

CHAPTER 33

LIGHTING

TABLE OF CONTENTS

<u>NUMBER</u>		<u>PAGE</u>
33-0	LIGHTING	
	Description	1
	General	1
33-1-1	INTERIOR LIGHTS	
	Description/Operation	1
	Instrument Lights	1
	Dome and Map Lights	3
	Radio and Compass Dial Lights	3
	Maintenance Practices	201
	Replacements - Interior Lights	201
	Operational Check - Interior Lights	202
33-4-1	EXTERIOR LIGHTS	
	Description/Operation	1
	Landing Light (Optional)	1
	Navigation Lights	1
	Flashing Beacon (Optional)	3
	Strobe Lights (Optional)	5
	Troubleshooting (Strobe Light System)	101
	Maintenance Practices	201
	Replacement - Exterior Lights	201
	Slave Unit Removal/Installation	202
	Strobe Light Removal/Installation	202
	Flasher Assembly Removal/Installation	203
	Landing Light - Adjustment	204
	Exterior Lights - Operational Check	205

**AA-5 SERIES
MAINTENANCE MANUAL**

LIGHTING - DESCRIPTION

1. General

To simplify this chapter, it has been divided into two sections. The first section will cover the interior lights, and the second section will cover the exterior lights.

The interior lights consist of instrument lights, dome lights and radio and compass lights. The exterior lights consist of landing light, navigation lighting, flashing beacon and strobe lights.

BULB CHART

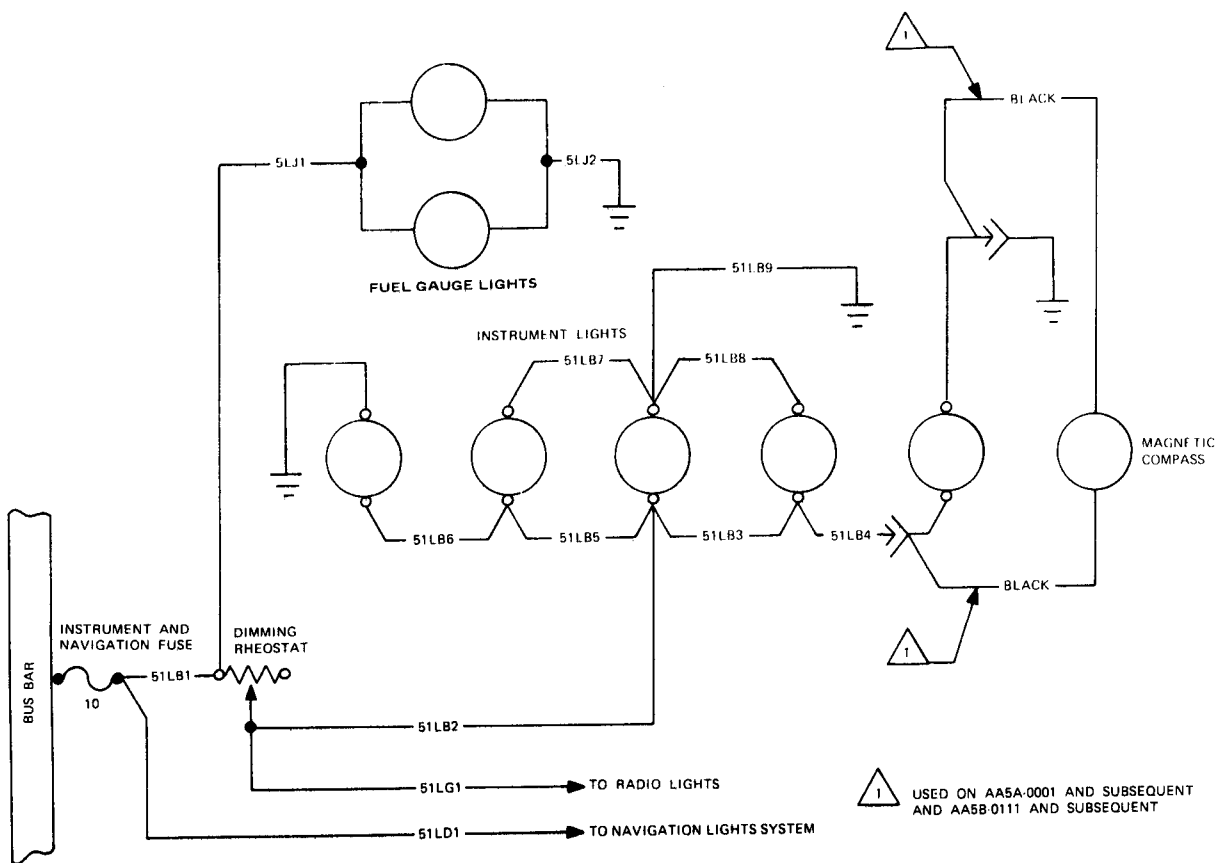
INTERIOR LIGHTS		
Quantity	Type Light	Bulb Part No.
5	Instrument Lights	1816 (G. E.)
1	Map Light - (FWD) AA5-0001 through 0021	1813 (G. E.)
1	Map Light - (FWD) AA5-0022 and Subsequent	1816 (G. E.)
1	Dome Light-(AFT)	1816 (G. E.)
1	Map Light (Optional)	G. E. -52 (G.E.)
2	Fuel Gauge Lights	6037-001-704 (Drake)
N/A	Radio and Compass Lights	N/A
EXTERIOR LIGHTS		
Quantity	Type Light	Bulb Part No.
1	Landing Light	4509 (G.E. or Westinghouse)
2	Navigation Lights - (Wingtips)	1512 (Grimes)
1	Navigation Light - (Tailcone)	1777 (Grimes)
1	Flashing Beacon	40-5A (Aero - Flash)
2	Strobe Lights - AA5-0001 through 0405	X2RD (Aero - Flash)
2	Strobe Lights - AA5-0406 and Subsequent	X2RDA (Aero - Flash)

INTERIOR LIGHTS - DESCRIPTION/OPERATION

1. Instrument Lights (See Figures 1 and 2)

The total instrument lighting system consists of three lights mounted in the glareshield, two fuel gauge lights and two lights mounted forward of the windshield bow. All seven lights are identical in components. The three lights mounted in the glareshield and two lights mounted forward of the windshield bow receive power through a dimming rheostat located on the instrument panel. The rheostat receives its power from the bus through a 10 amp fuse (Inst. & Nav. Lts.). Turning the control knob on the rheostat will vary the brightness of these lights.

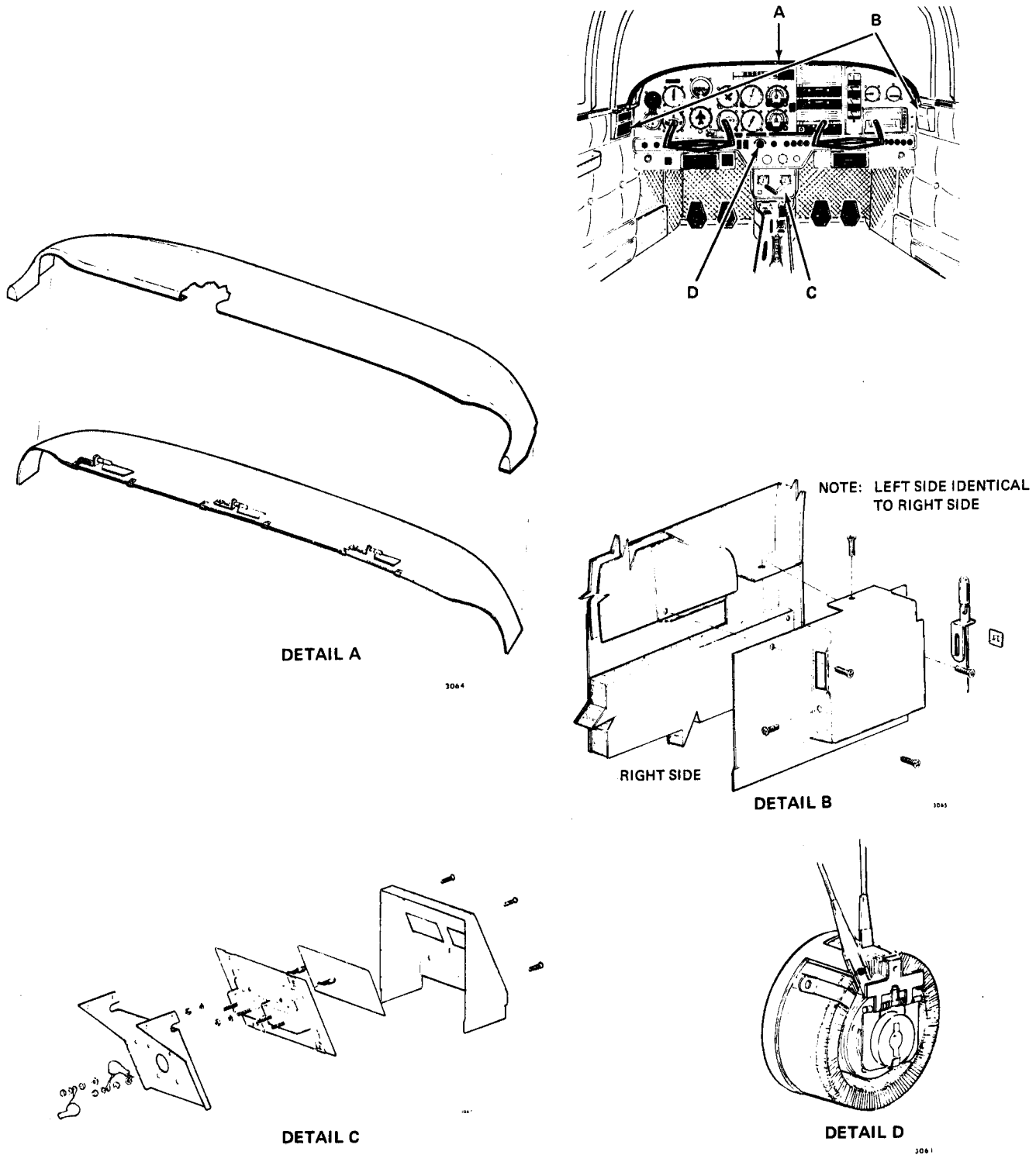
The fuel gauge lights receive power through the same fuse, but this circuit is not through the rheostat. Therefore, the brightness of these lights is not controllable. These lights will come on when the master switch is placed in the ON position.



3490

Instrument Lights - Wiring Diagram
Figure 1

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Instrument Lights
Figure 2

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2. Dome and Map Lights (See Figure 3)

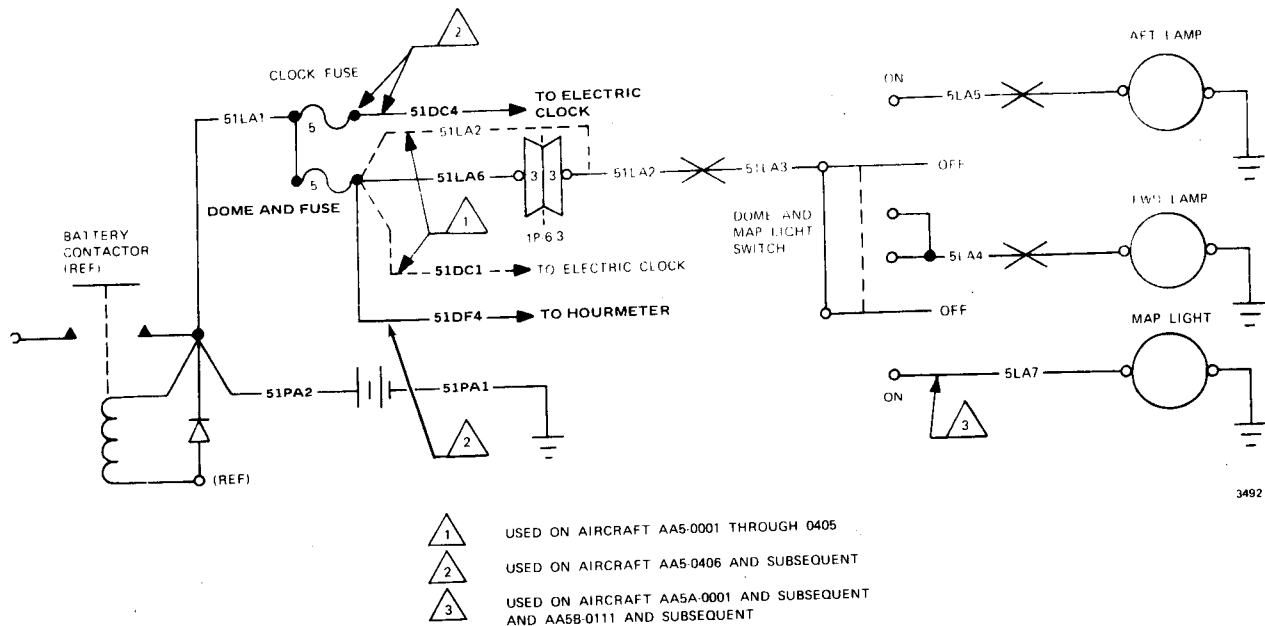
The dome (aft) light and map (forward) light are housed above and behind the pilot. They are controlled by a three-position rocker switch which is located on the fuselage side panel, to the left of the pilot's control wheel. The switch forward position activates the map (forward) light, neutral position is off and the aft position activates both the map (forward) light and the cabin dome (aft) light.

On AA5A-0001 and Subsequent and AA5B-0111 and Subsequent, an auxiliary map light mounted on a flex tube may be installed. This light will come on when the switch is placed in the forward position.

The three-position rocker switch receives power from the battery terminal of the battery contactor. A five amp fuse is in series with this circuit. On Aircraft AA5-0001 through 0405, the fuse is located in the main wire bundle forward of the firewall. On Aircraft AA5-0406 and Subsequent, AA5B-0001 and Subsequent and AA5A-0001 and Subsequent the fuse is located on a plate mounted to the battery support bracket. These lights are energized directly from the battery regardless of the master switch position.

3. Radio and Compass Dial Lights (See Figure 1)

The radio and compass dial lights are built into the individual units. The radio dial lights are controlled by the dimming rheostat located on the instrument panel. On AA5A-0001 and Subsequent and AA5B-0111 and Subsequent, the magnetic compass dial light is controlled by the dimming rheostat.



**Dome and Map Lights - Wiring Diagram
Figure 3**

INTERIOR LIGHTS - MAINTENANCE PRACTICES

1. Replacement of Instrument Lights (See Figure 2)
 - A. Glareshield Instrument Lights Replacement:
 - (1) Removal of the screws from the glareshield lower lip will separate the two halves and expose the light assembly.
 - (2) Remove the bulb and replace as required.
 - (3) Replace lower lip and attaching hardware.
 - B. Replacement of Lights Mounted Forward of the Windshield Bow :
 - (1) Remove the thermoplastic cover.
 - (2) The light assembly is attached to the back of this cover. Remove the bulb and replace as required.
 - (3) Replace the thermoplastic cover.
2. Replacement of Dome Lights
 - A. Remove the screws which attach the thermoplastic dome light housing to the forward turtleback bulk-head.
 - B. Remove the bulb and replace as required.

NOTE: On aircraft AA5-0001 through AA5-0405 the dome light is protected by an in-line fuse which is located in the main wire bundle forward of the firewall and near to the battery relay. On aircraft AA5-0406 and Subsequent, AA5B-0001 and Subsequent and AA5A-0001 and Subsequent, the dome light is protected by a fuse mounted on the battery box tray.
 - C. Replace thermoplastic dome light housing and attaching hardware.

INTERIOR LIGHTS - OPERATIONAL CHECK

1. Instrument Lights

NOTE: Ensure fuses are operational before performing check.

- A. Place master switch to the ON position. Fuel gauge lights should illuminate
- B. Turn control knob on rheostat from dim to bright. While turning control knob, the three lights mounted/ on glareshield and two lights mounted/forward of the windshield bow should become brighter.
- C. Turn control knob on rheostat to OFF position. Lights should go out.
- D. Place master switch to OFF position. Fuel gauge lights should go out.

2. Dome and Map Lights

NOTE: Ensure fuses are operational before performing check.

- A. Place map and dome light switch to forward position. The forward (map) light located overhead should illuminate. On AA5A-0001 and Subsequent and AA5B-0111 and Subsequent, a map light mounted on a flex tube was made available. If installed, it should illuminate.
- B. Place map and dome light switch to the OFF (Center) position. The light (or lights if flex tube light is installed) should go out.
- C. Place map and dome light switch to the aft position. The aft and forward lights located overhead should illuminate.
- D. Place map and dome light switch to the OFF position. The lights should go out.

EXTERIOR LIGHTS - DESCRIPTION/OPERATION

1. Landing Light (Optional) (See Figures 1 and 2)

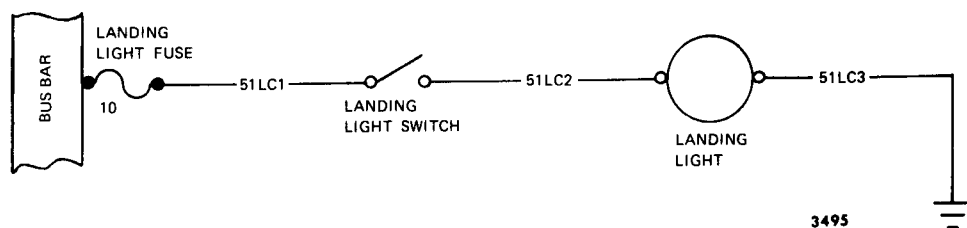
The landing light serves the dual purpose of landing light and taxi light. The light is located on the left lower corner of the forward engine cowl. On 1975 and later models, a clear plastic cover provides protection for the lamp.

The landing light is operated by a switch located to the left of the instrument lights rheostat on the instrument panel. The switch receives power from the bus through a ten amp fuse (Ldg Lt).

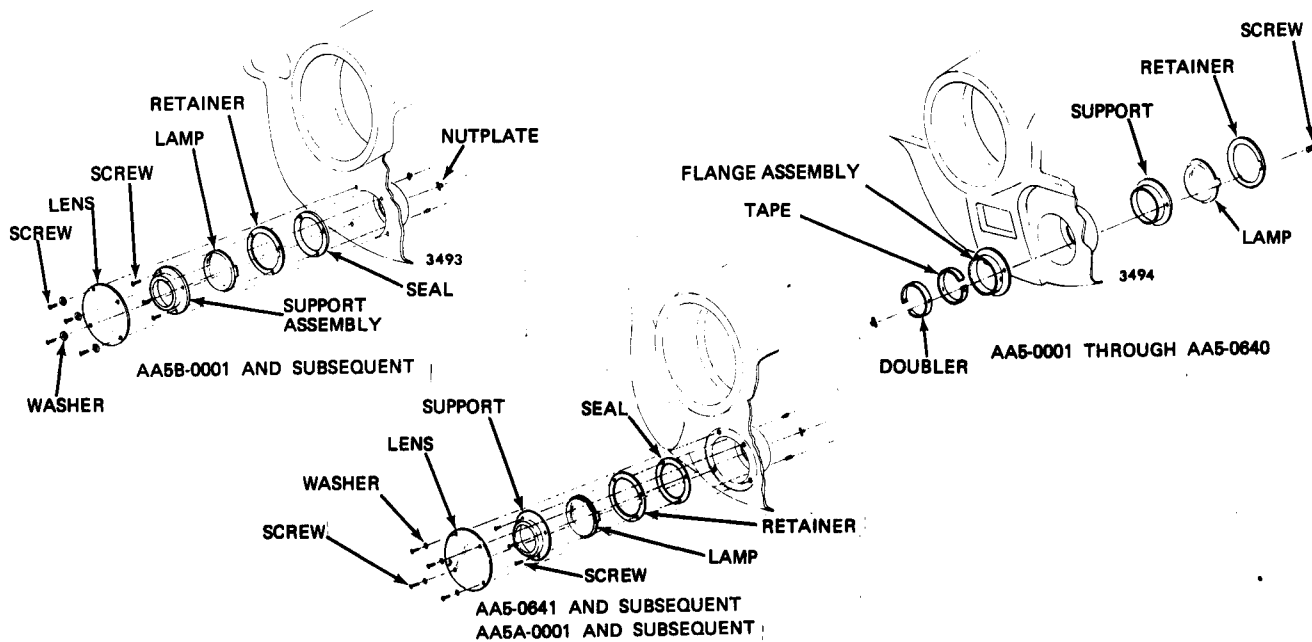
On pre 1975 models, adjustments to the landing light are made by opening the upper cowl and adjusting the mounting screws as required. On 1975 and later models, adjustments are made from the forward side of the cowl by removing the lamp shield.

2. Navigation Lights (See Figures 3 and 4)

The navigation lights consist of the two wing-tip lights, and the tail light mounted in the tailcone. The lights are controlled by a switch located on the lower instrument panel. Power for the lights is provided by the bus through a ten amp fuse (INST. & NAV. LTS.).

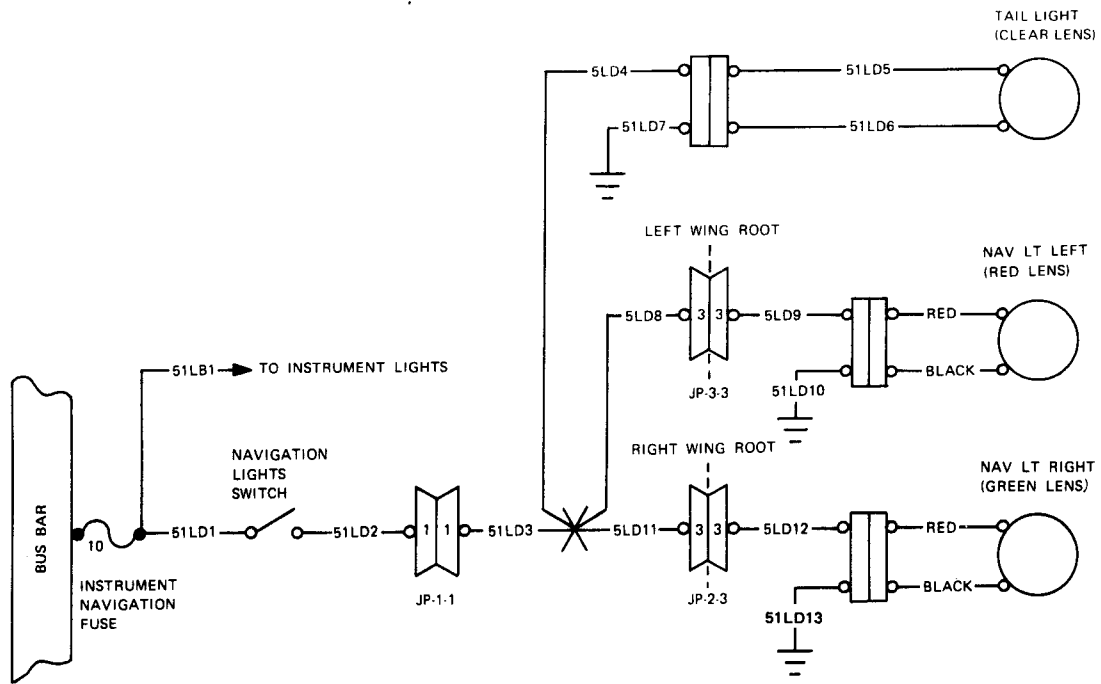


Landing Light - Wiring Diagram
Figure 1



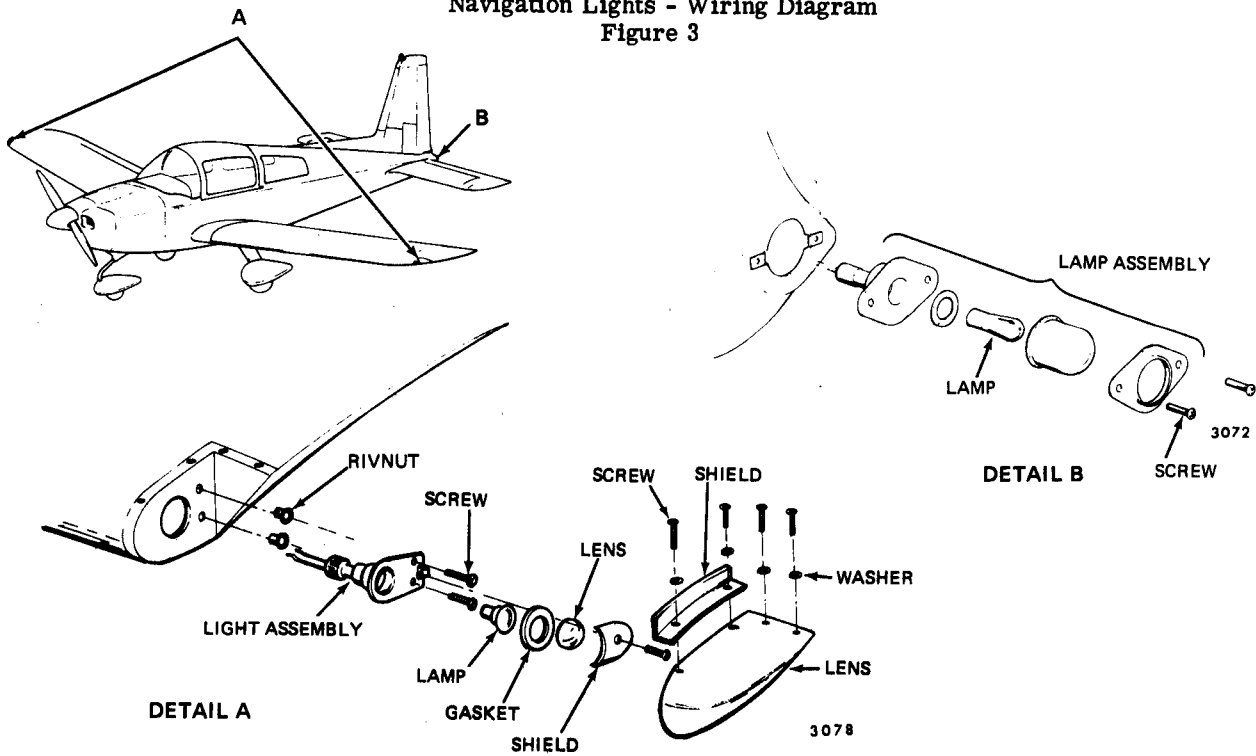
Landing Light
Figure 2

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3497

**Navigation Lights - Wiring Diagram
Figure 3**



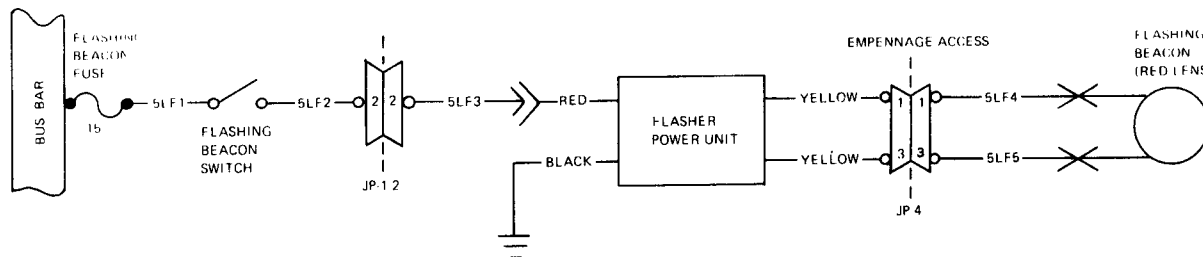
**Navigation Lights
Figure 4**

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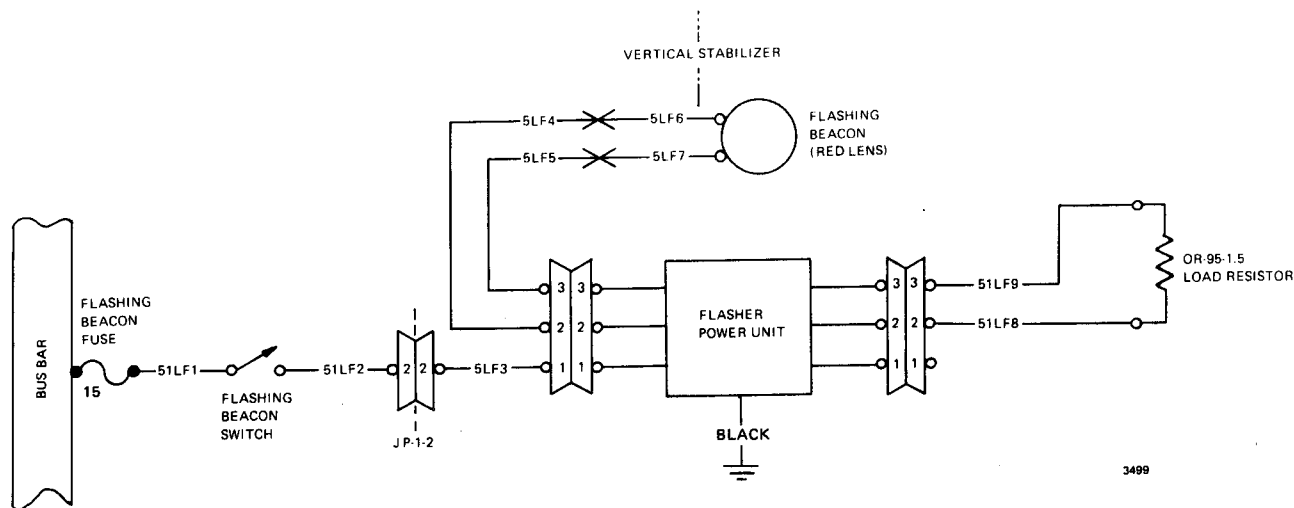
3. Flashing Beacon (Optional) (See Figure 5, 6 and 7)

The flashing beacon consists of the light assembly mounted on top of the vertical fin, and the slave unit (transistorized flasher unit) which is accessible through the right side tail inspection panel. The flashing beacon is an iodine vapor lamp electrically switched by the transistorized flasher unit.

The slave unit receives power from a switch located on the instrument panel. This switch receives power from the bus through a 15 amp fuse (Flash Bcn).

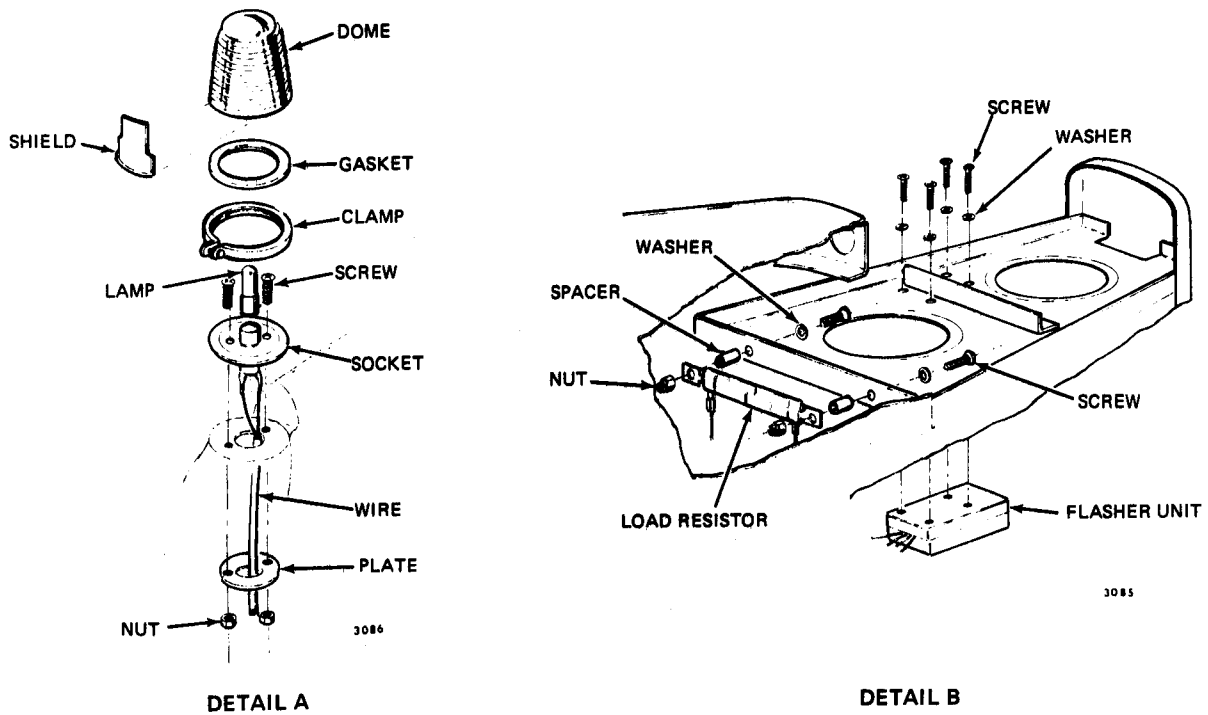
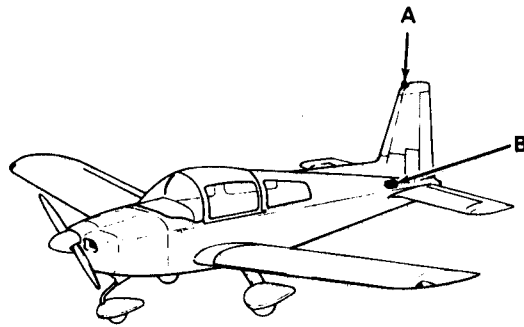


**Flashing Beacon - Wiring Diagram
(Aircraft AA5-0001 through AA5-0102)
Figure 5**



**Flashing Beacon - Wiring Diagram
(Aircraft AA5-0103 and Subsequent, AA5A-0001 and Subsequent and AA5B-0001 and Subsequent)
Figure 6**

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Flashing Beacon (Optional)
Figure 7

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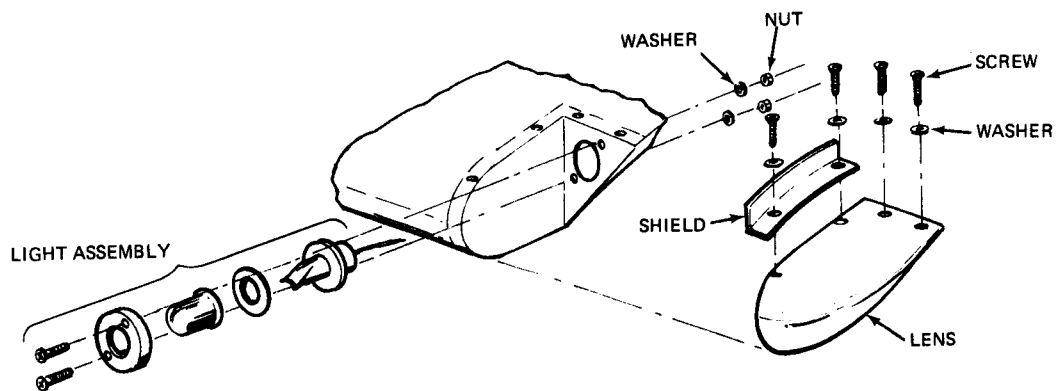
4. Strobe Lights (Optional) (See Figures 8 and 9)

The strobe light system consists of two flashers (power supplies) and two slaves (Strobe assemblies). The flasher is a solid state encapsulated electronic device. A flasher is mounted on each outer wing rib. The slave unit contains a lamp socket to hold the iodine quartz lamp and an outer covering glass dome. The slaves are mounted to the wing tip cutouts on the wing tips. They are located above and behind the navigation lights. Clear plastic lens are mounted over the lights to protect them from the weather.

On AA5-0001 through 0405, power for the flashers is provided by the bus through a 15 amp fuse (Flap & Strobe) located on the fuse panel.

On AA5-0406 through 0834 and AA5A/5B-0001 and Subsequent, power is provided by the bus through a 5 amp fuse (Fuel Pump & Strobe) located on the fuse panel.

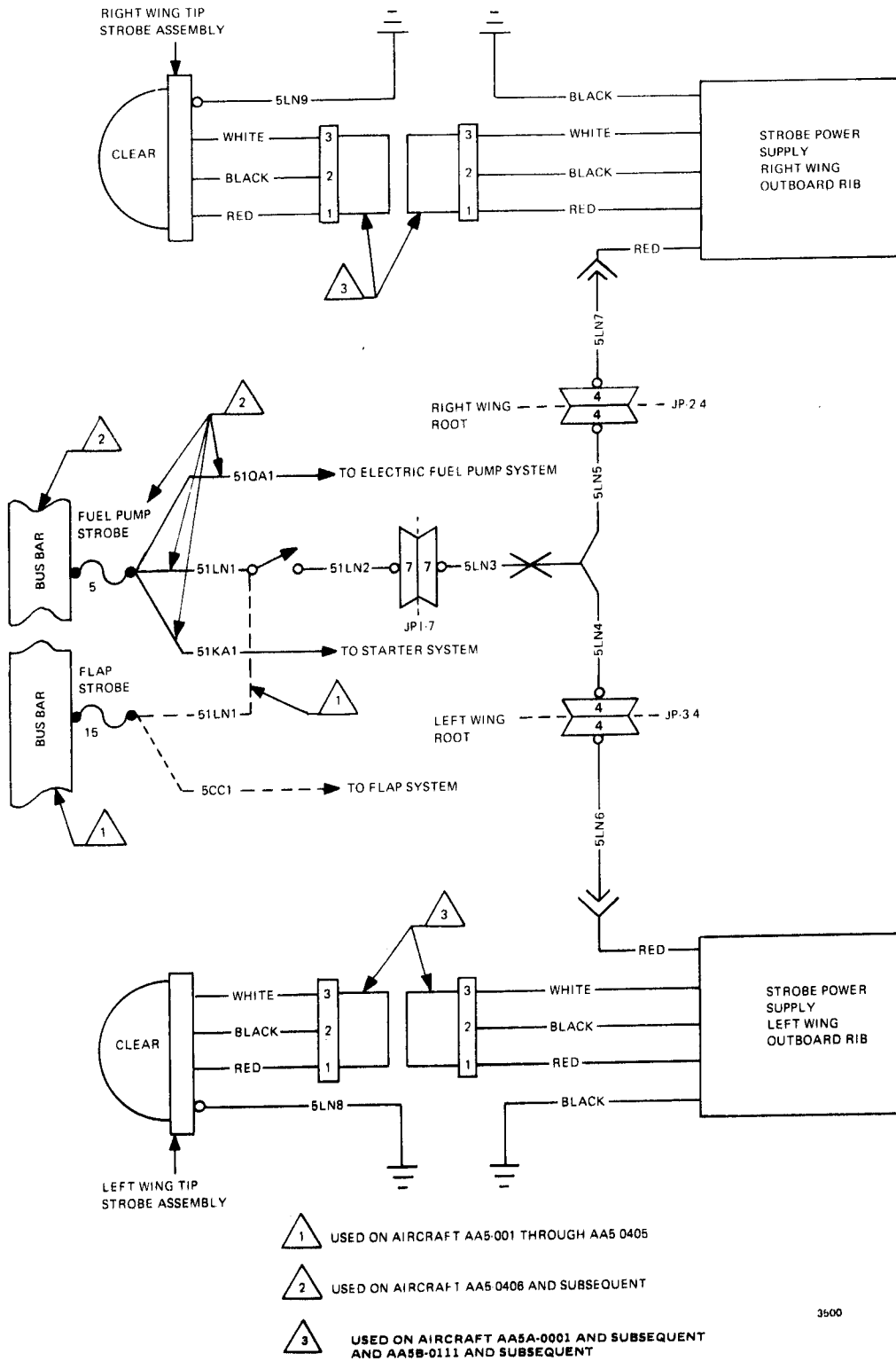
Operation of the strobe lights is controlled by a rocker switch located on the instrument panel.



3080

Strobe Light
Figure 8

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**Wiring Diagram
Figure 9**

3500

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EXTERIOR LIGHTS - TROUBLESHOOTING

Strobe Light System

TROUBLE	PROBABLE CAUSE	REMEDY
Both flash tubes fail to flash.	Blown fuse	Check and replace if required.
	Defective switch	Check and replace if required.
	Defective wiring	Check wiring from bus to power supply (flasher power unit).
Only one side fails to flash.	Defective flash tube	Replace flash tube with known good flash tube (opposite wing). If operation is normal, replace defective flash tube.
	Shorted or open circuit to flash tube	Check wiring from power supply (flasher power unit) to the flash tube.
	Defective power supply unit because of reversed polarity of the input power	Replace power supply.

EXTERIOR LIGHTS — MAINTENANCE PRACTICES

1. Exterior Lights Replacement

A. Replacement of Landing Light (See Figure 2.)

- (1) Gain access to the landing light by raising the upper cowl on pre 1975 models, or by removing the lamp shield on 1975 and later models.
- (2) Remove the three mounting screws and withdraw the lamp and bracket.
- (3) Disconnect the wires at the light terminals.
- (4) Remove light and replace as required.
- (5) Connect wires at the light terminal.
- (6) Place lamp in mounting bracket and replace hardware.
- (7) On pre-1975 models, close upper cowl. On 1975 and later models, replace lamp shield.
- (8) Perform operational check. (See Exterior Lights — Operational Check)

B. Replacement of Navigation Lights (Wing Tip) (See Figure 4.)

- (1) Remove the screws which attach the protective lens to the wing tip.
- (2) Remove the one screw which holds the lamp shield.
- (3) Remove the lamp and replace if necessary.
- (4) Replace lamp shield and securing screw.
- (5) Replace protective lens and attaching hardware to the wing tip.
- (6) Perform operational check. (See Exterior Lights — Operational Check)

C. Tail Light Replacement

- (1) Remove the two screws which hold the lamp retainer to the tailcone.
- (2) Withdraw the retainer and lens.
- (3) Remove the lamp and replace as required.
- (4) Replace lens and retainer to the tailcone.
- (5) Perform operational check. (See Exterior Lights — Operational Check)

D. Flashing Beacon Light Replacement (See Figure 7.)

- (1) Remove the clamp.
- (2) Withdraw the lens, shield, and lamp.

CAUTION: DO NOT HANDLE LAMP BY GLASS. INSERT INTO SOCKET BY BASE. ALWAYS WIPE LAMP OFF WITH TISSUE.

- (3) Remove and replace as required.
- (4) Replace lamp, shield, and lens.
- (5) Replace clamp.
- (6) Perform operational check. (See Exterior Lights — Operational Check)

2. **Slave Unit Removal/Installation**

A. Slave Unit Removal

- (1) Remove the left and right tail inspection cover. (ELT Inspection Covers)
- (2) Disconnect the wires.
- (3) Remove the four screws which attach the unit beneath the horizontal bulkhead and remove unit.

B. Slave Unit Installation

- (1) Place unit beneath the horizontal bulkhead and replace attaching hardware and ground wire.
- (2) Connect the remaining wires.
- (3) Replace the tail inspection covers.
- (4) Perform operational check. (See Exterior Lights — Operational Check)

3. **Strobe Light Removal/Installation**

A. Light Assembly Removal

WARNING: REMOVE POWER FOR 5 MINUTES BEFORE SERVICING SYSTEM.

- (1) Remove hardware attaching wing tip to the wing. (See Wing Tip Removal/Installation)
- (2) Disconnect wires going to navigation and strobe lights.
- (3) Remove wing tip.
- (4) Remove protective shield and supporting hardware from wing tip.
- (5) Remove hardware supporting light assembly to wing tip.
- (6) Remove light assembly.

B. Strobe Light Installation

- (1) Position light and install hardware supporting light assembly to wing tip.
- (2) Replace protective shield and hardware.
- (3) Connect wires going to navigation and strobe lights.
- (4) Replace wing tip and attaching hardware.
- (5) Perform operational check. (See Exterior Lights — Operational/Check.)

4. Flasher Assembly — Removal/Installation

A. Flasher Assembly — Removal

WARNING: REMOVE POWER FOR 5 MINUTES BEFORE SERVICING SYSTEM.

- (1) Remove hardware attaching wing tip to the wing. (See Wing Tip Removal/Installation.)
- (2) Disconnect wires going to navigation and strobe lights. Remove ground wire and attaching hardware.
- (3) Remove wing tip from wing.
- (4) Disconnect wires going to flasher unit.
- (5) Remove hardware supporting flasher unit to wing rib.
- (6) Remove flasher unit from wing rib.

B. Flasher Assembly — Installation

- (1) Replace flasher unit and supporting hardware.

CAUTION: THIS UNIT IS POLARITY SENSITIVE. THE WHITE OR RED LEAD IS POSITIVE AND THE BLACK LEAD AND/OR CASE IS NEGATIVE.

- (2) Connect wires going to flasher unit.
- (3) Connect wires going to navigation and strobe lights. Replace ground wire and attaching hardware.
- (4) Install wing tip and attaching hardware.
- (5) Perform Operational Check. (See Exterior Lights — Operational Check)

LANDING LIGHT -- MAINTENANCE PRACTICES

NOTE: Before adjusting light, ensure tires are properly inflated.

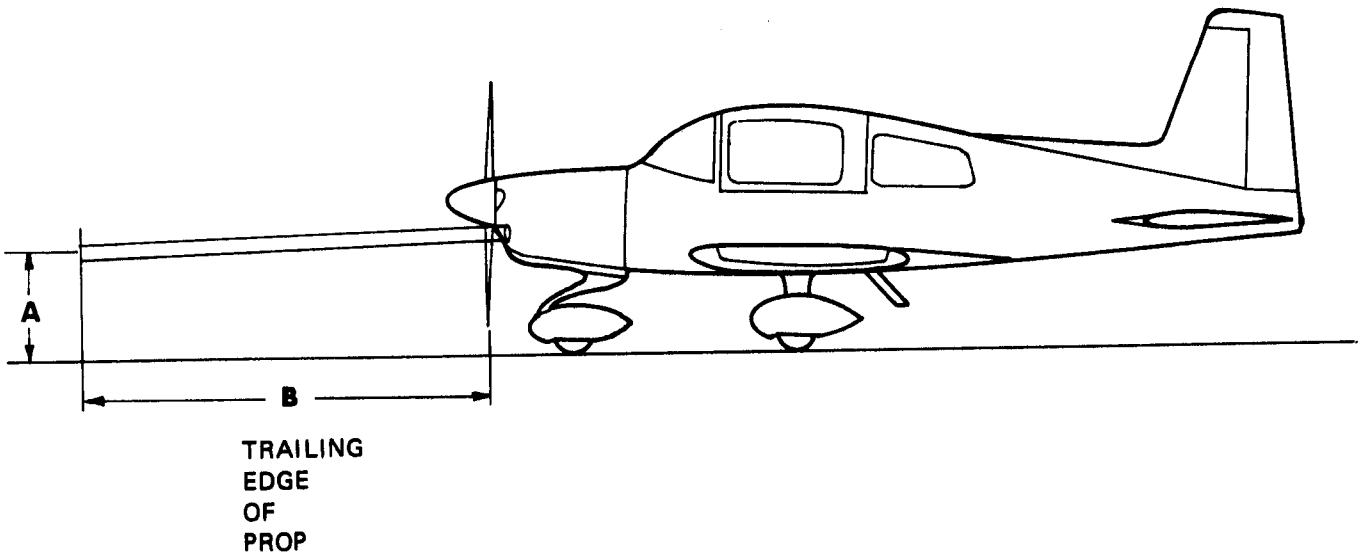
1. Adjustment

A. Landing Light

- (1) Place aircraft on flat surface.
- (2) On pre 1975 models, open the upper cowl to gain access to the adjusting screws. On 1975 and later models, remove the lamp shield to gain access to the adjusting screws.
- (3) Adjust light in accordance with Figure 201.

NOTE: LANDING LIGHT SHOULD NOT BE ADJUSTED BEYOND THE POINT WHERE IT DOES NOT HAVE A GOOD SEAL AROUND OUTER FLANGE.

NOTE: LIGHT BEAM TO PARALLEL CENTER LINE.



A	29 In.	26 In.
B	6 Ft.	10 Ft.

Landing Light Adjustment
Figure 201

EXTERIOR LIGHTS – OPERATIONAL CHECK

1. Operational Check of Landing Light, Navigation Lights, Beacon Light, and Strobe Light

A. Landing Light (Optional)

NOTE: Ensure fuse is operational before performing check.

- (1) Place master switch to ON position.
- (2) Place landing light switch to ON position. Landing light should come on.
- (3) Place landing light switch to OFF position. Light should go out.
- (4) Place master switch to OFF position.

B. Navigation Lights

NOTE: Ensure fuse is operational before performing check.

- (1) Place master switch to ON position.
- (2) Place navigation light switch to ON position. The two lights mounted on each wing tip and the one light mounted on the tail cone should come on.
- (3) Place navigation light switch to OFF position. Navigation lights should go out.
- (4) Place master switch to OFF position.

C. Flashing Beacon (Optional)

NOTE: Ensure fuse is operational before performing check.

- (1) Place master switch to ON position.
- (2) Place flashing beacon switch to ON position. Flashing beacon should start flashing.
- (3) Place flashing beacon switch to OFF position. Lamp should stop flashing.
- (4) Place master switch to OFF position.

D. Strobe Lights (Optional)

NOTE: Ensure fuse is operational before performing check.

- (1) Place master switch to ON position.
- (2) Place strobe light switch to ON position. Strobe lights should come on.
- (3) Place strobe light switch to the OFF position. Strobe lights should go off.
- (4) Place master switch to OFF position.