Automatic Headlight Dimmer

GENERAL MOTORS GUIDE-MATIC

Buick
Cadillac

DESCRIPTION

Guide-Matic is a semi-automatic device which controls the car headlights in response to light from an approaching car and will switch the headlights to lower beam at a distance depending upon the setting of the driver sensitivity control. After the approaching car has passed, headlights automatically return to upper beam. The system consists of a combination photo-amplifier, power relay, special foot switch, and a sensitivity control. Units are located differently on each car as follows:

Buick – The photo-amplifier is mounted on the left front fender, so the amber-colored lens has an unobstructed view of approaching vehicle headlights. The power relay is mounted under the carpet just above the foot switch. The foot switch is mounted in the usual position on toeboard. The sensitivity control (driver control) is located on the lower instrument panel to the left of the steering column. An in-line 1 amp. (SFE-4) fuse is located near the foot switch in the interconnecting wire harness. If this fuse opens, the system will revert to manual control of headlight beams.

Cadillac – The photo-amplifier is mounted to upper grille support. The power relay is mounted on the toeboard just above foot switch. Foot switch is mounted in usual position in toeboard. The sensitivity control is located directly behind and is concentric with headlight switch knob.

OPERATION

AUTOMATIC

With system on automatic operation, lights will go to low beam whenever daylight, street light, or car light strikes the phototube. Driver may obtain high beam by overriding automatic control with a slight pressure on foot switch. Lights will return to automatic control when pressure is removed. Sensitivity is driver controlled with lever behind headlight switch and normal automatic operation is secured with pointer centered between "Off" and "Far" positions (rotating ring toward "Far" will increase sensitivity and cause headlights to switch to low beam when approaching car is farther away). Operation of Guide-Matic may be affected by reflective quality of road surfaces. To obtain furthest usable dimming distance, turn sensitivity control fully clockwise after lights dimmed for approaching car, then, after car has passed, rotate control counterclockwise slowly until lights just return to high beam.

MANUAL

Rotate sensitivity control fully counterclockwise so that pointer is aligned with "Off". In this position, unit will provide only High Beam with foot switch in automatic position. High and low beams can then be controlled by operation of the foot switch in the usual manner.

TESTING

DIM & HOLD SENSITIVITY TEST

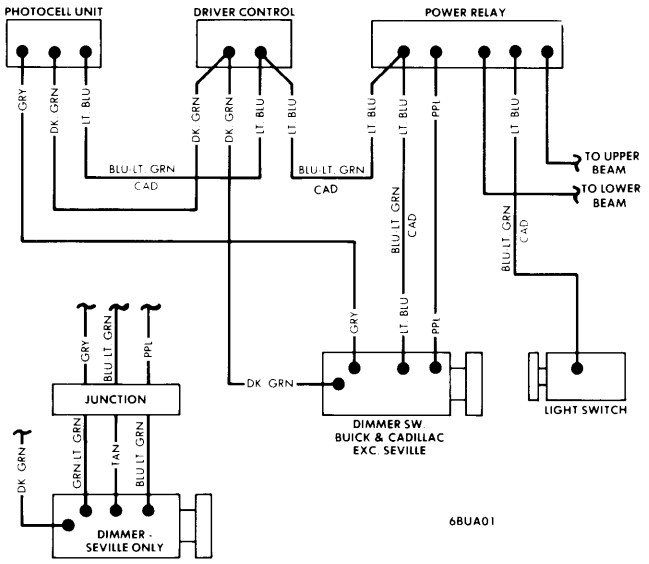
Adjusting is not recommended on electronic components of system (except for photo-amplifier vertical aiming adjustment). The following tests will help determine which components are defective and must be replaced.

Buick – 1) Using a suitable tester (J-22630), attach tester adapter tube to bottom of photo-amplifier lens (making sure it clears aiming pad on lens). Push bulb rubber sleeve all the way into rear opening in adapter tube. Connect tester long leads to battery (Red, positive and Black, negative). Cover photo-amplifier and tester bulb with a black cloth. Rotate driver control knob counterclockwise to stop. Turn on headlights, start engine and operate at a fast idle.

2) Adjust tester voltage knob until tester scale reads 7.0 volts. Rotate driver control knob slowly clockwise to point where headlights switch to low beam. To check accuracy of driver control adjustment, turn tester voltage knob counterclockwise until headlights switch back to high beam, then turn tester knob clockwise just to point where headlights switch back to low beam. Scale on tester should read 6.5-7.0 volts. If voltage is not as specified, repeat test procedure.

3) Rotate tester voltage knob slowly counterclockwise to point where headlights switch to high beam. Voltage should be 1.5-2.5 volts less than reading when lights were previously switched back to low beam. If this minimum dim and hold sensitivity can be obtained at any position at driver control knob, driver control unit is good. If switching to low beam cannot be obtained, check for open circuit to driver control unit. If there is no open circuit, driver control unit or photo-amplifier is defective. If dim and hold sensitivity readings are close together (½ - ¾ volt apart), photo-amplifier is defective.

Cadillac – 1) Using a suitable tester (J-21529), attach a suitable adapter tube (J-22622) to photo-amplifier. Push tester bulb and rubber sleeve into stop in adapter. Connect tester long leads to battery (Red, positive and Black, negative). Cover photo-amplifier and test bulb with a black cloth. Rotate tester knob to No. 1 position and rotate driver control knob counterclockwise to stop. Turn on headlights, start engine and operate at fast idle. Place foot switch in automatic position (headlights on high beam).

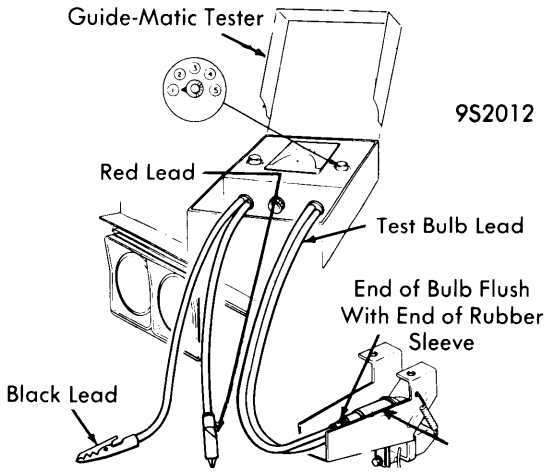


BUICK & CADILLAC GUIDE-MATIC CIRCUIT DIAGRAM

GENERAL MOTORS GUIDE-MATIC (Cont.)

2) Adjust tester voltage knob until tester scale reads 7.0 volts. Rotate driver control knob slowly clockwise until headlights switch to low beam. To check accuracy of driver control adjustment, turn tester voltage knob counterclockwise until headlights switch back to high beam, then turn tester voltage knob clockwise just to point where headlights switch back to low beam. Scale on tester should read 6.5-7.0 volts. If voltage is not as specified, repeat test procedure.

3) Rotate tester voltage knob until reading is 1 volt less than reading when headlights switched back to low beam in step **2)**. Wait four seconds, headlights should not switch to high beam. Rotate tester voltage knob until reading is 3 volts less than reading when headlights switched back to low beam in step **2)**. Headlights should switch to high beam within four seconds.



DIM & HOLD SENSITIVITY TEST CONNECTIONS

4) If this dim and hold sensitivity can be obtained at any position on driver control knob, driver control unit is good. If switching to low beam cannot be obtained, check for open circuit to driver control unit. If there is no open circuit, driver control unit or photo-amplifier are defective.

ADJUSTMENT

PHOTO-AMPLIFIER UNIT (VERTICAL AIMING)

Photo-amplifier vertical aiming should be performed with trunk empty except for spare tire, vehicle unloaded, gas tank at least half full, and tires at correct pressure. Locate vehicle on level floor (level within ¼ " fore and aft) and rock car sideways to equalizer springs.

Buick - Photo-amplifier is mounted on fender with center line parallel to center line of car. To adjust vertical aim, mount special Level Assembly on front face of photo-amplifier with notches seated on front edge of photo-amplifier casting and extrusion on lower edge of aimer seated on extruded pad on lower part of lens, secure aimer in place with spring clamp. Use Allen wrench to turn adjusting screw on front of photo-amplifier base until level bubble is centered. Always make final adjustment by turning screw clockwise. *CAUTION - Do not disturb screw on forward end of bubble tube. This is a calibrating screw and unit must be returned to manufacturer for recalibration if this screw disturbed.*

Cadillac - Bubble level is permanently mounted on phototube unit, Adjust vertical aiming screw on unit until bubble is centered in level. *CAUTION - Make final adjustment by turning screw clockwise.*