1967-74 FORD MOTOR CO.

Ford, All Models (1968)
Lincoln Continental (1967-74)
Continental Mark III & IV (1969-74)
Mercury, All Models (1968)

CHANGES, CAUTIONS, CORRECTIONS

►*1967 LINCOLN CONTINENTAL DEFORMED OR COLLAPSED BELLOWS CAUTION:* May be caused by heat from welding torch or paint drying lamps applied to left front fender thereby distorting bellows and blocking light to the phototube. To correct, replace bellows assembly.

DESCRIPTION

The automatic headlight dimmer is a driver operated device which automatically switches headlights from high to low beam in response to light from an approaching vehicle or light from the taillights of a vehicle being overtaken. Major components of the system are as follows:

Phototube & Amplifier Unit (1967 Lincoln Continental) - Separate units with phototube mounted in left front fender. Light enters through a separate lens in fender leading edge, passes through bellows and into phototube. Amplifier unit is mounted behind left cowl trim panel.

Photo-Amplifier (All Other Models) - Mounted on left front fender forward of the windshield, or on left side of cowl on Continental Mark III. Unit must be properly aimed for correct operation (see Adjustments).

Power Relay - Mounted behind left cowl trim panel (Lincoln Continental), behind lower finish panel under left side of instrument panel (Contintental Mark III). *NOTE* - Power relay contains doide to protect photo-amplifier and must be connected with proper polarity to prevent burning out of the diode and damage to the photo-amplifier.

Sensitivity Control – Driver sensitivity control is the ring knob on the headlight switch. Rotating the knob clockwise increases sensitivity and headlights will switch to lower beam when approaching car is farther away. Rotating knob counterclockwise decreases sensitivity, allowing approaching car to come nearer before headlight switching occurs. Full counterclockwise rotation allows for manual operation of headlight beams with foot switch.

Foot Dimmer Switch - Replaces standard beam selector switch on toeboard.

ADJUSTMENT

PHOTOTUBE UNIT (VERTICAL AIMING)

With car unloaded,trunk empty, gas tank at least half full, and tire pressure correct, put car on a floor level within 1/4" fore and aft of car and rock car sideways to equalize springs.

1967 Lincoln Continental - Remove moulding and lens assembly from leading edge of left front fender. Insert aiming tool J-22238 through the upper slot in fender and into the sensor and bracket assembly over the pre-aim screw so that two button pads are seated under metal bracket, then slide tool forward against pre-aim screw. *NOTE - Do not disturb pre-aim screw. This is for factory adjustment only.* Adjust vertical aiming screw until level bubble is centered. Turn screw clockwise to make final adjustment.

Ford & Mercury Models (1968) & Mark III (1969-71) – Install aiming tool T68N-13016-A, being sure two notches are seated over top front edge of casting and that lower extrusion is seated on extruded pad on lens. Secure aimer in place with spring clamp. Use Allen wrench to turn adjusting screw on front lower flange of photo-amplifier unit until level bubble is centered. Always make final adjustment by turning screw clockwise. *CAUTION – Do not disturb tool adjusting screw at forward end of aimer level. This is a calibrating screw and is correctly adjusted at the factory.*

Continental (1969-74) & Mark IV (1972-74) – Locate vehicle on level floor. Rock vehicle to equalize springs. Adjust the verticle aiming screw at rear of sensor-amplifier (see illustration) and bracket assembly until the bubble is centered in the level. *CAUTION – Do not disturb screw near the end of level. Always make final adjustment by turning aiming screw clockwise.*

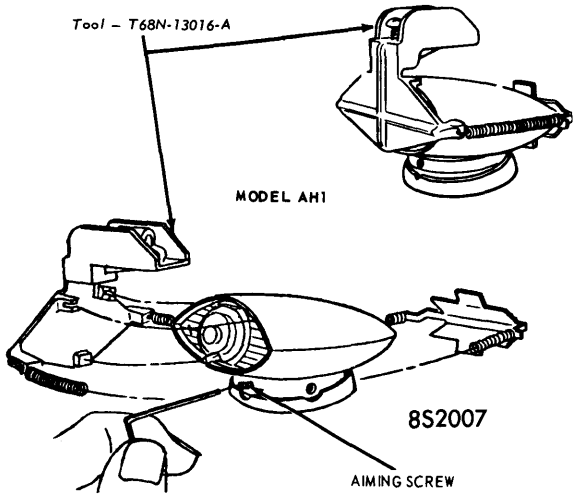

PHOTO-AMPLIFIER ADJUSTMENT MARK III

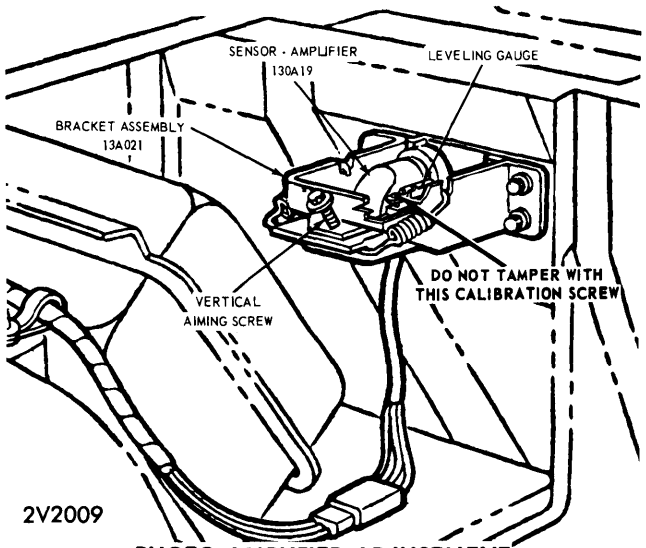

PHOTO-AMPLIFIER ADJUSTMENT CONTINENTAL & MARK IV

Headlight Dimmers

1967-74 FORD MOTOR CO. (Cont.)

TROUBLE SHOOTING & DIAGNOSIS

HEADLIGHTS OCCASSIONALLY DIM AT WRONG DISTANCE

Approaching car lights out of adjustment. Fog or snow, Bright traffic lights or street lights.

HEADLIGHTS DIM TOO LATE OR NOT AT ALL

Driver sensitivity control not adjusted. Foot dimmer switch defective. Blown fuse.

HEADLIGHTS DIM TOO SOON

Driver sensitivity control not adjusted.

HEADLIGHTS WILL NOT GO TO UPPER BEAM

Defective phototube, wiring, driver sensitivity control, or amplifier.

HEADLIGHTS RETURN TO UPPER BEAM WHEN APPROACHING CAR SWITCHES TO LOWER BEAM

Defective phototube unit or amplifier unit.

NO LOWER BEAM OPERATION

Defective phototube unit, foot dimmer switch, or amplifier unit.

LOCKED ON LOW BEAM

Phototube vertical aim not adjusted. Defective phototube unit, foot dimmer switch, or amplifier unit.

BEAM CHANGES ON DIFFERENT COLOR ROAD SURFACES

Phototube vertical aim not adjusted.

TESTING

PREPARATION FOR TESTS

Unit is transistorized and requires no warm up time. Place car in lighted area, adjust driver sensitivity control to center position, and operate engine at fast idle to maintain constant voltage.

TEST PROCEDURE

1) Turn light switch on. Headlights should remain on lower beam in both positions of foot switch (beam should not switch when foot switch operated). If not make Test A.

2) With foot dimmer switch in AUTOMATIC position, slight pressure on switch should override unit and switch headlight to upper beam. If not, make Test B.

3) With foot dimmer switch in AUTOMATIC position, covering phototube opening with black cloth should cause headlights to switch to upper beam (lights should return to low beam when cloth removed). If not, make test C.

4) If no failure occurs in steps 1 through 3 above, make Test D for sensitivity, and check vertical aiming (Above).

TEST A (FUSE, DIMMER SWITCH, POWER RELAY, AMPLIFIER, DRIVER CONTROL)

1) Check for loose connection at foot switch, power relay, connector near driver control, or in-line connector between photo-amplifier cable and wire harness.

2) Disconnect red wire (override) from foot switch. If lower beam is obtained in both positions, replace foot switch.

3) Disconnect photo-amplifier cable at in-line connector. Make a test lamp from a No. 53 bulb and 2 pieces of wire. Ground one test lamp lead and touch the other to yellow terminal in connector. Test lamp should light. If not, check for blown fuse or loose connection at driver control connector or power relay.

4) Connect one test lamp lead to battery voltage and touch the other lead to white terminal in connector, then rotate driver control knob counterclockwise and bulb should light. If not, check for loose connection at driver control connector, or defective driver control (open circuit).

5) Connect one test lamp lead to battery voltage and touch the other lead to black terminal in connector. Operate foot switch two or three times. Test bulb should light in one position of foot switch, and headlights should be on lower beam for both positions. If not, check for loose connections at foot switch or power relay, a poor ground at power relay, or a defective foot switch or power relay.

6) If steps 1 through 5 do not locate problem, photo-amplifier is at fault and should be replaced.

TEST B (OVERRIDE CIRCUIT)

1) Check for disconnected red wire at foot switch.

2) Disconnect red wire from foot switch and ground it to car body. If lights switch to high beam, replace foot switch. If lights do not switch to high beam, check continuity of red wire to 2-way connector near driver control.

3) Disconnect photo-amplifier cable from inter-connecting harness at in-line connector and using a test lamp, connect one lead to battery voltage and touch the other to white terminal in connector. Push down slightly on foot switch and bulb should light. If not, check continuity from in-line connector to foot switch.

TEST C (PHOTO-AMPLIFIER)

Disconnect photo-amplifier at in-line connector. If headlights switch to upper beam, replace photo-amplifier.

TEST D (DIM & HOLD SENSITIVITY)

NOTE - Sensitivity control in photo-amplifier is adjusted and sealed at the factory (case is filled with epoxy material) so that no adjustment can be made in the field. Following tests will determine if driver sensitivity control provides acceptable dimming sensitivity (switch to low beam) and hold sensitivity (return to high beam).

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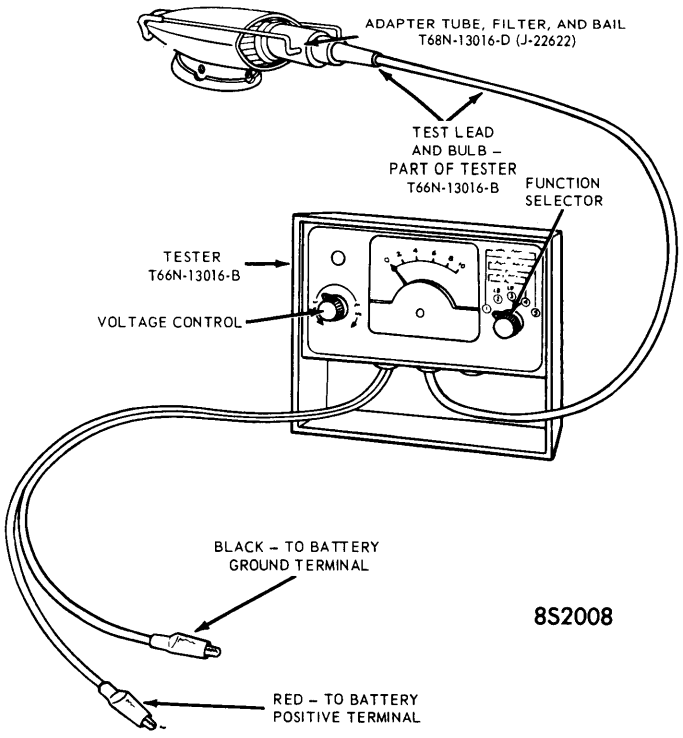
1) Install analyzer test bulb assembly into smaller diameter hole in rear of adapter head (see Dim and Hold Sensitivity Test illustration). Push bulb and rubber sleeve forward until they stop against inner wall of adapter. Install and connect analyser as shown in "Dim & Hold Sensitivity Test" illustration.

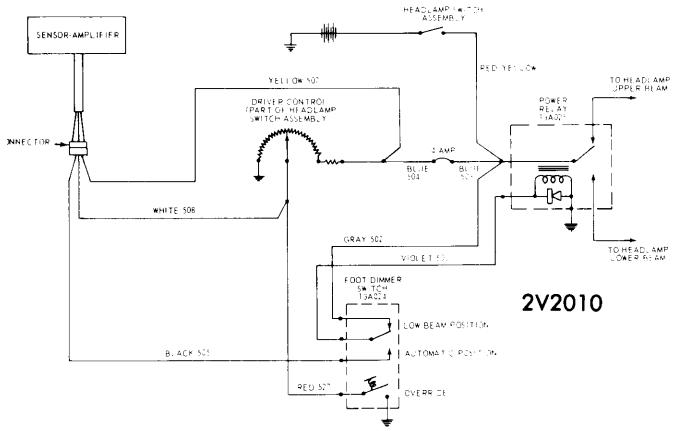
Test Light Adapter Note - Adapter must be used with test light to provide a calibrated light source for testing (filter is glued in adapter to reduce light intensity to correct figure). Test light must be No. 53 bulb with bulb filament straight up so that minimum of side illumination is exposed to end of bulb and bulb end should be approximately flush with end of rubber sleeve.

2) Cover photo-amplifier with black cloth, rotate analyzer function selector switch to No. 1 position, rotate driver control ring pointer to OFF position, then turn on headlights and operate engine at fast idle. Lights should be on high beam.

3) Adjust voltage control knob until meter reads 7.0 volts, then slowly rotate driver control ring until headlights just switch to low beam. *NOTE - Check accuracy of driver control adjustment by rotating voltage control knob until headlights switch to high beam, then slowly rotate voltage control knob until lights switch to low beam (voltmeter should read 6.5-7.0 volts).* If reading not within limits, check installation of analyzer and adapter.



DIM & HOLD SENSITIVITY TEST



AUTOMATIC HEADLIGHT DIMMER WIRING DIAGRAM

4) Slowly rotate analyser voltage control knob counterclockwise to point where headlights just switch to upper beam. Tester voltmeter reading should be 1.5 to 2.5 volts less than voltage at which headlights switched to low beam (Step 3 above).

5) If this minimum dim and hold sensitivity can be obtained at any position of driver control ring, unit is functioning properly. If dim sensitivity (switching to low beam) cannot be adjusted, replace photo-amplifier. If dim and hold sensitivity readings are close together (approximately ½ to ¾ volt apart), check for open sensitivity control circuit to ground. If driver control properly grounded, replace photo-amplifier.

6) Turn headlights and engine off, disconnect and remove tester, reconnect all regular car wiring.