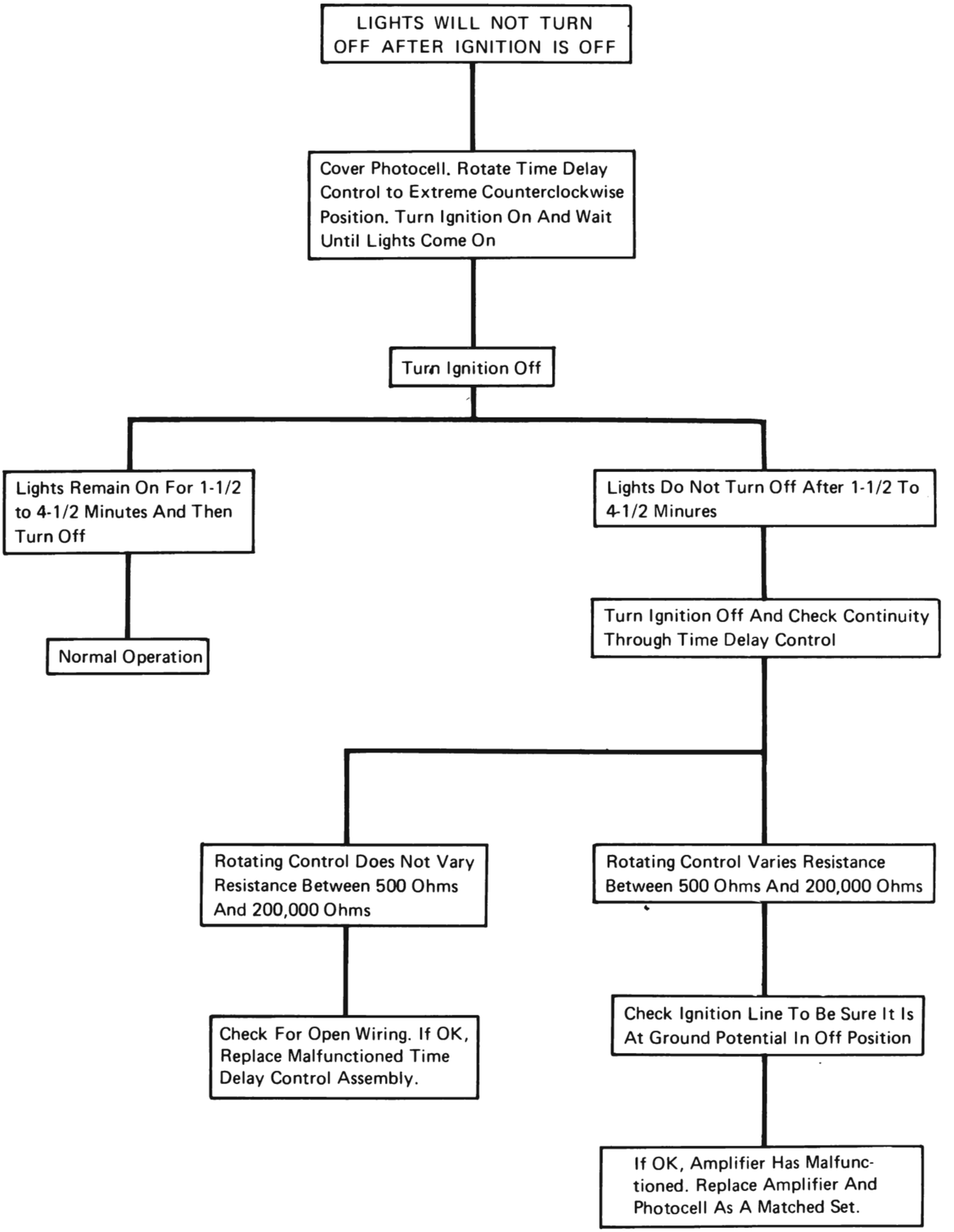


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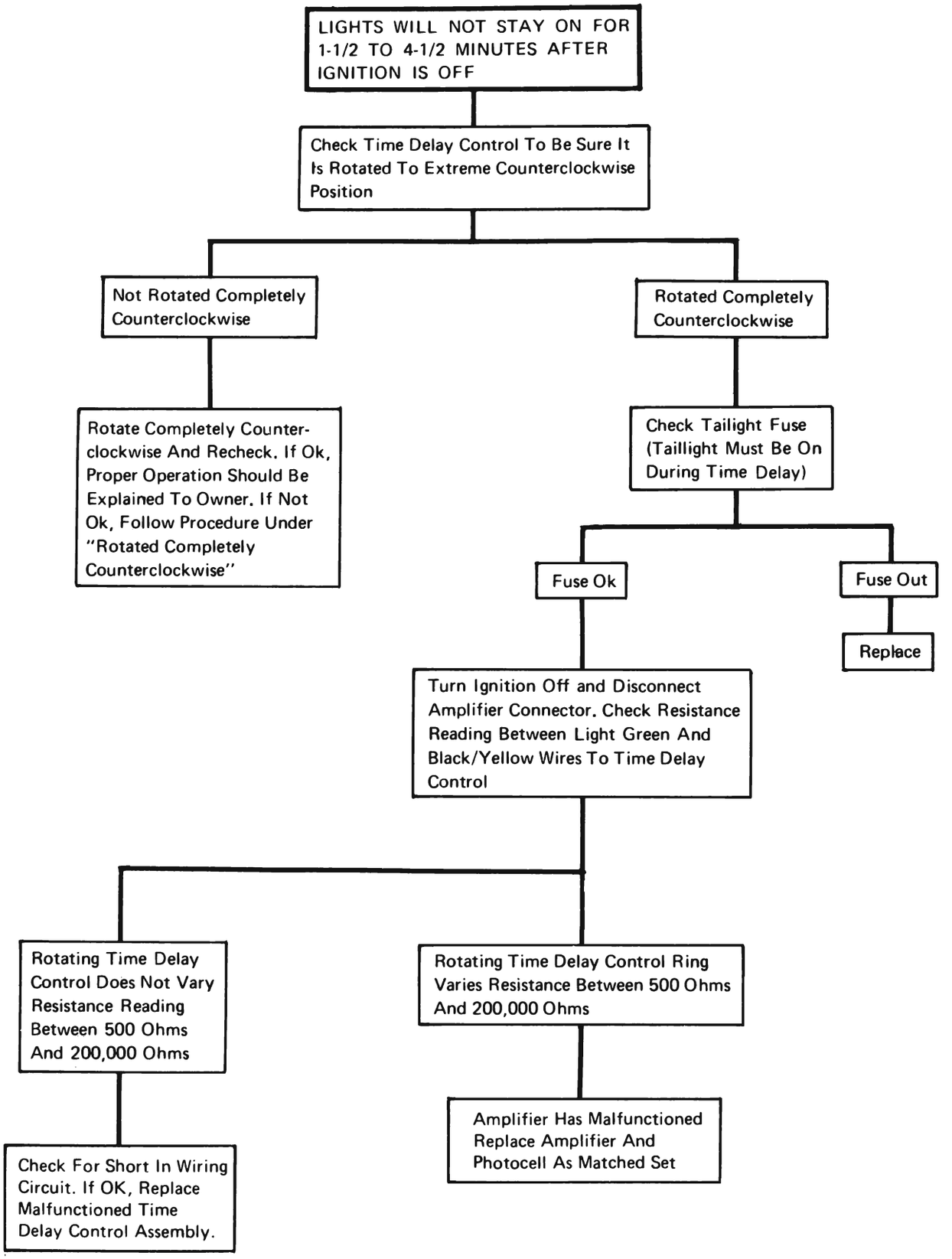


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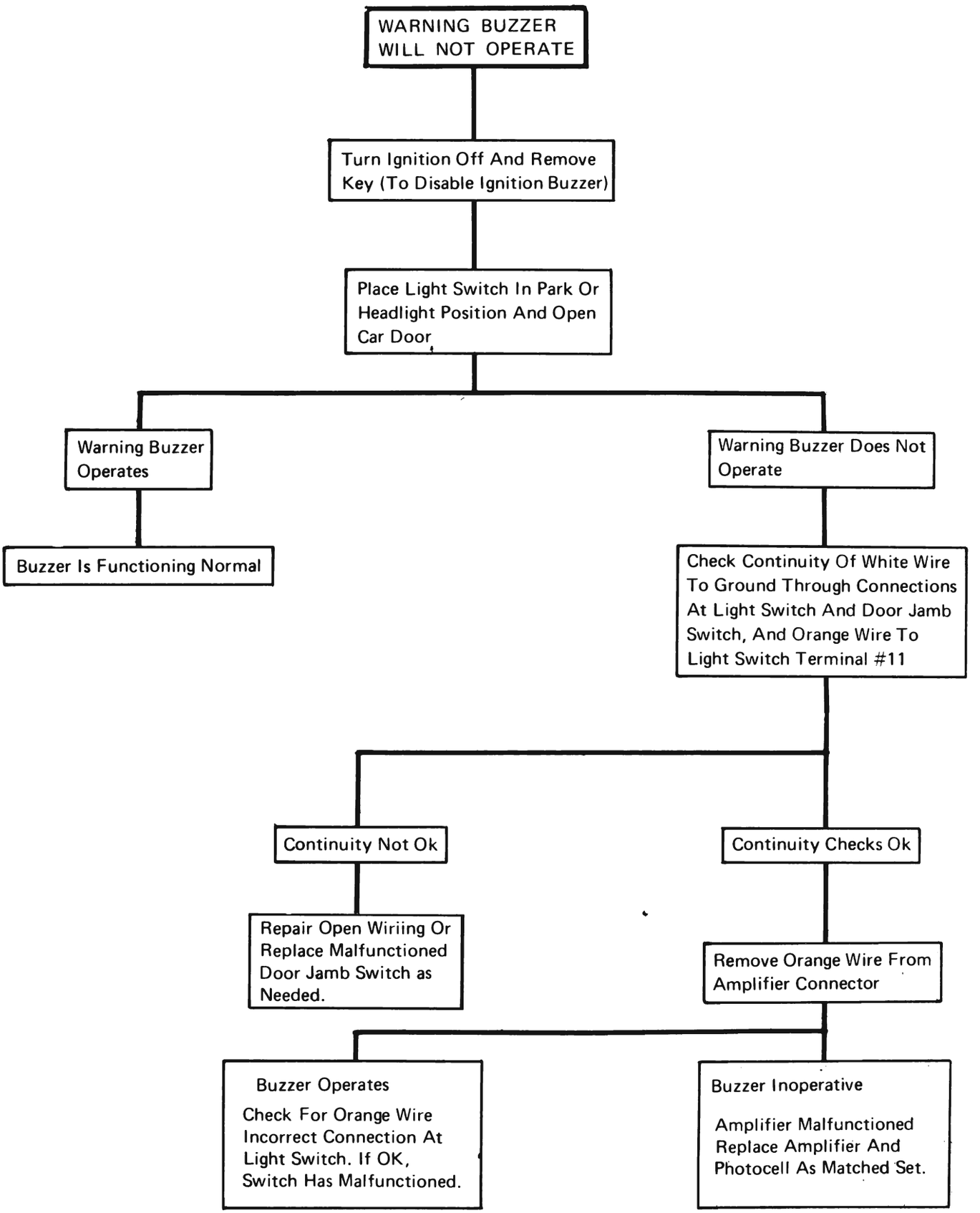


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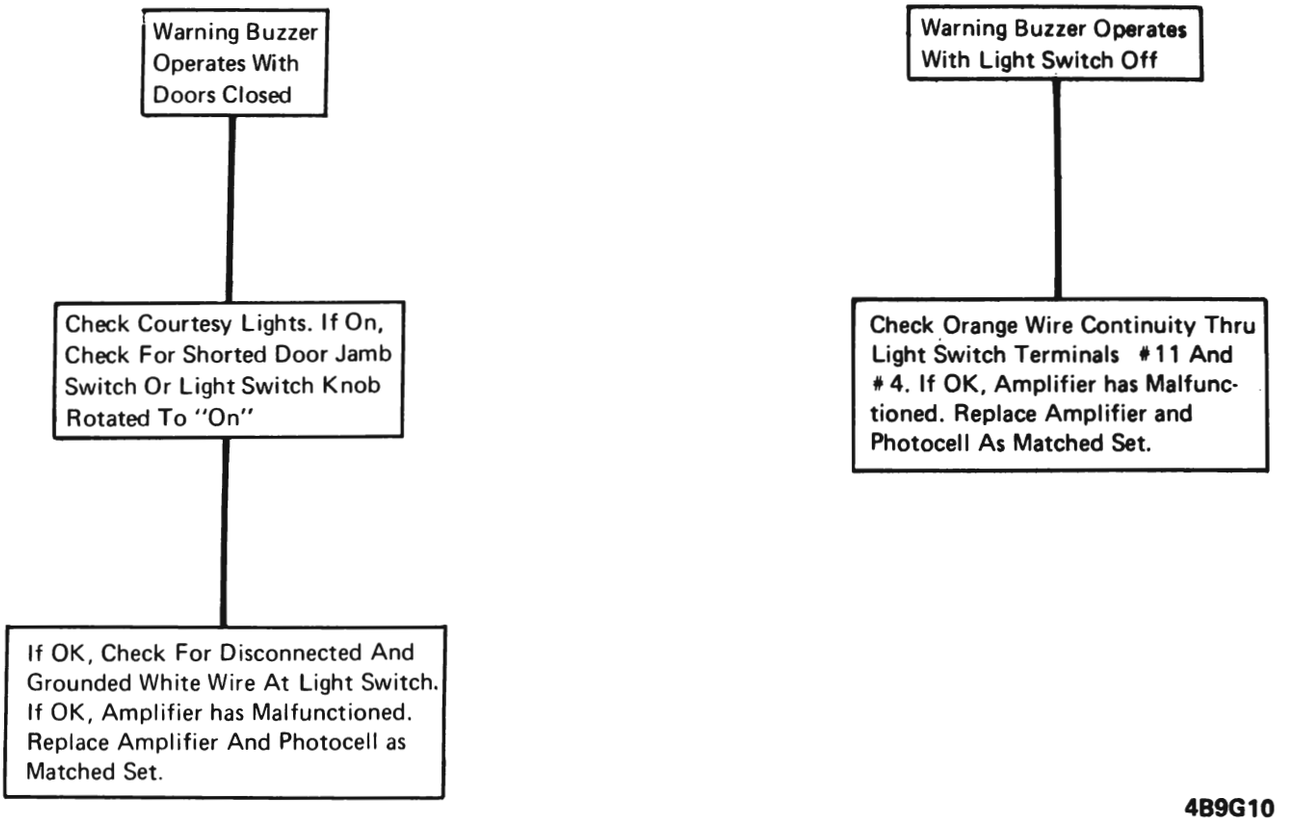


## MAINTENANCE AND ADJUSTMENTS

### SENSITIVITY ADJUSTMENT

If a photocell or amplifier has malfunctioned, both must be replaced as a matched set since no provision is made for adjusting a mismatched set. However, if the owner is dissatisfied with turn-on or turn-off time, an adjustment procedure to advance or retard turn-on time by 15 minutes is recommended below.

A. Headlights Turn On Too Late Or Turn Off Too Early

1. Leave ignition and lights turned off.

2. Cover photocell so no light strikes it.

3. Take resistance reading between black and purple wires in amplifier connector (time delay on-off switch control ring pointer must be rotated to "on" - anywhere counterclockwise from "off" position).

4. See Figure 9G-3. Adjust control screw counterclockwise until resistance reads one-half of value read in Step 3.

5. If amplifier has been previously adjusted, set resistance value to 4100-4500 ohms.

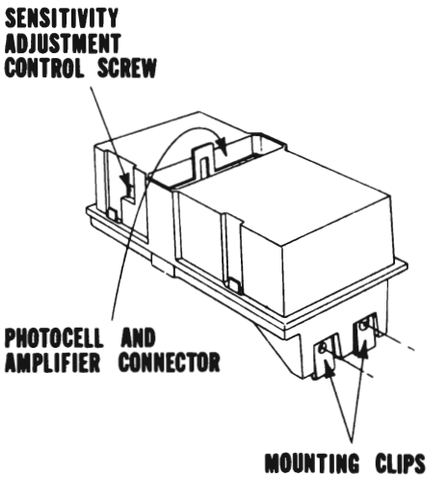


Figure 9G-3 Sensitivity Adjustment Control Screw

B. Headlights Turn On Too Early Or Turn Off Too Late

Follow same procedure as described in Steps 1 through 5 above except under Step 4 adjust control screw until resistance reads one and one-half times value read in Step 3.

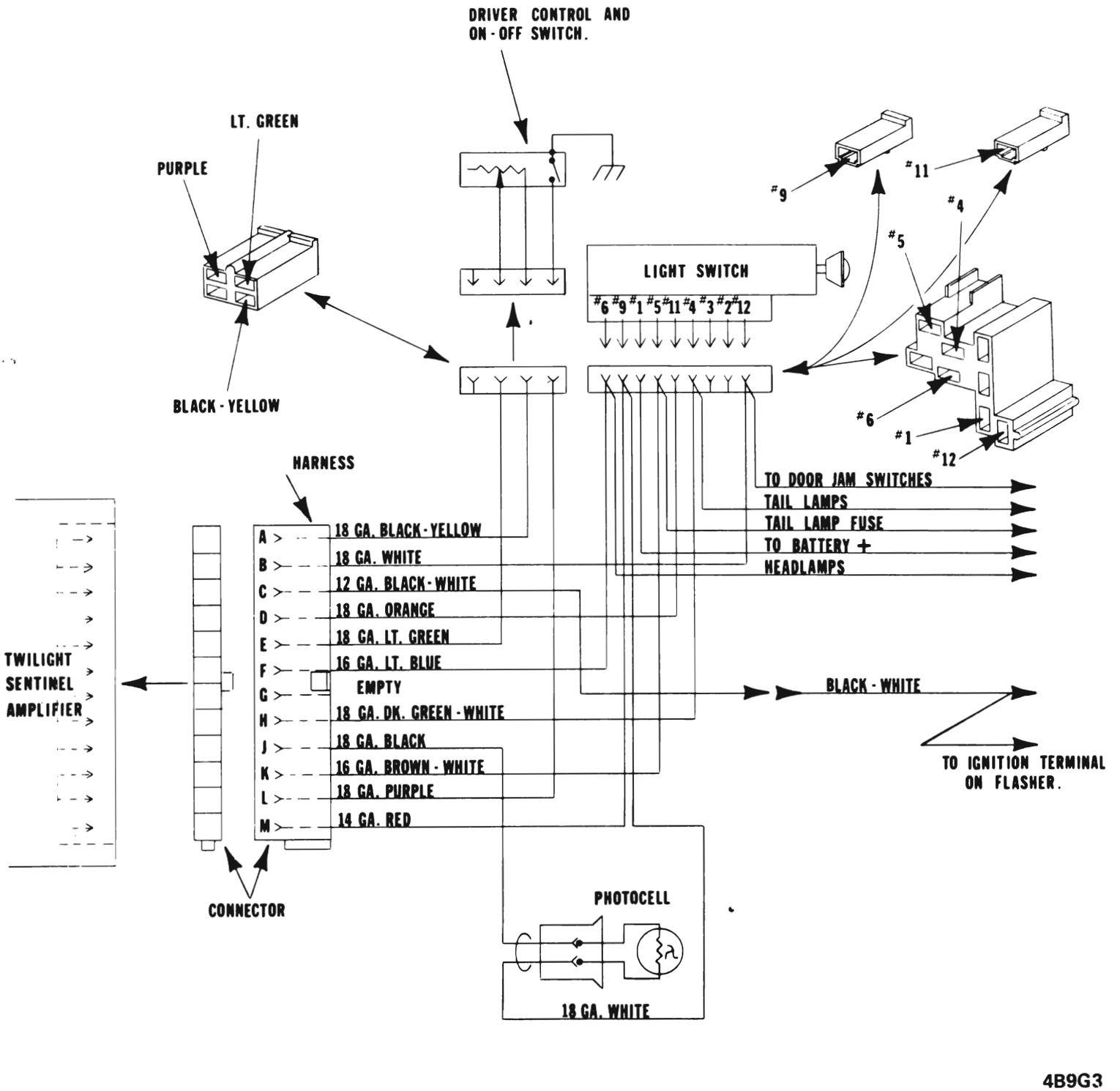


Figure 9G-4 Twilight Sentinel Circuit Diagram