CHAPTER 33

Lights

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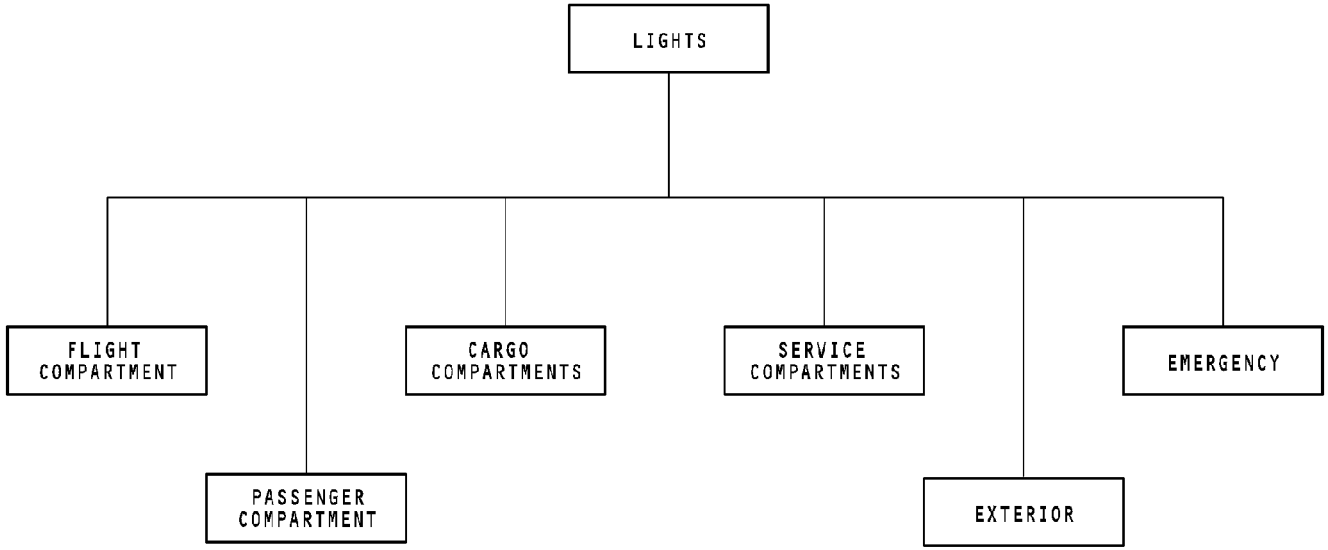
General

These are the light systems on the airplane:

- Flight compartment lights
- Passenger compartment lights
- Cargo compartment lights
- Service compartment lights
- Exterior lights
- Emergency lights.

Abbreviations and Acronyms

- att - attendant
- ac - alternating current
- bat - battery
- brt - bright
- dc - direct current
- EE - electronic equipment
- gnd - ground
- instr - instrument
- lt(s) - light(s)
- prim - primary
- PSU - passenger service unit
- svce - service
- sw - switch
- typ - typical
- vari - variable
- xfmr - transformer
- xfr - transfer



LIGHTS - INTRODUCTION

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LIGHTS - FLIGHT COMPARTMENT - INTRODUCTION

Purpose

These are the four types of flight compartment lights:

- Instrument and panel lights
- Miscellaneous lights
- Flight crew lights
- Master dim and test.

The instrument and panel lights are for the flight compartment controls and panel indications.

The miscellaneous lights supply general lighting to the flight compartment. These are the miscellaneous lights:

- Panel and control stand flood lights
- Circuit breaker panel lights
- Standby compass light
- Dome lights.

The flight crew lights supply light for specific tasks. These are the flight crew lights:

- Reading lights
- Map lights
- Flight kit lights
- Chart lights.

The master dim and test system controls the light for the system annunciator and indicator lights.

General Description

The dome lights supply general lighting for the flight compartment. The glareshield supplies background lighting for the pilots.

Each instrument and instrument panel has lighting. The control stand gets light from an overhead floodlight.

The circuit breaker panels get light from floodlights.

There are lights for the standby compass and map lighting.

The master dim and test switch can do these functions:

- Test the indicator and panel lights
- Cause the indicator and panel lights to come on in the bright or dim mode.

The replacement lamps for the lights in the flight compartment are above the right number three window.

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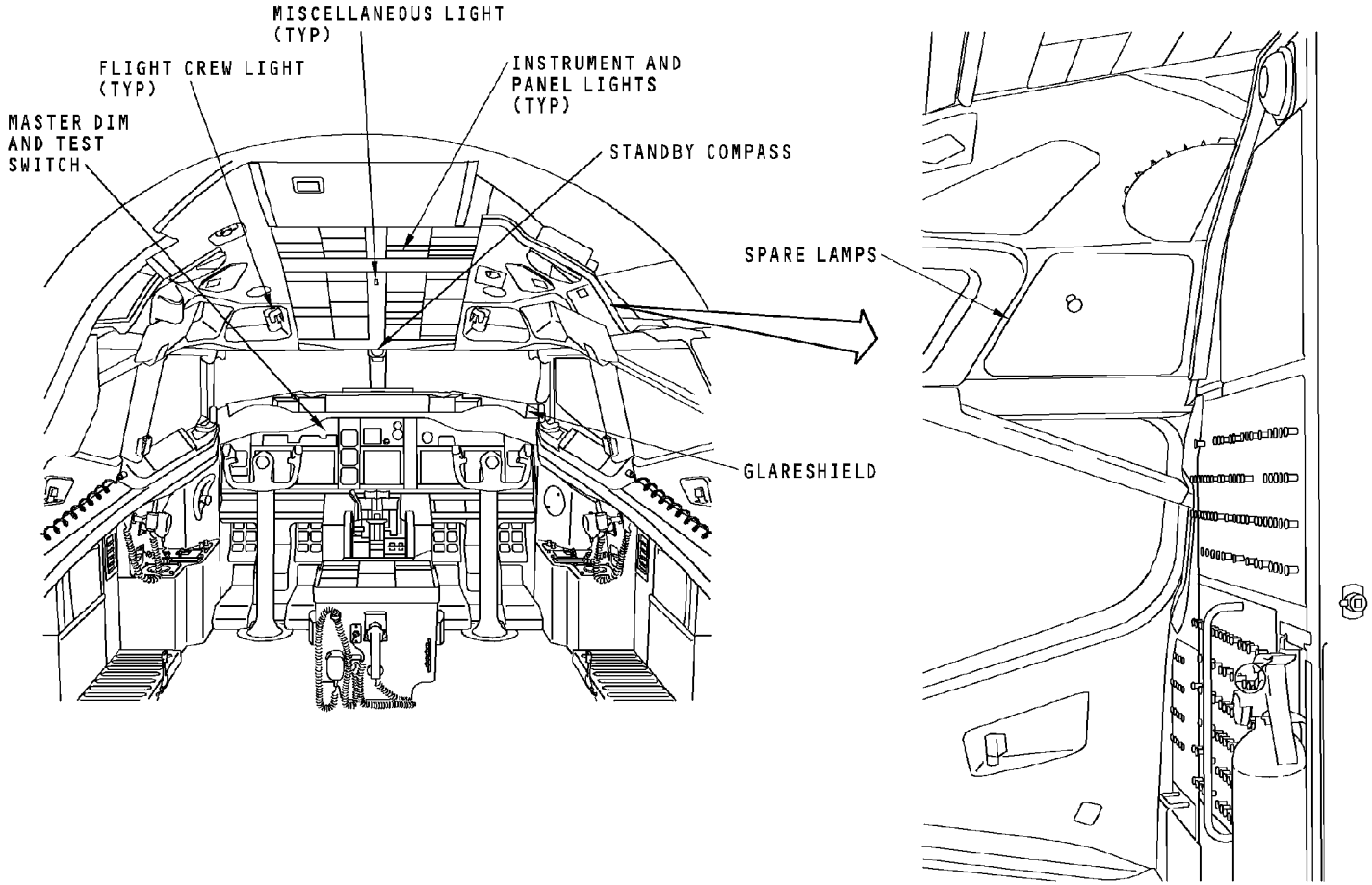

LIGHTS - FLIGHT COMPARTMENT - INTRODUCTION

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LIGHTS - INSTRUMENT AND PANEL LIGHTS - INTRODUCTION

Purpose

Instrument and panel lights supply light to the switches, selectors, and indicators on panels in the flight compartment.

These are the types of panel lights in the flight compartment:

- Light plates
- Indicators
- Instrument lights
- Lighted push-button switches.

General Description

Light plates supply the background light for the panels in the flight compartment.

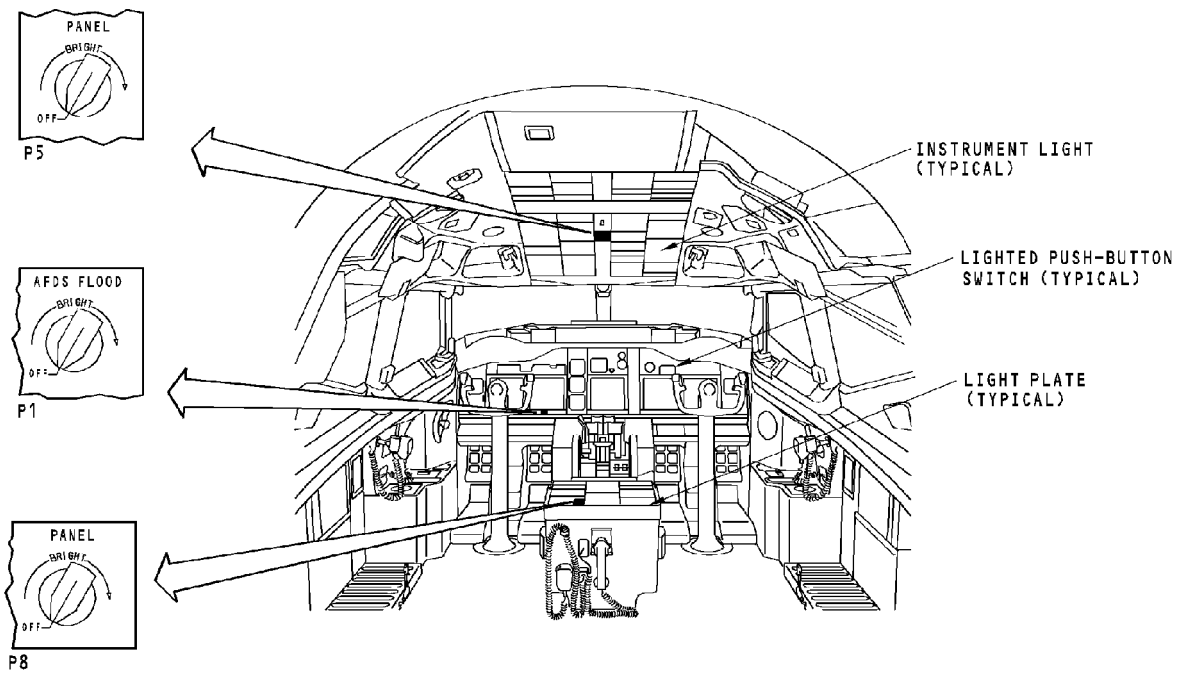
Indicator lights show the flight or maintenance crew the status of an airplane system.

Lighted push-button switches supply control inputs to, or information for their associated systems.

Instrument lights supply light to the face of the instruments.

Functional Description

Electrical power for the instrument and panel lights comes from the 28v ac transfer buses 1 or 2.



LIGHTS - INSTRUMENT AND PANEL LIGHTS - INTRODUCTION

Operation

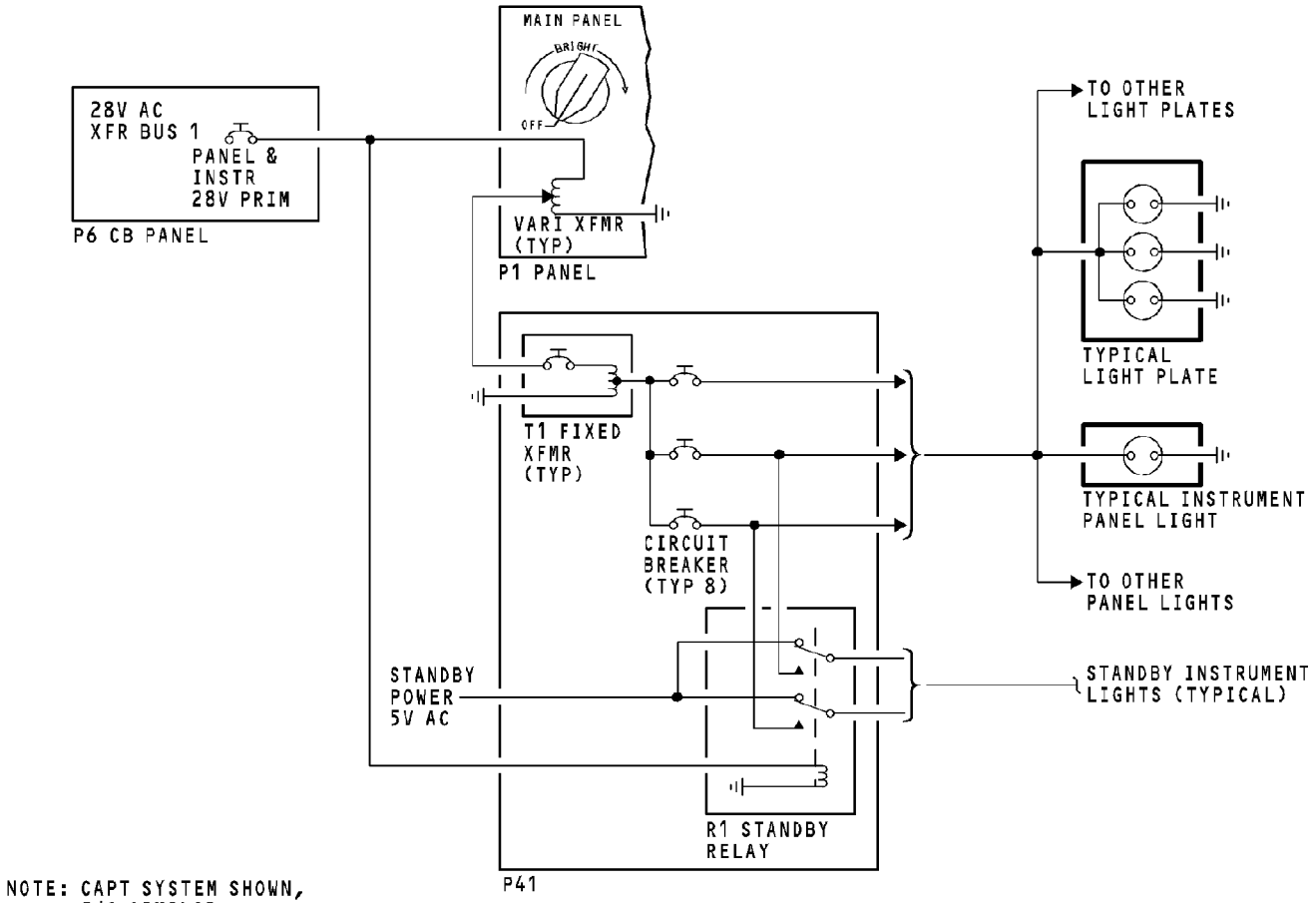
The OFF-BRIGHT control for P1, P2, and P7 instrument and panel lights adjusts the intensity of the lamps.

Functional Description

The OFF-BRIGHT control is a variable transformer. The control knob turns to adjust the voltage available to the fixed transformers in the captain's lighting module (P41).

The lighting module's fixed transformer supplies a maximum of 5v ac to the circuit breakers on the P41 panel. The 0-5v ac voltage from the circuit breakers makes the P1, P2, and P7 instrument and panel lights come on.

Instruments that are necessary for flight safety connect to the standby light system. When power is not available from transfer bus 1, the lights get power from the standby bus. When relay R1 does not energize, the standby bus connects to the standby transformer, T2 in P42. The standby transformer supplies the 5v ac to the lights that are connected to the system.



Purpose

The lightplates supply light to these components:

- Panel decals
- Instrument lights
- Panel switches.

Physical Description

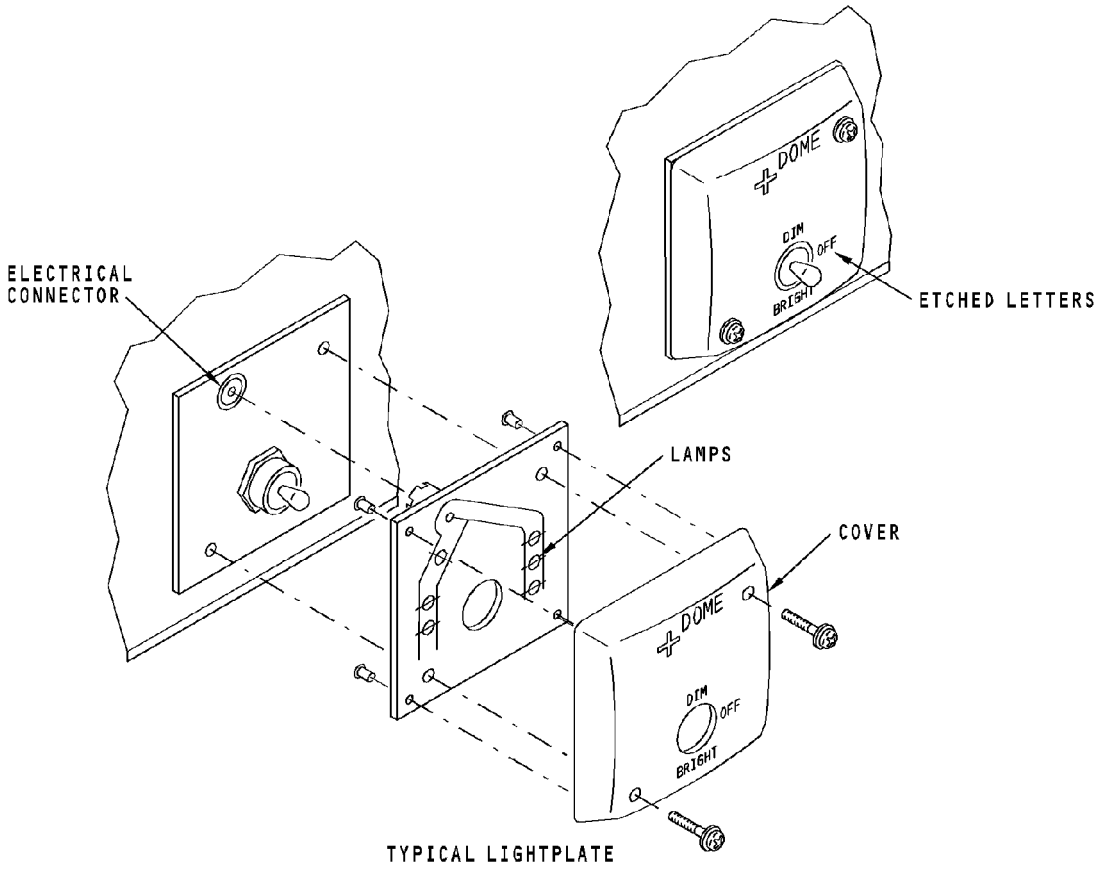
The lamps are a part of the lightplates. The back of the lightplates have an electrical connector on a printed circuit board. The incandescent lamps are in a parallel circuit. The lightplate continues to supply light if one lamp has a failure.

The front of the lightplates have etched letters and openings for selector switches and indicator lights. These openings let the lamps on the circuit board to supply light to the front of the panels.

Location

There are integral panel lights in the lightplates on these panels:

- P1 captain instrument panel
- P2 center instrument panel
- P3 first officer instrument panel
- P5 overhead panels
- P7 lightshield panel
- P8 aft electronics panel
- P21 left sidewall panel
- P23 right sidewall panel.



TYPICAL LIGHTPLATE

Purpose

The indicator lights show the flight or maintenance crew the condition of an airplane system.

Location

Many airplane systems have indicator lights in the flight compartment. Indicator lights are on these panels:

- Instrument panels
- Overhead panels
- Electronics (aisle stand) panels.

Physical Description

The indicator lights use incandescent lamps to supply light. Each indicator light has these components:

- Terminal assembly
- Sleeve
- Body and contact assembly
- lamps
- Cap assembly
- Mounting screws.

Functional Description

The two types of indicator light assemblies receive either a ground or power. The indicator lamps that have a ground come on when an electrical ground is on the output terminal. The indicator lamps that receive power, come on when a positive 16/28v dc is applied to the output terminal.

Each type of indicator light assembly has a press-to-test switch circuit. This does a test of the lamp.

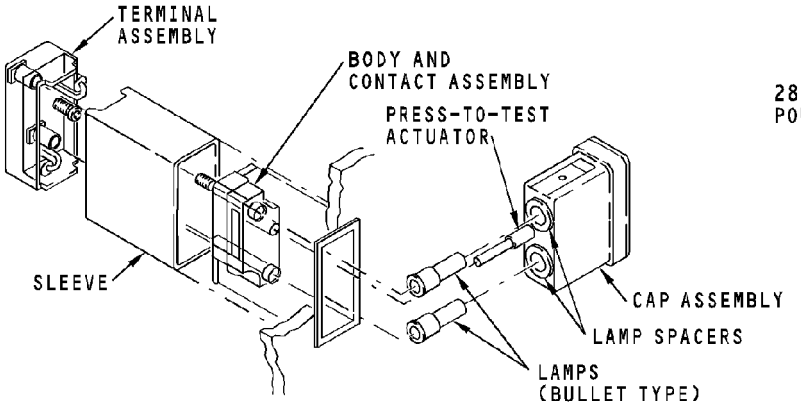
The lens of each indicator light assembly is colored. The lens color means:

- Red - warning
- Amber - caution
- Blue - position
- Green - power on
- White - information.

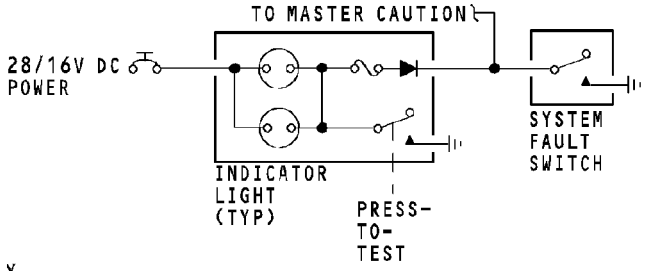
Training Information Point

There are two types of lamps that you can install in the indicator lights. If you use the wrong lamp, damage to the lens cover can occur. Make sure the replacement lamp has the same part number as the one you remove.

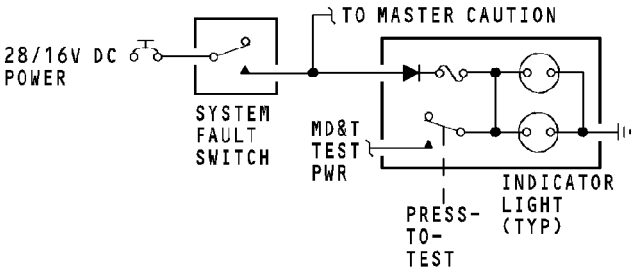
NOTE: Use the Wiring Diagram Manual to find the correct system circuit breakers for each light indicator.



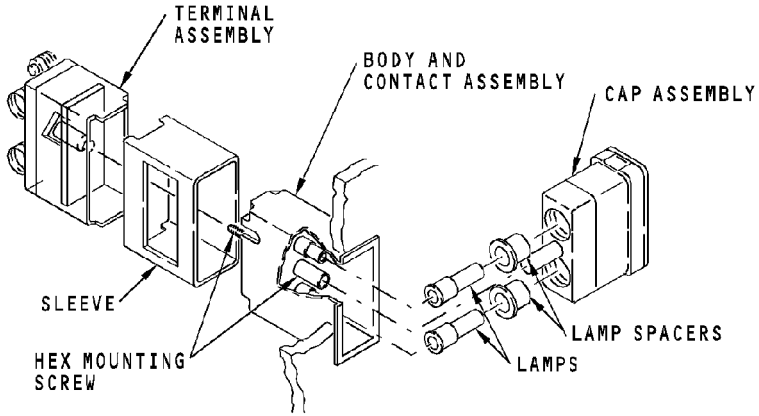
INDICATOR LIGHT WITH PHILLIPS MOUNTING SCREWS (TYPICAL)



GROUND TYPE INDICATOR



POWER TYPE INDICATOR



INDICATOR LIGHT WITH A HEX MOUNTING SCREW (TYPICAL)

Purpose

The lighted push-button switches supply control inputs to their systems. They can also supply information on system condition.

Location

Many airplane systems have lighted push-button switches in the flight compartment. Lighted push-button switches are on these panels:

- Instrument panels
- Overhead panels
- Electronics (aisle stand) panels.

Physical Description

The lighted push-button switches use incandescent lamps to give light. Each lighted push-button switch has these components:

- Lens cap
- Master module
- Diode/fuse card
- Housing
- Sleeve.

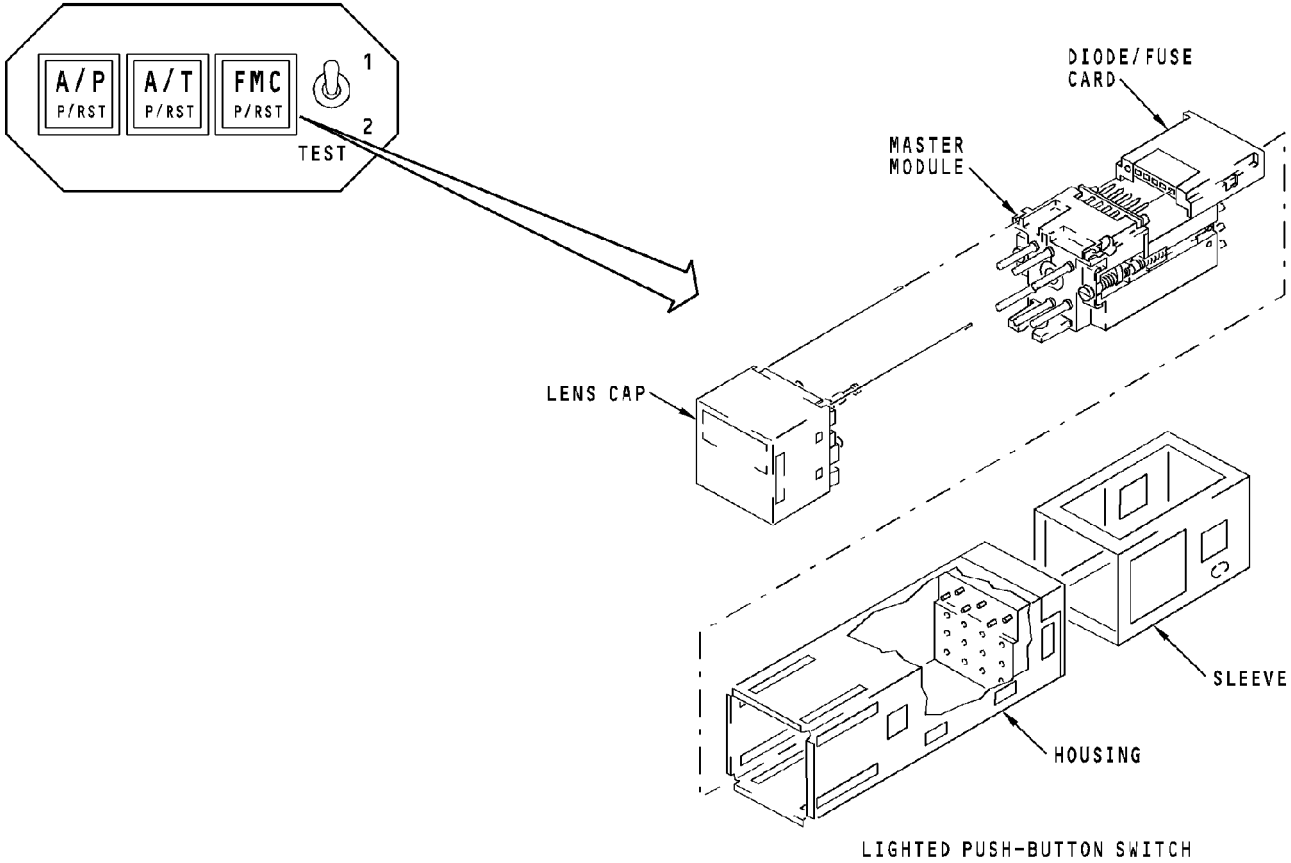
FUNCTIONAL DESCRIPTION

Each push-button switch contains four independent switch circuits. Each switch circuit contains these type of components:

- Normally open contact
- Normally closed contact
- Common wiper.

The two types of lighted push-button switches are momentary and alternate. The momentary switch changes condition when you push the cap assembly. It changes back to its original condition when you remove the pressure. The alternate switch changes condition when you push the cap assembly. It stays in that condition until you push it again. The master module in the switch body sets the type of switch.

The power to operate the lighted push-button switches may come from different sources. Use the Wiring Diagram Manual to find the correct source of power.



LIGHTED PUSH-BUTTON SWITCH

Purpose

The system status information is on the flight compartment panels. The master warning and caution lights provide a central location for information for the crew about alarms and faults for various systems.

Location

The master warning and caution lights are on the P7 glareshield panel.

General Description

The two MASTER CAUTION lights are amber. They both come on whenever one of the annunciator lights comes on. The lights are push-to-reset. This makes the MASTER CAUTION and annunciator light go out.

The annunciators are two amber blocks of six lights each. Each light shows the system that has the fault. Push either annunciator for a test of all annunciators and the MASTER CAUTION lights.

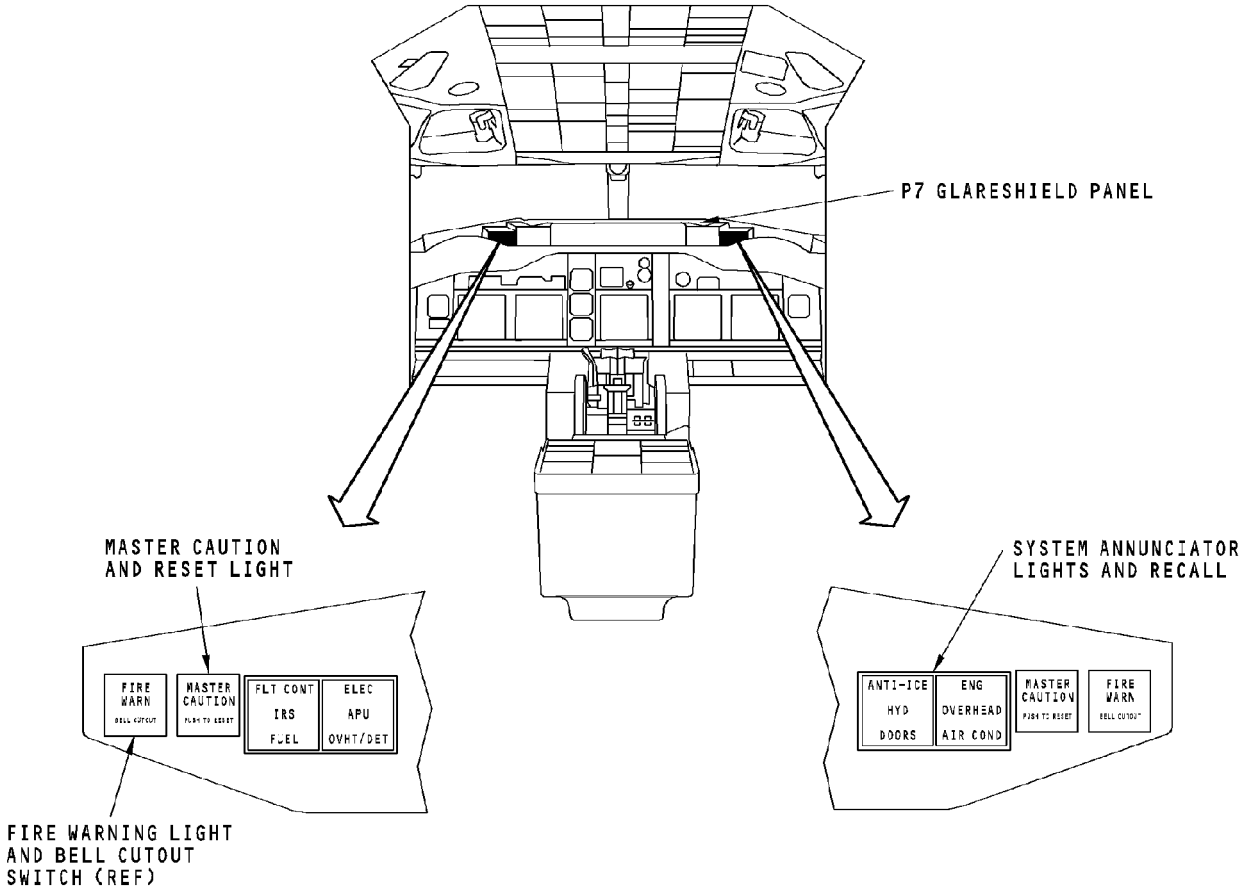
If a fault is detected, the particular annunciator and the two MASTER CAUTION lights come on. The lights go out by a push of either of the MASTER CAUTION lights.

Push either annunciator block to recall the light for the system that has the fault.

See the chapters and sections in AMM PART I for each annunciator function.

Training Information Point

Do not leave the MASTER CAUTION lights on when they are not necessary. Excessive heat can distort the lenses.



LIGHTS - INSTRUMENT AND PANEL LIGHTS - MASTER WARNING AND CAUTION LIGHTS

Purpose

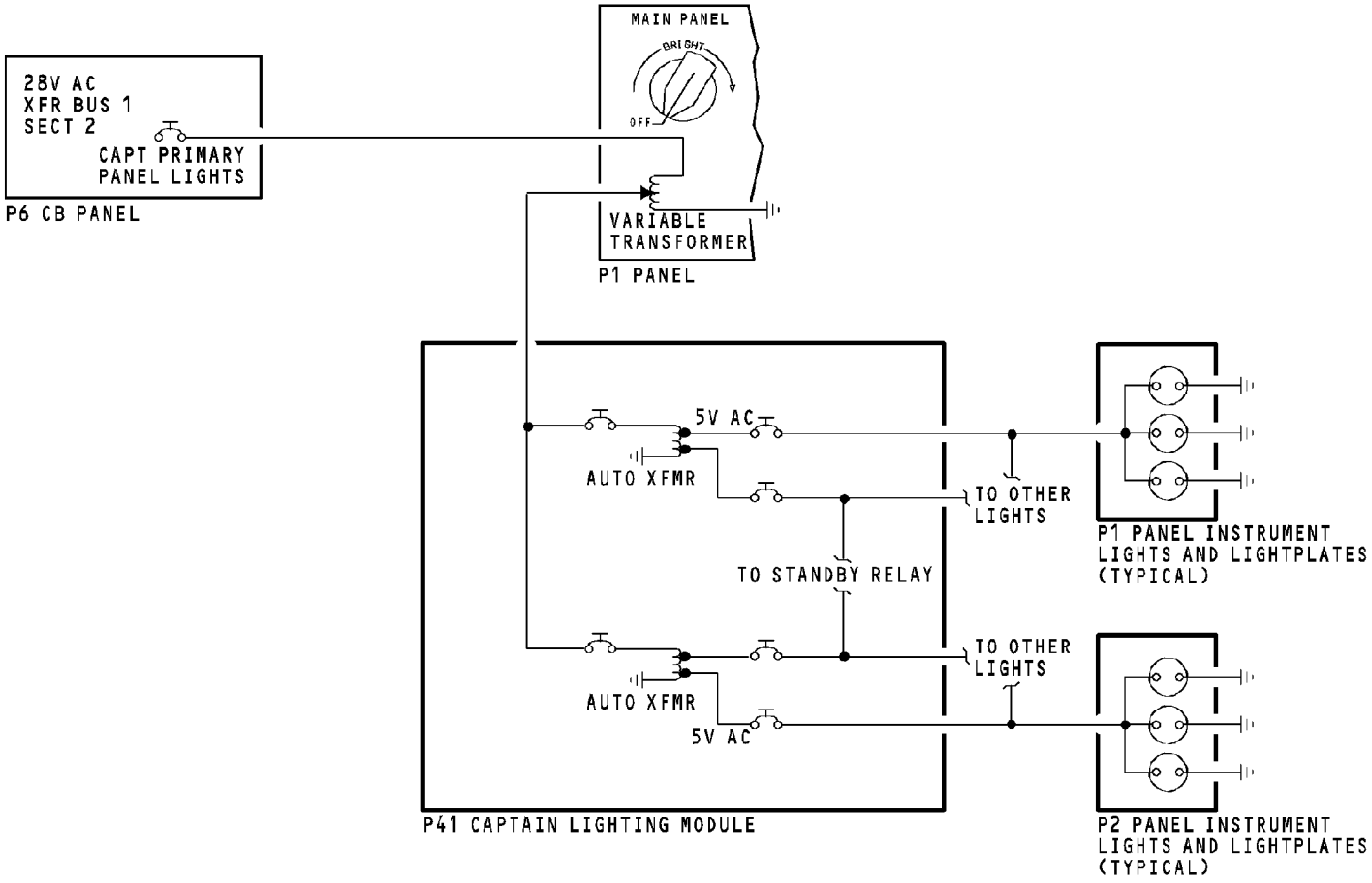
The captain instrument panel lights provide the illumination for the instruments and panels in front of the captain.

Functional Description

You control the intensity of instrument and panel illumination by the main panel variable transformer on the P1 panel. Turn the transformer knob clockwise to give brighter lights. Turn the transformer knob all the way counterclockwise to turn the lights off.

Power from the variable transformer goes to the auto transformer in the P41 captain lighting panel. From the auto transformer, 0 - 5v ac goes to the instrument and panel lights on P1 and P2 panels.

Circuit breakers on the P41 panel provide protection for the system.



LIGHTS - INSTRUMENT AND PANEL LIGHTS - CAPTAIN INSTRUMENT PANEL - FUNCTIONAL DESCRIPTION

33-11-00-011

EFFECTIVITY
HAP ALL

33-11-00

Purpose

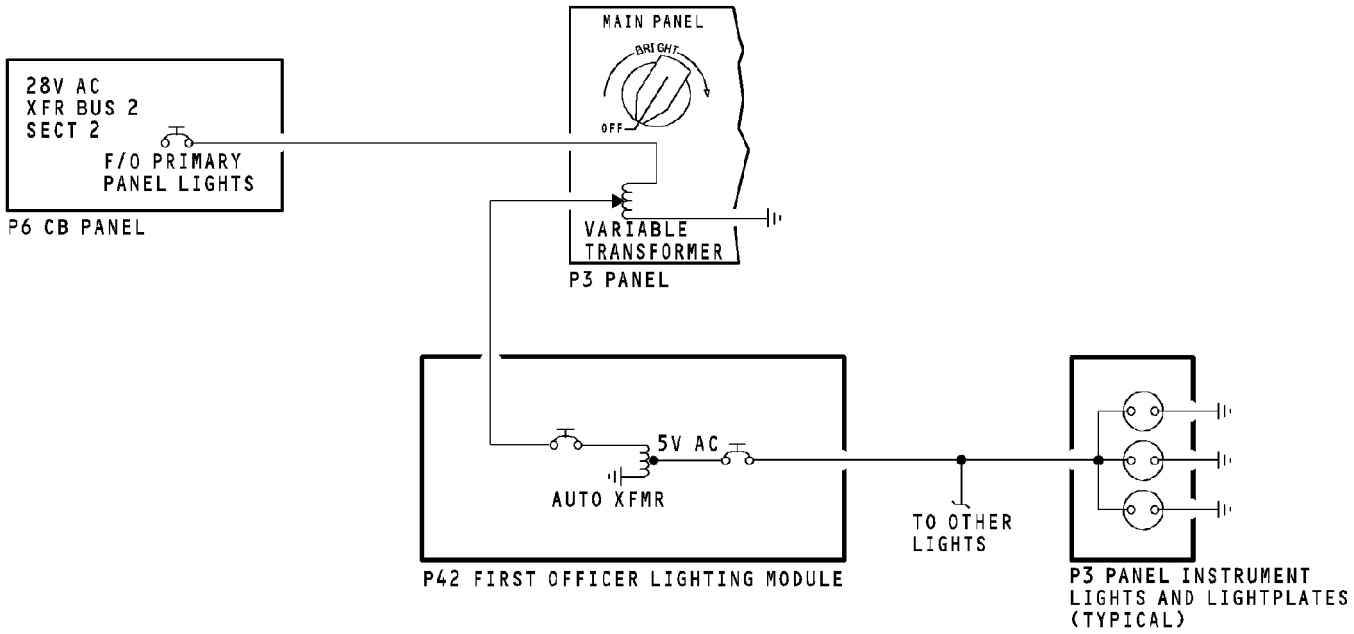
The first officer instrument panel lights provide the illumination for the instruments and panels in front of the first officer.

Functional Description

You control the intensity of instrument and panel illumination by the main panel variable transformer on the P1 panel. Turn the transformer knob clockwise to give brighter lights. Turn the transformer knob all the way counterclockwise to turn the lights off.

Power from the variable transformer goes to the auto transformer in the P42 first officer lighting panel. From the auto transformer, 0 - 5v ac goes to the instrument and panel lights on P3 panel.

Circuit breakers on P42 panel provide protection for the system.



Purpose

The standby instrument panel lights provide the illumination for the instruments and panels when normal power supply is not available.

Functional Description

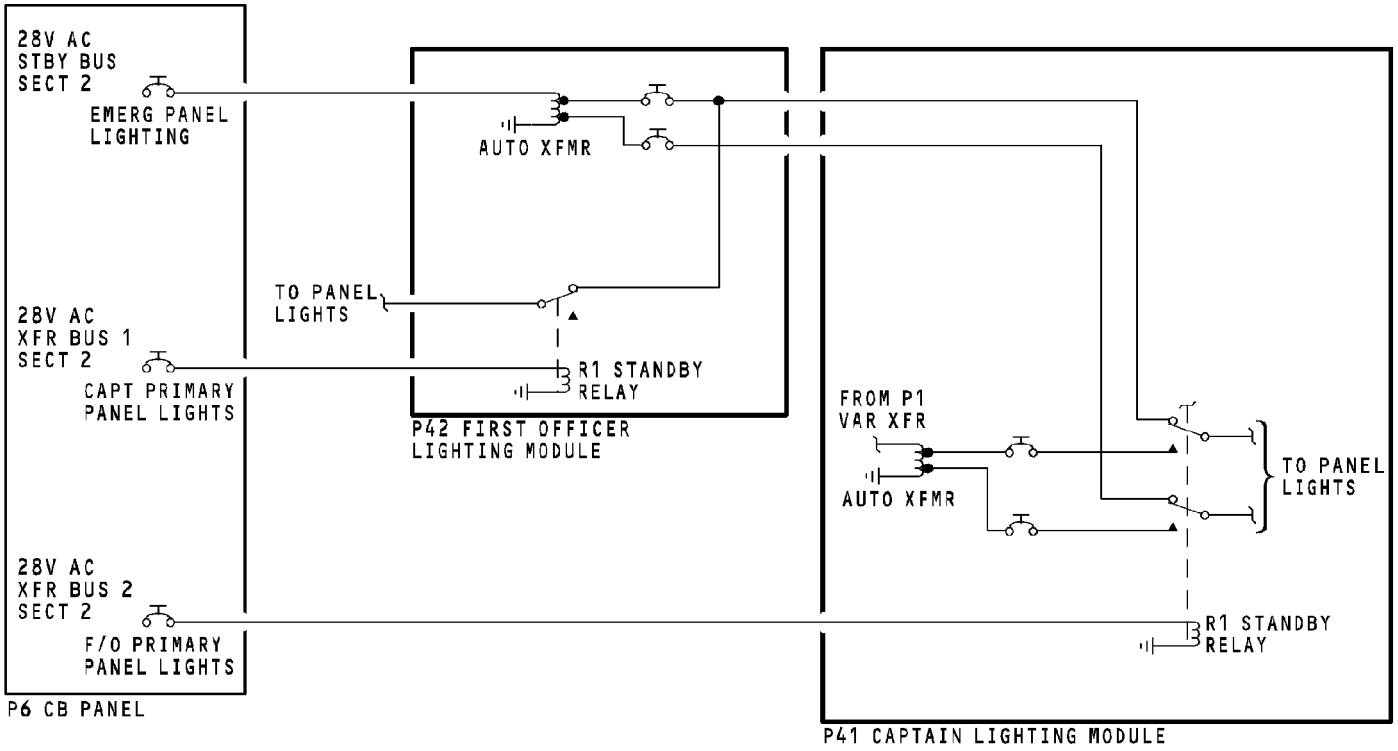
The instrument and panel lights for the captain and first officer are from the 28v ac transfer busses.

Relays R1 in the P41 and P42 panels are energized.

Relay R386 in P41 panel and relay R237 in P42 panel are energized.

When 28v ac power from transfer bus is not present, the relays deenergize. This connects the 28v ac standby bus to the auto transformer in the P42 panel. From the auto transformer, 5v ac goes to the instrument and panel lights on P1, P2, and P3 panels.

Circuit breakers on the P41 and P42 panels provide protection for the system.



Purpose

The control stand panel lights provide the illumination for the instruments and panels for the flight crew.

Functional Description

You control the intensity of instrument and panel illumination by the panel variable transformer on the P8 panel. Turn the transformer knob clockwise to give brighter lights. Turn the transformer knob all the way counterclockwise to turn the lights off.

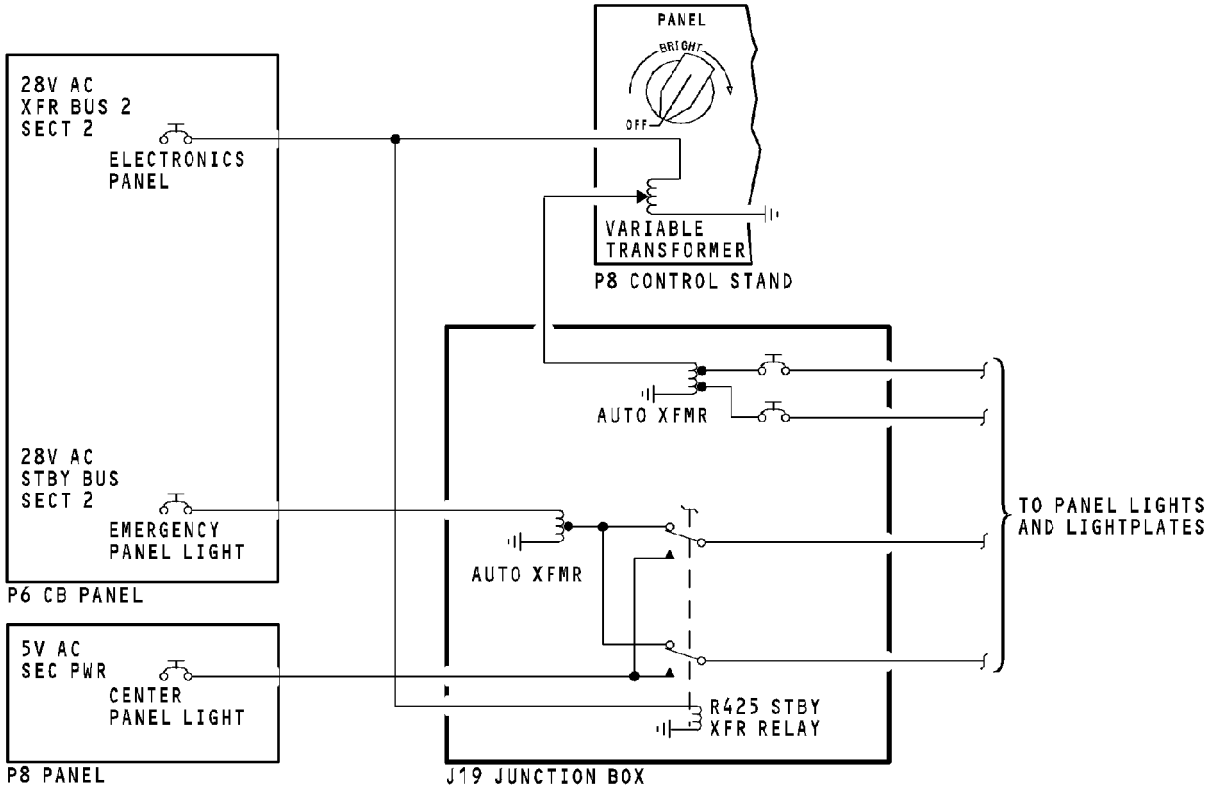
Power from the variable transformer goes to the auto transformer in the J19 junction box.

Power from the variable transformer goes to the auto transformer in the P8 panel.

From the auto transformer, 0 - 5v ac goes to the instrument and panel lights on P8 panel.

Relay R425 is normally energized. When normal 28v ac power is not present, the relay deenergizes. This connects the 28v ac standby bus to the instrument and panel lights on P8 panel.

Circuit breakers on the panels provide protection for the system.



LIGHTS - INSTRUMENT AND PANEL LIGHTS - CONTROL STAND - FUNCTIONAL DESCRIPTION

Purpose

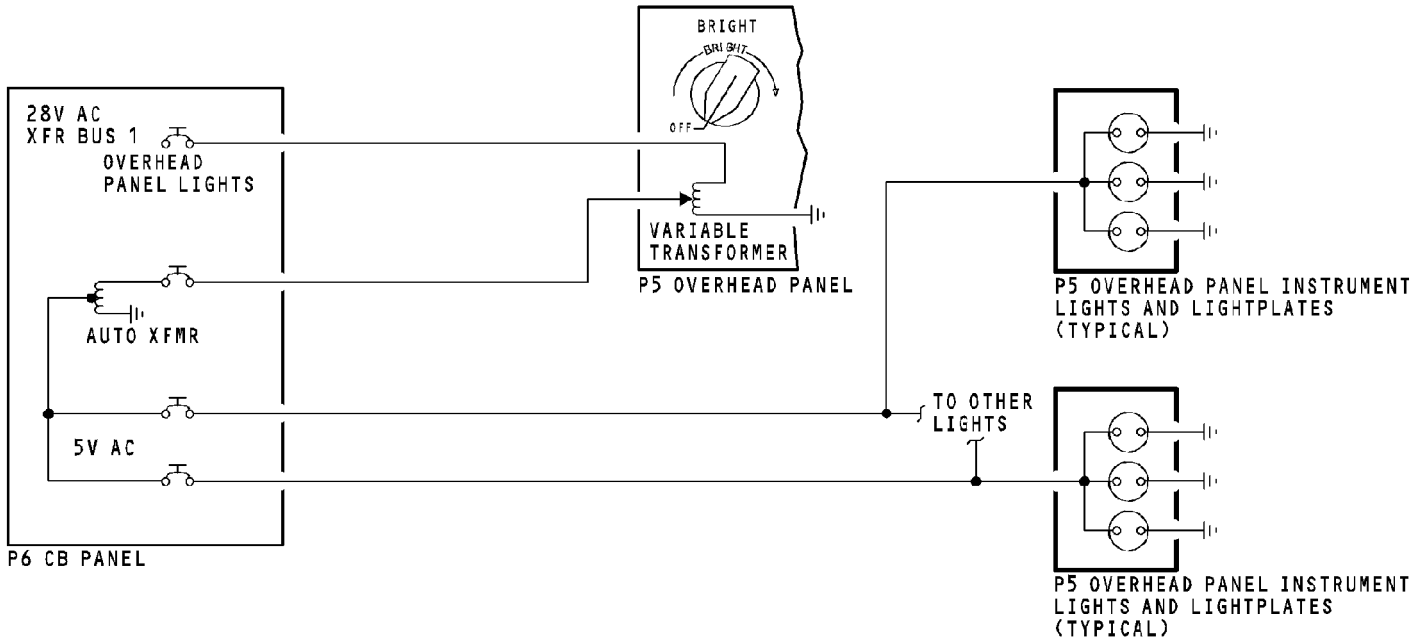
The overhead panel lights provide the illumination for the instruments and panels for the flight crew.

Functional Description

You control the intensity of instrument and panel illumination by the panel variable transformer on the P5 panel. Turn the transformer knob clockwise to give brighter lights. Turn the transformer knob all the way counterclockwise to turn the lights off.

Power from the variable transformer goes to the auto transformer in the P6 circuit breaker panel. From the auto transformer, 0 - 5v ac goes to the instrument and panel lights on P5 panel.

Circuit breakers on P6 panel provide protection for the system.



LIGHTS - INSTRUMENT AND PANEL LIGHTS - OVERHEAD PANEL - FUNCTIONAL DESCRIPTION

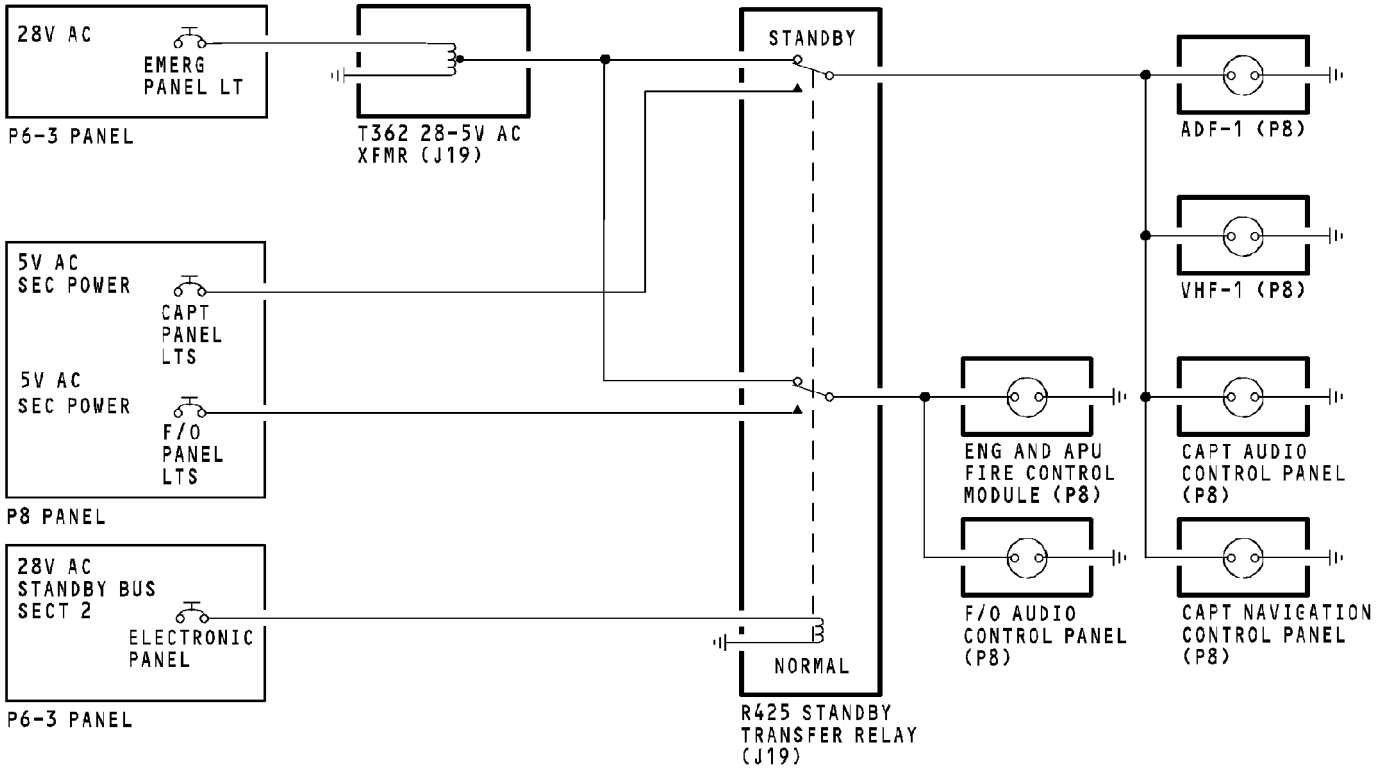
Purpose

Standby lights supply light to instruments that are necessary for flight safety.

The diagram below shows the standby circuit for systems on the P8 panel. Please refer to your wiring diagrams for other lights on the standby system.

Functional Description

When transfer bus 2 cannot supply power to the lights, the lights get power from the standby bus. When relay R425 cannot energize, the standby bus connects to the standby transformer, T362. The standby transformer supplies the 5v ac to the lights for the system.



LIGHTS - INSTRUMENT AND PANEL LIGHTS - STANDBY LIGHTING - FUNCTIONAL DESCRIPTION

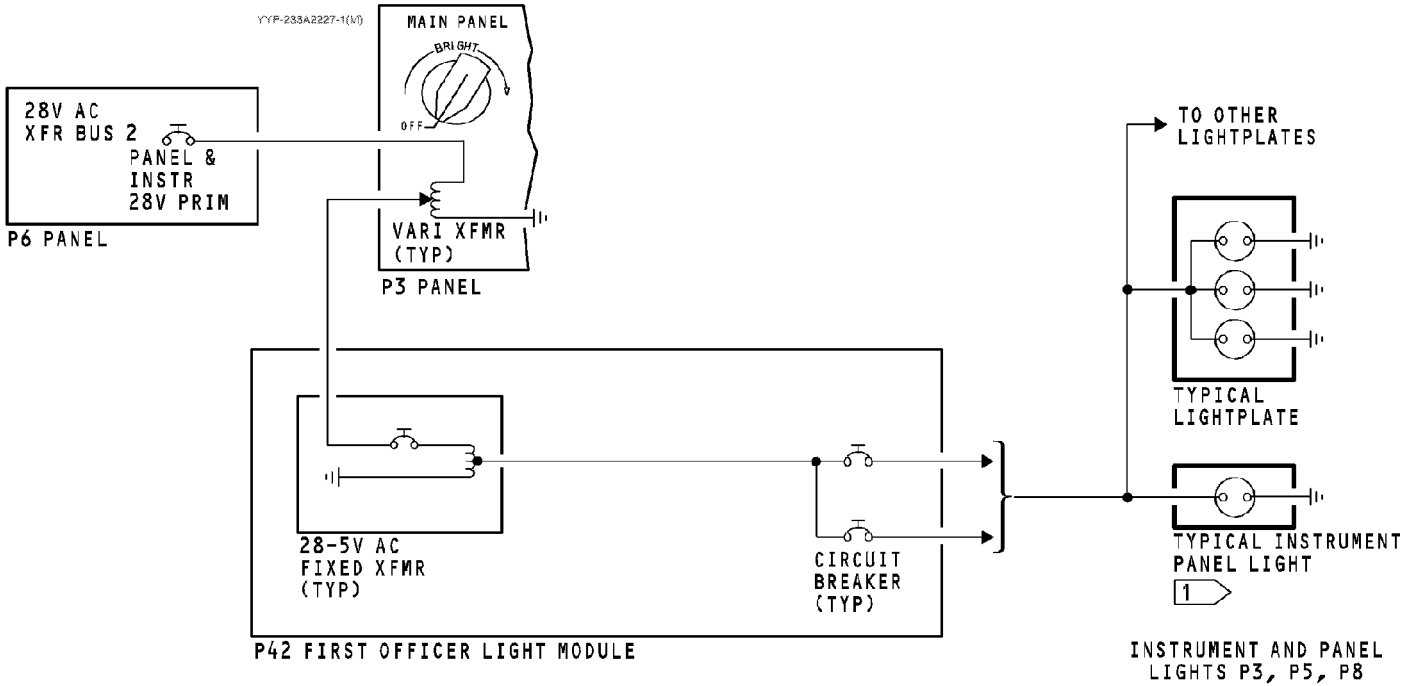
Operation

The OFF-BRIGHT control for the control stand (P8 panel), main panel (P3 panel) instrument and panel lights (P5 panel) adjusts the intensity the lamps.

Functional Description

The OFF-BRIGHT control is a variable transformer. The control knob turns to change the voltage available to two fixed transformers. These transformers are in the J19 junction box.

The two fixed transformers supply a maximum of 5v ac to the circuit breakers on the P42 panel. The 0-5v ac voltage from the circuit breakers causes the instrument and panel lights on the P5 panel to come on.



1 FUNCTIONAL OPERATION OF THE LIGHTPLATES AND INSTRUMENT LIGHTS ARE THE SAME FOR EVERY PANEL IN THE FLIGHT COMPARTMENT.

LIGHTS - INSTRUMENT AND PANEL LIGHTS - PANEL P3/P5/P8 - FUNCTIONAL DESCRIPTION

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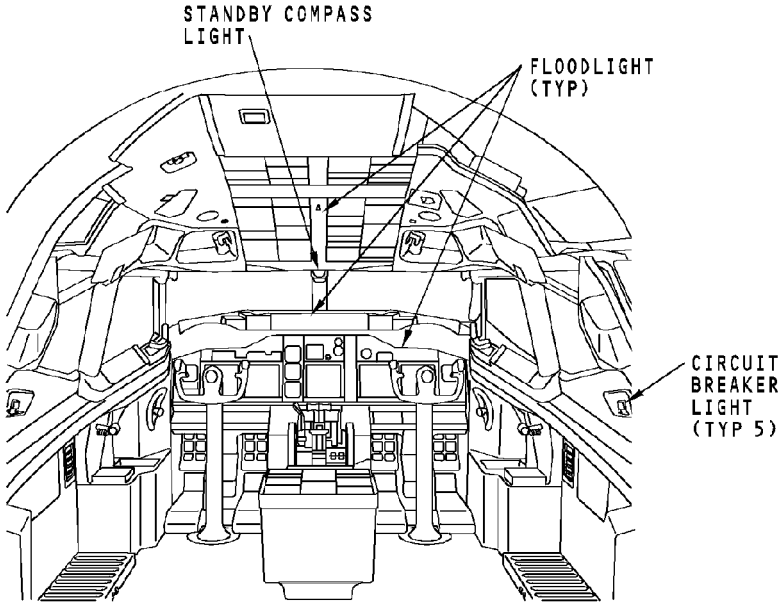
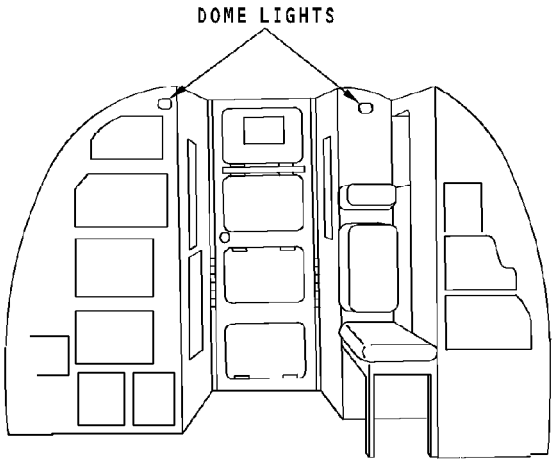
Purpose

The flight compartment miscellaneous lights supply light to specified areas in the flight compartment. These are the flight compartment miscellaneous lights:

- Standby compass
- Circuit breaker lights
- Dome lights
- Floodlights.





Purpose

The standby compass light supplies light to the standby compass card.

Location

The standby compass light is part of the standby compass. It is forward of the P5 panel.

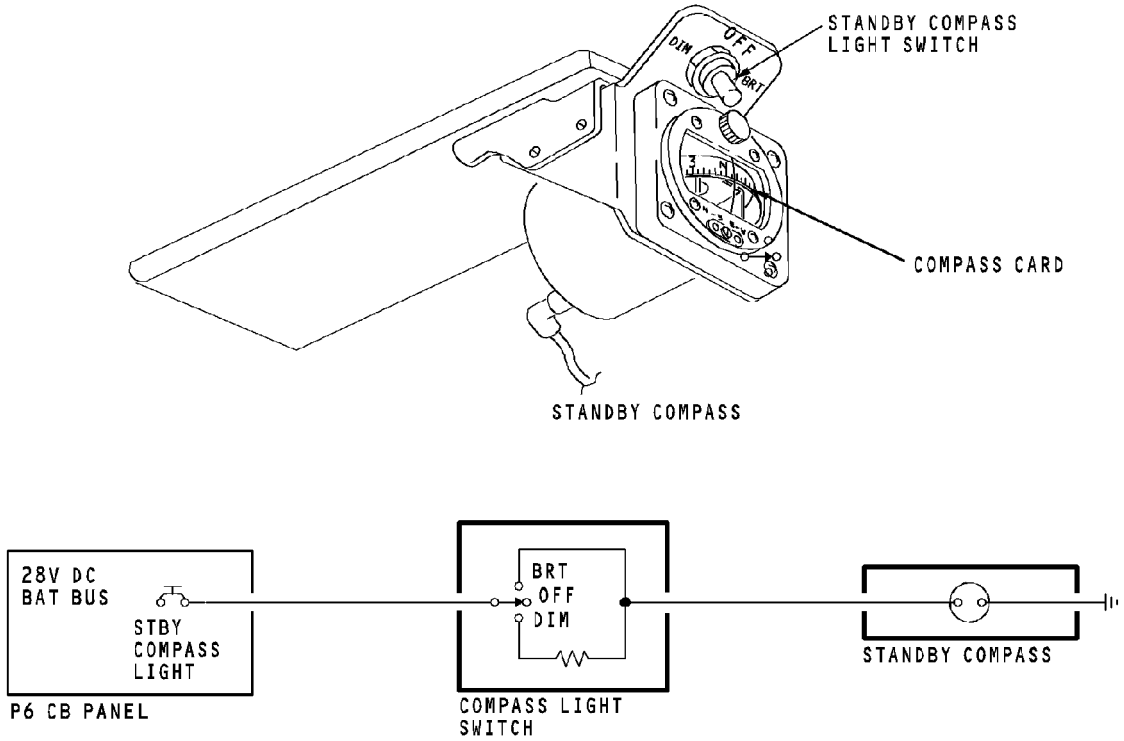
Operation

A three-position switch controls the standby compass light. The switch has these positions:

- OFF - no power to the light
- DIM - light on in the dim mode
- BRIGHT - light on in the bright mode.

Functional Description

Power to the standy compass light comes from the 28v dc battery bus. When the standby compass light switch is in the BRT position, 28v dc goes to the lamp. When the switch is in the DIM position, a resistor decreases power to the lamp. When the switch is in the OFF position, there is no power to the lamp.



LIGHTS - MISCELLANEOUS LIGHTS - STANDBY COMPASS LIGHT

Purpose

The P6 and P18 circuit breaker panels receive light from the circuit breaker panel lights.

Location

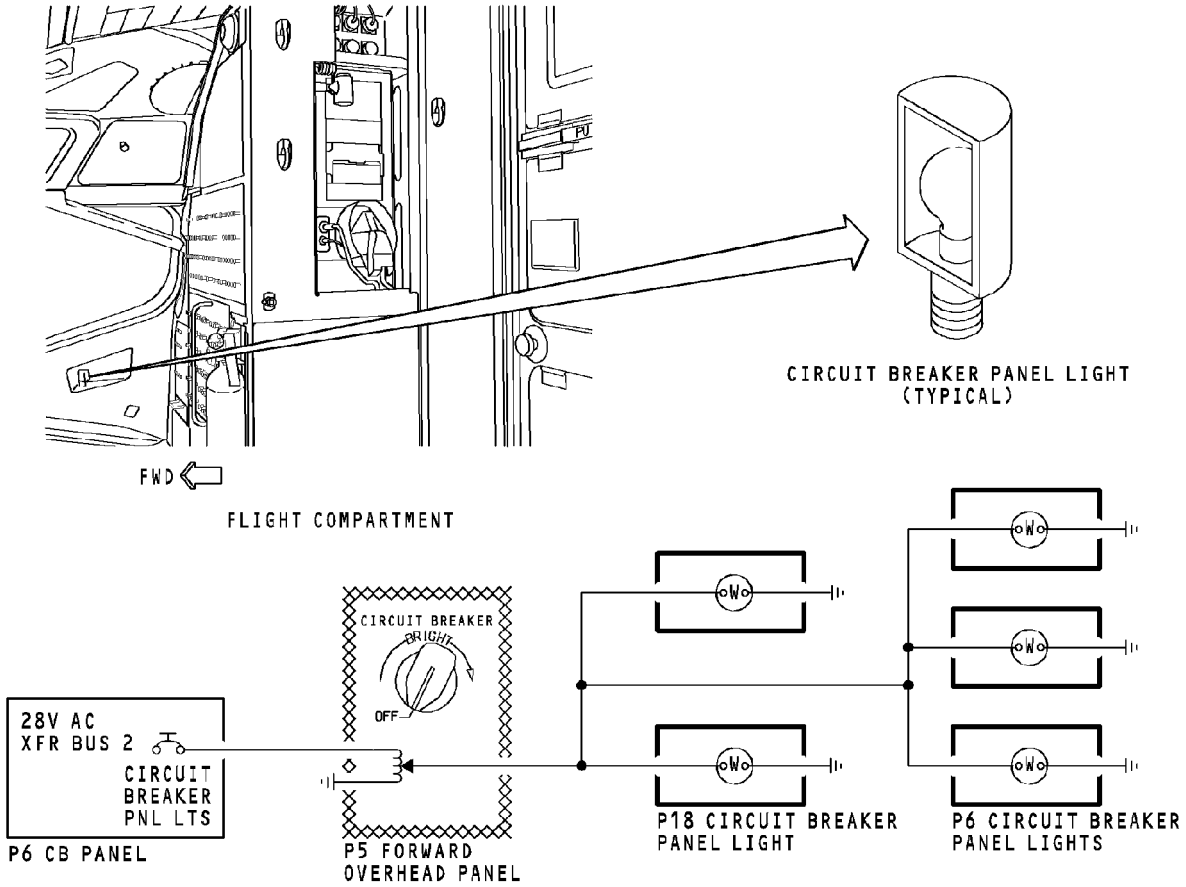
There are five circuit breaker panel lights in the flight compartment. These Lights are on the sidewalls, the ceiling and the floor. The control for the circuit breaker panel lights is on the P5 forward overhead panel.

Operation

You use the OFF-BRIGHT control on the P5 panel to adjust the intensity of the circuit breaker lamps.

Functional Description

The circuit breaker panel lights get 28v ac power through a variable transformer. You rotate the control to change the power to the circuit breaker panel lights.



LIGHTS - MISCELLANEOUS LIGHTS - CIRCUIT BREAKER PANEL LIGHTS

Purpose

The dome lights supply light to all of the flight compartment.

location

There are two dome lights. One is on the P6 panel. The other light is on the P18 panel.

Physical Description

Each light has these components:

- Lamp
- Screws (4)
- Lens
- Lens retainer.

Operation

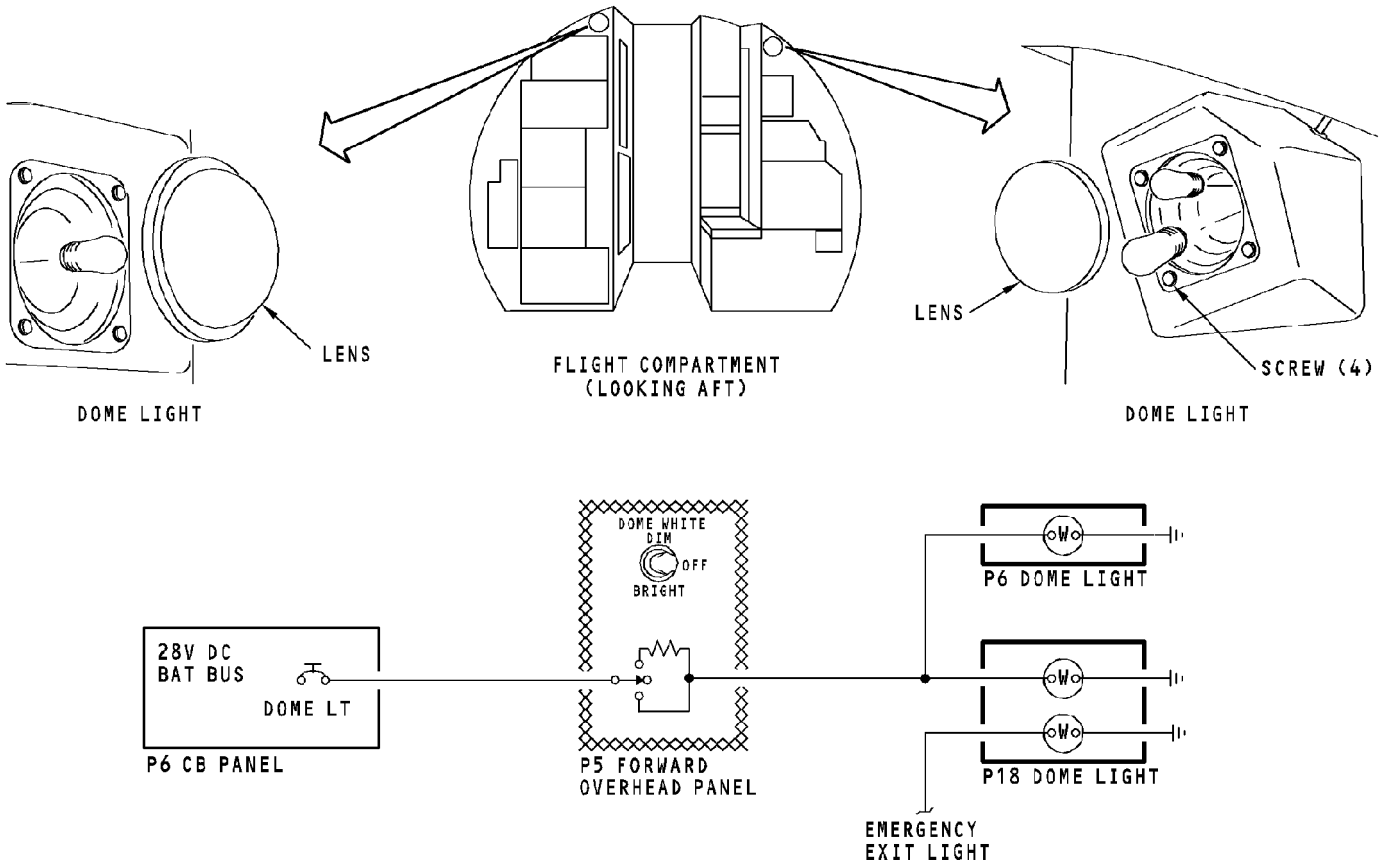
A three position switch on the P5 panel controls the dome lights. The switch has these three positions:

- OFF - no power to the light
- DIM - light on in the dim mode
- BRT - light on in the bright mode.

Functional Description

Power to the dome light is from the 28v dc battery bus. With the dome light switch in the BRIGHT position, 28v dc goes to the lamp. With the switch in the DIM position, a resistor decreases power to the lamp. With the switch in the OFF position, there is no power to the lamp.

The dome light on the P18 panel is a dual lamp assembly. One lamp is an emergency light for the flight compartment. It comes on with the emergency light system.



Purpose

The floodlights supply light to these panels:

- P1 captain instrument panel
- P2 center instrument panel
- P3 first officer instrument panel
- P7 lightshield panel
- P8 aft electronics panel
- P9 forward electronics panel.

Location

The floodlights for the P1, P2, P3, and P7 panels are above the panels. The control switch for these flood lights are on the P1 and P3 panels.

The floodlight for the P8 and P9 panels is above the aisle stand on the P5 panel. The control switch is on the aft left section of the P8 panel.

Physical Description

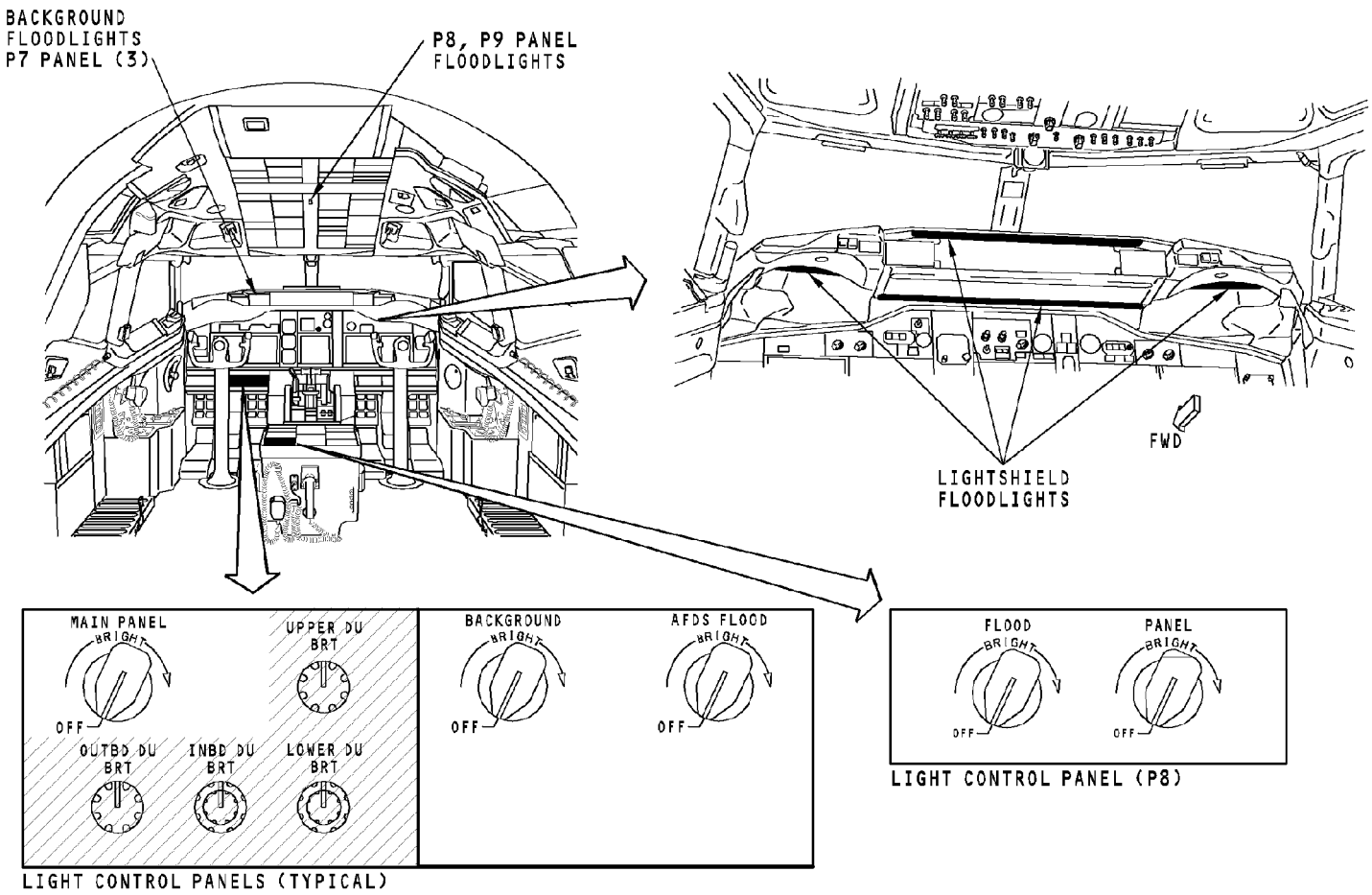
These are the two types of floodlights:

- Strip floodlights
- Spot flood lights.

The strip floodlight has many incandescent lights attached to a lens. Each spot floodlight is an incandescent bulb.

Operation

You can use the OFF-BRIGHT controls to adjust the intensity of the lamps.



LIGHT CONTROL PANEL (P8)

LIGHT CONTROL PANELS (TYPICAL)

Functional Description

The floodlights can operate in two modes, normal and standby. Not all floodlights can operate in the standby mode.

You control the AFDS (glareshield P7) control panel floodlights with the glareshield bright/dim control. The panel floodlights receive power from the 115v ac transfer bus. These lights do not operate in the standby mode.

You operate the control stand floodlight from the floodlight control switch on the P8 panel. The control stand floodlight does not operate in the standby mode.

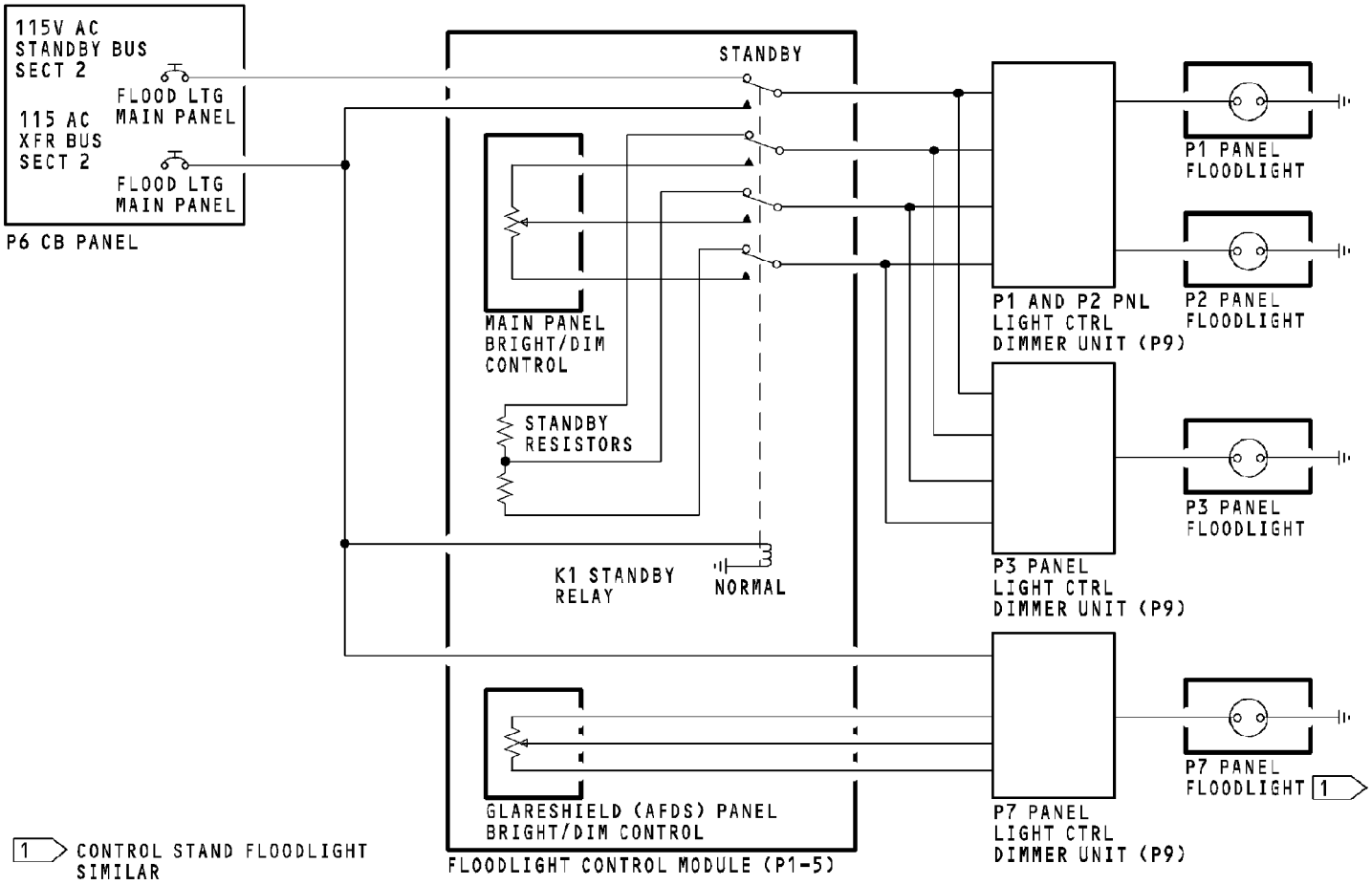
Normal Mode

In the normal mode, you can adjust the intensity from the floodlight. In the standby mode, the light intensity cannot change.

When the 115v ac transfer bus has power, the K1 standby relay energizes. This connects the main panel bright/dim control to the main panel floodlight dimmer control unit. When you push and turn this control on the P1 panel, it adjusts the resistance to the main panel floodlight dimmer control unit. This unit uses the input to adjust the light from the three main panel floodlights for the captain (P1), first officer (P3), and the center (P2) panels.

Standby Mode

When the 115v ac transfer bus does not have power, the standby relay de-energizes. In the standby mode, the resistance to the main panel floodlight dimmer control unit is set by the standby resistors. In this mode, the intensity cannot be adjusted. The light from the glareshield floodlights also cannot be adjusted.



LIGHTS - MISCELLANEOUS LIGHTS - FLOOD LIGHTS - FUNCTIONAL DESCRIPTION

EFFECTIVITY
HAP ALL

33-14-00

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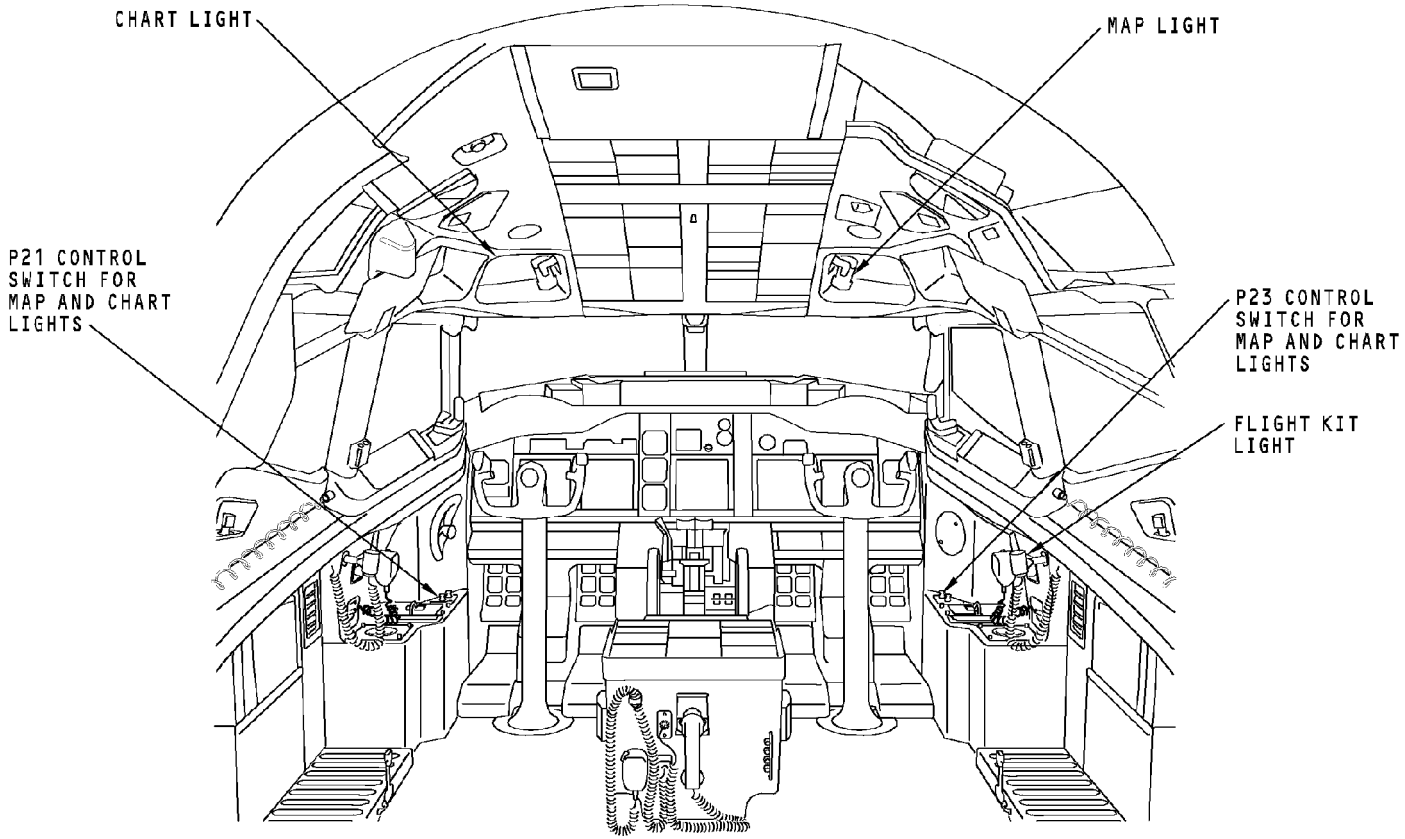
Purpose

The flight crew lights are reading lights for the flight crew. The lights are adjustable. These are the flight compartment reading lights:

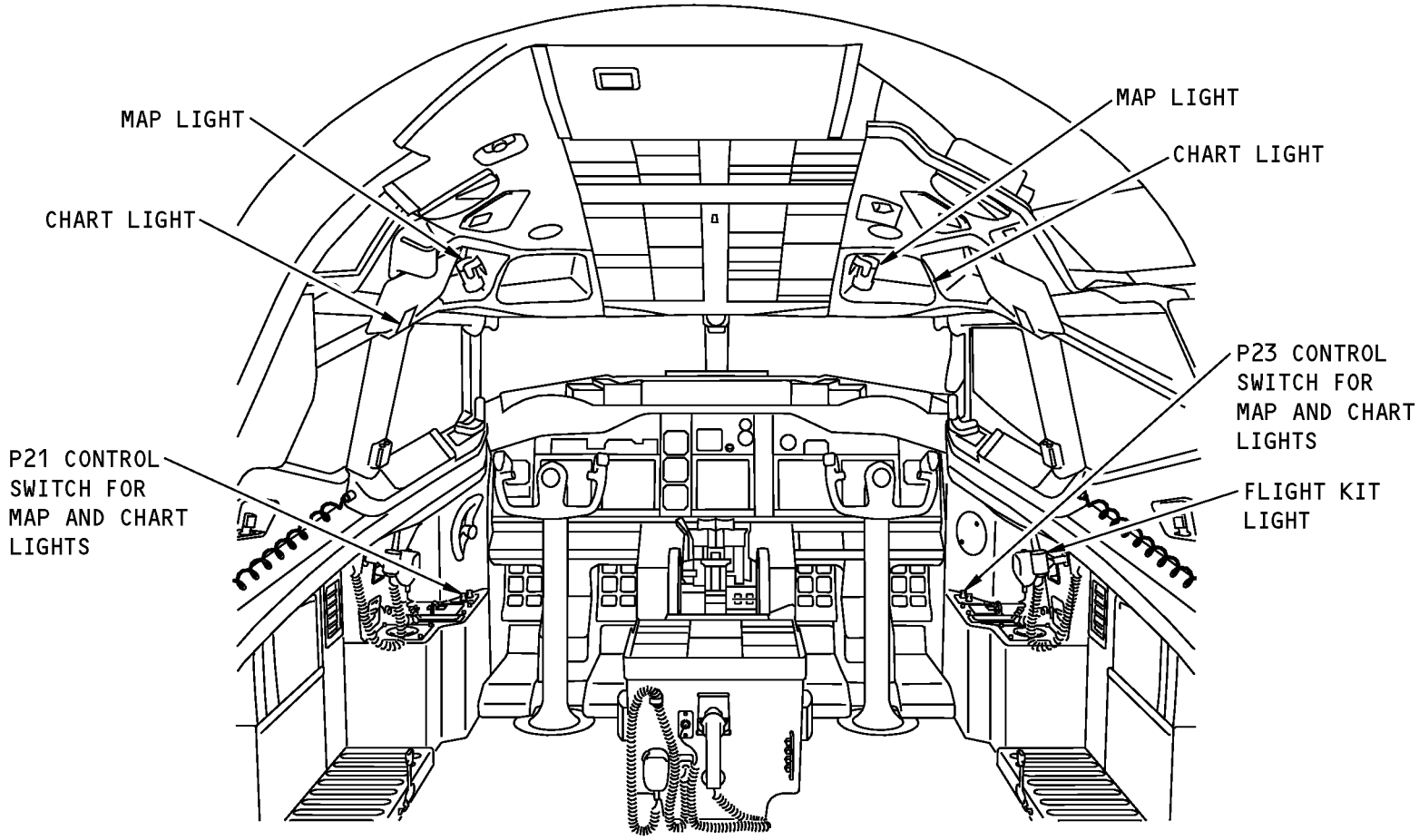
- Flight kit light (2)
- Map light (2)
- Chart light (2)
- Observer reading lights.



LIGHTS - FLIGHT CREW LIGHTS - INTRODUCTION

EFFECTIVITY

HAP 001-013, 015-026, 048-053, 107-999



LIGHTS - FLIGHT CREW LIGHTS - INTRODUCTION

EFFECTIVITY
HAP 028-047, 054, 101-106

33-17-00

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Purpose

The flight kit lights give a mobile light source in the flight deck.

location

These are the locations of the flight kit lights in the flight compartment:

- P21 panel (captain) flight kit light
- P23 panel (first officer) flight kit light.

Physical Description

The flight kit light has these components:

- Light control
- Housing
- lamp
- lens
- Retaining ring
- Cord
- Base.

The lens cap can make the light white or red. The light disconnects from the base. The cord is 100 inches (254 cm) long when extended to the full length.

Operation

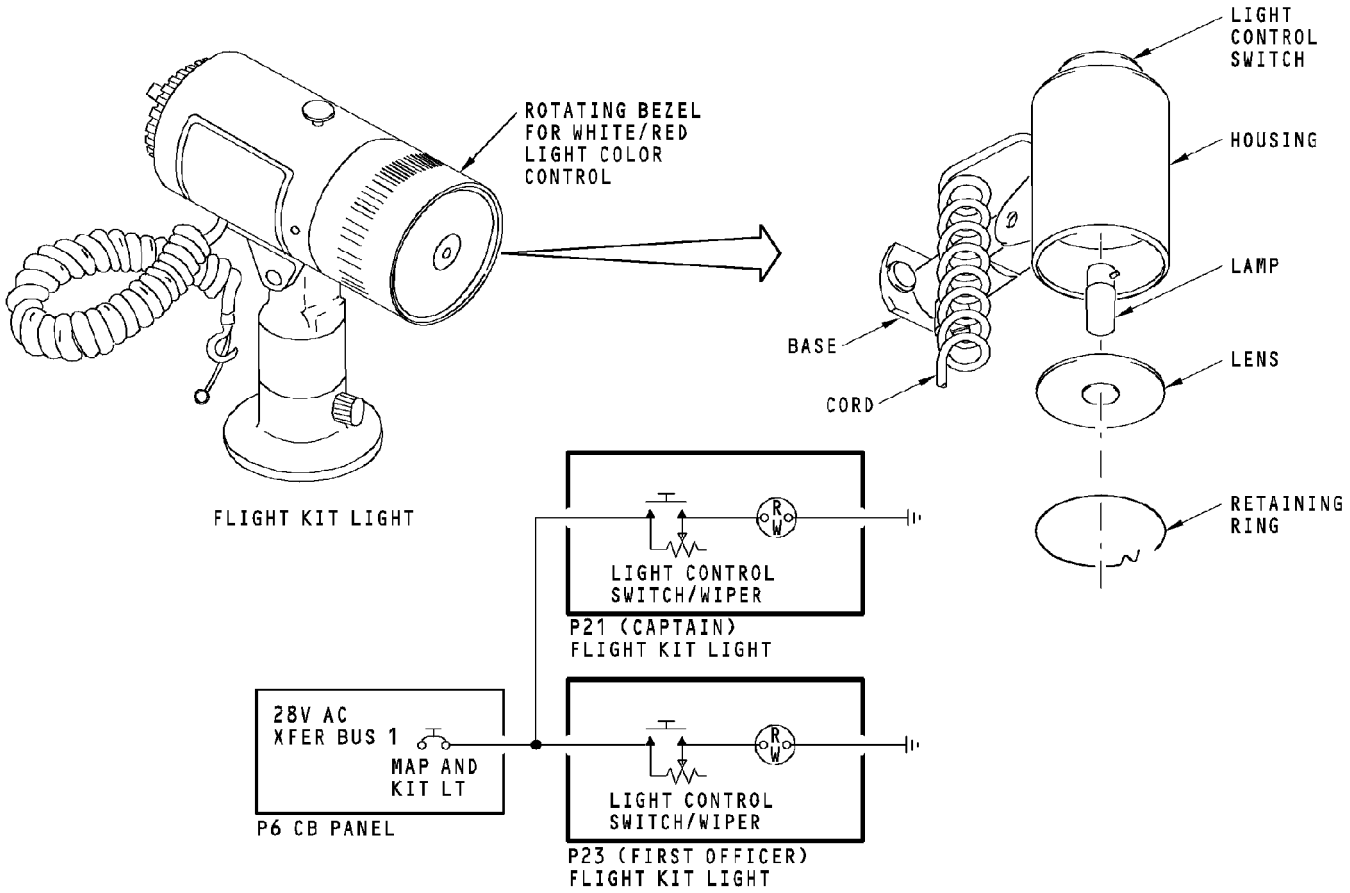
You turn the light control to make the light come on and to adjust the light intensity. When you push the light control, the light comes on until you release the control.

Functional Description

For the light to come on, a switch closes and sends power to the light. A wiper arm adjusts the quantity of power to the lamp. The light has a push to operate function. This makes the light stay on when you push the switch.

Training Information Point

You must remove the retaining clip and rotate the light control to the white position to get access to the lamp. The lamp is a bayonet-style lamp.



Purpose

The map lights supply adjustable light for the captain and first officer.

Location

There are two map lights in the flight compartment. There is one above the captain and the first officer seats. They are adjacent to the No. 4 windows.

There are pull-up and rotate controls for the map light on these panels:

- P21 (captain) map light module
- P23 (first officer) map light module.

Physical Description

Each light has an upper and lower half. The lamp is a bayonet-style lamp.

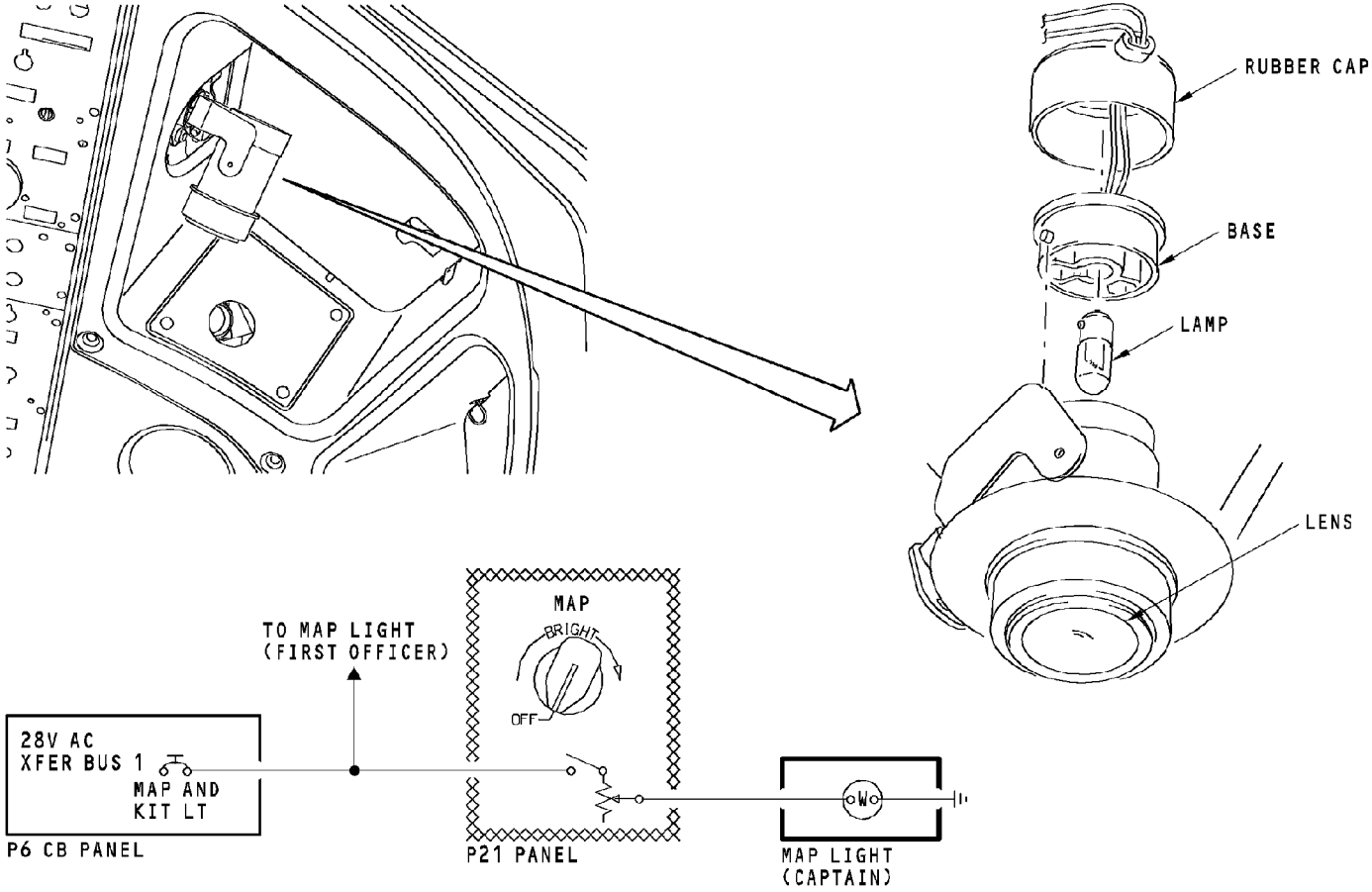
Operation

The light comes on when you pull the switch up. You turn the control switch to adjust the map light intensity. You turn the bezel to adjust the area of the light.

You can control the adjustment and diameter of light. You can also point the light.

Training Information Point

To replace the map light, you must remove the back cover. The lamp is a bayonet-style lamp.



LIGHTS - FLIGHT CREW LIGHTS - MAP LIGHTS

Purpose

The chart light supplies light to the clip board area.

Location

There are two chart lights, one for the captain and one for the first officer. They are above the No. 4 windows.

There are pull-up and turn controls for the chart light on these Panels:

- P21 (captain) chart light
- P23 (first officer) chart light.

Physical Description

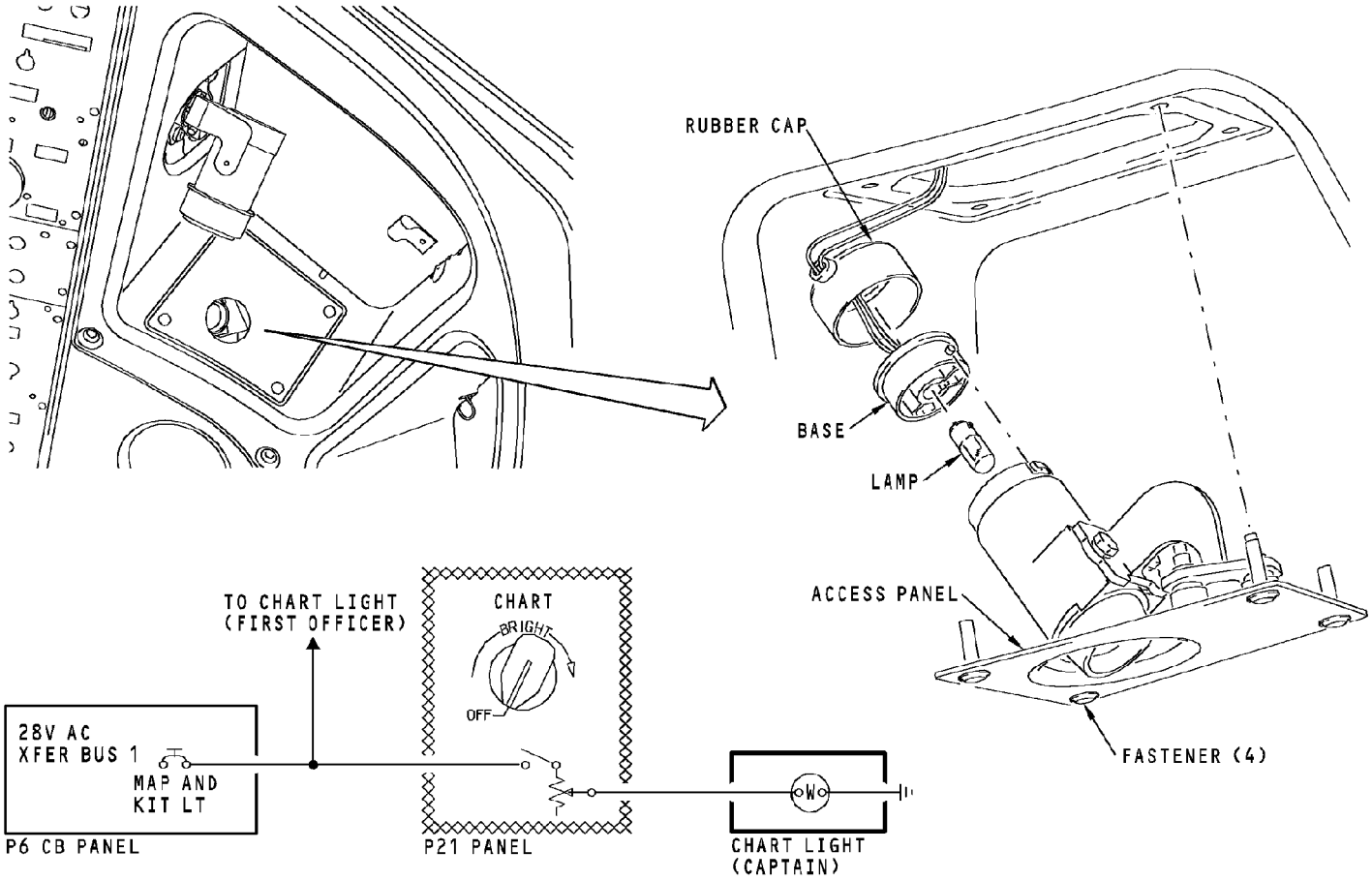
Each light has an upper and lower half. The lamp is a bayonet-style lamp.

Operation

You use the CHART light controls to make the chart light come on and go off. The controls are on the P21 and P23 panels.

Training Information Point

To replace the chart light, you must remove the upper half. The lamp is a bayonet-style lamp.



LIGHTS - FLIGHT CREW LIGHTS - CHART LIGHTS

Purpose

HAP 001-013, 015-026, 028-030, 041, 047, 049, 050, 054

The observer reading lights supply light to the first and second observer positions.

HAP 031-040, 042-046, 048, 051-053, 101-999

The observer reading light supplies light to the first observer position.

HAP ALL

Location

HAP 001-013, 015-026, 028-030, 041, 047, 049, 050, 054

The first observer reading light is on the P6 panel. The second observer reading light is on the P18 panel.

HAP 031-040, 042-046, 048, 051-053, 101-999

The observer reading light is on the P6 panel.

HAP ALL

Operation

You turn the light control to make the light come on and to adjust the light intensity. When you push the light control, the light comes on until you release the control.

Training Information Point

HAP 001-013, 015-026, 028-030, 041, 047, 049, 050, 054

The observer reading lights are interchangeable with the flight kit lights.

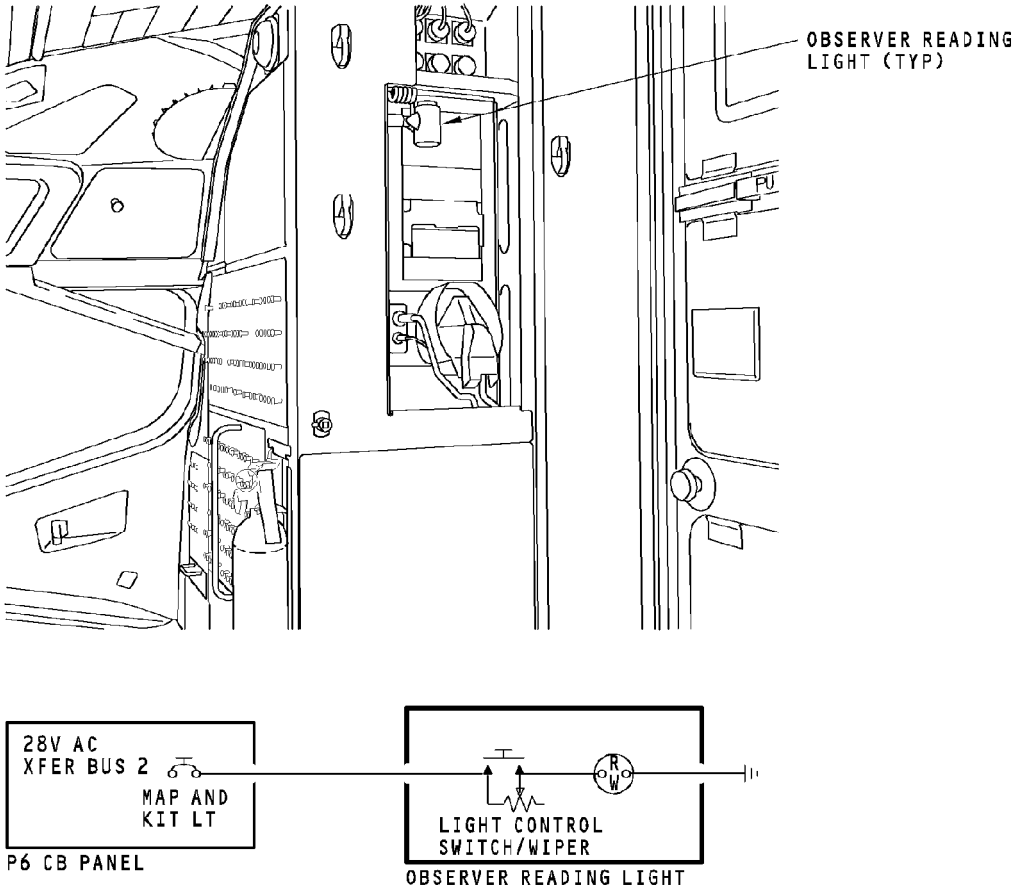
HAP 031-040, 042-046, 048, 051-053, 101-999

The observer reading light is interchangeable with the flight kit lights.

HAP ALL

EFFECTIVITY

HAP ALL



LIGHTS - FLIGHT CREW LIGHTS - OBSERVER READING LIGHTS

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LIGHTS - MASTER DIM AND TEST - INTRODUCTION

Purpose

The master dim and test (MD&T) system lets you do these tasks:

- Do a test of the flight compartment annunciators and lighted push-button switches
- Set annunciators and lighted push-button switches to the bright or dim mode.

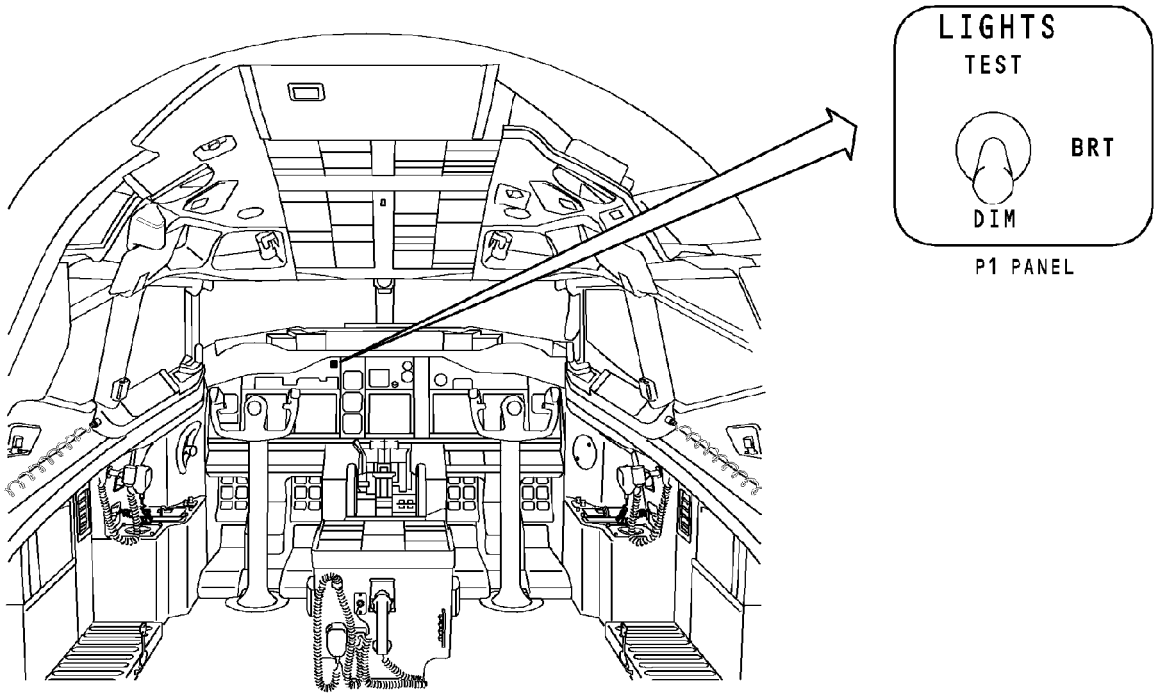
Location

A master dim and test switch (TEST/BRT/DIM) is on the P1 main instrument panel. The annunciation and dimming module is in the P6 circuit breaker panel together with relays and modules for the master dim and test system.

Interface

The MD&T system controls the bright, dim, and test of lights in these panels in the flight compartment:

- P1
- P2
- P3
- P5
- P7
- P8
- P9.



LIGHTS - MASTER DIM AND TEST - INTRODUCTION

LIGHTS - MASTER DIM AND TEST - FUNCTIONAL DESCRIPTION

Functional Description

The flight compartment indicating lights are on various panels. The lights are one of these two types:

- Ground seeking
- Power seeking.

The ground seeking light has power and the ground is connected by the action of the system the light monitors.

The power seeking light has ground and the power is connected by the action of the system the light monitors.

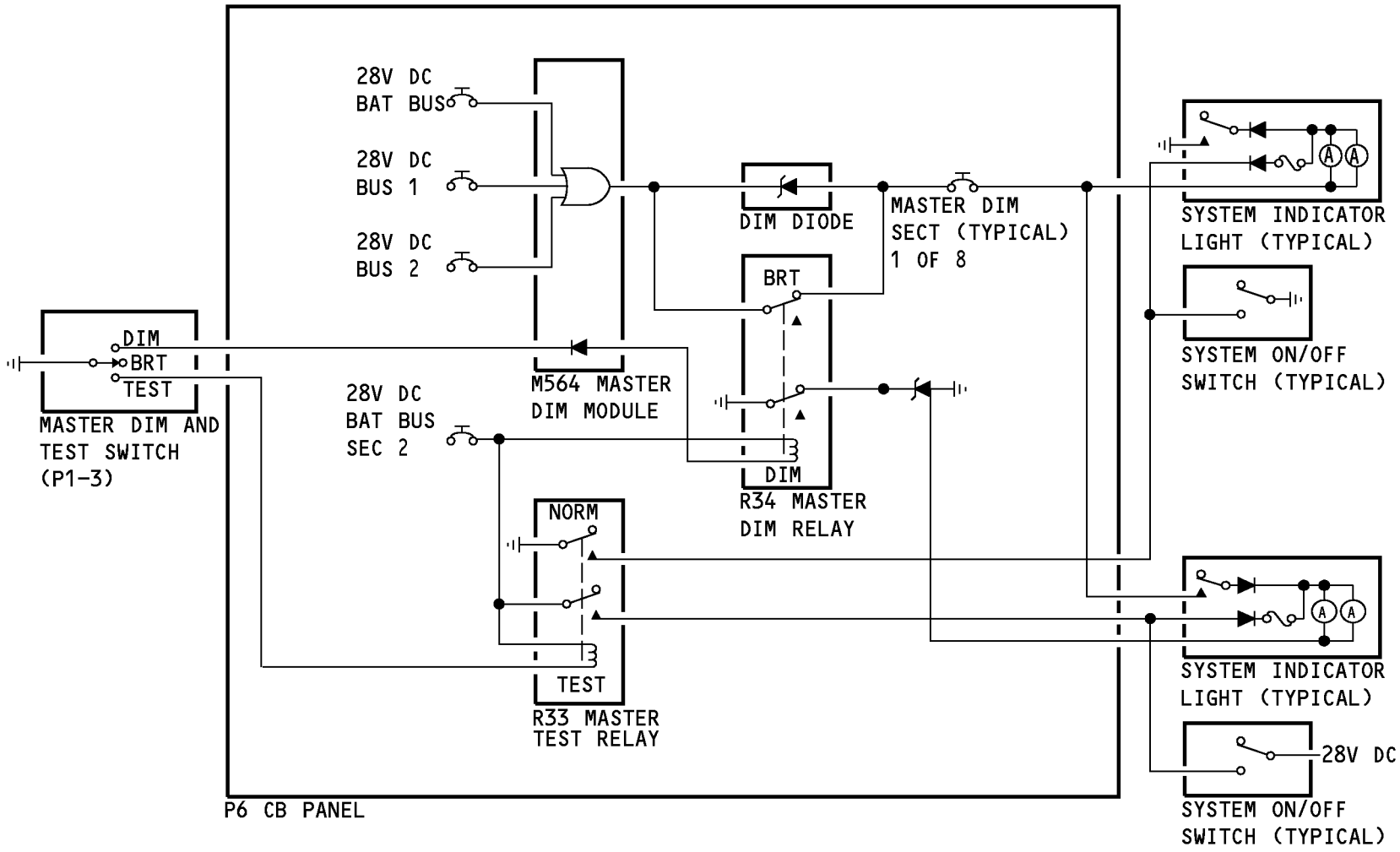
The indicating lights (red, amber, blue, and green) are press-to-test. The lights can be bright or dim by the master dim and test (MD&T) switch on the P1-3 panel.

When the MD&T switch is in the bright (BRT) position, relays R33 and R34 are deenergized. Power for the ground seeking lights and ground for the power seeking lights goes through relay R33. When the MD&T switch is in the DIM position, relay R34 energizes and power and ground goes through the zener diodes.

In the TEST position, relay R33 energizes. This supplies power and ground to make all of the indicating lights come on bright.

Training Information Point

The fire warning system has its own test switch on the P8 panel.



LIGHTS - MASTER DIM AND TEST - FUNCTIONAL DESCRIPTION

33-18-00-002

EFFECTIVITY
HAP ALL

33-18-00

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LIGHTS - PASSENGER COMPARTMENT - INTRODUCTION

Purpose

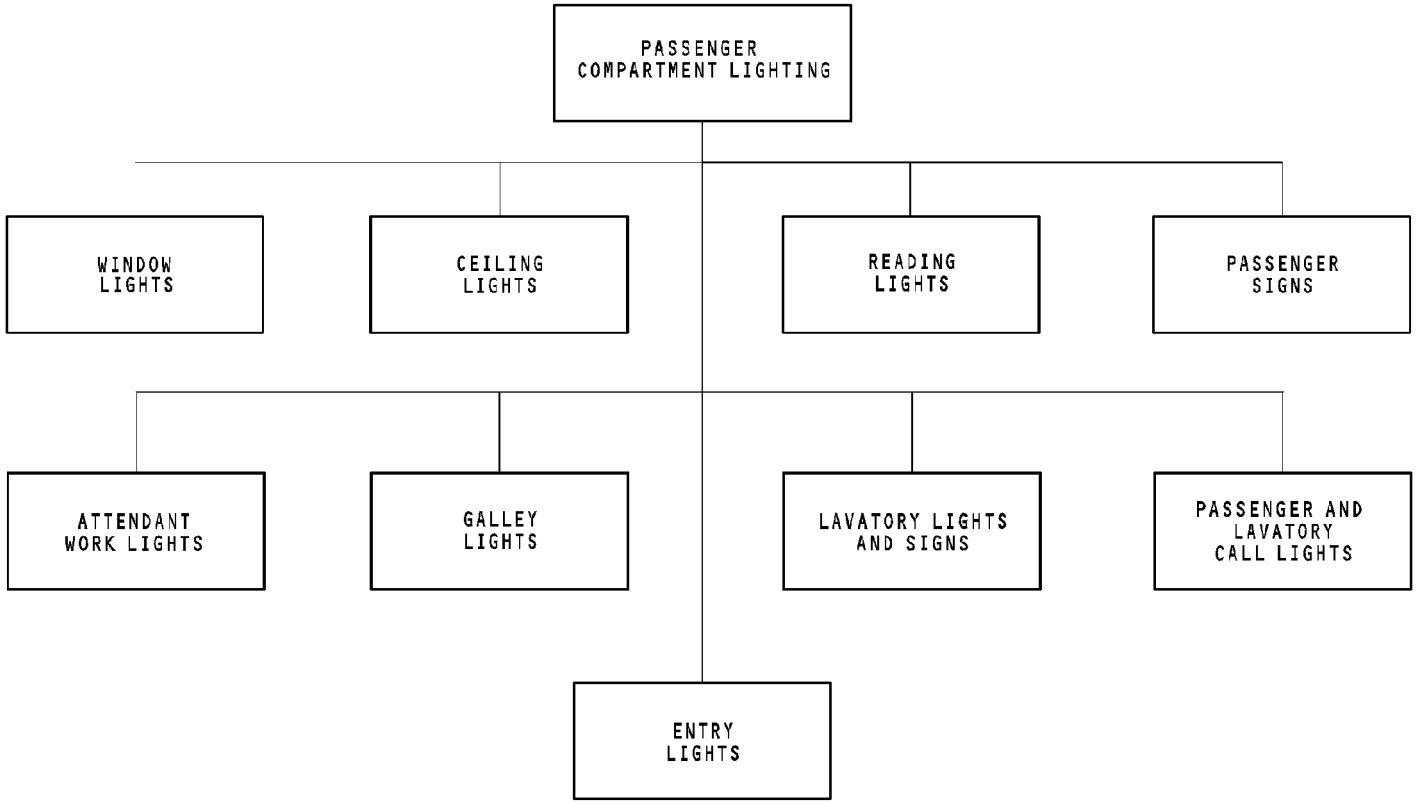
The lights in the passenger compartment supply these functions:

- General light in the passenger cabin
- Reading lights
- Information lights for the passengers and attendants
- Lights in the lavatories
- Lights in the galleys.

The light system also lets the passenger call the attendants for aid.

The passenger compartment lights has these subsystems:

- Window lights
- Ceiling lights
- Reading lights
- Passenger signs
- Lavatory lights and signs
- Passenger and lavatory call lights
- Attendant work lights
- Galley lights
- Entry lights.



LIGHTS - PASSENGER COMPARTMENT - INTRODUCTION

Purpose

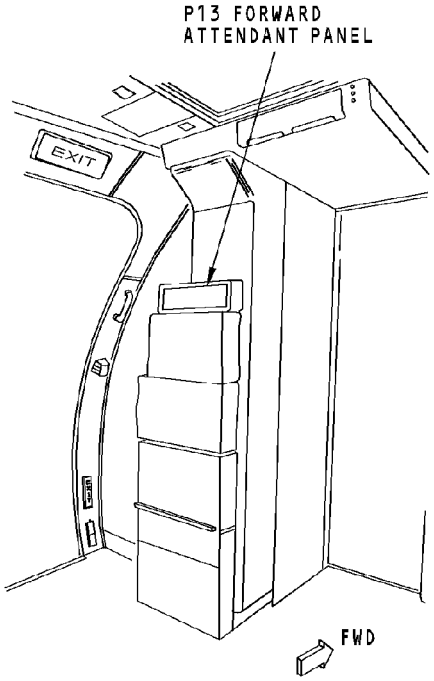
You control these passenger cabin lights from the forward and aft attendant panels:

- Ceiling
- Window
- Entry
- Work
- Emergency (aft panel only).

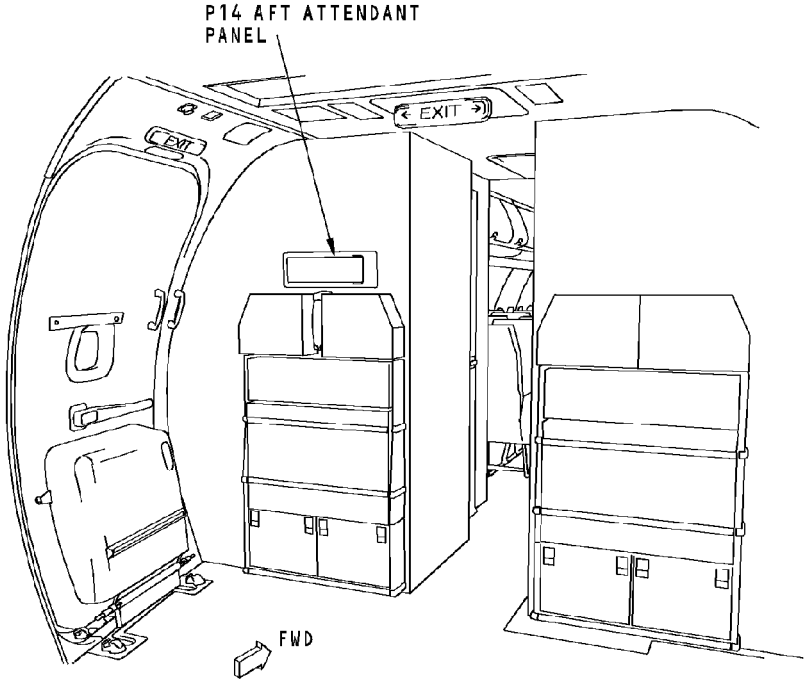
Location

The P13 forward attendant panel is on the forward lavatory wall.

The P14 aft attendant panel is on the aft lavatory wall.



FORWARD ATTENDANT STATION



AFT ATTENDANT STATION

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Purpose

The window lights supply lighting to the areas below the stowage bins in the passenger compartment.

Physical Description

The window lights use fluorescent lamps. The ballast assembly is in the lamp support assembly. The ballast assembly supplies power to the fluorescent lamps in its own lamp assembly and to the adjacent lamp assembly.

The window lights have these components:

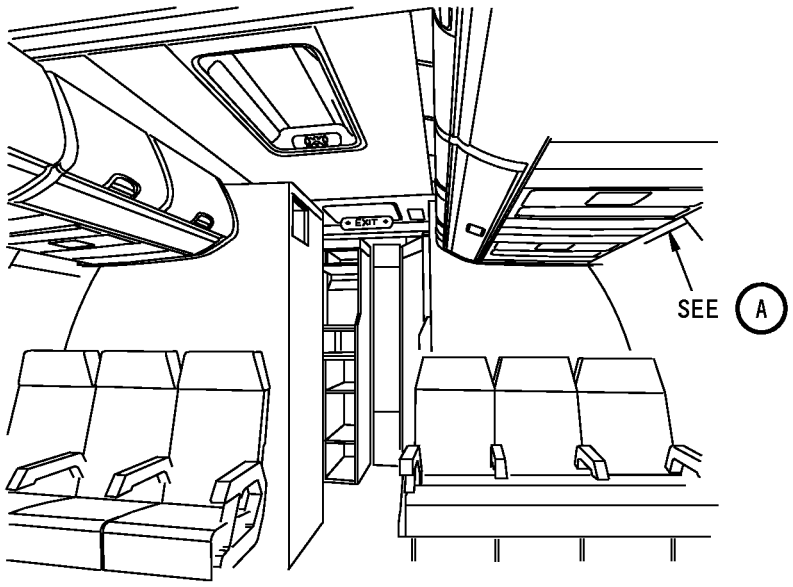
- Ballast assembly (on every other lamp support)
- Fluorescent lamp tube
- Lens.

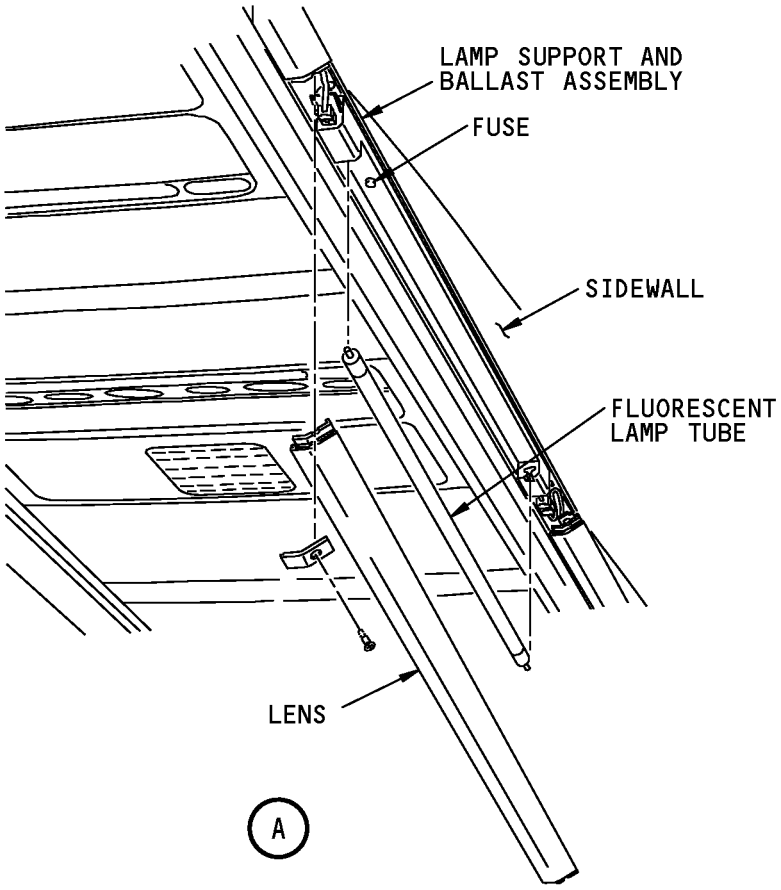
Location

The window lights are on the extrusion between the PSU and the sidewall panel above the windows

Training Information Point

Usually two adjacent window light assemblies are powered by one primary and one secondary ballast. The primary ballast is connected to 115V AC and supplies conditioned power to its lamp and to the secondary ballast. If two adjacent lamps fail or flicker, the primary ballast may be inoperative. If only one lamp fails, the lamp or ballast for that window light may be inoperative.





M85129 S0004628176_V2

LIGHTS - WINDOW LIGHTS - INTRODUCTION

EFFECTIVITY

HAP ALL

33-21-00-001

33-21-00

Operation

A three-position switch on the forward attendant panel controls the window lights. These are the positions of the switch:

- OFF
- BRT
- DIM.

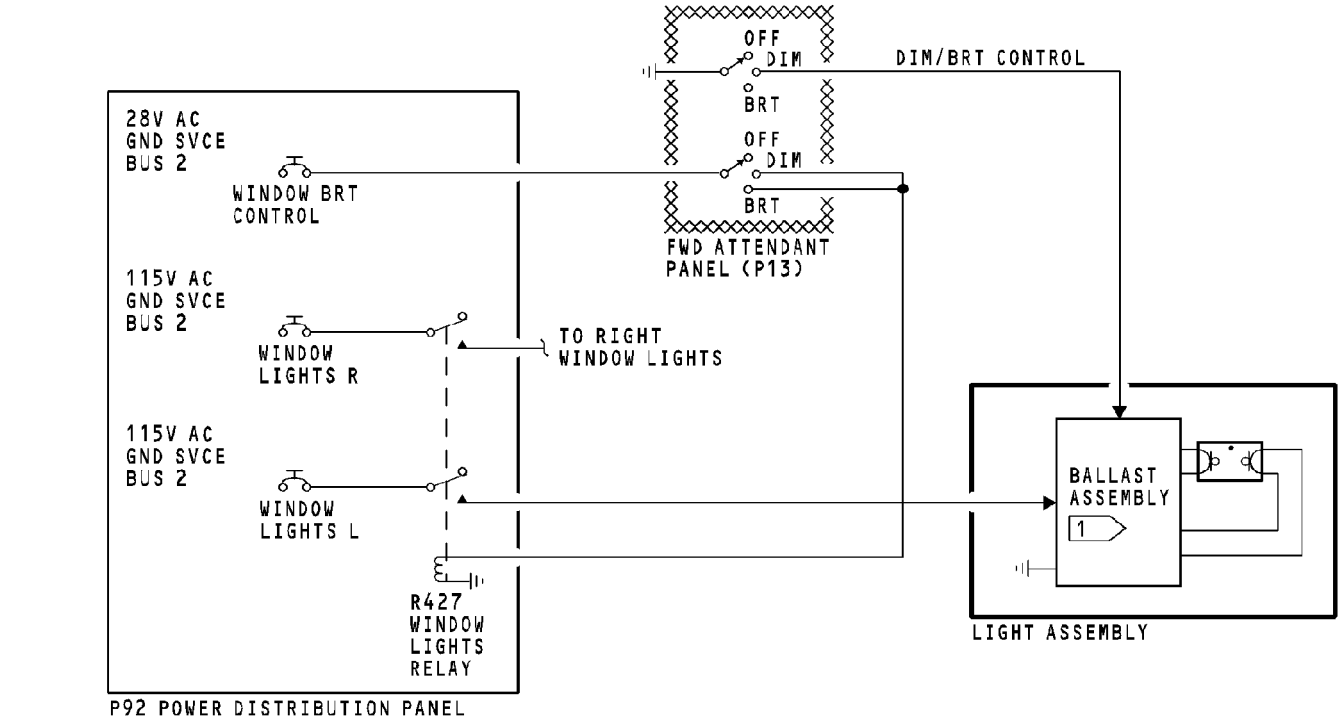
Functional Description

When you set the window light control switch to the DIM or BRT position, this occurs:

- Window lights relay R427 energizes
- 115v ac goes to the ballast assembly.

In the DIM position, an electrical ground goes to the ballast assembly for dim mode operation.

In the BRT position, an open discrete goes to the ballast assembly for bright mode operation.



1 SOME BALLAST ASSEMBLIES CONTROL 2 LAMPS

LIGHTS - WINDOW LIGHTS - FUNCTIONAL DESCRIPTION

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LIGHTS - CEILING LIGHTS - INTRODUCTION

Purpose

The ceiling lights supply lighting to the areas above the stowage bins and the aisle in the passenger compartment.

Physical Description

There are two types of ceiling lights, bin lights and recessed lights.

The bin ceiling lights are fluorescent and incandescent light assemblies.

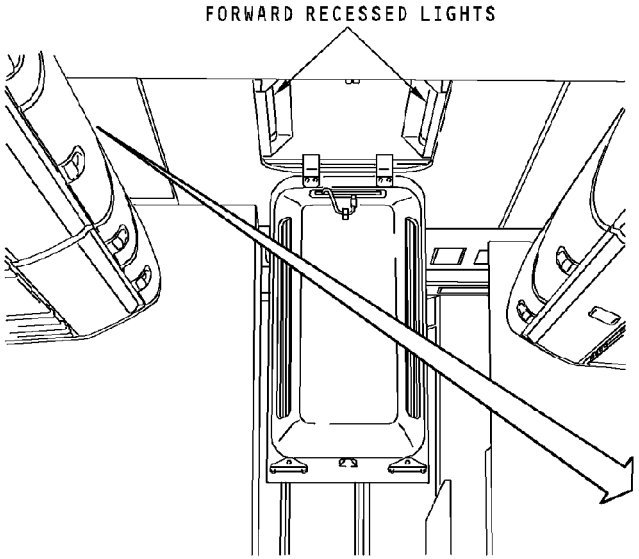
The recessed lights are fluorescent lights.

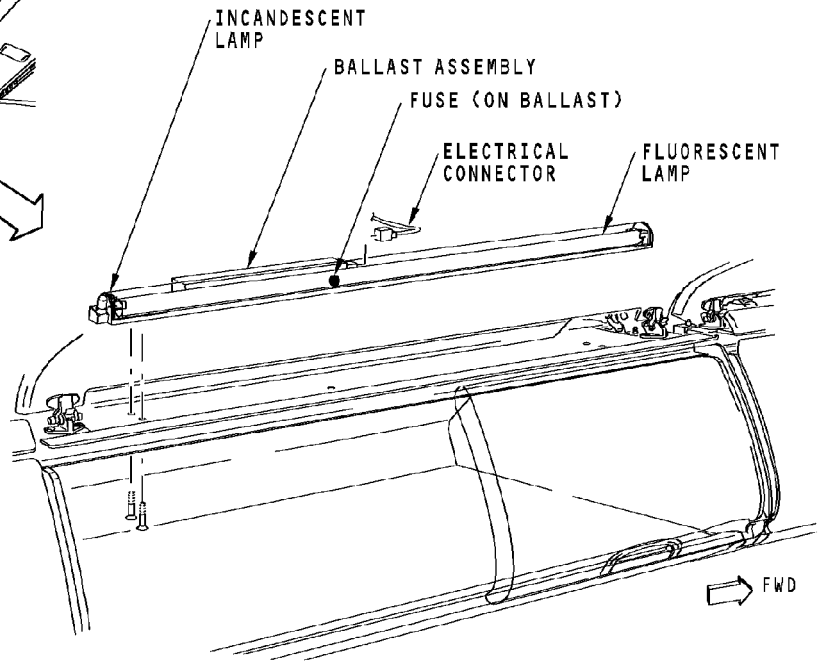
Both types of ceiling lights use same type of ballast assembly.

Location

The bin ceiling lights are on top of the stowage bins.

The recessed ceiling lights are in the forward and aft ceiling panels.





LIGHTS - CEILING LIGHTS - INTRODUCTION

Operation

A five-position rotary selector on the forward attendant panel controls the ceiling lights. These are the five positions on the switch:

- OFF
- NIGHT
- DIM
- MED
- BRIGHT.

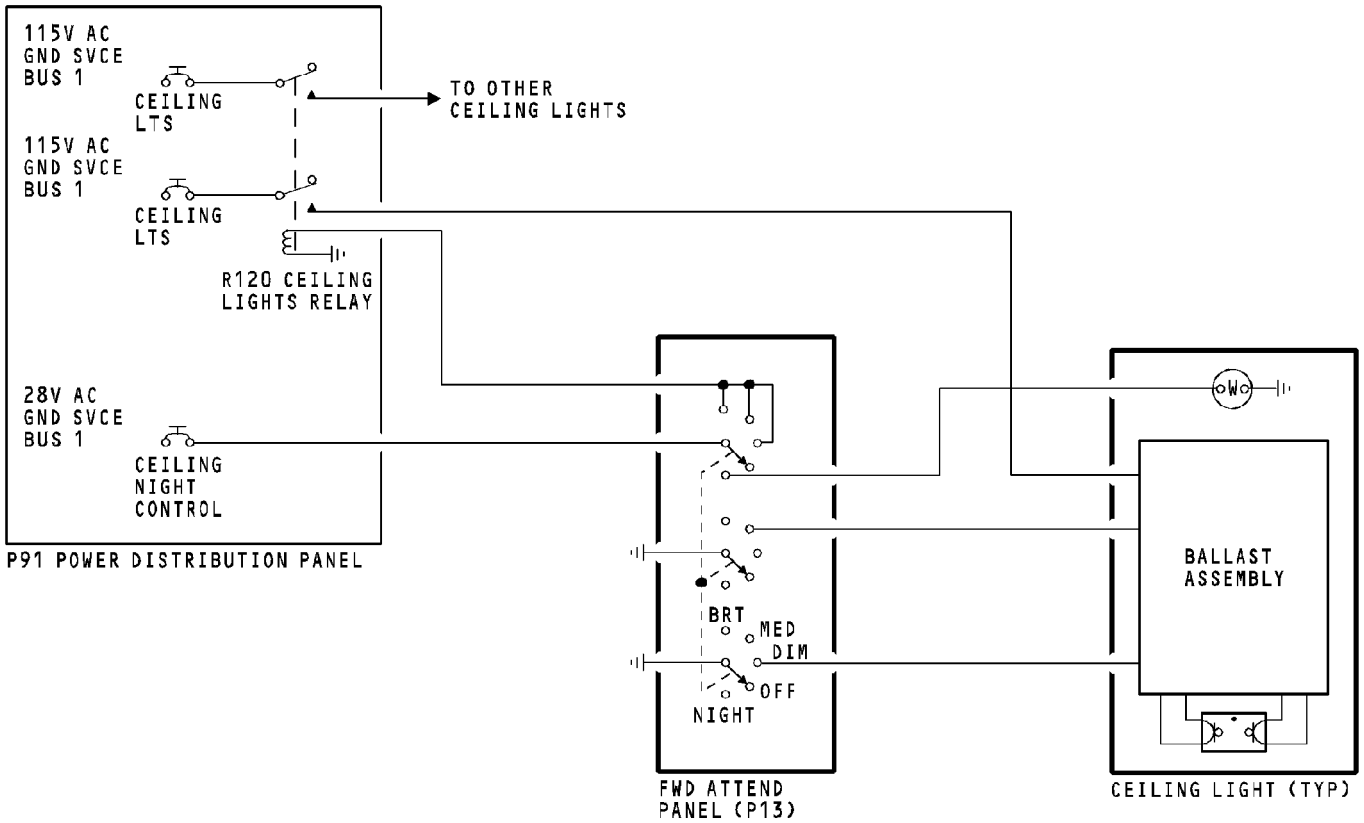
Functional Description

When you move the attendant selector to the DIM, MED, or BRT position, this occurs:

- Ceiling light relay R120 energizes
- 115v ac goes to the ceiling light ballast assemblies
- An electrical ground discrete goes to the ceiling light ballast assemblies.

The logic circuits in the ceiling light ballast assemblies use these input signals to set the light level.

When you move the attendant switch to the night position, 28v ac powers incandescent night lamps.



LIGHTS - CEILING LIGHTS - FUNCTIONAL DESCRIPTION

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Purpose

The reading lights supply lighting locally for each passenger seat.

Physical Description

A reading light has these parts:

- Bezel/lens retainer
- Lens
- Lamp
- Lock/unlock lever.

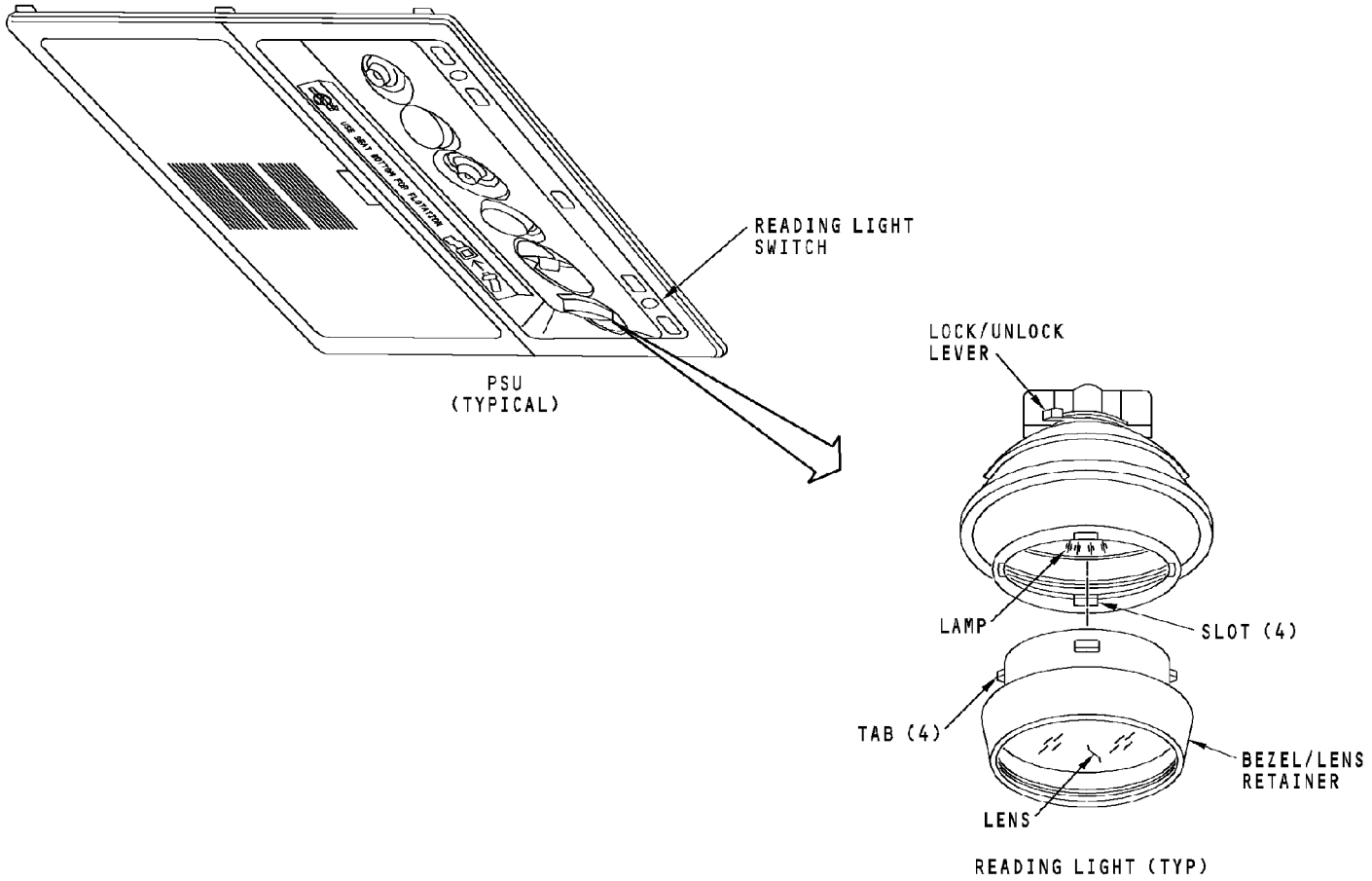
Location

The reading lights are in the passenger service units (PSUs).

Operation

To operate the reading light, use the switch on the passenger service unit (PSU). Then use the bezel to adjust the direction of the light beam. You use the lever to lock or unlock the light in position. To lock or unlock the reading light do these steps:

- Put the lamp in the correct position
- Lower the PSU
- Move the lever to the lock or unlock position as necessary.



LIGHTS - READING LIGHTS - INTRODUCTION

LIGHTS - READING LIGHTS - FUNCTIONAL DESCRIPTION

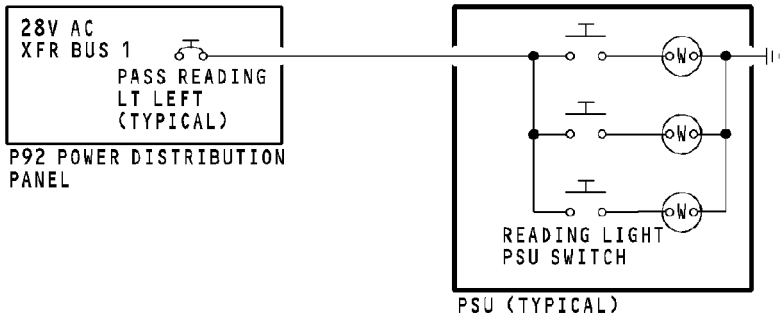
Functional Description

Momentarily push the reading light switch on the PSU to connect 28v ac to the reading light. The lights are in a parallel circuit. The loss of one lamp will not affect the other lamps.

Training Information Point

It is not necessary to lower the PSU to replace a lamp.

CAUTION: THE LAMPS ARE HALOGEN. USE COTTON GLOVES OR LINT FREE CLOTH DURING REPLACEMENT OPERATIONS. TOUCHING THE LAMPS WITH BARE FINGERS WILL REDUCE THE LIFE OF THE BULB.



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LIGHTS - PASSENGER SIGNS - INTRODUCTION

Purpose

The passenger signs give these indications to the passengers and attendants:

- NO SMOKING
- FASTEN SEAT BELT
- RETURN TO SEAT.

Physical Description

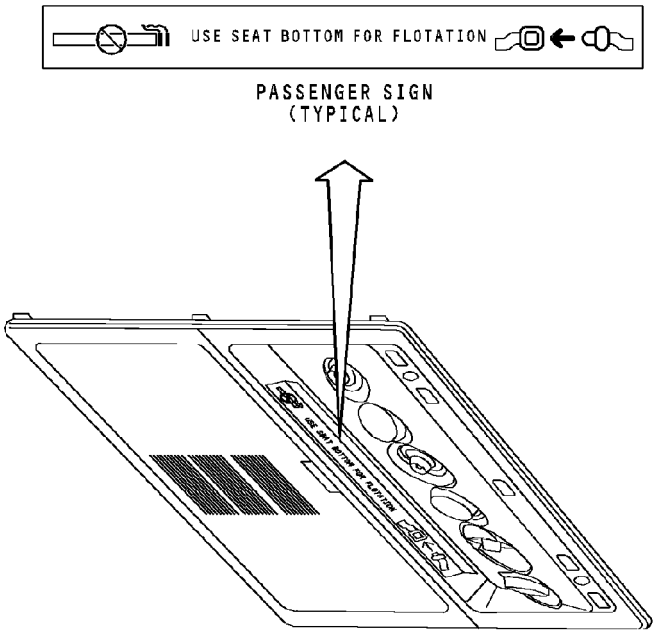
The passenger sign lights use incandescent lamps.

Location

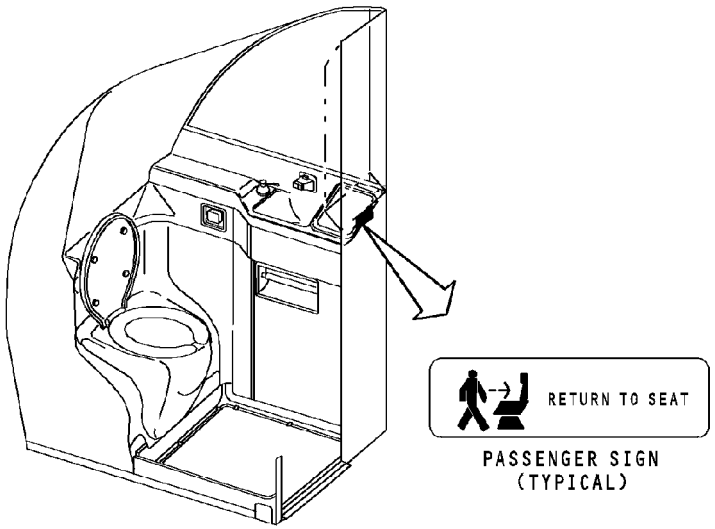
The NO SMOKING and the FASTEN SEAT BELTS signs are at these locations:

- Passenger service units (PSU)
- Forward left windscreen
- Galley
- Lavatories.

The RETURN TO SEAT signs are in the lavatories.



PASSENGER SERVICE UNIT



LAVATORY

LIGHTS - PASSENGER SIGNS - INTRODUCTION

Operation

HAP 001-013, 015-026, 028-030

Two, three-position toggle switches on the P5 forward overhead panel control the passenger signs. These switches are the NO SMOKING and FASTEN SEAT BELT switches. When the switches are in the ON position, all the passenger signs come on and there is a low chime.

HAP 031-054, 101-999

A three-position toggle switch on the P5 forward overhead panel controls the passenger signs. This switch is the FASTEN SEAT BELT switch. When the switch is in the ON position, all the passenger signs come on and there is a low chime.

NOTE: The NO SMOKING switch on the P5 forward overhead panel does not effect the NO SMOKING lights. The NO SMOKING signs are on when power is on.

HAP 001-013, 015-026, 028-030

When the NO SMOKING and FASTEN SEAT BELT switches are in the OFF position, the passenger signs are off.

HAP 031-054, 101-999

When the FASTEN SEAT BELT switch is in the OFF position, the FASTEN SEAT BELT and RETURN TO SEAT signs are off.

HAP 001-013, 015-026, 028-030

When the NO SMOKING and FASTEN SEAT BELT switches are in the AUTO position and the trailing edge flaps limit switch is in the NOT UP position, these indications occur:

- The FASTEN SEAT BELT signs come on
- The RETURN TO SEAT signs come on
- There is a low chime.

HAP 031-054, 101-999

When the FASTEN SEAT BELT switch is in the AUTO position and the trailing edge flaps limit switch is in the NOT UP position, these indications occur:

- FASTEN SEAT BELT signs
- RETURN TO SEAT signs
- Low chime.

HAP 001-013, 015-026, 028-030

When the NO SMOKING and FASTEN SEAT BELT switches are in the AUTO position and the landing gear lever switch is in the GEAR DOWN position, these indications occur:

- FASTEN SEAT BELT signs
- NO SMOKING signs
- RETURN TO SEAT signs
- Low chime.

HAP 001-013, 015-026, 028-030 (Continued)

HAP 031-054, 101-999

When the FASTEN SEAT BELT switch is in the AUTO position and the landing gear lever switch is in the GEAR DOWN position, these indications occur:

- FASTEN SEAT BELT signs
- RETURN TO SEAT signs
- Low chime.

HAP ALL

Interface

HAP 001-013, 015-026, 028-030

The passenger oxygen system has an interface with the passenger sign system. When the NO SMOKING and FASTEN SEAT BELT switches are in the AUTO position and the oxygen indication relay energizes, these indictions occur:

- FASTEN SEAT BELT signs
- NO SMOKING signs
- Low chime.

HAP 031-054, 101-999

The passenger oxygen system has an interface with the passenger sign system. When the FASTEN SEAT BELT switch is in the AUTO position and the oxygen indication relay energizes, these indications occur:

- FASTEN SEAT BELT signs
- Low chime.

HAP ALL

Functional Description

HAP 001-013, 015-026, 028-030

When you move the NO SMOKING or FASTEN SEAT BELT switch to the ON position, 28v ac energizes the related relay. Transfer bus 1 then supplies 28v ac to operate the passenger sign lights and the low chime.

HAP 031-054, 101-999

When you move the FASTEN SEAT BELT switch to the ON position, 28v ac energizes relay R26. Transfer bus 1 then supplies 28v ac to operate the passenger sign lights and the low chime.

HAP 001-013, 015-026, 028-030

When the NO SMOKING and FASTEN SEAT BELT switches are in the AUTO position, these occur:

- Relay R25 and R26 energizes if the landing gear is in the down position, or when the oxygen indication relay energizes
- Relay R26 energizes if the trailing edge flap limit switch is in the NOT UP position.

EFFECTIVITY

HAP ALL

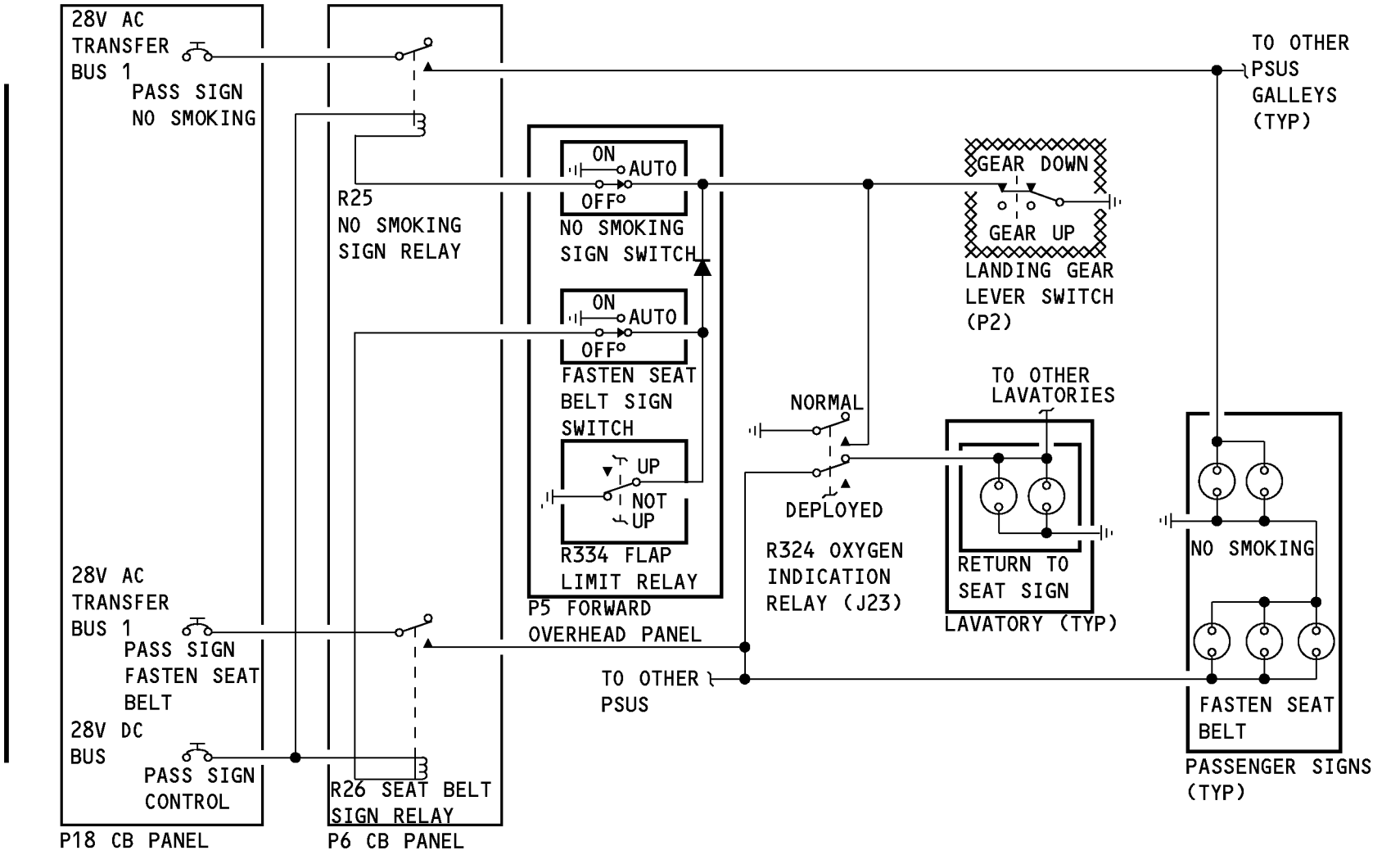
HAP 001-013, 015-026, 028-030 (Continued)

HAP 031-054, 101-999

When the FASTEN SEAT BELT switch is in the AUTO position, these indications occur:

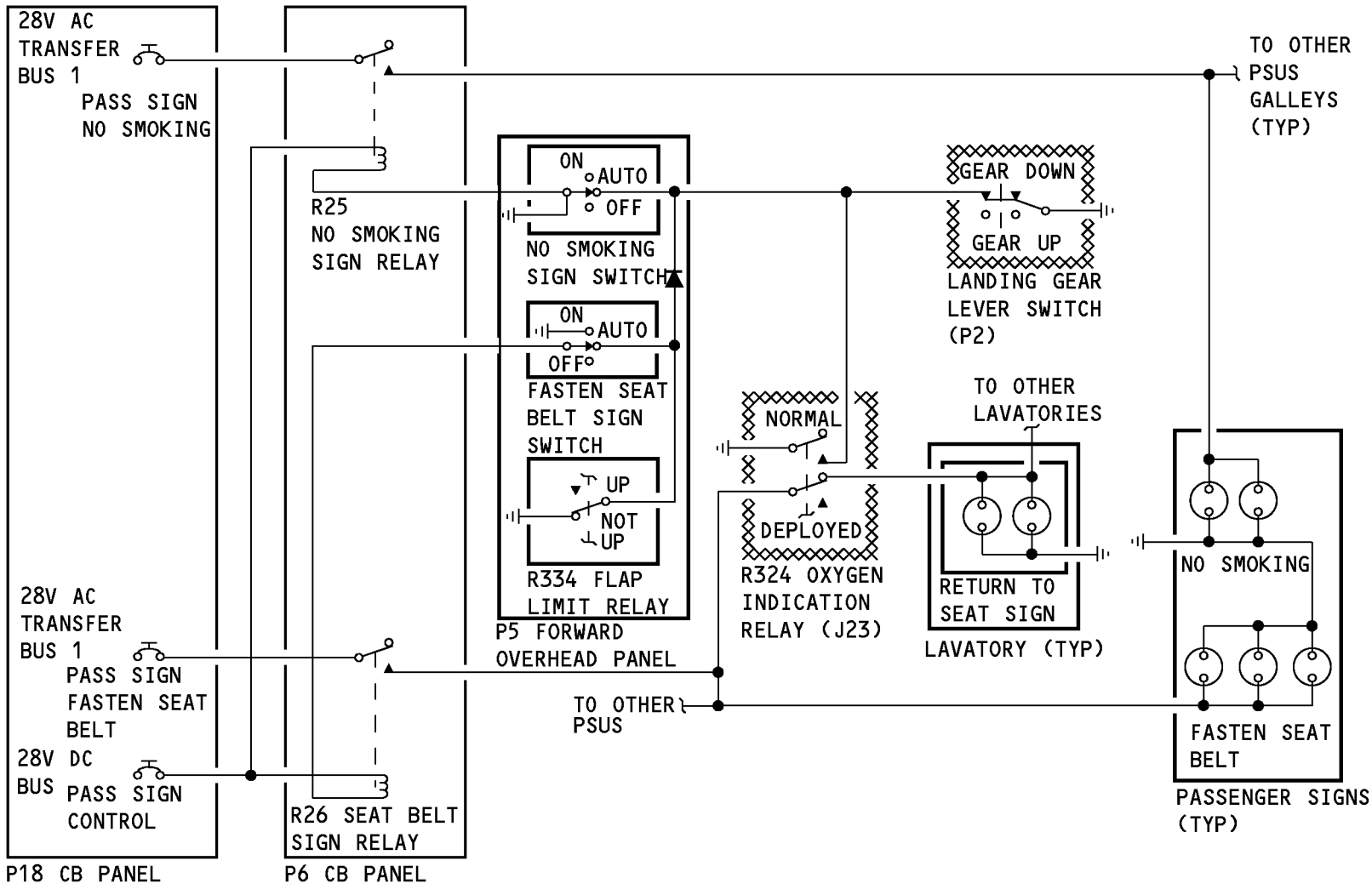
- Relay R25 and R26 energizes if the landing gear is in the down position, or when the oxygen indication relay energizes
- Relay R26 energizes if the trailing edge flap limit switch is in the NOT UP position.

HAP ALL



M85155 S0004628214_V2

LIGHTS - PASSENGER SIGNS - FUNCTIONAL DESCRIPTION



M85154 S0004628216_V2

LIGHTS - PASSENGER SIGNS - FUNCTIONAL DESCRIPTION

EFFECTIVITY
HAP 031-054, 101-999

33-25-00

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LIGHTS - ATTENDANT WORK LIGHTS - INTRODUCTION

Purpose

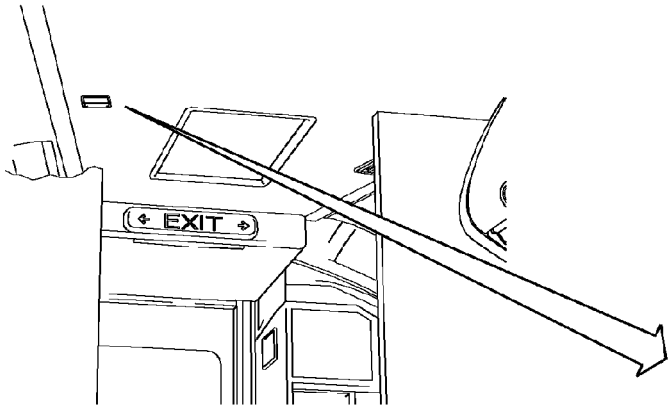
The attendant work lights supply light to the attendant work stations.

Location

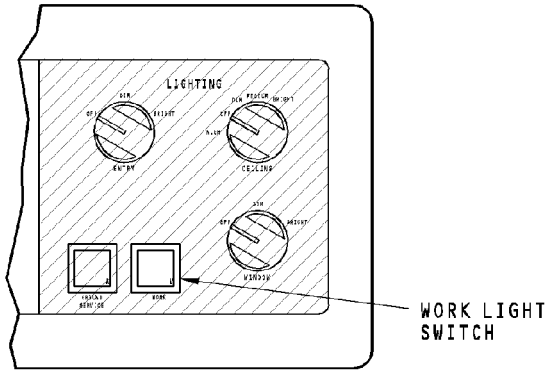
The attendant lights are in the ceiling above the attendant stations. There is one work light for each attendant station. The work light control switch is on the related attendant panel.

Physical Description

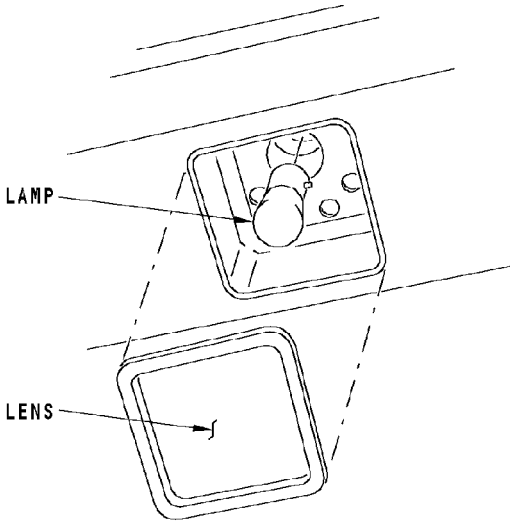
The attendant work lights are incandescent. The attendant work lights have a lens and a lamp.



FORWARD ATTENDANT STATION



FORWARD ATTENDANT PANEL

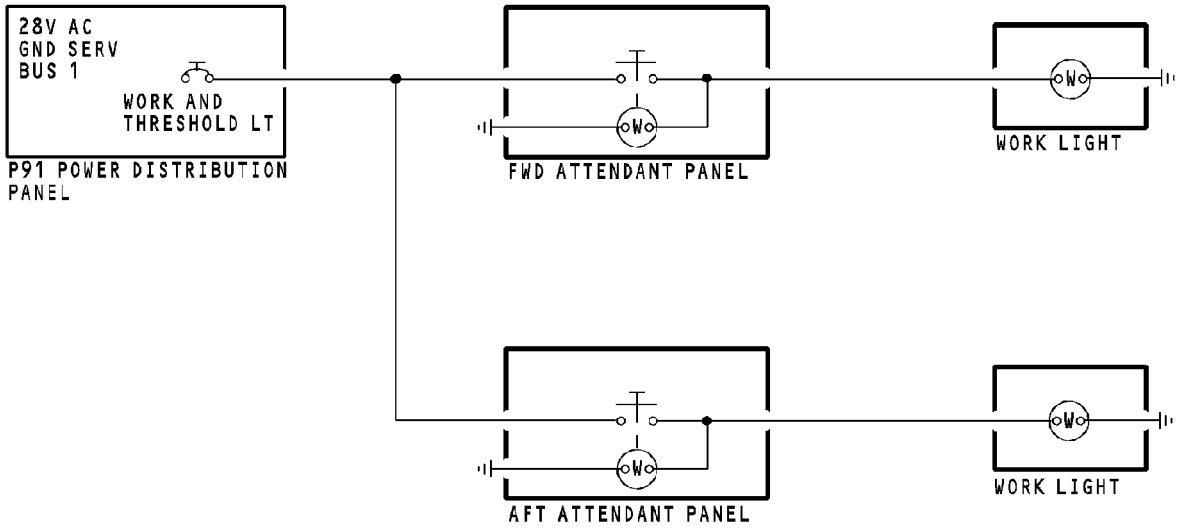


ATTENDANT WORK LIGHT
(TYPICAL)

LIGHTS - ATTENDANT WORK LIGHTS - INTRODUCTION

Functional Description

When you put the attendant work light switch to ON, 28v ac from the ground service bus causes the light in the switch and attendant work light to come on.



LIGHTS - ATTENDANT WORK LIGHTS - FUNCTIONAL DESCRIPTION

LIGHTS - GALLEY LIGHTS - INTRODUCTION

Purpose

The galley light supplies light to the forward galley area.

Physical Description

The galley light has these components:

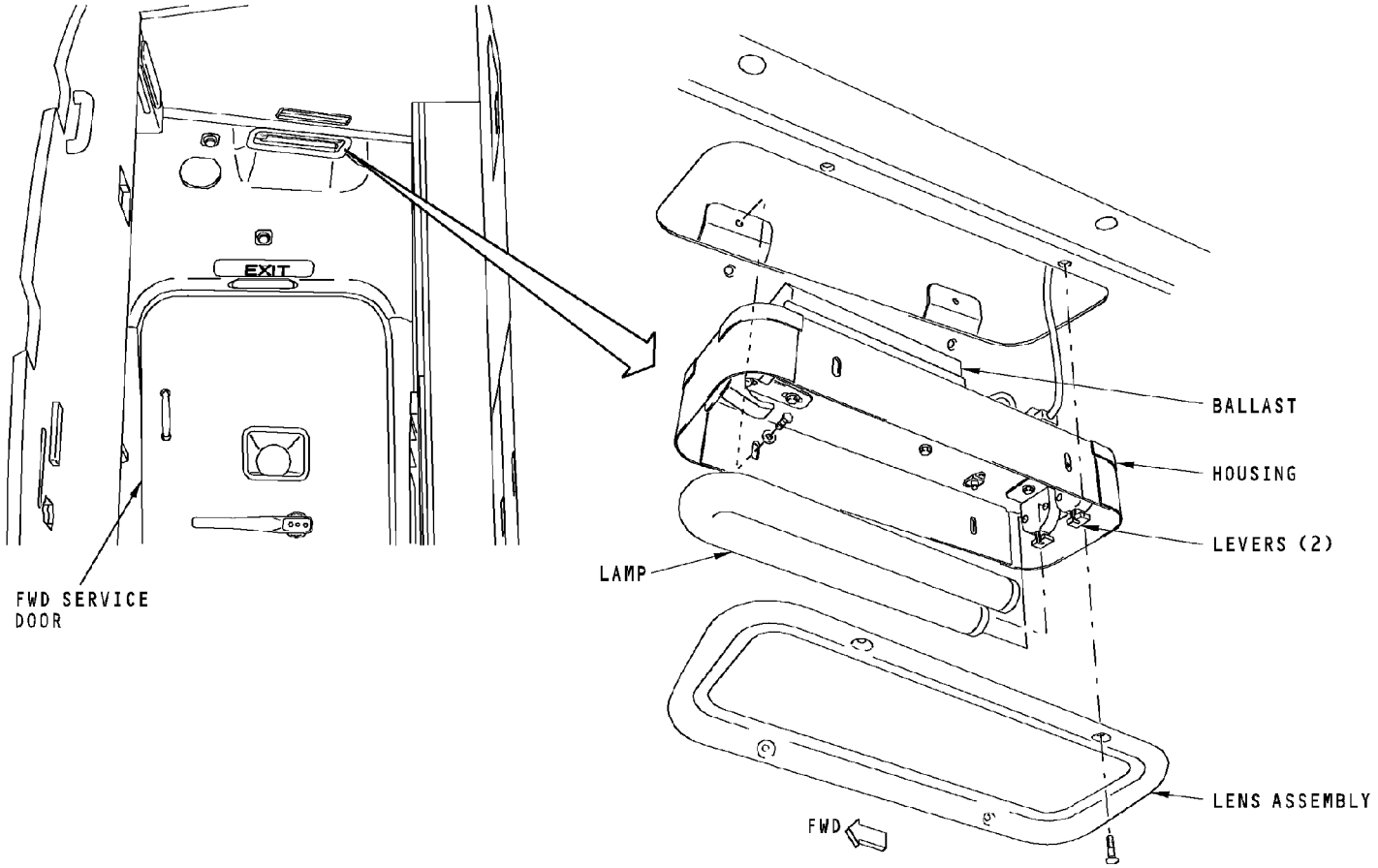
- Fluorescent lamp
- Lens
- Housing
- Ballast.

Location

The galley light is above the forward service entry door.

Training Information Point

To remove the lamp, release the levers that hold the lamp in the housing.

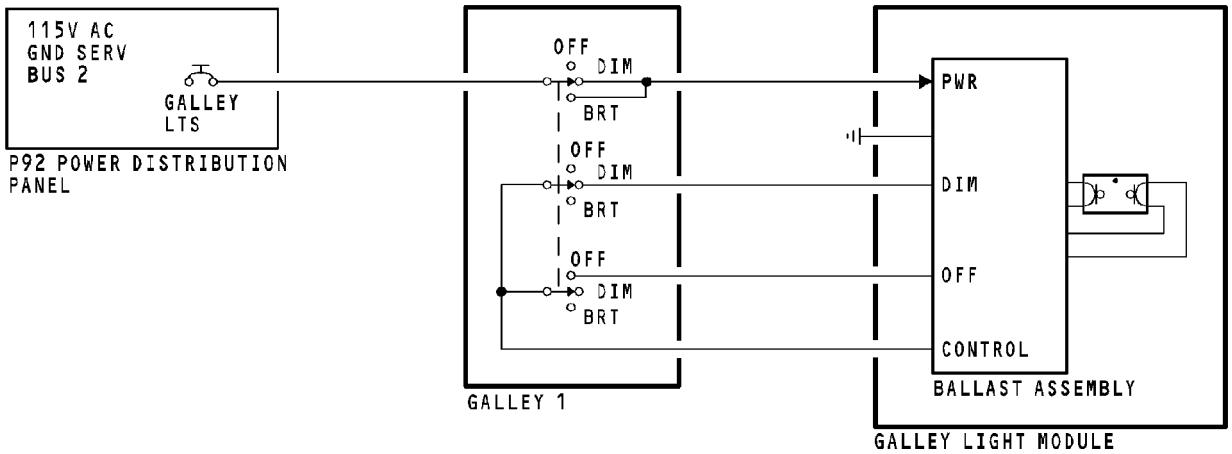


LIGHTS - GALLEY LIGHTS - INTRODUCTION

Functional Description

When the galley light switch moves from the OFF position, logic circuits in the ballast assembly set these conditions:

- Continuity between CONTROL and DIM causes the dim mode
- Continuity between CONTROL and OFF causes the off mode
- No continuity between CONTROL and either DIM or OFF causes the bright mode.



Purpose

The lavatory lights and signs supply light and indications to the passengers while in the lavatory.

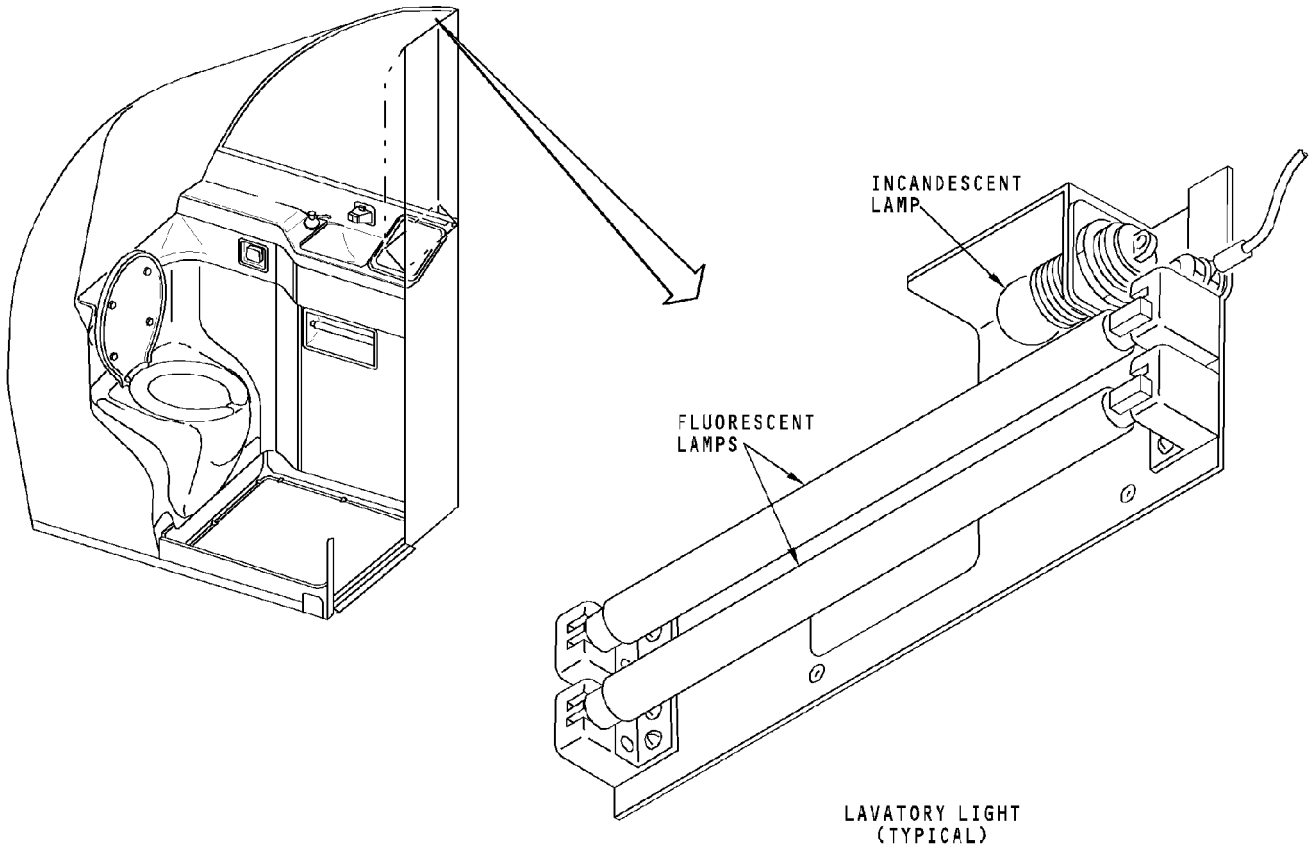
Physical Description

The mirror light has a fluorescent and incandescent lamp. It has a ballast assembly and an electrical connector.

Location

The lavatory lights and controls are in these places:

- Lavatory lights are on the mirror
- Lavatory light ballast assembly is on or next to the lavatory ceiling PSU panel
- Door switch is in the door frame.



LIGHTS - LAVATORY LIGHTS AND SIGNS - INTRODUCTION

Operation

You can operate the fluorescent mirror lights in the lavatory in a dim or a bright mode. When there is 115v ac power applied, the fluorescent mirror lights have these modes:

- Dim mode when the lavatory door is unlocked
- Bright mode when the lavatory door is locked.

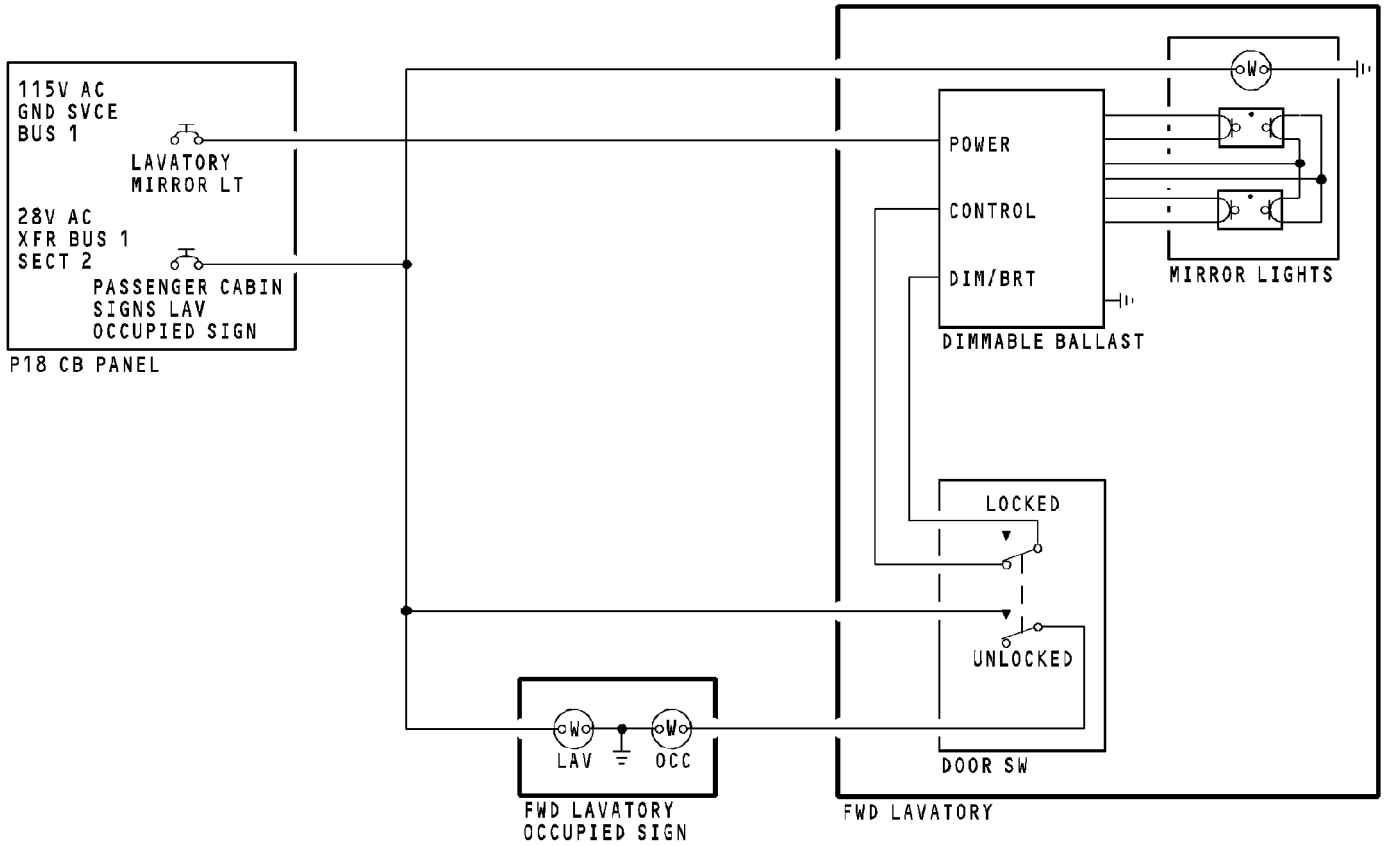
The lavatory light and the incandescent lamp come on when the 28v ac transfer bus 1 has power.

The lavatory occupied light (OCC) light comes on when the lavatory door is locked and the 28v ac transfer bus 1 has power.

Functional Description

The control signal from the ballast assembly sets the mode of operation. If the control signal comes back to the ballast assembly, the light is in the dim mode. The door switch not locked condition is necessary for dim mode operation

Power for the lavatory light is from the 115v ac ground service bus.



LIGHTS - LAVATORY LIGHTS AND SIGNS - FUNCTIONAL DESCRIPTION

EFFECTIVITY
HAP ALL

33-26-00

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LIGHTS - PASSENGER AND LAVATORY CALL LIGHTS - INTRODUCTION

Purpose

The passenger and lavatory call light tells the flight attendant when a passenger or flight crew member needs aid or assistance.

Physical Description

The lights are incandescent.

There are lens covers for the lights. The lens covers are blue, pink, and amber.

Indications

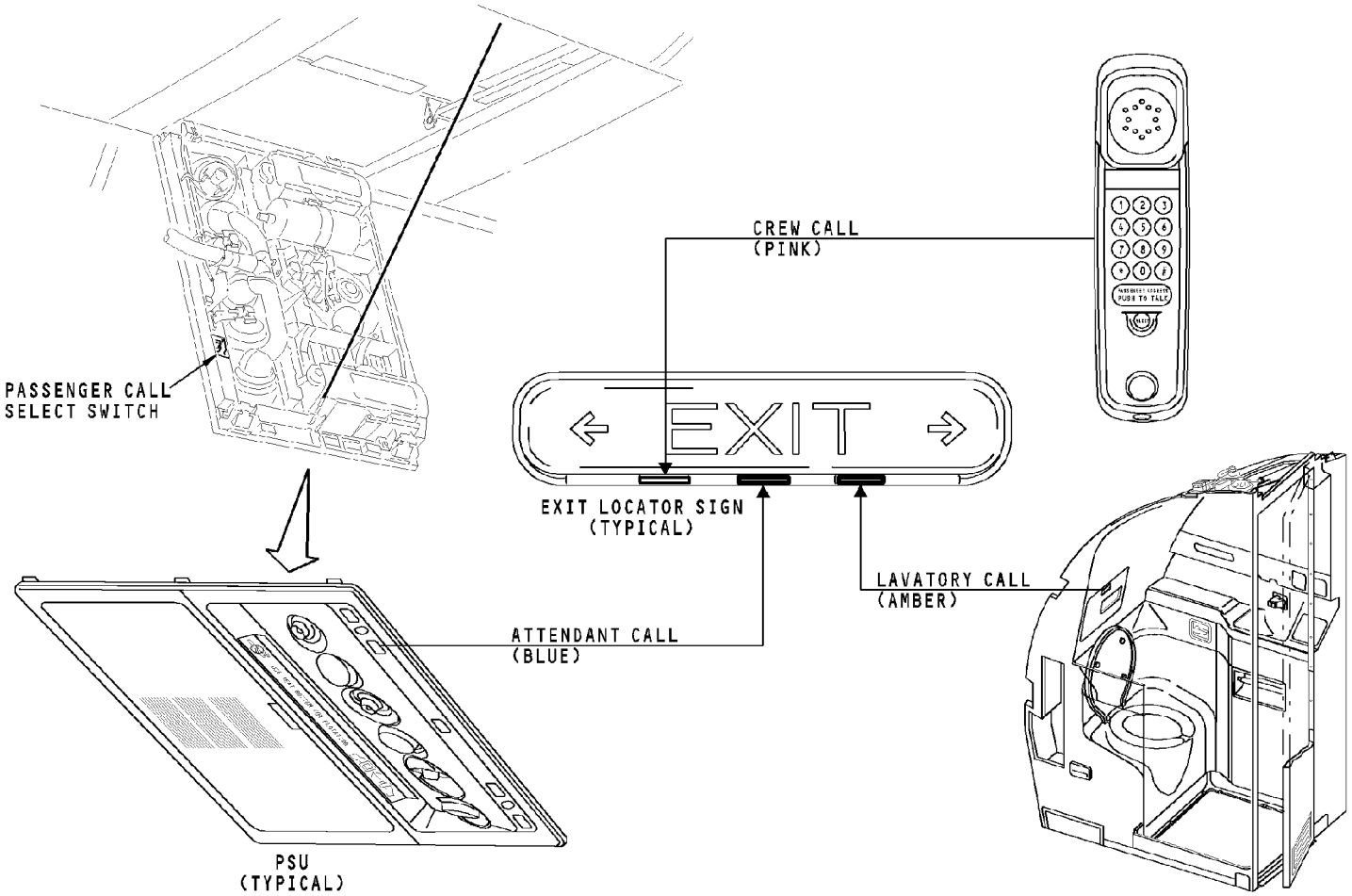
The light under the blue cover comes on when a passenger pushes the passenger call switch on the PSU. The light under the amber cover comes on when a passenger pushes the call switch in a lavatory. The light under the pink cover comes on when a crew member calls another crew member.

location

The passenger and lavatory call lights are on the ceiling exit locator signs at the forward and aft ends of the passenger cabin.

Training Information Point

You can put the lens covers in different lamps. Be sure the lens is the right color for the lamp.



LIGHTS - PASSENGER AND LAVATORY CALL LIGHTS - INTRODUCTION

EFFECTIVITY

HAP ALL

33-27-00

Passenger Call

When you push the attendant call button on the passenger service unit (PSU), the control circuit causes these indications:

- Light under the blue lens cover on the forward or aft exit locator
- High chime sound
- PSU call light.

You must push the call light/reset switch to cause the control circuit to turn off the indicatins.

A two-position passenger call select switch in the PSU controls which exit locator sign gets the call from the PSU. You can set this switch with the PSU open.

Lavatory Call

When you operate the lavatory push-on, push-off light, 28v dc causes this to occur:

- Relay R1 energizes and latches
- High chime sound
- Lavatory call light/reset switch
- Light under the amber lens cover on the forward or aft exit locator.

When you push the reset button, you remove 28v dc from relay R1 and all indications stop.

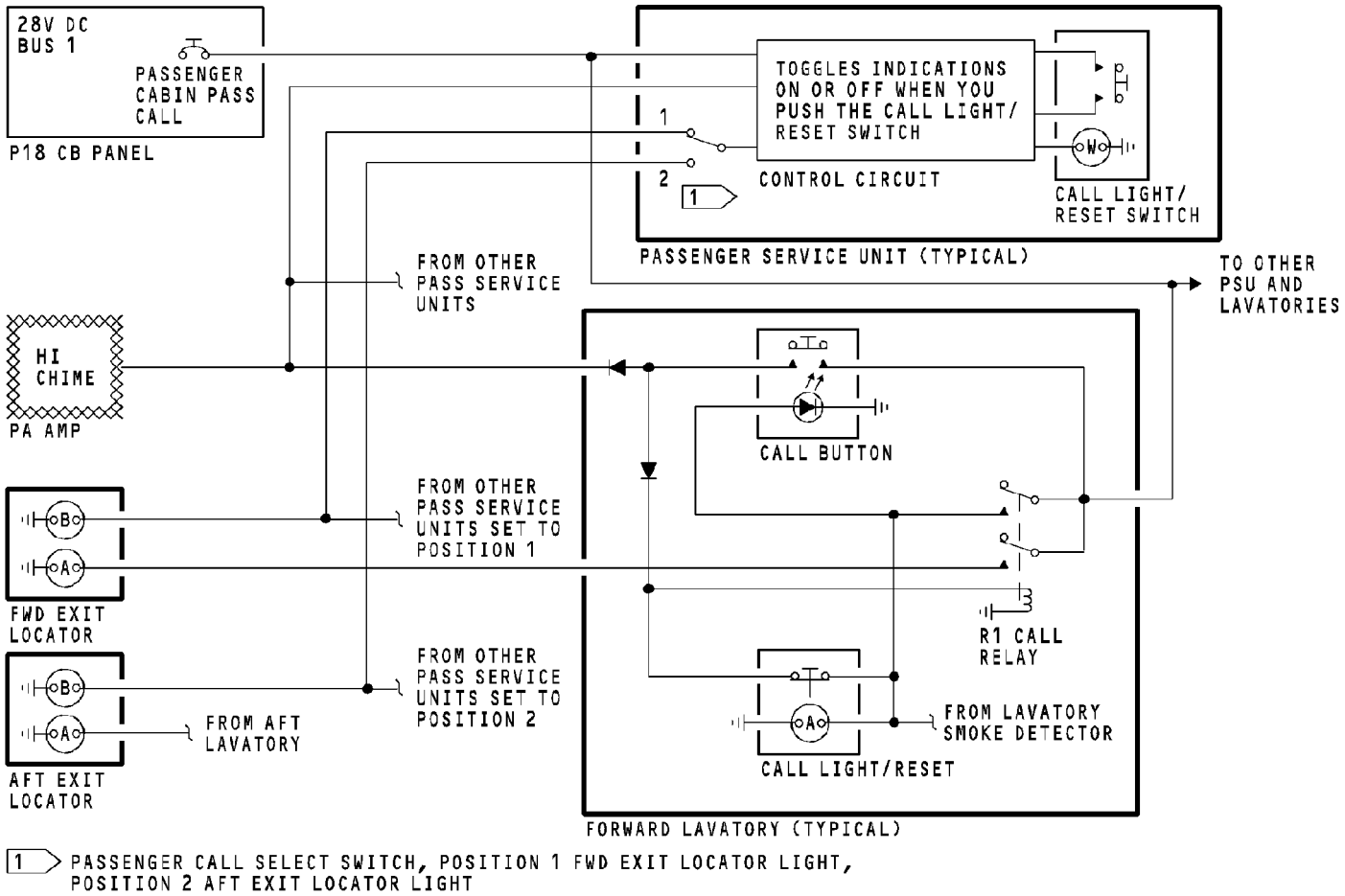
HAP 001-013, 015-026, 028-054

When smoke is detected in the lavatory, the lavatory call light/reset switch comes on. See the lavatory smoke detection section for more information about the lavatory smoke detection system (SECTION 26-14).

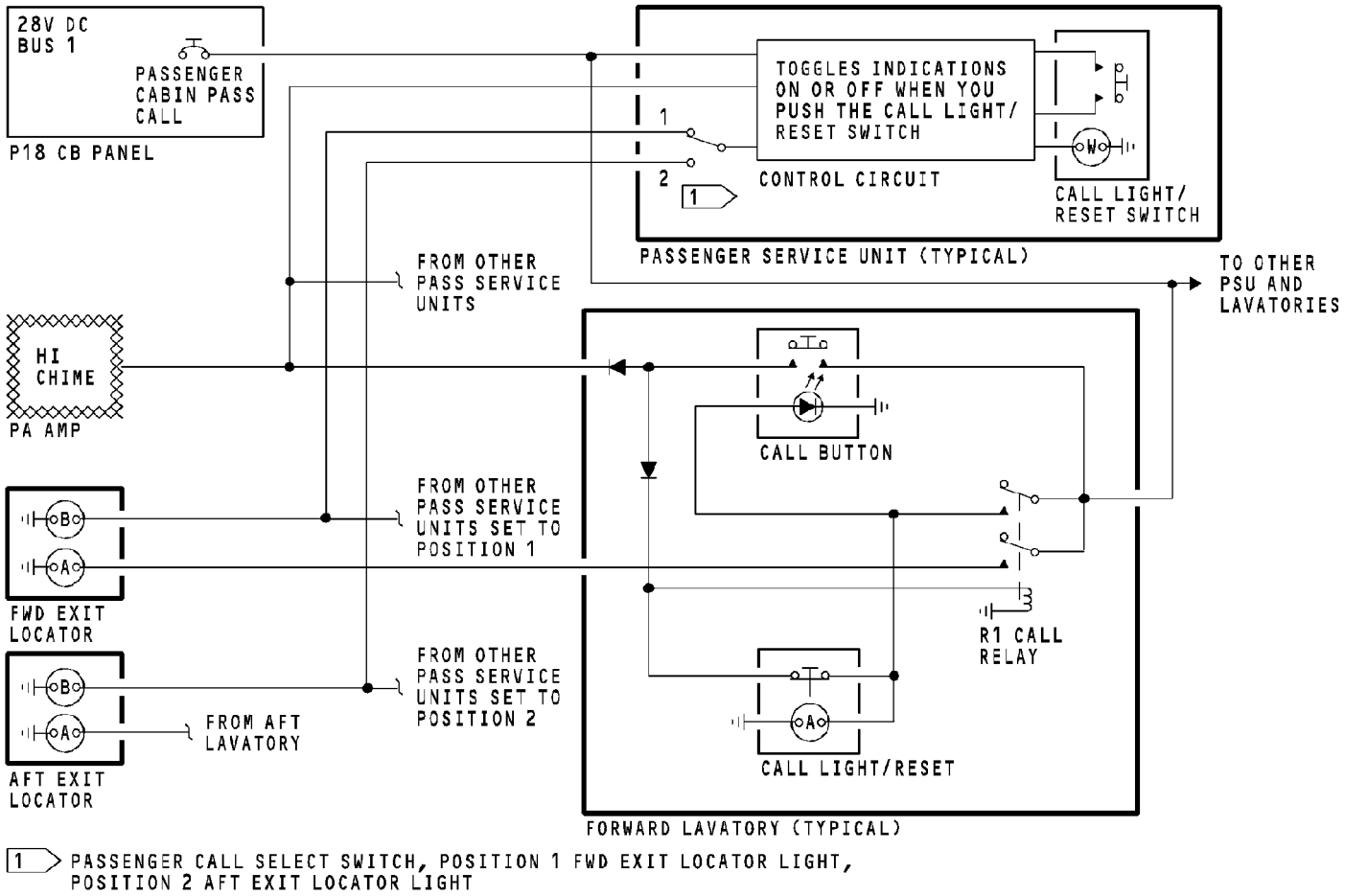
HAP ALL

EFFECTIVITY

HAP ALL



LIGHTS - PASSENGER AND LAVATORY CALL LIGHTS - FUNCTIONAL DESCRIPTION



LIGHTS - PASSENGER AND LAVATORY CALL LIGHTS - FUNCTIONAL DESCRIPTION

EFFECTIVITY

HAP 101-999

33-27-00

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Purpose

The entry lights supply light for the airplane entry areas. The entry lights are in the forward and aft ends of the passenger cabin.

Physical Description

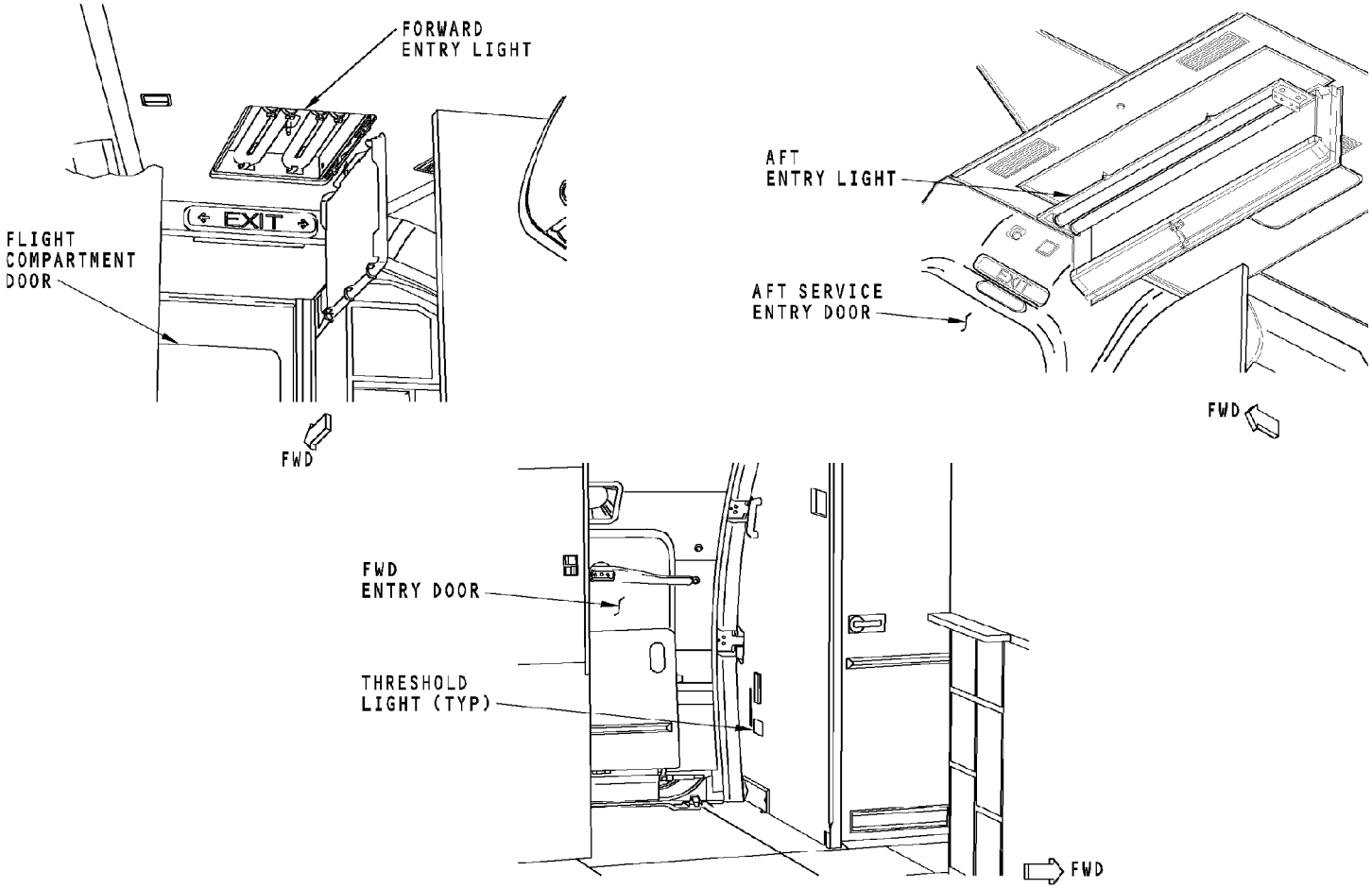
The entry lights are fluorescent lights. They have these components:

- lamp
- lens
- Bezel
- Ballast (not shown).

The threshold light is an incandescent lamp assembly.

location

The entry lights are in the ceiling near the entry and service entry doors. The threshold light is on the forward entry door windscreen.



LIGHTS - ENTRY LIGHTS - INTRODUCTION

EFFECTIVITY
HAP ALL

33-29-00

LIGHTS - ENTRY LIGHTS - FUNCTIONAL DESCRIPTION

Operation

You use a three-position rotary switch to control the entry lights. This switch is on the P13 forward attendant panel. These are the positions and operation of the switch:

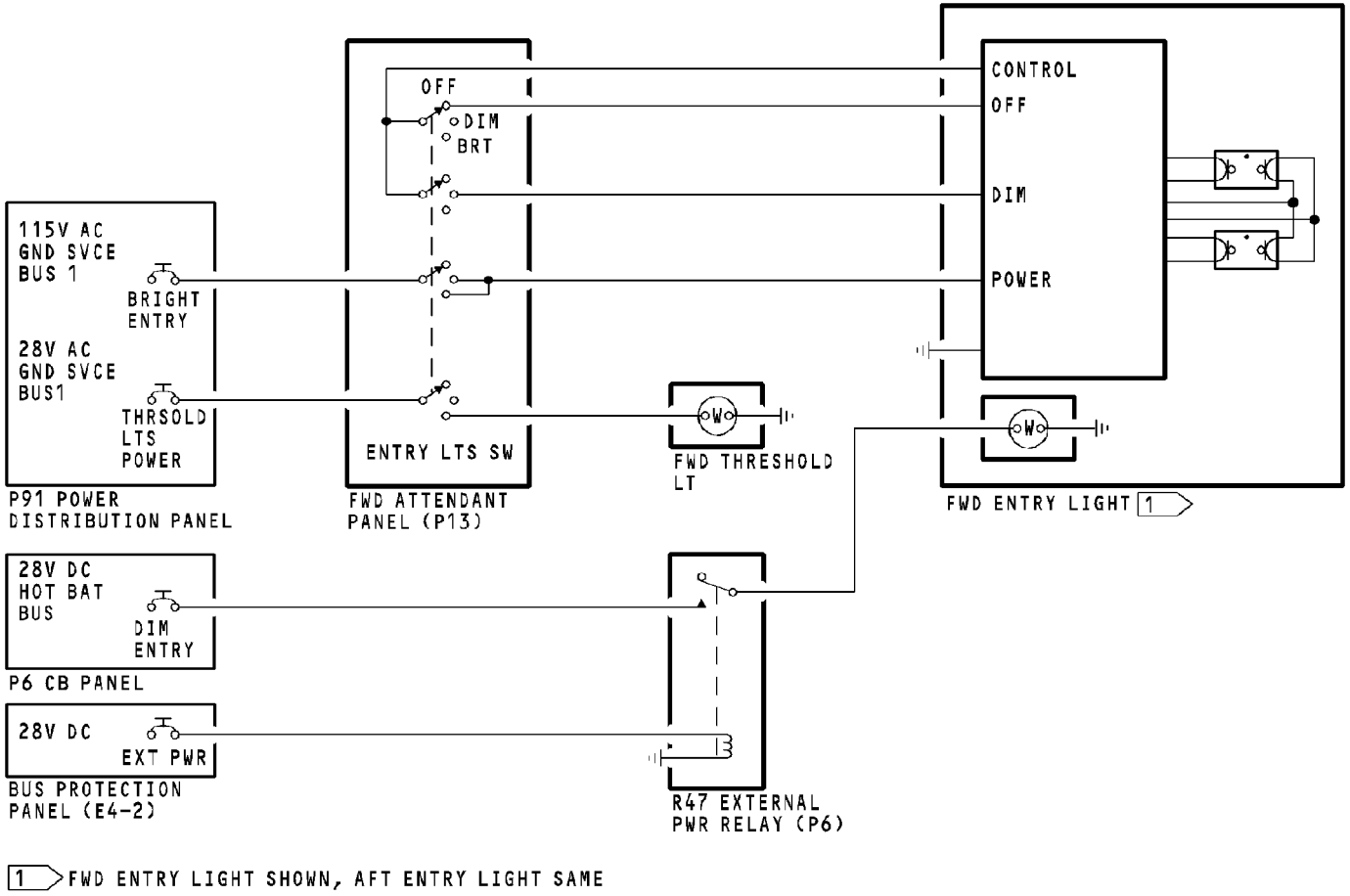
- OFF - all lights are off except with external power applied
- DIM - the fluorescent lamps are on dim
- BRIGHT - the fluorescent lamps are on bright and the threshold lights are on.

With external power applied, the dim incandescent entry light is on.

Functional Description

When you move the switch from the OFF position, 115v ac from the ground service bus goes to the entry light ballast assembly.

The ballast assembly supplies the control logic for the OFF, DIM, or BRT mode of operation. A control signal from the ballast goes to the rotary switch to set the mode.



1 FWD ENTRY LIGHT SHOWN, AFT ENTRY LIGHT SAME

LIGHTS - ENTRY LIGHTS - FUNCTIONAL DESCRIPTION

EFFECTIVITY
HAP ALL

33-29-00

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LIGHTS - CARGO AND SERVICE COMPARTMENT LIGHTS - INTRODUCTION

Purpose

The cargo and service compartment lights supply light to help maintenance personnel and ground crews.

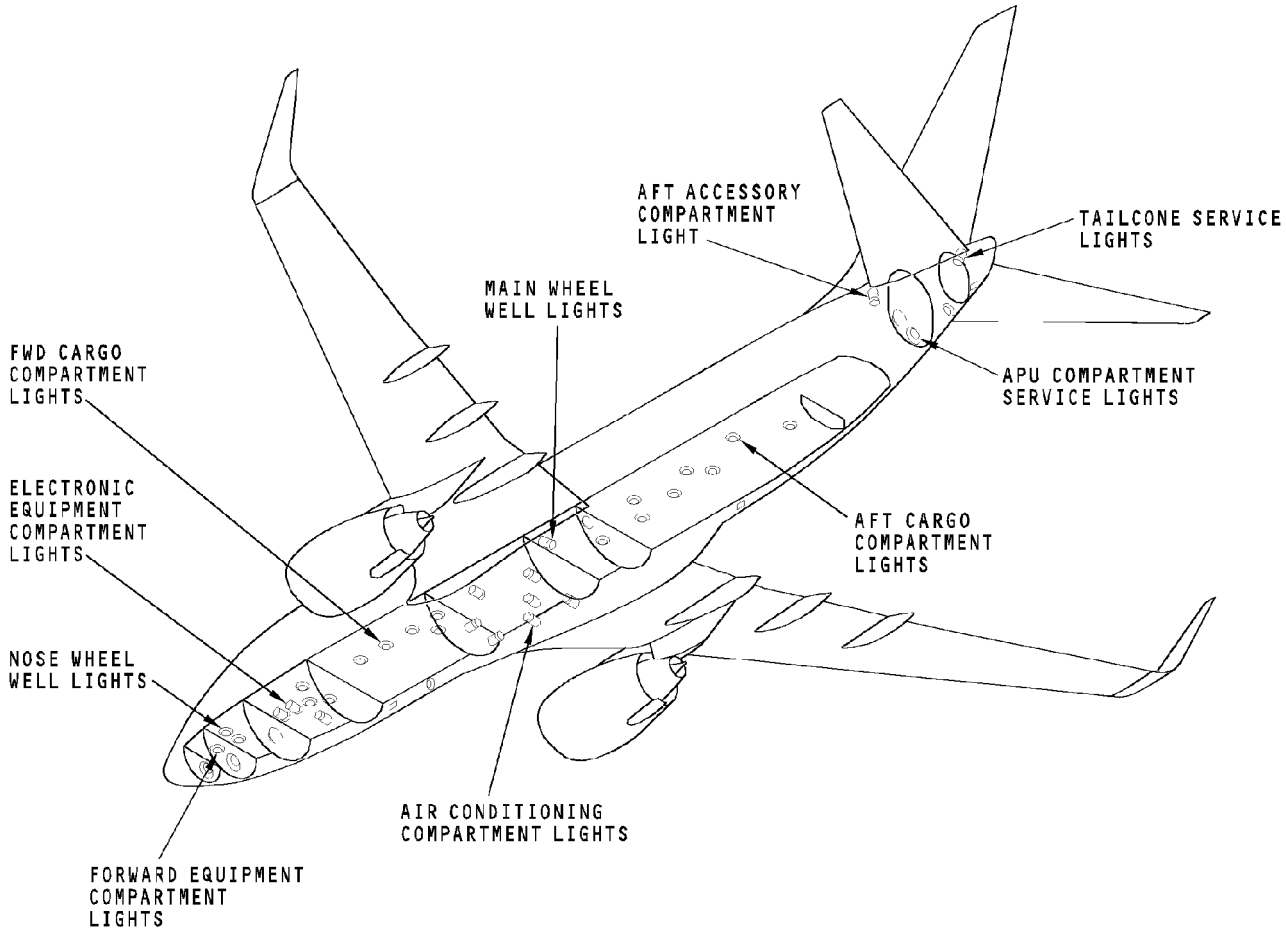
Location

There are cargo compartments lights in the forward and aft cargo compartments.

There are service lights in these areas:

- Forward equipment compartment
- Electronic equipment compartment
- Right air conditioning compartment
- Left air conditioning compartment
- Aft accessory compartment (section 48 interior)
- APU compartment
- Tail cone compartment.

There are wheel well lights in the nose and main wheel wells.



LIGHTS - CARGO AND SERVICE COMPARTMENT LIGHTS - INTRODUCTION

33-30-00-001

EFFECTIVITY

HAP ALL

33-30-00

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LIGHTS - WHEEL WELL LIGHTS - INTRODUCTION

Purpose

The wheel well lights supply lighting to the nose and main landing gear wheel wells.

Physical Description

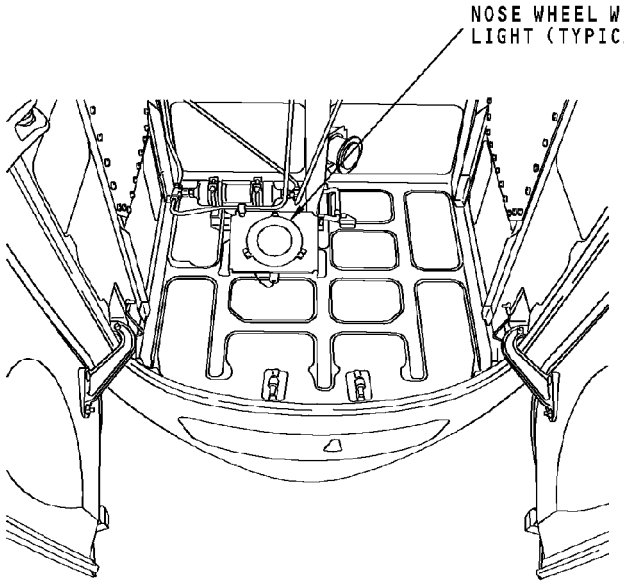
The wheel well lights use incandescent lamps.

Location

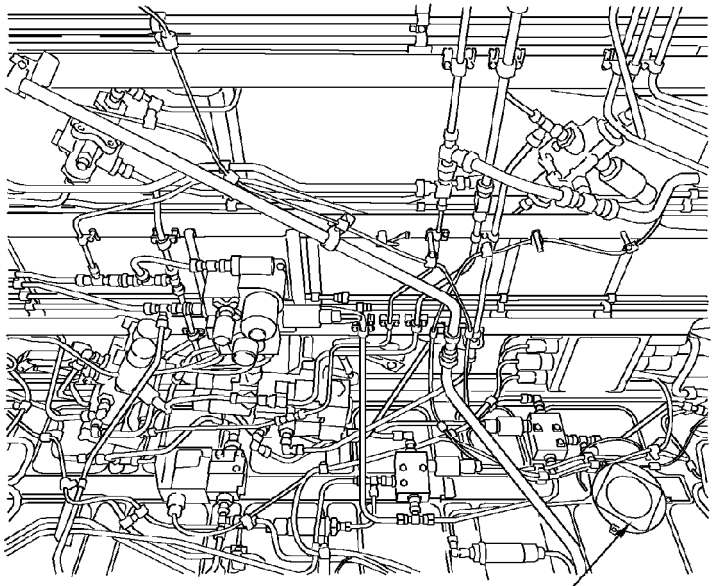
There is one wheel well light in the nose gear wheel well. The nose gear wheel well light switch is on the P19 external power panel.

There are four wheel well lights in the main gear wheel well. The main gear wheel well light switch is on the outer forward bulkhead of the left main wheel well.

A switch on the P5 forward overhead panel controls the wheel well lights from inside the airplane.



NOSE WHEEL WELL
(LOOKING FORWARD)



MAIN WHEEL WELL
(LOOKING FORWARD)

LIGHTS - WHEEL WELL LIGHTS - INTRODUCTION

Operation

The wheel well lights switch on the P5 forward overhead panel controls the nose and main wheel well lights. When you put the switch to ON, all wheel well lights come on.

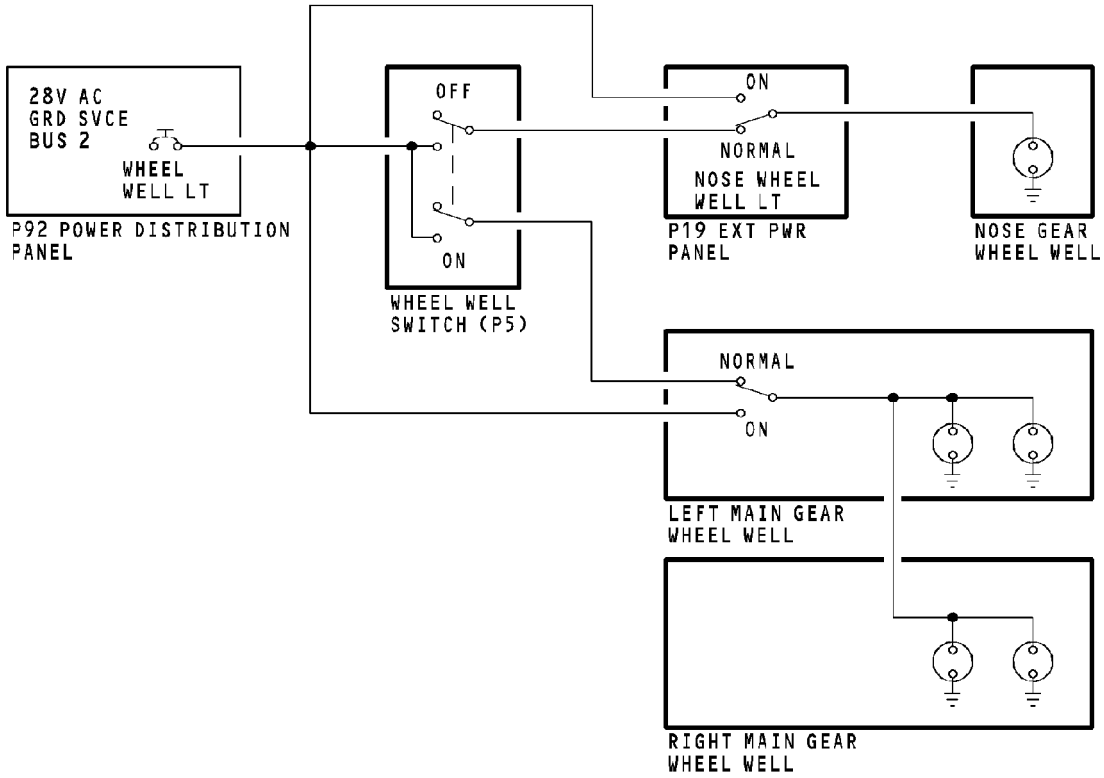
There is a two-position toggle switch in the left main wheel well. It is in the forward end of the wheel well. This switch controls four lights in the main wheel well only.

The two-position toggle switch on the P19 external power panel controls one light in the nose gear wheel well.

The switch you use to make the lights come on must be used to select the lights off.

Functional Description

The 28v ac ground service bus supplies electrical power for the wheel well lights. When you select the P5 forward overhead panel wheel well switch to ON, all wheel well lights come on. When you use a switch in the wheel well, only the related wheel well lights come on.



LIGHTS - WHEEL WELL LIGHTS - FUNCTIONAL DESCRIPTION

33-32-00-005

EFFECTIVITY
HAP ALL

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LIGHTS - AIR CONDITIONING COMPARTMENT LIGHTS - INTRODUCTION

Purpose

The air conditioning compartment lights supply lighting for maintenance in the air conditioning compartments.

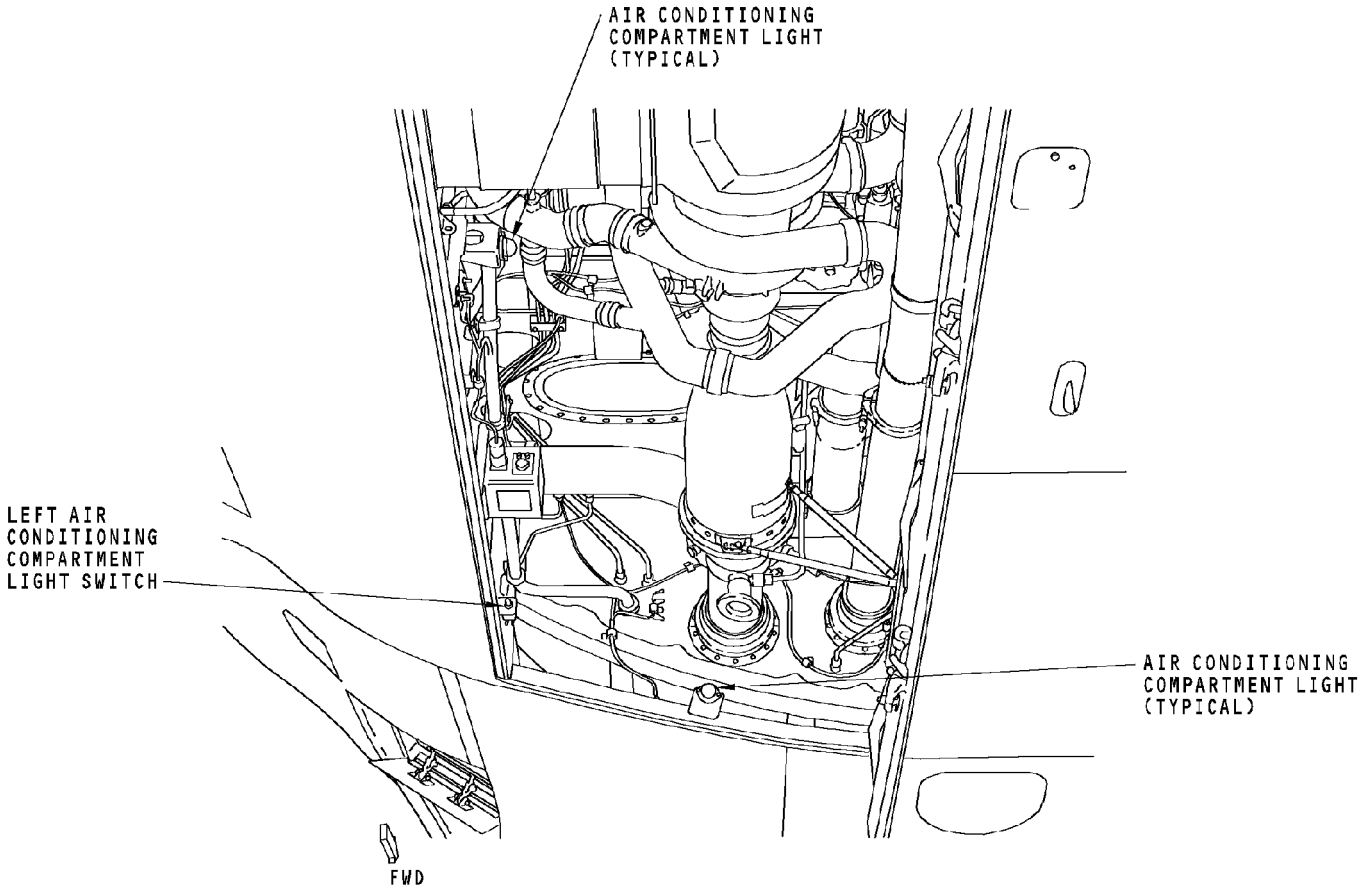
Physical Description

The air conditioning compartment lights are incandescent lamps.

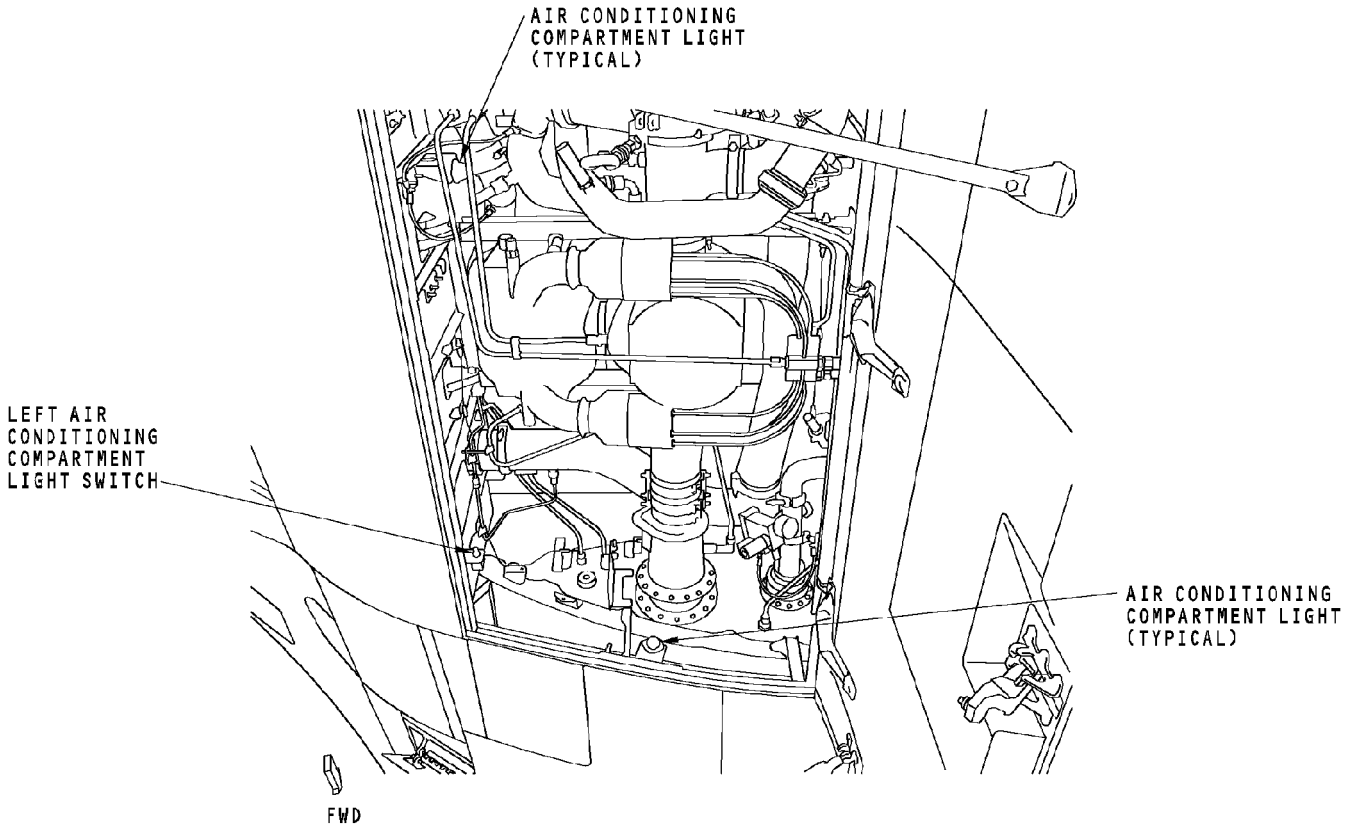
Location

There are five incandescent lights in the left air conditioning compartment and four in the right air conditioning compartment.

The control switch is on the forward outboard bulkheads of each air conditioning compartment.



LIGHTS - AIR CONDITIONING COMPARTMENT LIGHTS - INTRODUCTION



LEFT AIR CONDITIONING COMPARTMENT

LIGHTS - AIR CONDITIONING COMPARTMENT LIGHTS - INTRODUCTION

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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Operation

Each air condition compartment has a two-position toggle switch. The switches control electrical power to the lights in each compartment.

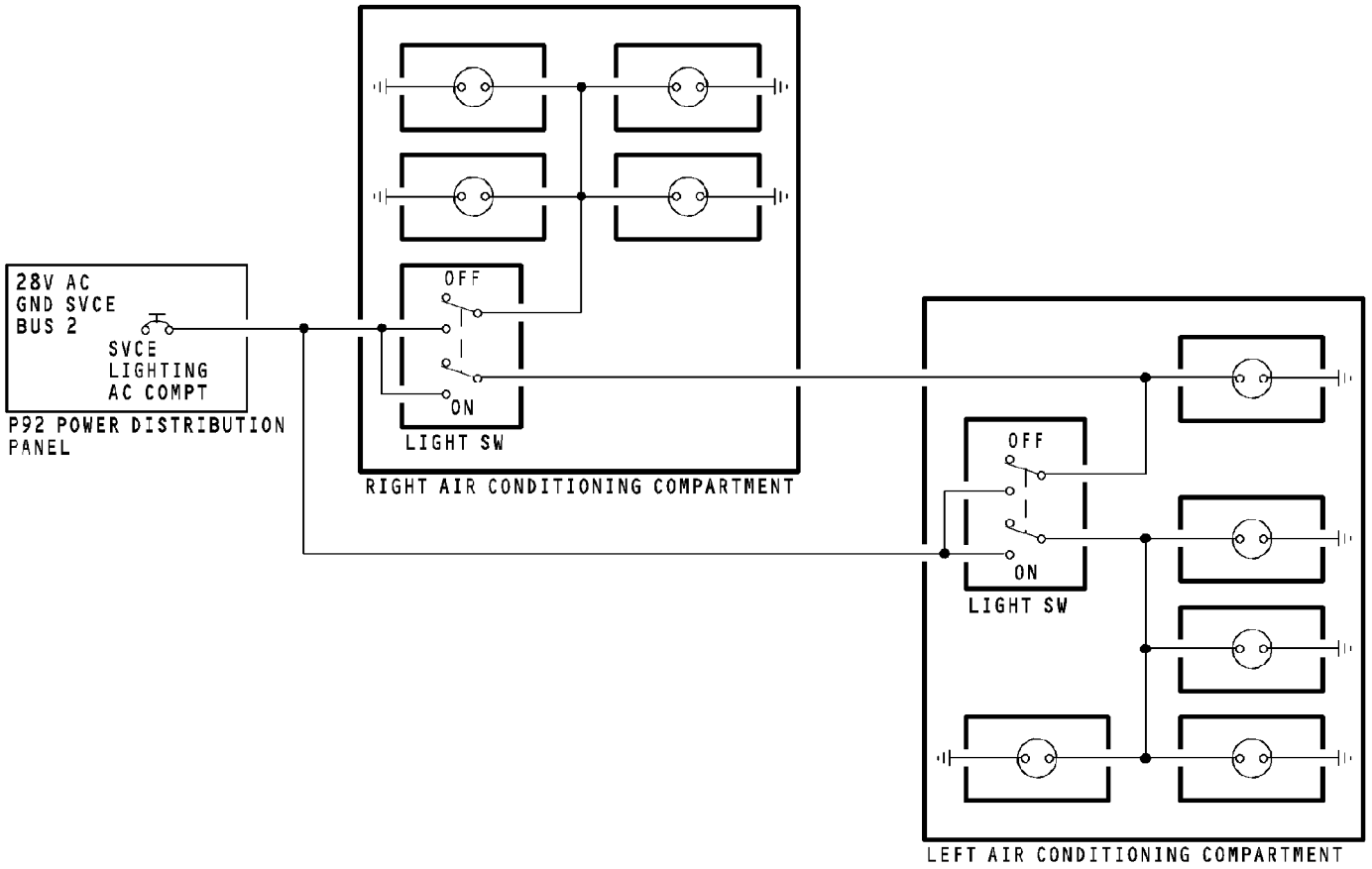
Functional Description

The incandescent lights are in a parallel circuit. The loss of a lamp will not effect the operation of the other lamps in the circuit. When the control switch is in the ON position, 28v ac goes to each incandescent light.

Training Information Point

The light switches have a sealing compound on the terminals to prevent arcing.

WARNING: MAKE SURE YOU SEAL THE TERMINALS TO PREVENT AN EXPLOSION OF THE FUEL FUMES. AN EXPLOSION CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.



LIGHTS - AIR CONDITIONING COMPARTMENT LIGHTS - FUNCTIONAL DESCRIPTION

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LIGHTS - ELECTRONIC EQUIPMENT COMPARTMENT LIGHTS - INTRODUCTION

Purpose

The EE compartment lights supply light to the electronic equipment compartments for maintenance.

Physical Description

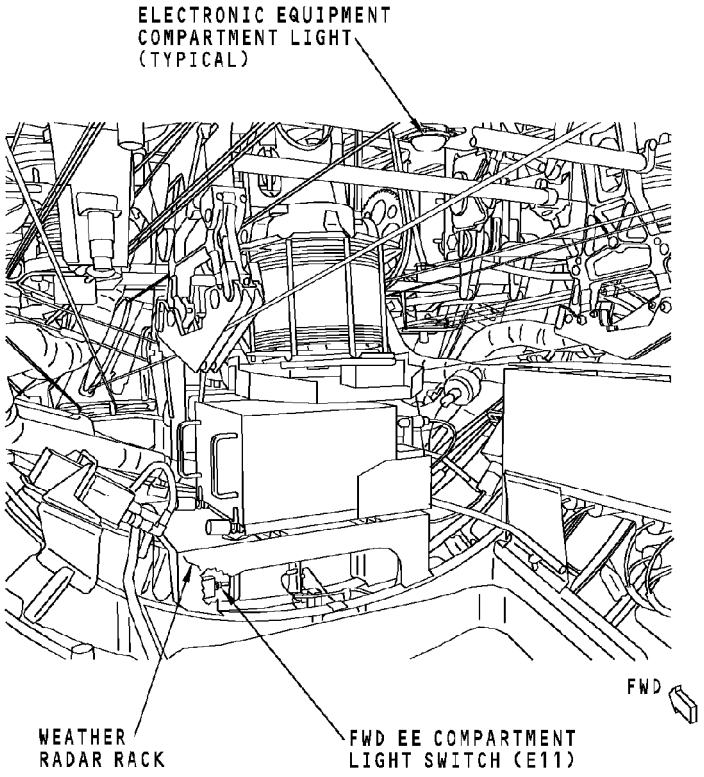
The EE compartment lights are incandescent lamps.

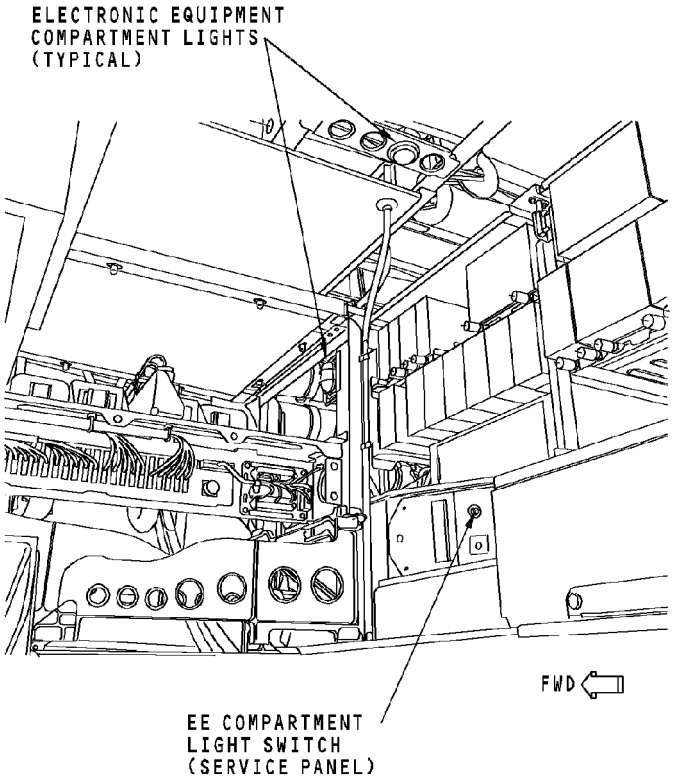
Location

There are four incandescent lights in the EE compartment and three in the forward equipment compartment.

The EE compartment light control switch is on the service panel.

The forward equipment compartment light control switch is on the right side under the weather radar rack.





LIGHTS - ELECTRONIC EQUIPMENT COMPARTMENT LIGHTS - INTRODUCTION

EFFECTIVITY
HAP ALL

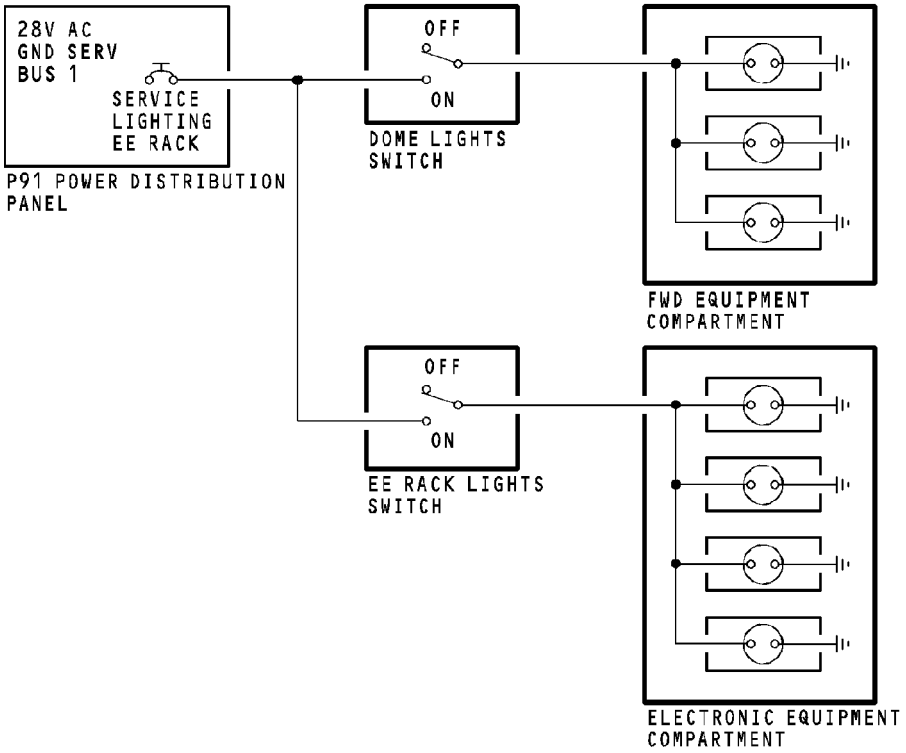
33-34-00

Operation

A two-position toggle switch controls the lights for the forward equipment compartment. A two-position toggle switch controls the lights for the electronic equipment compartment.

Functional Description

The incandescent lights are in a parallel circuit. The loss of a lamp will not effect the output of the other lamps in the circuit. When the two-position toggle switch is in the ON position, 28v ac goes to each incandescent lamp.



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LIGHTS - ACCESSORY COMPARTMENT LIGHTS - INTRODUCTION

Purpose

The service and accessory compartment lights supply light to these areas:

- APU compartment
- Aft accessory compartment (section 48 interior)
- Tail cone compartment.

Physical Description

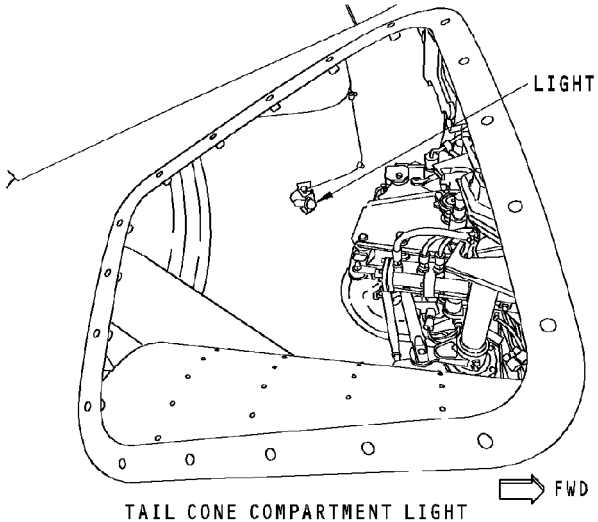
The service and accessory compartments lights are incandescent lamps.

Location

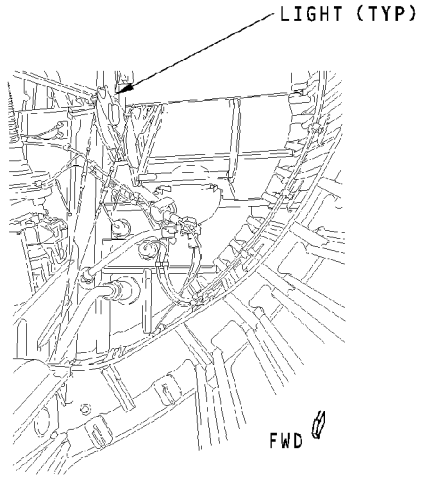
There are two lights in the aft accessory compartment. The light control switch is next to the access door.

There are two lights in the APU compartment. The light control switch is on the forward bulkhead.

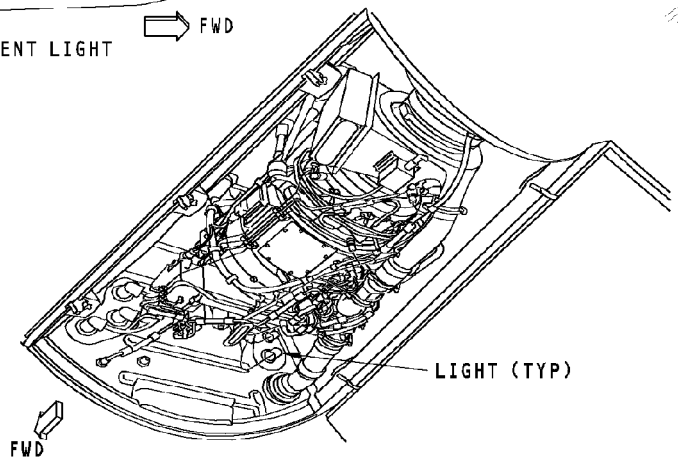
The tail cone compartment has one light. The light control switch is inside the tail cone compartment forward of the access panel in the lower right corner.



TAIL CONE COMPARTMENT LIGHT



ACCESSORY COMPARTMENT LIGHT



APU COMPARTMENT LIGHT

LIGHTS - ACCESSORY COMPARTMENT LIGHTS - INTRODUCTION

EFFECTIVITY

HAP ALL

33-35-00

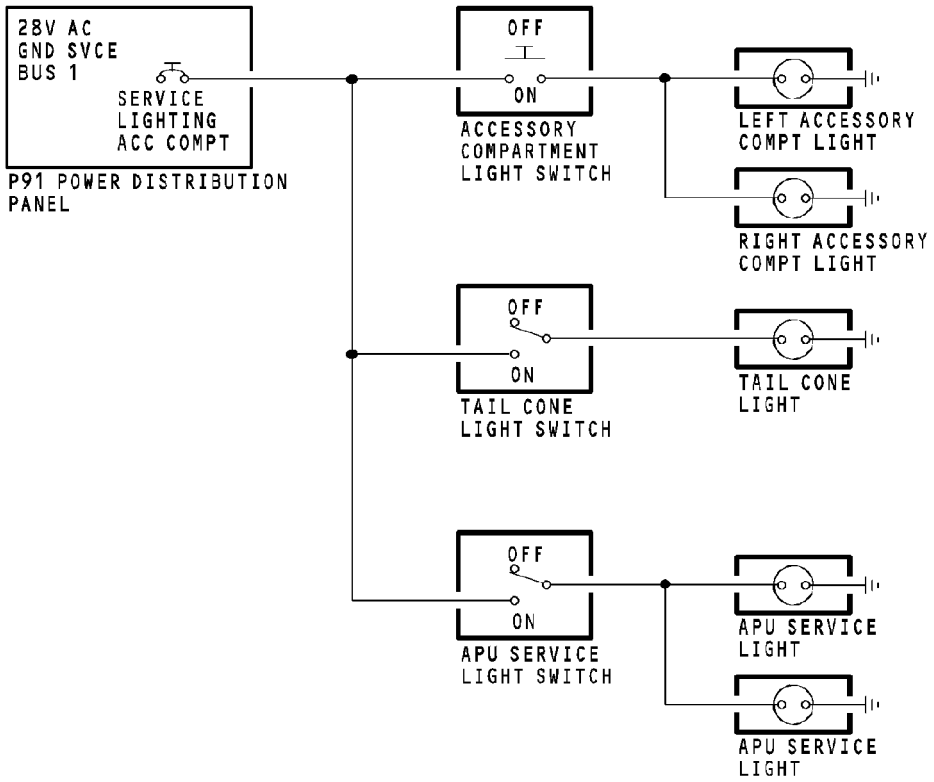
Operation

A two-position toggle switch controls the lights for the tail compartment. A two-position toggle switch controls the lights for the APU compartment.

A push-to-operate switch controls the lights for the accessory compartment. You push the switch to make the light come on. Push the switch again to control the light to go off.

Functional Description

The accessory and APU compartment lights are in a parallel circuit. The loss of a lamp will not an affect the operation of the other lamps in the circuit. With the switches in the ON position, 28v ac will go directly to each light.



LIGHTS - ACCESSORY COMPARTMENT LIGHTS - FUNCTIONAL DESCRIPTION

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LIGHTS - CARGO COMPARTMENT LIGHTS - INTRODUCTION

Purpose

The cargo compartment lights supply light to the cargo compartment areas to aid the ground and maintenance crews.

Physical Description

The cargo compartment lights are incandescent lamps.

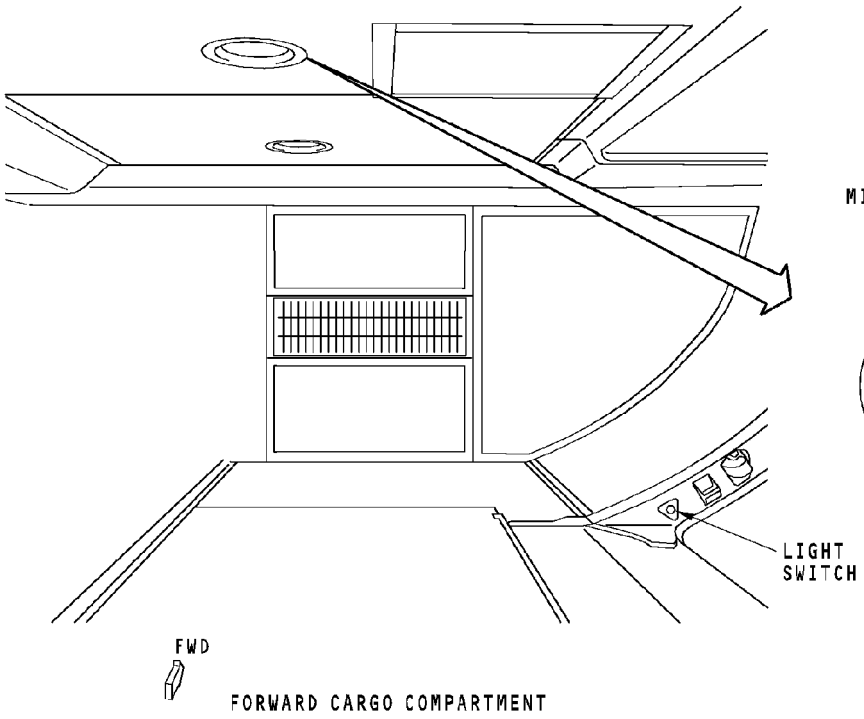
The lights have a microswitch. This switch opens the light circuit when the lens is not attached to the light assembly.

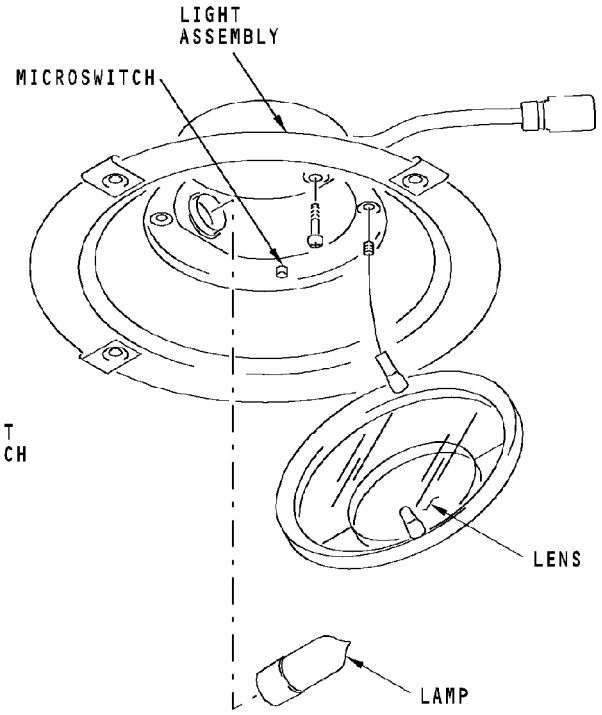
Location

The cargo compartment lights are in these areas:

- Ceiling of cargo compartment
- Top of cargo compartment door frame.

The cargo compartment light control switches are in the forward door frames.





CARGO COMPARTMENT LIGHT
(TYPICAL)

LIGHTS - CARGO COMPARTMENT LIGHTS - INTRODUCTION

EFFECTIVITY
HAP ALL

33-36-00

LIGHTS - CARGO COMPARTMENT LIGHTS - FUNCTIONAL DESCRIPTION

General

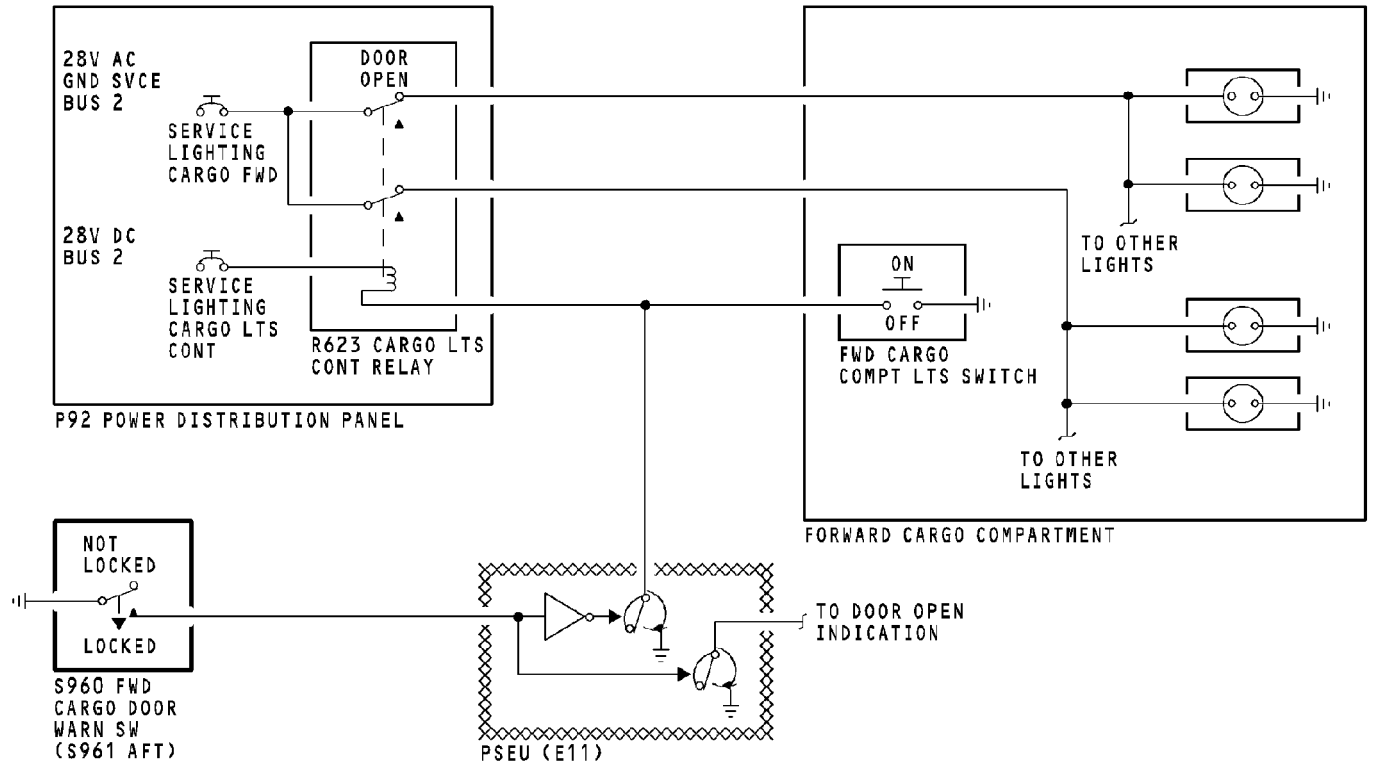
The cargo lights control relay controls the cargo compartment lights. When the cargo door is open and the cargo lights switch is in the ON position, the cargo lights come on. When the cargo door is closed, the cargo lights do not come on.

Functional Description

The cargo compartment lights are in a parallel circuit. The loss of a lamp will not affect the operation of the other lamps in the circuit.

When the cargo lights control relay is not energized, 28v ac goes to the lights. The lights come on. When the cargo lights control relay is energized, 28v ac does not go to the lights. The lights are off.

If the cargo door warning switch is in the not locked position or the proximity switch electronics unit (PSEU) senses a door close failure, the cargo lights will stay off when the door is open.



NOTE: FORWARD CARGO COMPARTMENT SHOWN,
AFT CARGO COMPARTMENT THE SAME.

LIGHTS - CARGO COMPARTMENT LIGHTS - FUNCTIONAL DESCRIPTION

EFFECTIVITY
HAP ALL

33-36-00

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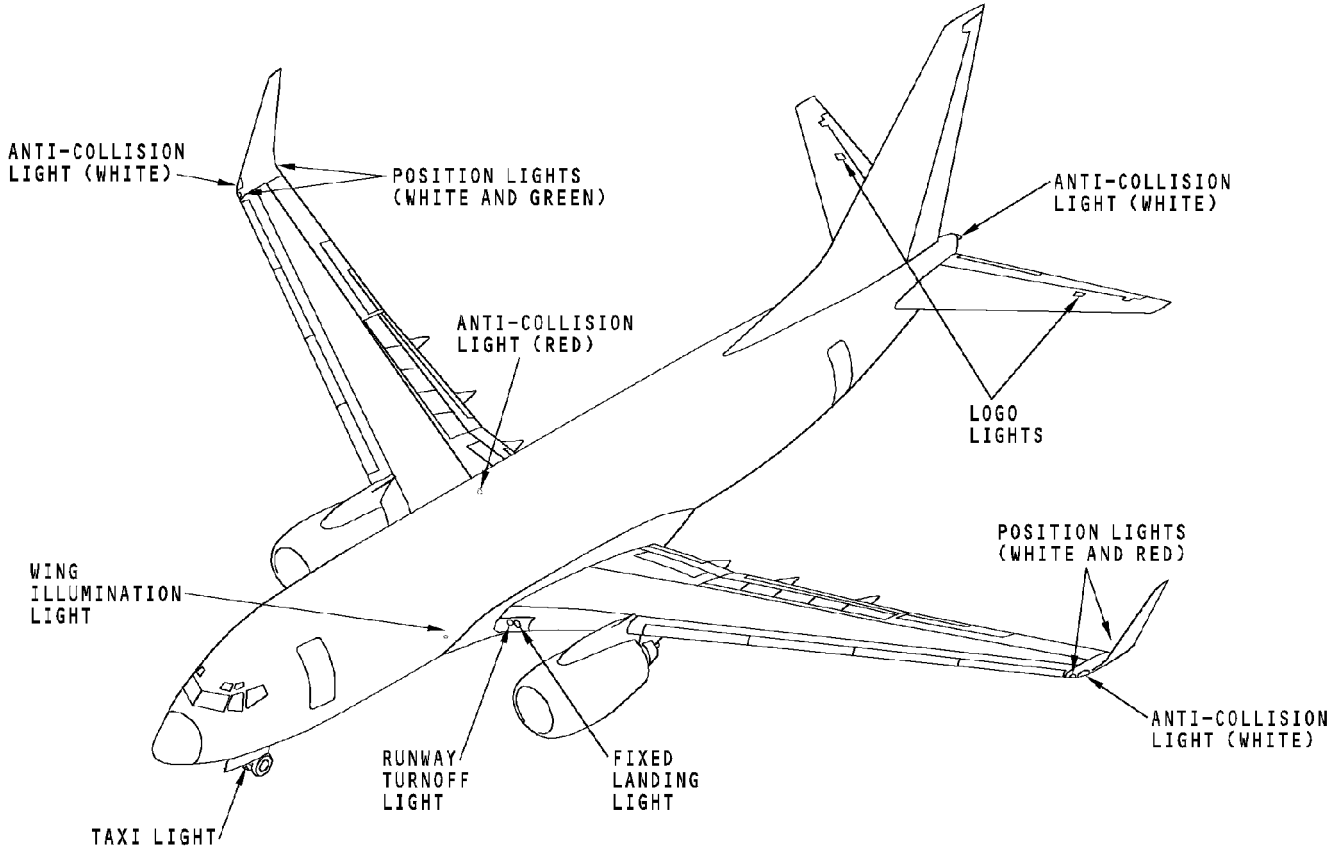
LIGHTS - EXTERIOR - INTRODUCTION

Purpose

The exterior lights supply light for airplane identification, direction, and to aid in the safe operation of the airplane.

These are the exterior lights on the airplane:

- Wing illumination
- Landing lights
- White anti-collision lights
- Red anti-collision lights
- White, red and green position lights
- Taxi and runway turnoff lights
- Logo lights.



LIGHTS - EXTERIOR - INTRODUCTION

33-40-00-001

EFFECTIVITY

HAP ALL

33-40-00

Purpose

The exterior lighting control switches control the airplane external lights.

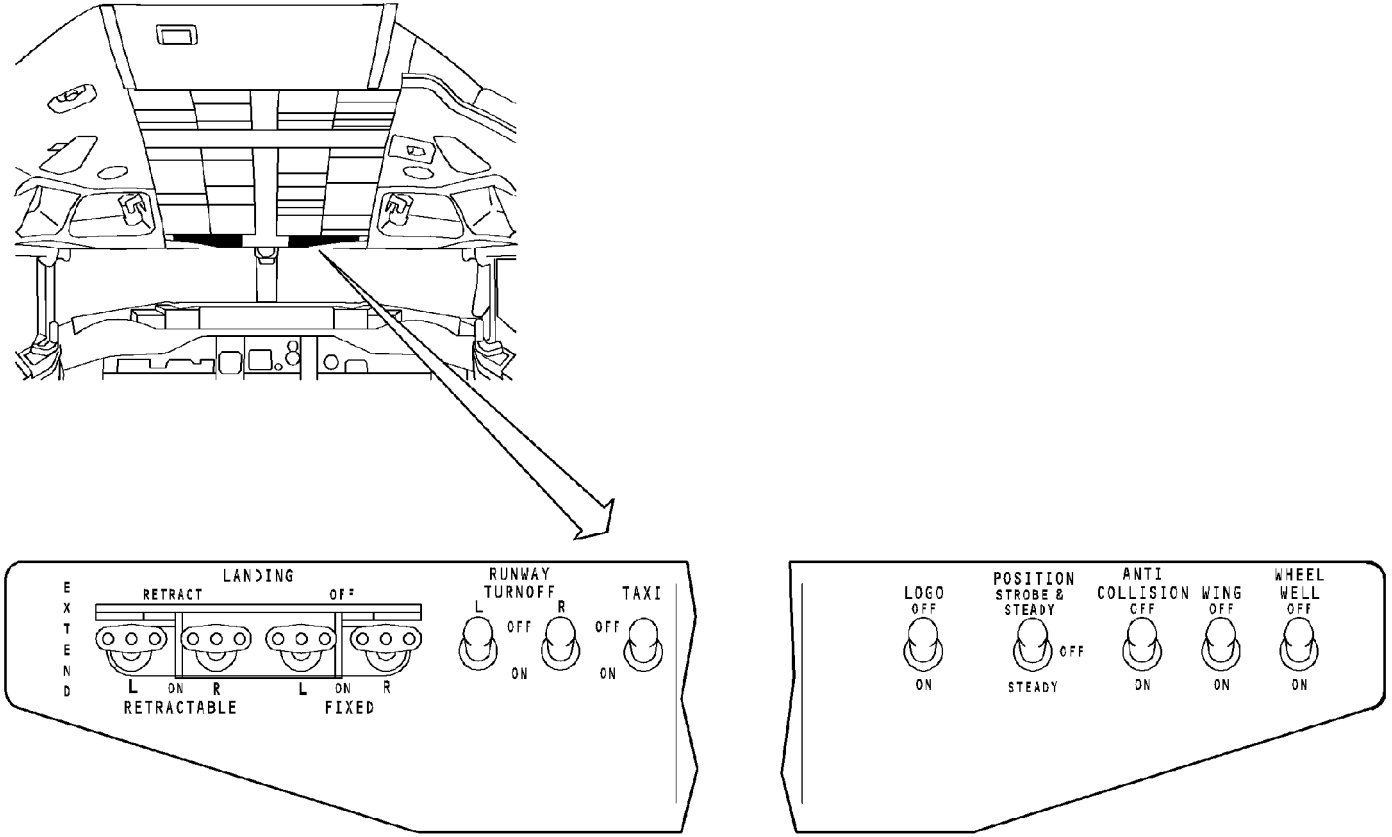
Location

The exterior lighting control switches are in the flight compartment on the lower edge of the P5 forward overhead panel.

General Description

These are the switches on the P5 that control the external lights:

- Landing (retractable and fixed)
- Runway turnoff
- Logo
- Position
- Anti-collision
- Wing
- Wheel well
- Taxi.



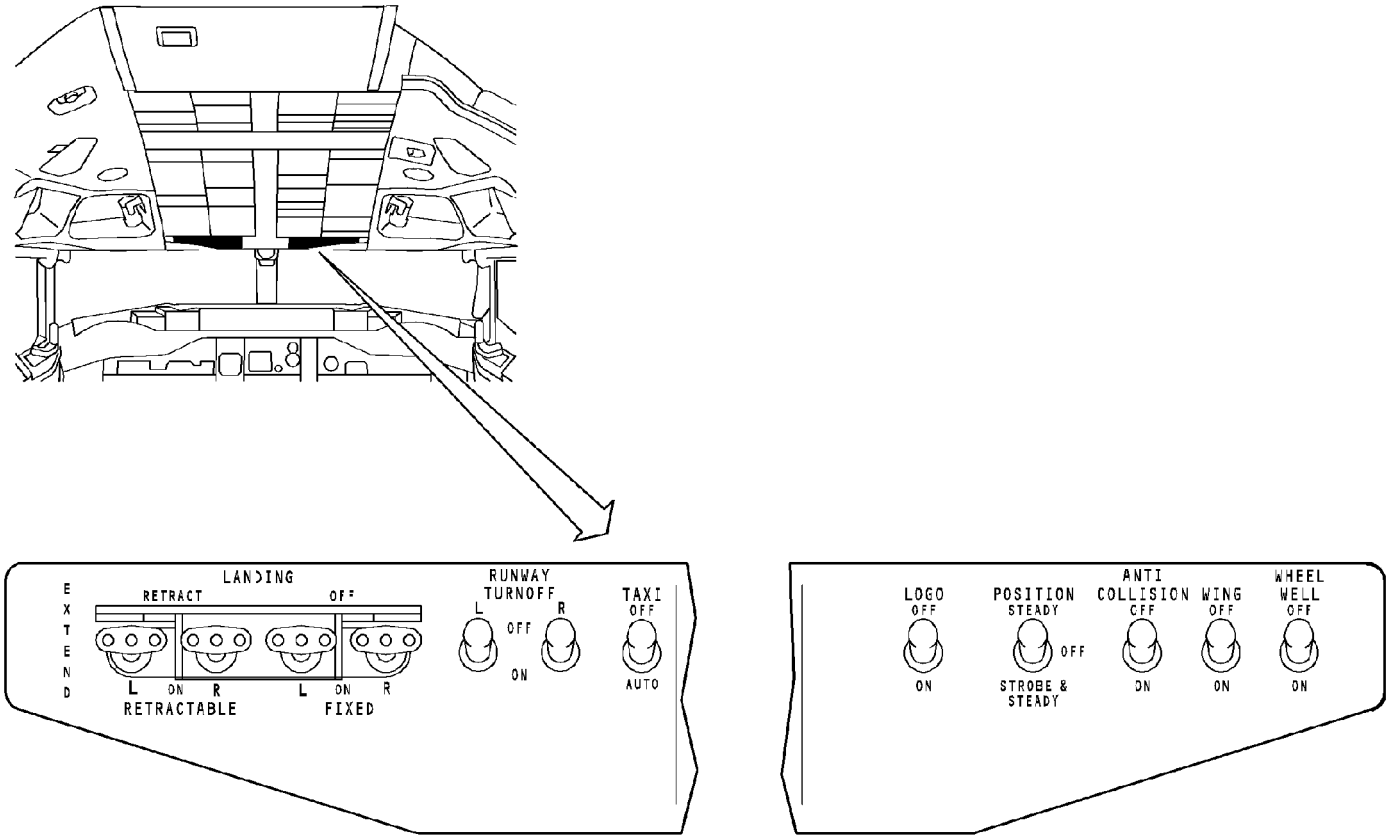
EXTERIOR LIGHTING SWITCHES

LIGHTS - EXTERIOR - CONTROL SWITCHES

EFFECTIVITY
HAP 001-013, 015-026, 028-030

33-40-00

33-40-00-002



EXTERIOR LIGHTING SWITCHES

LIGHTS - EXTERIOR - CONTROL SWITCHES

EFFECTIVITY
HAP 031-054, 101-999

33-40-00

33-40-00-002

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Purpose

The wing illumination lights supply light to the leading edge of the wings. At night, this lets the pilots see when ice collects on the on the wing leading edges.

Physical Description

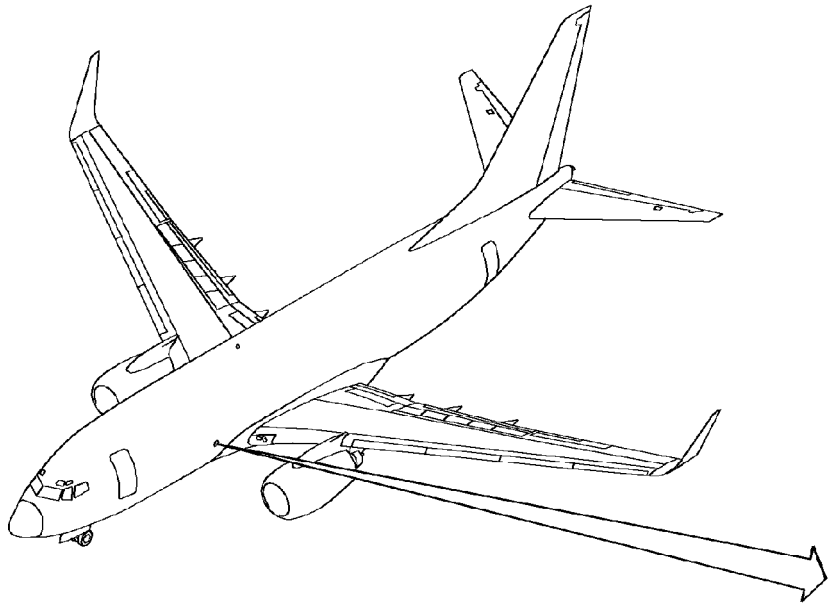
Each wing illumination light has these parts:

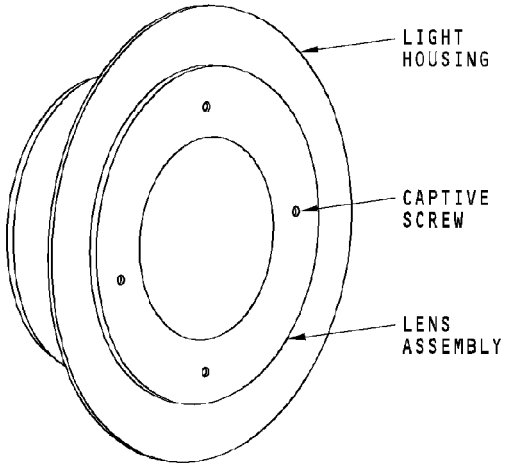
- Lens assembly with lens, reflector and captive screws
- Halogen lamp
- Lamp retainer wire spring
- Lamp socket assembly
- Light housing with transformer.

Location

The wing illumination lights are on the right and left sides of the fuselage above and forward of the wings.

The control switch is on the P5 forward overhead panel.





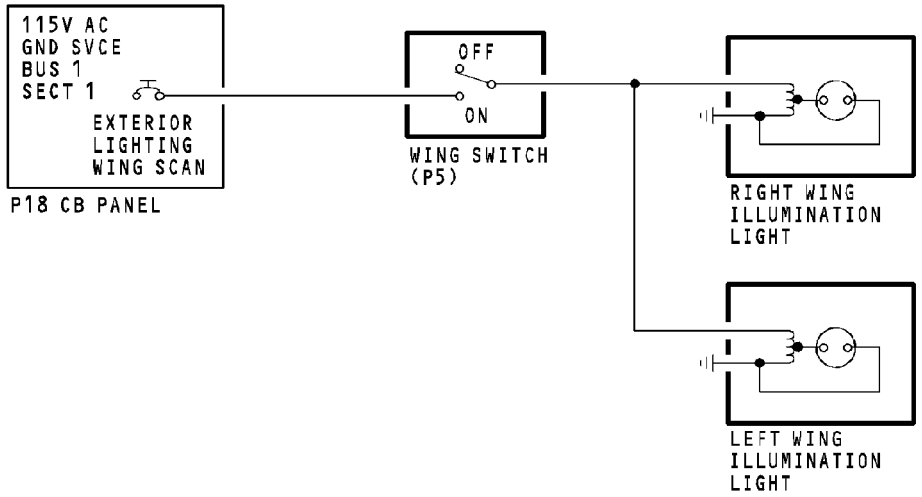
WING ILLUMINATION LIGHT
(TYPICAL)

Operation

You use the wing illumination switch to control the right and left wing illumination lights. This switch is on the exterior lighting panel on the P5 forward overhead panel.

Functional Description

With the two-position toggle switch in the ON position, 115v ac will go to the wing illumination light. A fixed step down transformer in the light assembly decreases the voltage to 12 volts.



LIGHTS - WING ILLUMINATION LIGHTS - FUNCTIONAL DESCRIPTION

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Purpose

The landing lights help the pilots to see the runway during takeoff and landing.

Physical Description

The fixed landing light has these parts:

- Lens assembly
- Lamp
- Step down transformer.

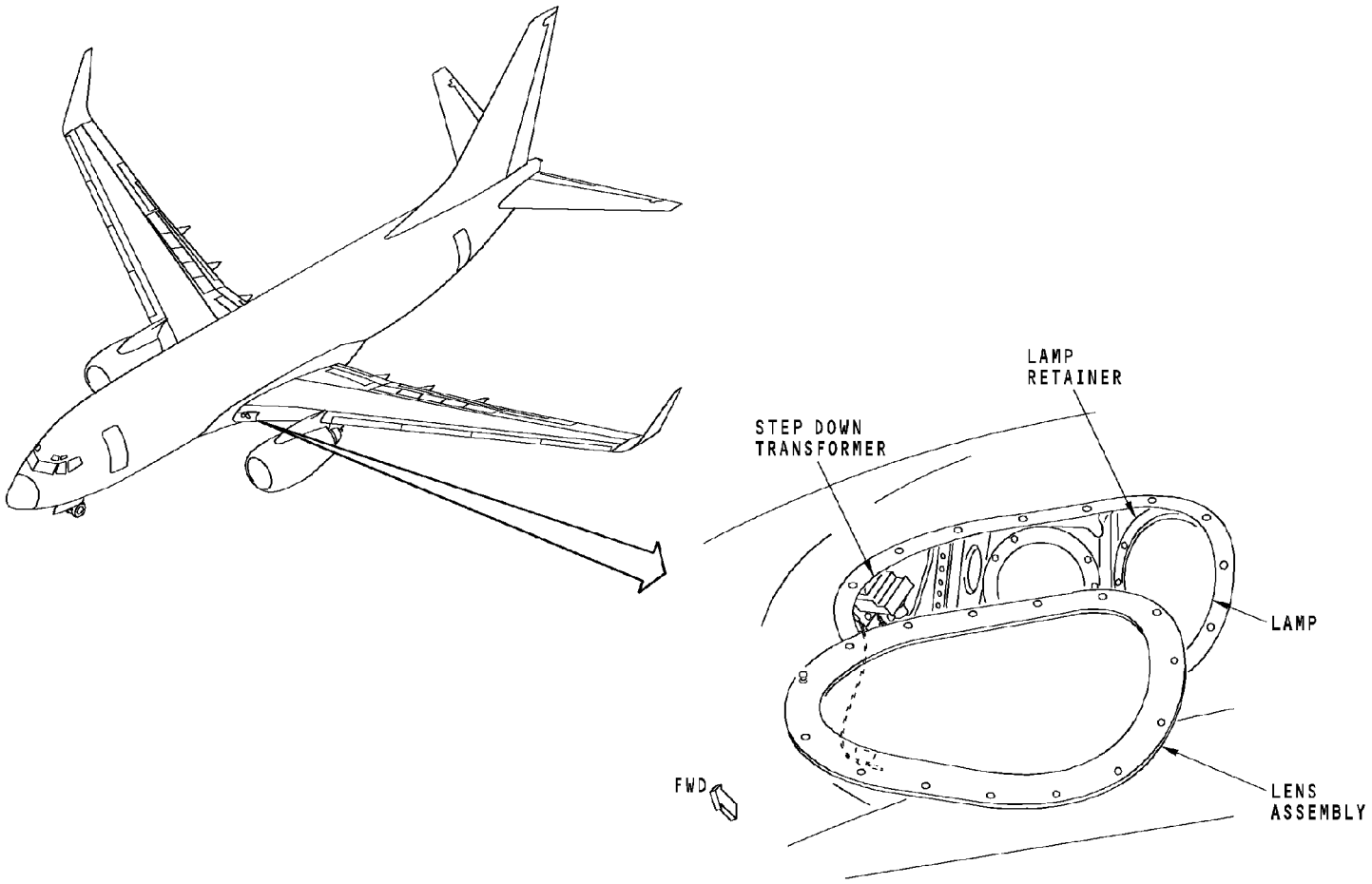
Location

The fixed landing lights are in the wing root area of each wing.

The control switches for the fixed landing lights are on the P5 forward overhead panel.

Training Information Point

You must remove the fixed landing light lens assembly to replace or adjust the position of lamp. There are six screws that hold the lamp. There are three adjustment screws to change the direction of the lamp.



LIGHTS - LANDING LIGHTS - FIXED LANDING LIGHTS

EFFECTIVITY
HAP ALL

33-42-00

Purpose

The landing lights help the pilots see the runway during takeoff and landing.

Physical Description

The retractable landing light has these parts:

- Lens assembly
- Lamp
- Retainer screws
- Extend/retract motor.

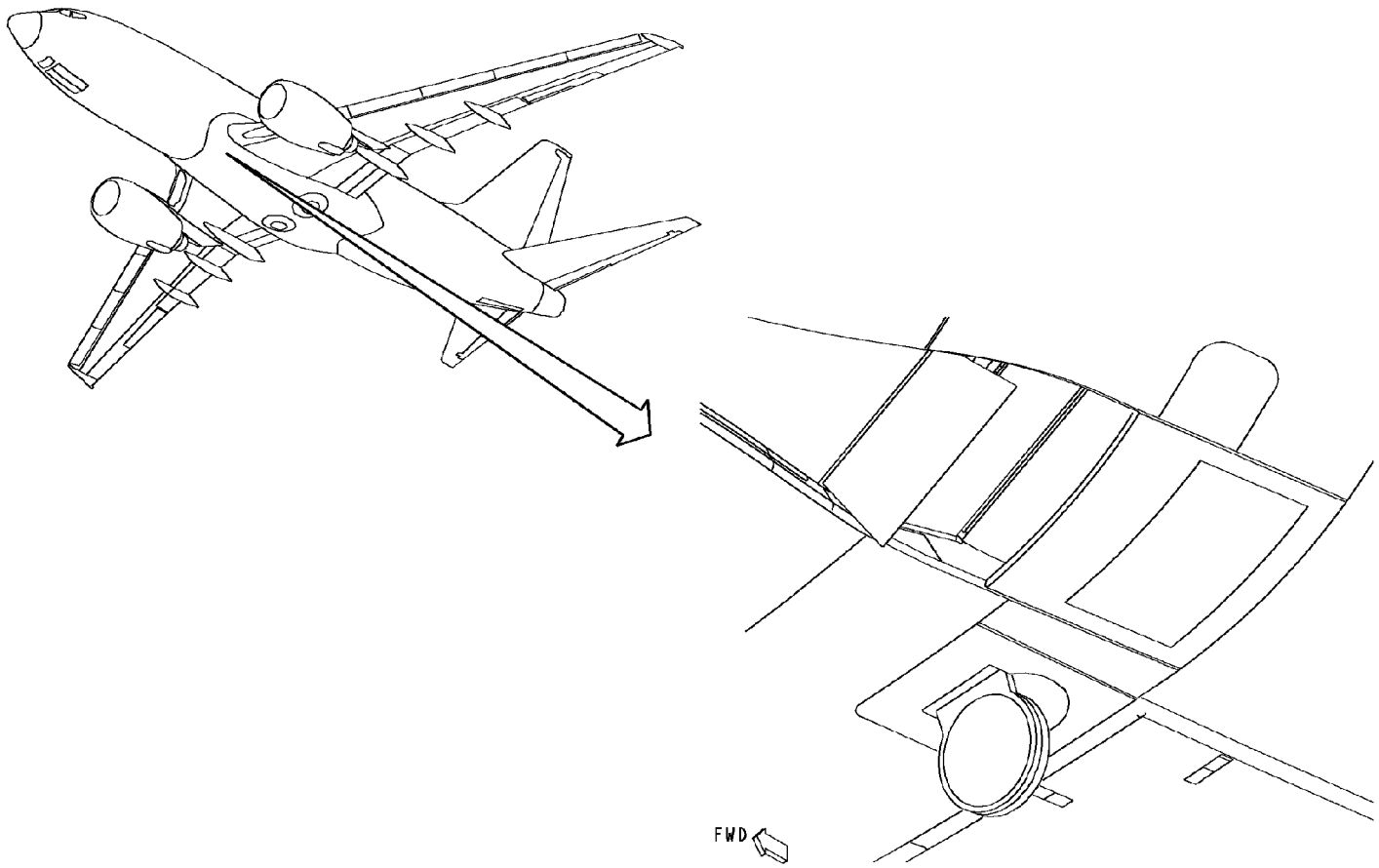
Location

The retractable landing lights are on the fuselage, adjacent to the ram air inlet panels.

The control switches for the retractable landing lights are on the P5 forward overhead panel.

Training Information Point

You must extend the retractable landing light to replace the lamp. After you extend the retractable landing light, pull and collar the circuit breaker to prevent accidental operation of retraction mechanism or electric shock.



LEFT RETRACTABLE LANDING LIGHT

LIGHTS - LANDING LIGHTS - RETRACTABLE AND FIXED LANDING LIGHTS FUNCTIONAL DESCRIPTION

Operation

A two-position toggle switch controls the fixed landing lights.

A three-position toggle switch controls the retractable landing lights. These are the positions of the switch:

- RETRACT; the light retracts and is off
- EXTEND; the light extends and the light is parallel to the aircraft water line
- ON; the light is on.

The light will come on only with the switch in the ON position.

Functional Description

When the fixed landing light switch is in the ON position, 115v ac goes to the step down transformer. The step down transformer decreases the voltage to 28v ac.

The retractable landing light uses 115v ac to extend and retract the light.

When the retractable landing light switch is in the RETRACT position, 115v ac goes to the retract motor in the light. The light retracts until the full retract limit switch opens.

When the switch is in the EXTEND position, 115v ac goes to the extend motor in the light. The light extends until the full extend limit switch opens.

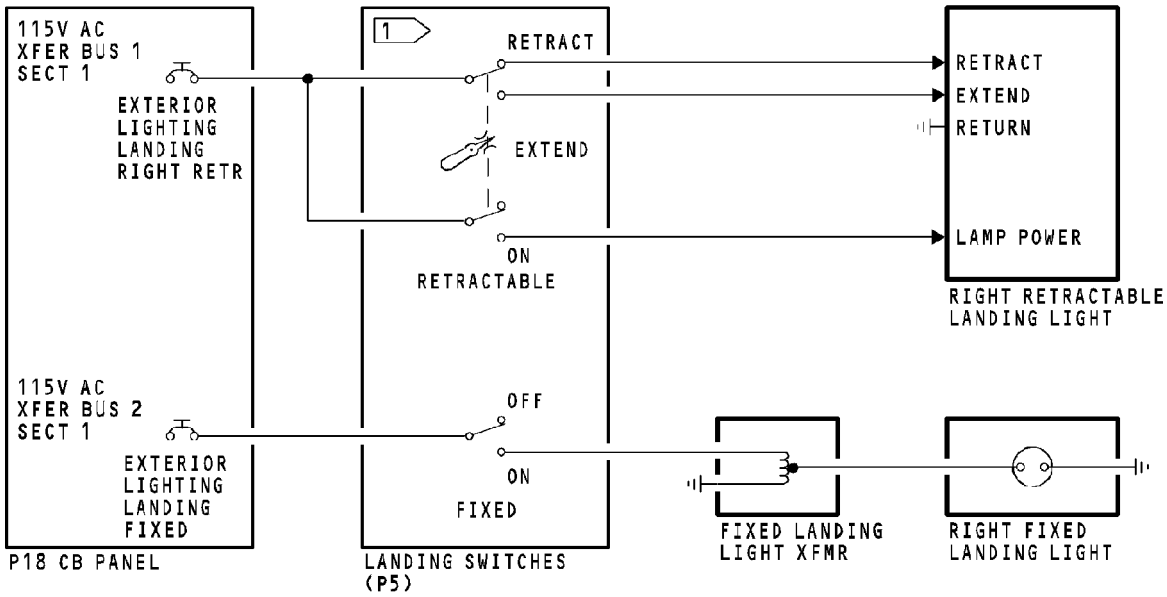
When the switch is in the ON position, the landing light extends. When the light is within five degrees of full extension the light will come on.

Training Information Point

WARNING: MAKE SURE YOU SEAL THE TERMINALS TO PREVENT AN EXPLOSION OF THE FUEL FUMES. AN EXPLOSION CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION: LANDING LIGHTS ARE NOT DESIGNED FOR CONTINUOUS USE IN STILL AIR. LIMIT OPERATION TO MOMENTARY USE.

EFFECTIVITY
HAP ALL



1 RIGHT SYSTEM SHOWN,
LEFT SYSTEM SIMILAR

LIGHTS - LANDING LIGHTS - RETRACTABLE AND FIXED LANDING LIGHTS FUNCTIONAL DESCRIPTION

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LIGHTS - POSITION LIGHTS - INTRODUCTION

Purpose

The position lights show this information to persons in other airplanes or on the ground:

- Airplane position
- Direction
- Attitude.

Physical Description

The position lights are red, green, and white incandescent lights. The left forward position light is red. The right forward light is green. The tail position lights are white.

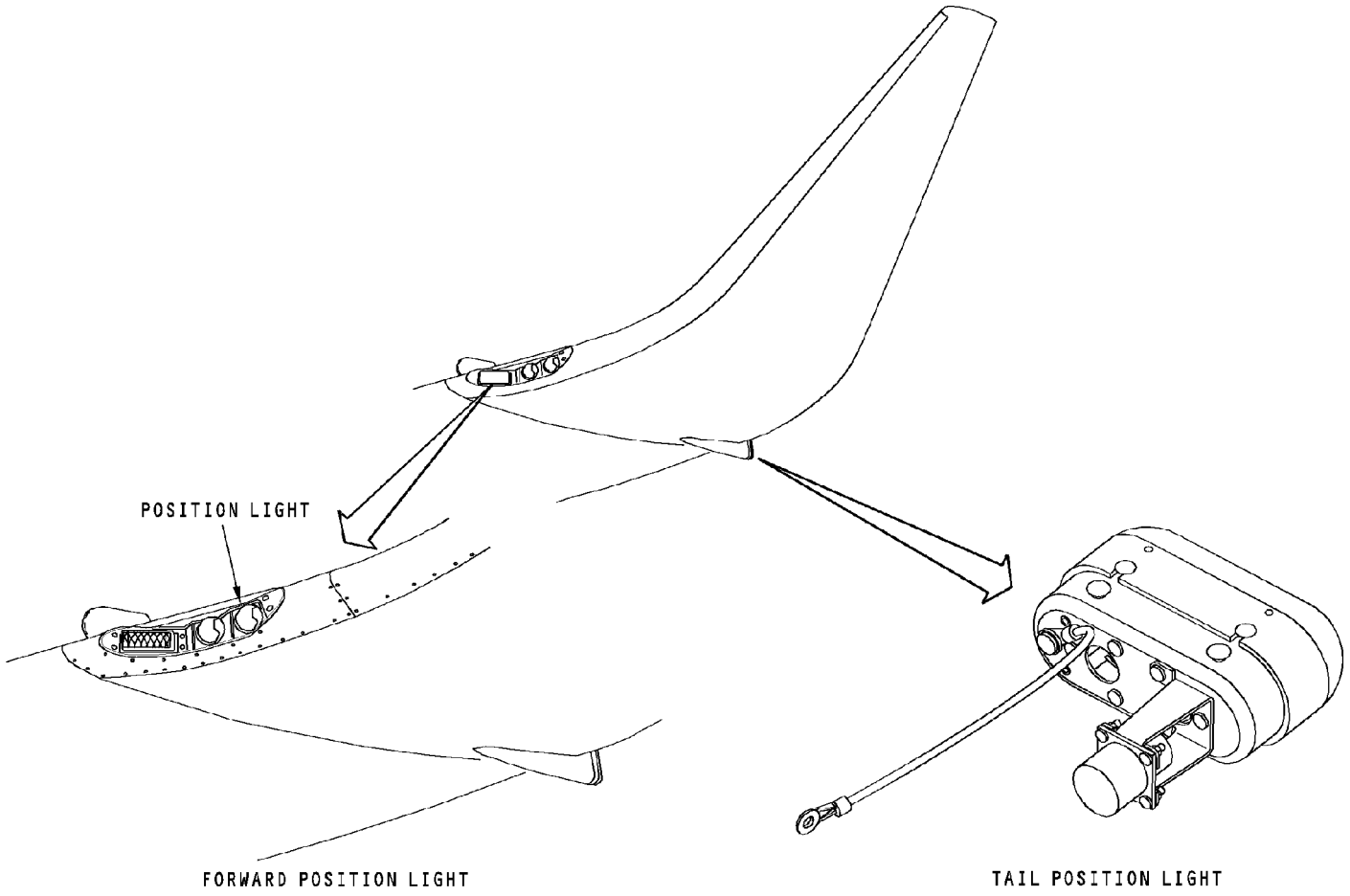
Location

There are position lights in the tip of each wing. These lights are in the leading and trailing edge of the wing tip.

The control switch for the position lights is on the P5 forward overhead panel.

Operation

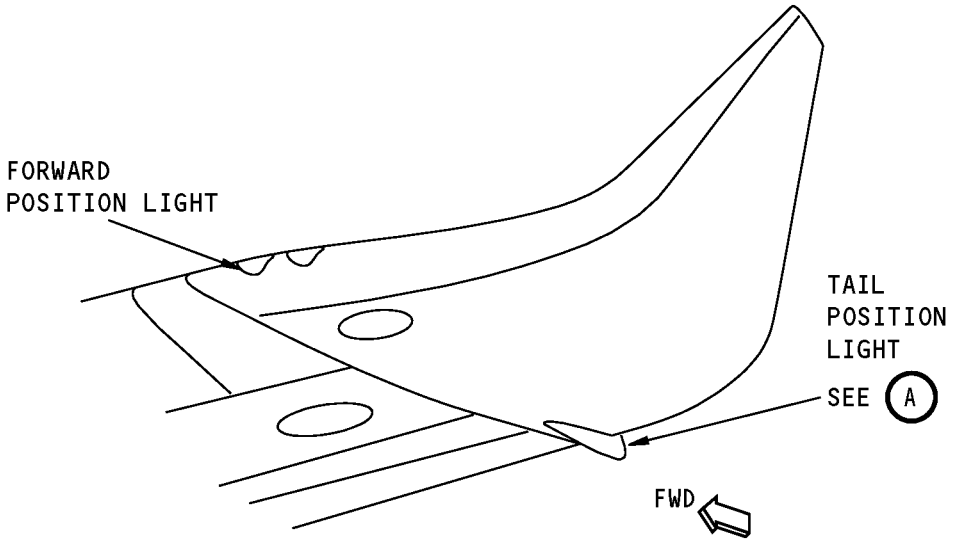
You use the position lights switch on the P5 forward overhead panel to control the position light operation.

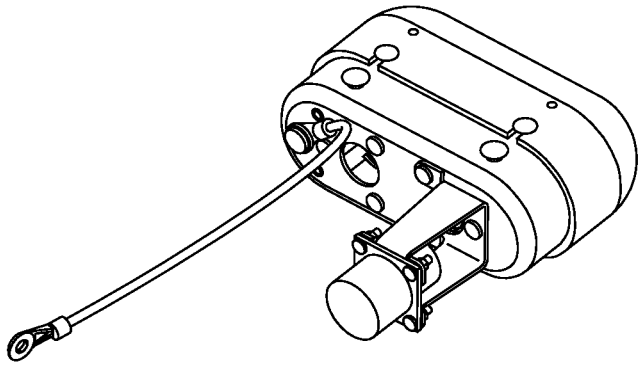


LIGHTS - POSITION LIGHTS - INTRODUCTION

EFFECTIVITY

HAP ALL; AIRPLANES WITH SINGLE FORWARD LENS CONFIGURATION





TAIL POSITION LIGHT

A

LIGHTS - POSITION LIGHTS - INTRODUCTION

EFFECTIVITY

HAP ALL; AIRPLANES WITH DUAL FORWARD LENS CONFIGURATION

33-43-00

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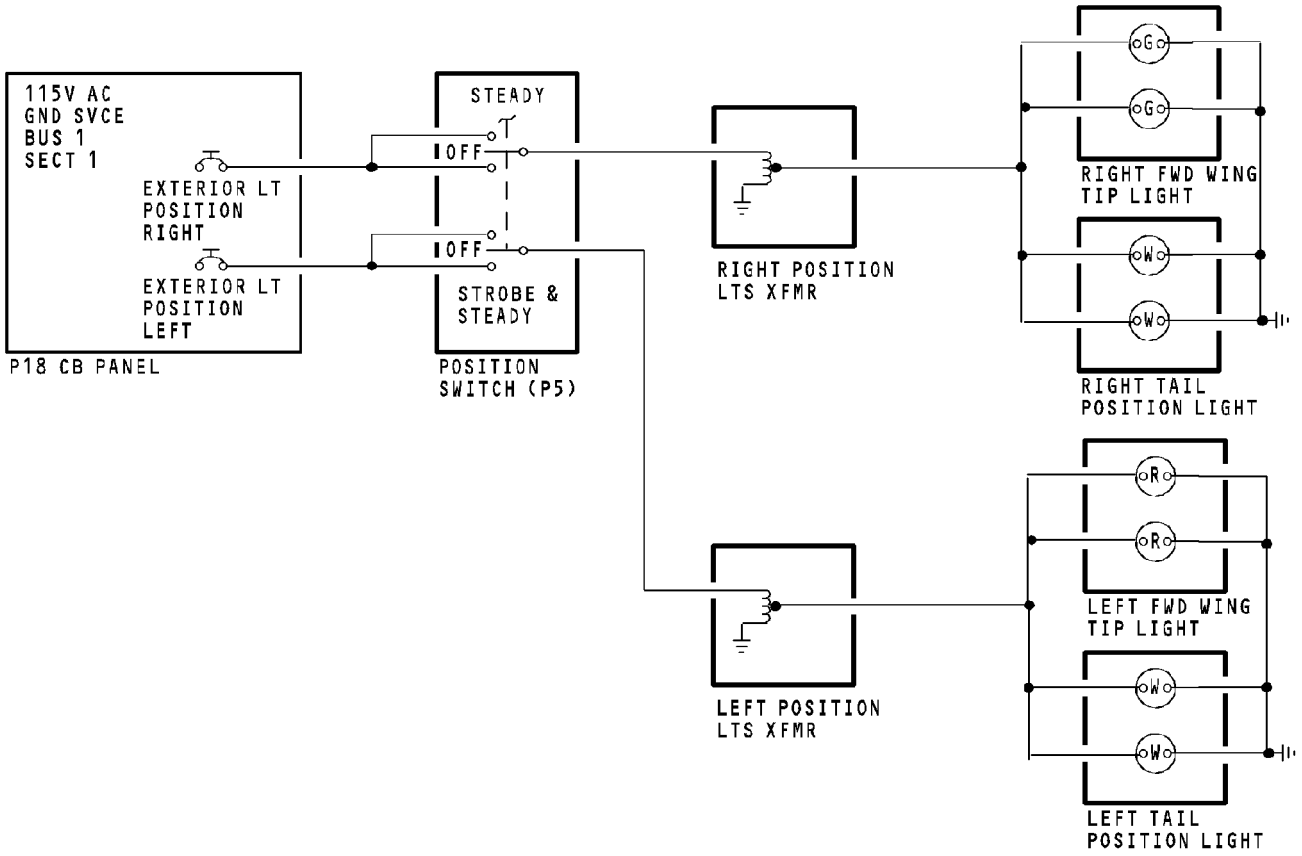
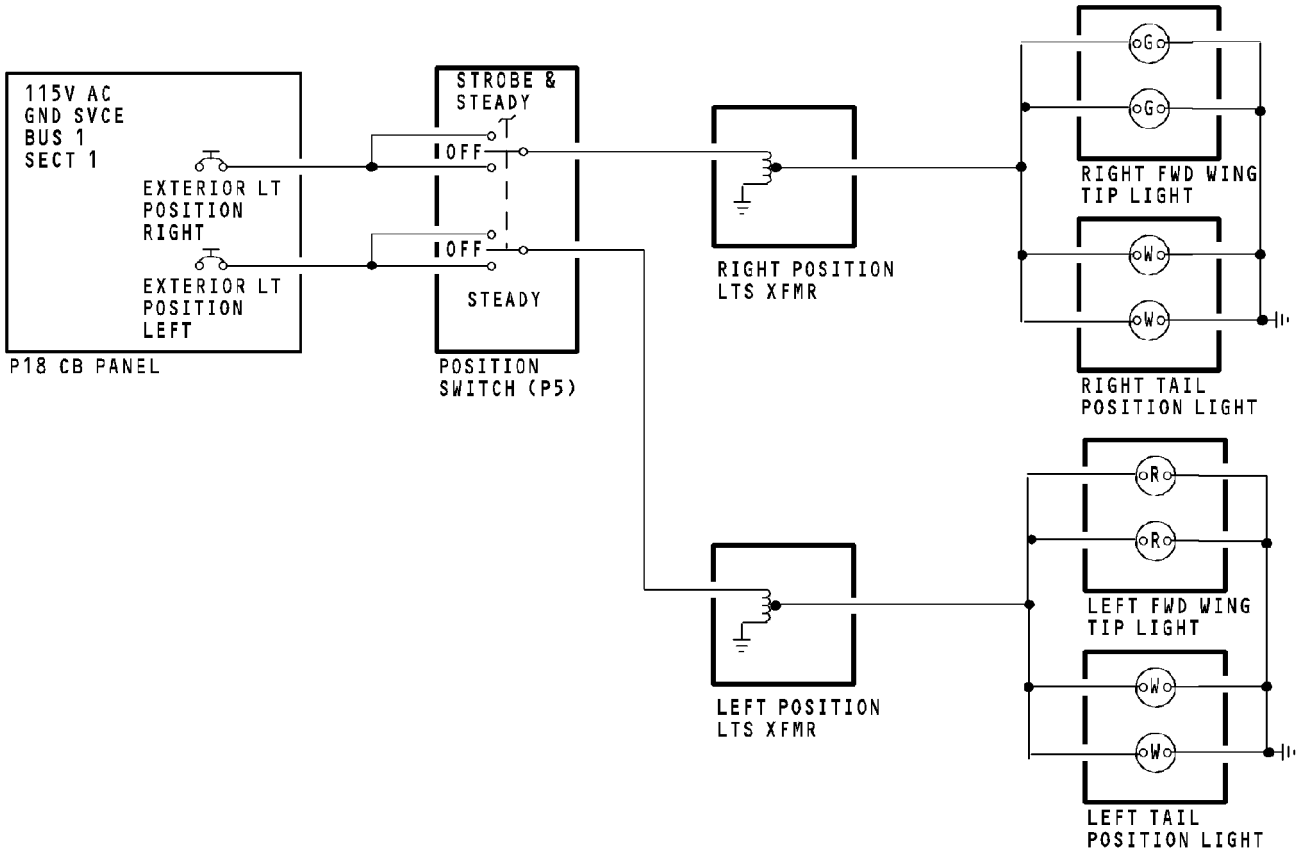
Functional Description

With the position lights switch in the STEADY or STROBE & STEADY position, 115v ac goes to the step down transformers. The step down transformers decrease the 115v ac to an operating voltage for the position light.



LIGHTS - POSITION LIGHTS - FUNCTIONAL DESCRIPTION



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LIGHTS - ANTI-COLLISION LIGHTS - INTRODUCTION

Purpose

The anti-collision lights make the airplane easier to see in the air and on the ground.

Physical Description

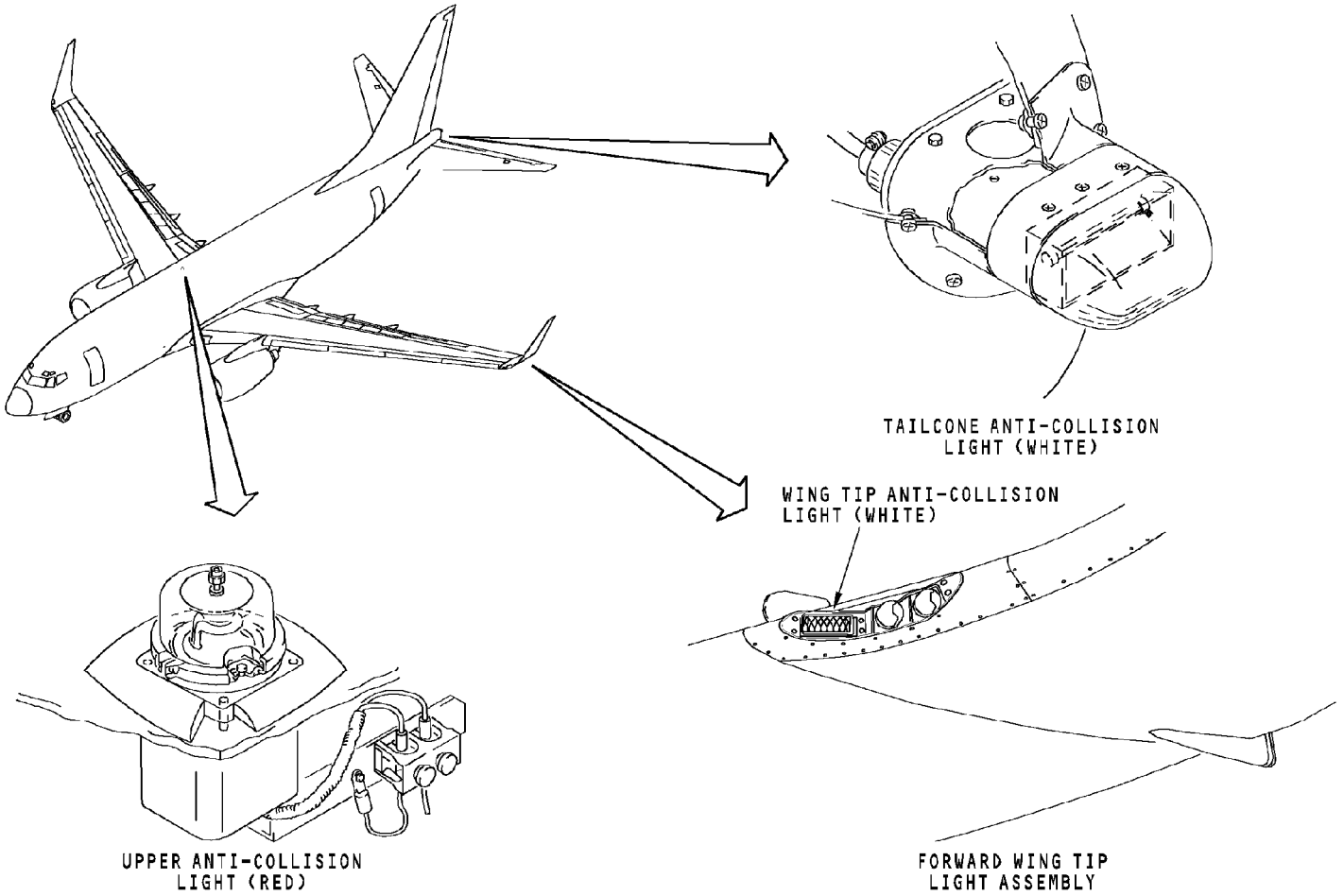
There are five anti-collision lights on the airplane. Two red anti-collision lights and three white anti-collision lights. Each light assembly has a xenon arc flashtube and solid state circuits to operate the flashtube.

Location

One red anti-collision light is on the top and bottom of the fuselage. The upper and lower anti-collision lights are the same.

There are three white anti-collision lights, one on each wing tip and one on the tailcone of the airplane.

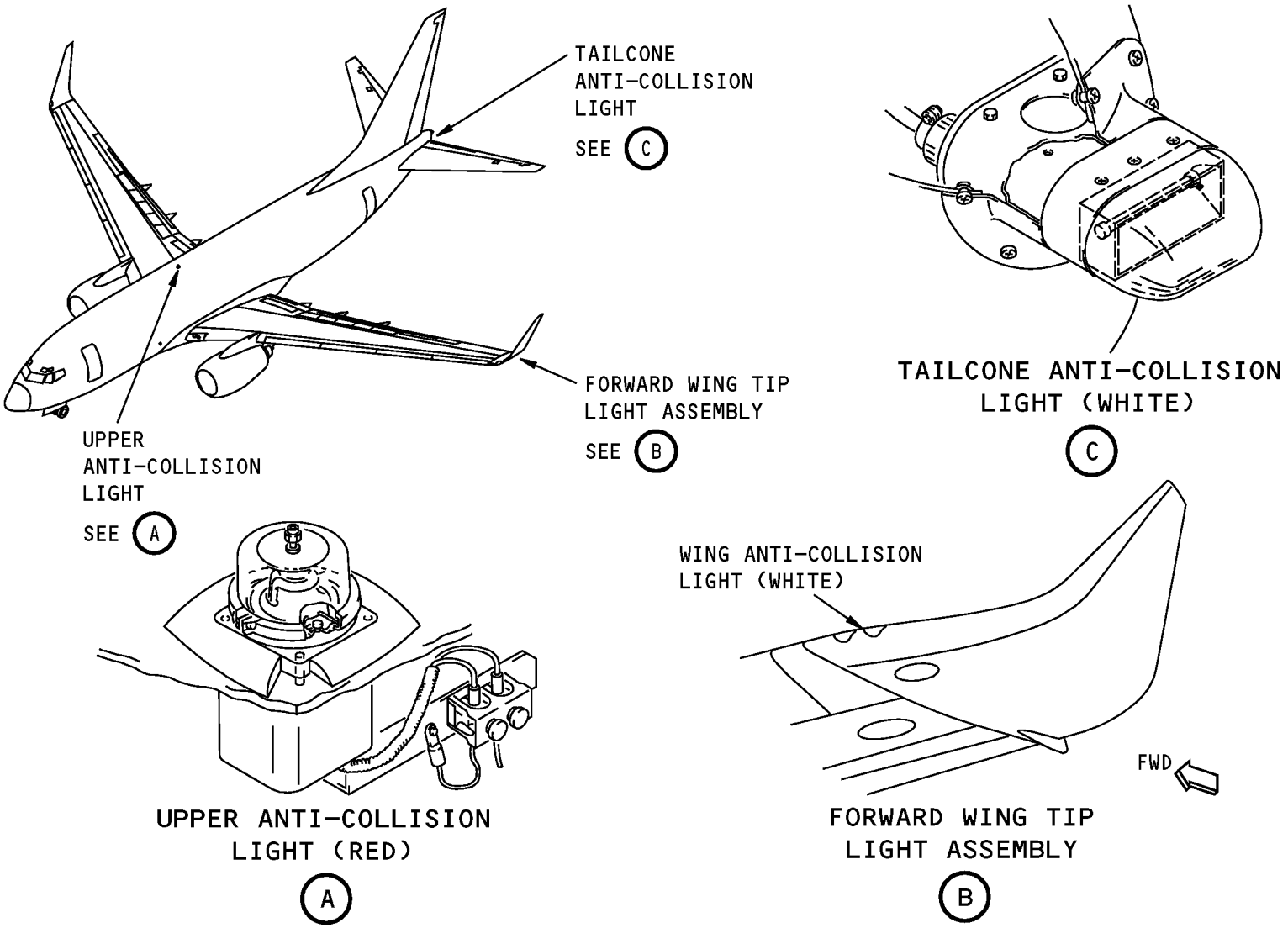
The control switches for the anti-collision lights are on the P5 forward overhead panel.



LIGHTS - ANTI-COLLISION LIGHTS - INTRODUCTION

EFFECTIVITY

HAP ALL; AIRPLANES WITH SINGLE FORWARD LENS CONFIGURATION



LIGHTS - ANTI-COLLISION - INTRODUCTION

EFFECTIVITY

HAP ALL; AIRPLANES WITH DUAL FORWARD LENS CONFIGURATION

33-44-00

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Operation

Control switches for the anti-collision lights are on the P5 forward overhead panel. There is a control switch for each anti-collision system. The anti-collision lights flash at a rate of 42 times per minute. The red anti-collision lights flash at the same time.

Functional Description

With the control switch in the STROBE and STEADY position, 115v ac goes to the power supplies for each anti-collision light. The power supplies cause drive signals for these components:

- Trigger circuit
- Flash timer
- Energy storage capacitors.

Training Information Point

You remove the white anti-collision light from the outside of the airplane.

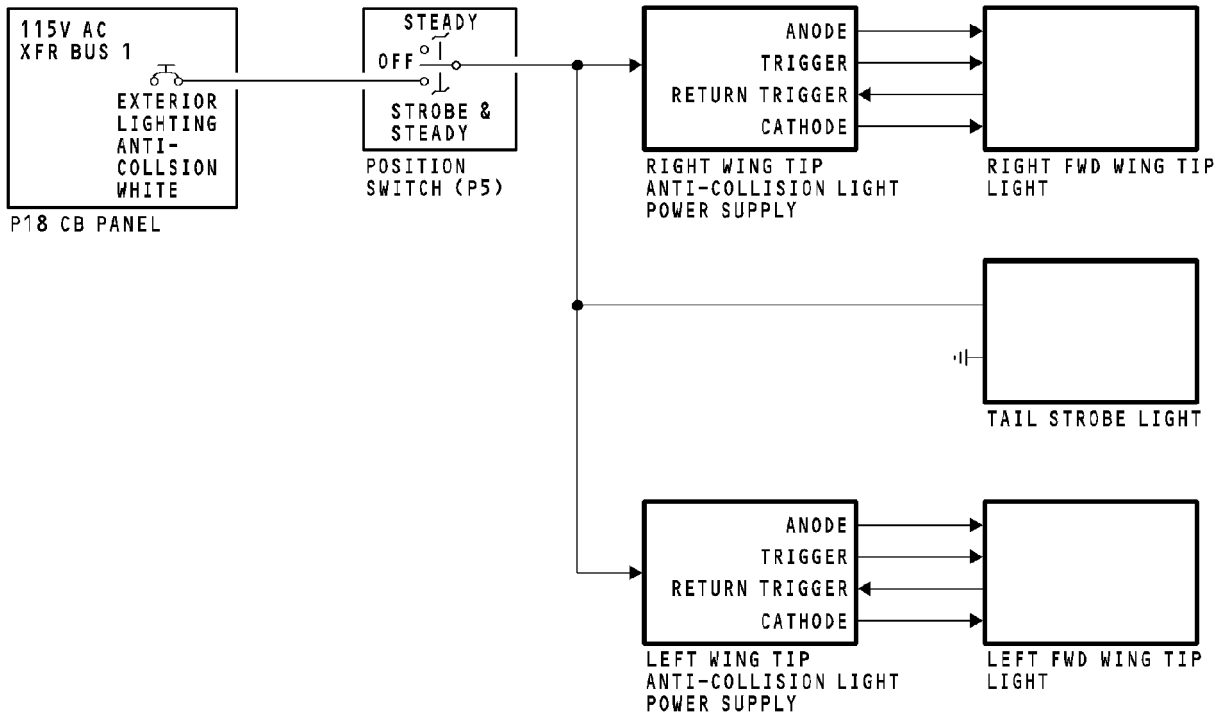
WARNING: DO NOT LET THE STROBE LIGHT FLASH DIRECTLY IN YOUR EYES. THE INTENSITY OF THE LIGHT CAN CAUSE YOU TO NOT SEE TEMPORARILY.

WARNING: FOR THE LOWER ANTI-COLLISION LIGHT, MAKE SURE YOU SEAL EACH BARE ELECTRICAL CONNECTION NEAR THE LIGHT TO PREVENT AN EXPLOSION OF FUEL FUMES. AN EXPLOSION CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

WARNING: DO NOT TOUCH THE LIGHT WITH YOUR BARE HANDS UNTIL THE LIGHT IS OFF FOR FIVE MINUTES. DURING THIS TIME, YOU CAN RECEIVE AN INJURY IF YOU TOUCH THE LIGHT. THE LIGHT CAN BURN YOUR SKIN OR GIVE YOU AN ELECTRICAL SHOCK.

WARNING: DO NOT TOUCH THE POWER SUPPLY FOR THREE MINUTES AFTER YOU REMOVE ELECTRICAL POWER. AN ELECTRICAL SHOCK CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION: DO NOT TOUCH THE LAMP WITH YOUR BARE HANDS. FINGERPRINTS DECREASE LIGHT OUTPUT AND CAN CAUSE FAILURE OF THE LAMP BEFORE THE USUAL TIME.



LIGHTS - ANTI-COLLISION LIGHTS (WHITE) - FUNCTIONAL DESCRIPTION

EFFECTIVITY
HAP ALL

33-44-00

Operation

Control switch for the red anti-collision lights is on the P5 forward overhead panel. There is a control switch for each anti-collision system. The anti-collision lights flash at a rate of 42 times per minute. The white anti-collision lights flash at the same time.

Functional Description

With the control switch in the ON position, 115v ac goes to the power supplies for each anti-collision light. The power supplies cause drive signals for these components:

- Trigger circuit
- Flash timer
- Energy storage capacitors.

Training Information Point

You remove the upper anti-collision light from the inside of the airplane. You remove the lower and white anti-collision light from the outside of the airplane.

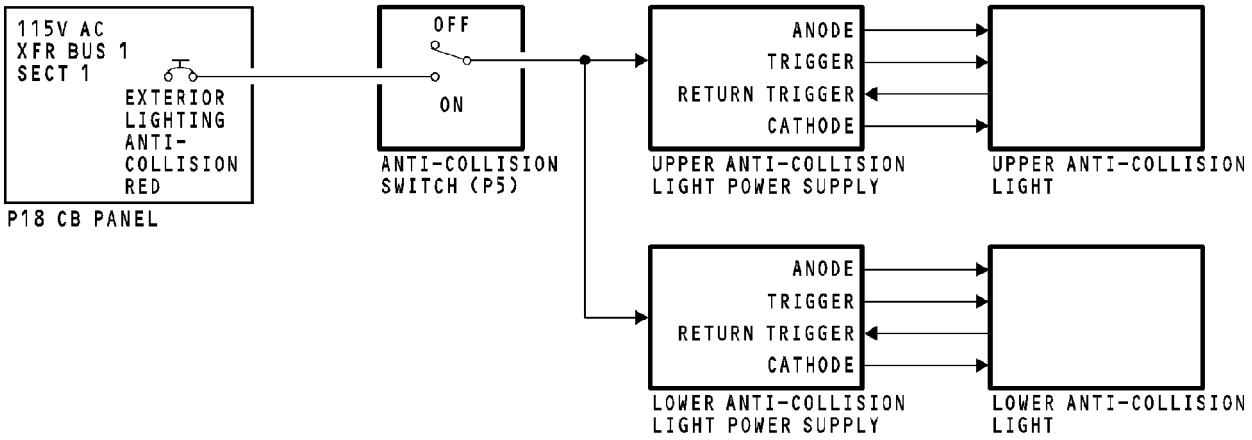
WARNING: DO NOT LET THE STROBE LIGHT FLASH DIRECTLY IN YOUR EYES. THE INTENSITY OF THE LIGHT CAN CAUSE YOU TO NOT SEE TEMPORARILY.

WARNING: FOR THE LOWER ANTI-COLLISION LIGHT, MAKE SURE YOU SEAL EACH BARE ELECTRICAL CONNECTION NEAR THE LIGHT TO PREVENT AN EXPLOSION OF FUEL FUMES. AN EXPLOSION CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

WARNING: DO NOT TOUCH THE LIGHT WITH YOUR BARE HANDS UNTIL THE LIGHT IS OFF FOR FIVE MINUTES. DURING THIS TIME, YOU CAN RECEIVE AN INJURY IF YOU TOUCH THE LIGHT. THE LIGHT CAN BURN YOUR SKIN OR GIVE YOU AN ELECTRICAL SHOCK.

WARNING: DO NOT TOUCH THE POWER SUPPLY FOR THREE MINUTES AFTER YOU REMOVE ELECTRICAL POWER. AN ELECTRICAL SHOCK CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION: DO NOT TOUCH THE LAMP WITH YOUR BARE HANDS. FINGERPRINTS DECREASE LIGHT OUTPUT AND CAN CAUSE FAILURE OF THE LAMP BEFORE THE USUAL TIME.



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LIGHTS - TAXI AND RUNWAY TURNOFF LIGHTS - INTRODUCTION

Purpose

Taxi and runway turnoff lights let the pilots see the taxiway or runway during taxi.

Physical Description

The taxi and runway turnoff lights have these components:

- Lens retainer
- Lamp
- Terminal.

Location

The taxi light is on the front of the nose landing gear strut. It is below the nose wheel steering actuator.

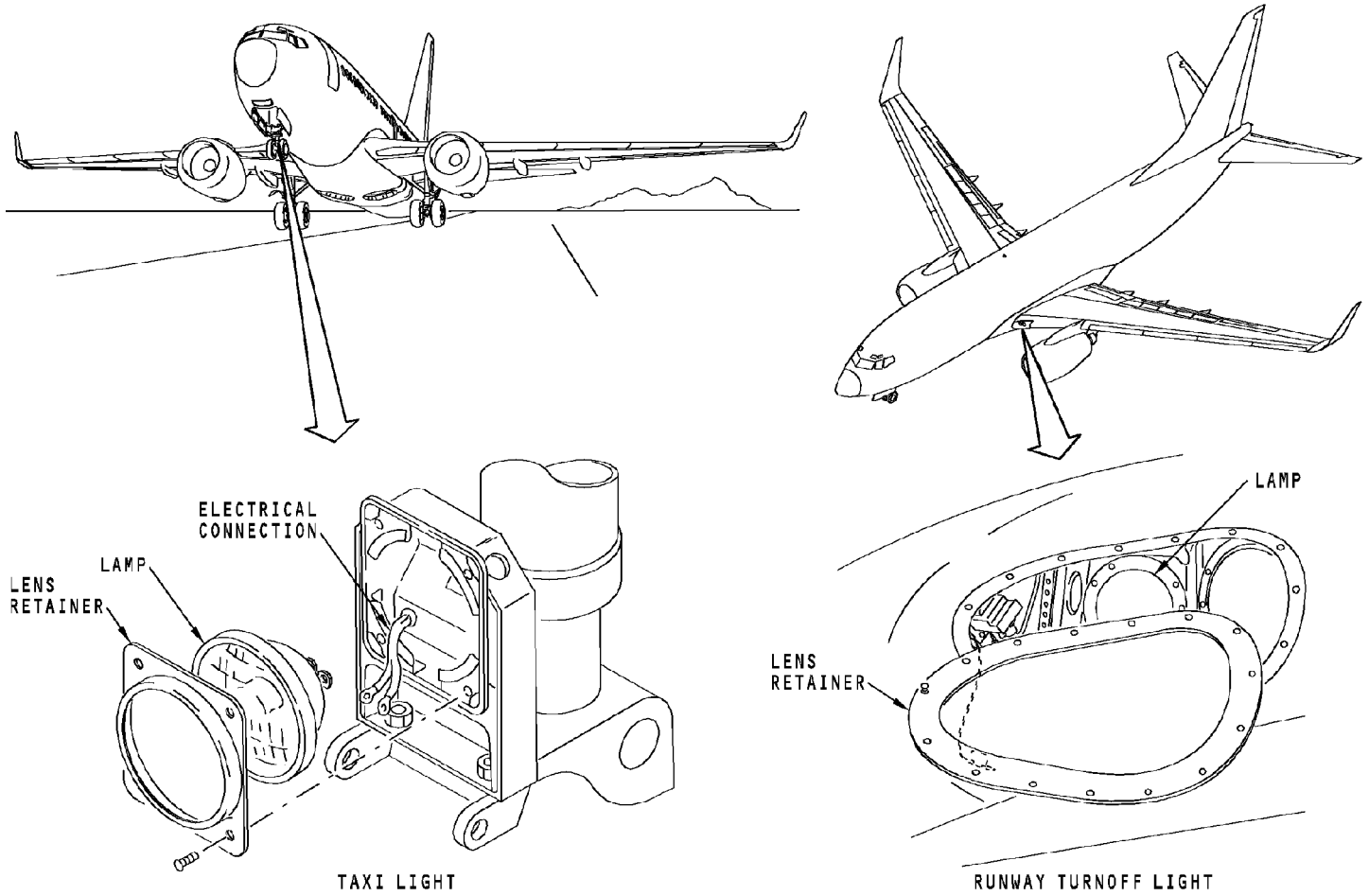
The runway turnoff lights are on the leading edge wing root, next to the wing-to-body fairing. They are adjacent to the fixed landing lights.

The control switches for the taxi and runway turnoff lights are on the P5 forward overhead panel.

Training Information Point

There are three adjustment screws that you use to point the lamp and three screws that hold the lamp of the runway turnoff light.

WARNING: YOU MUST CAREFULLY INSTALL THE GROUND LOCKS IN ALL LANDING GEAR. AN ACCIDENTAL RETRACTION OF THE LANDING GEAR CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.



LIGHTS - TAXI AND RUNWAY TURNOFF LIGHTS - INTRODUCTION

EFFECTIVITY

HAP ALL

33-45-00

Functional Description

Three switches on the P5 panel control the taxi and runway lights. There is one switch for the nose gear taxi light and one switch for each runway turnoff light.

When the runway turnoff switches are in the ON position, 28v ac goes to the lights.

When the taxi light switch is in the ON position, 28v ac goes to the light.

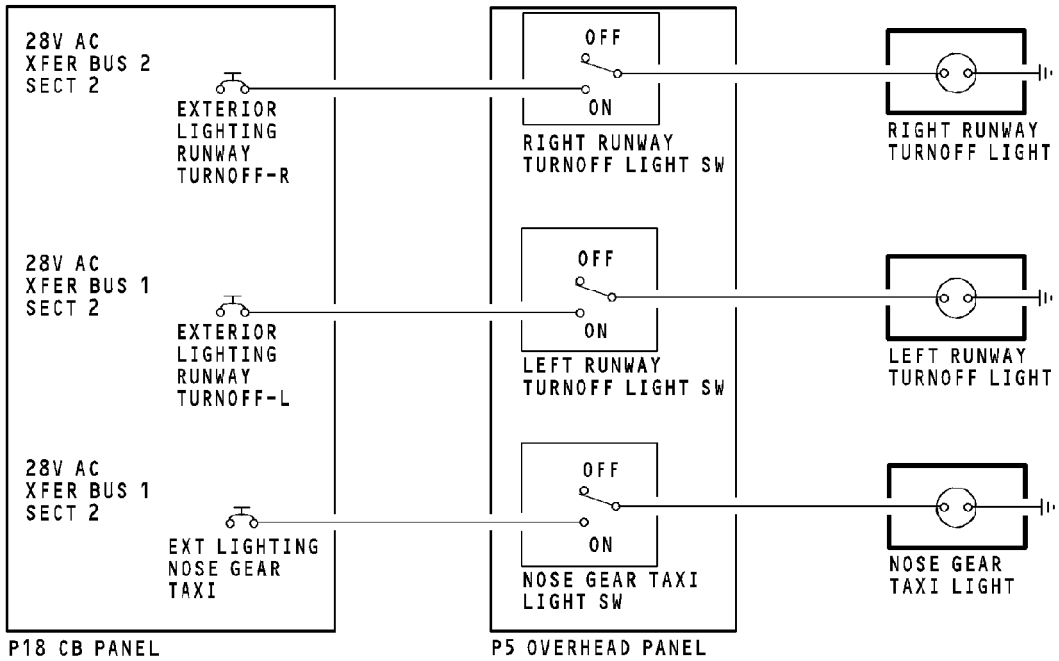
HAP 031-054, 101-999

The nose gear taxi light turns off automatically when these things occur:

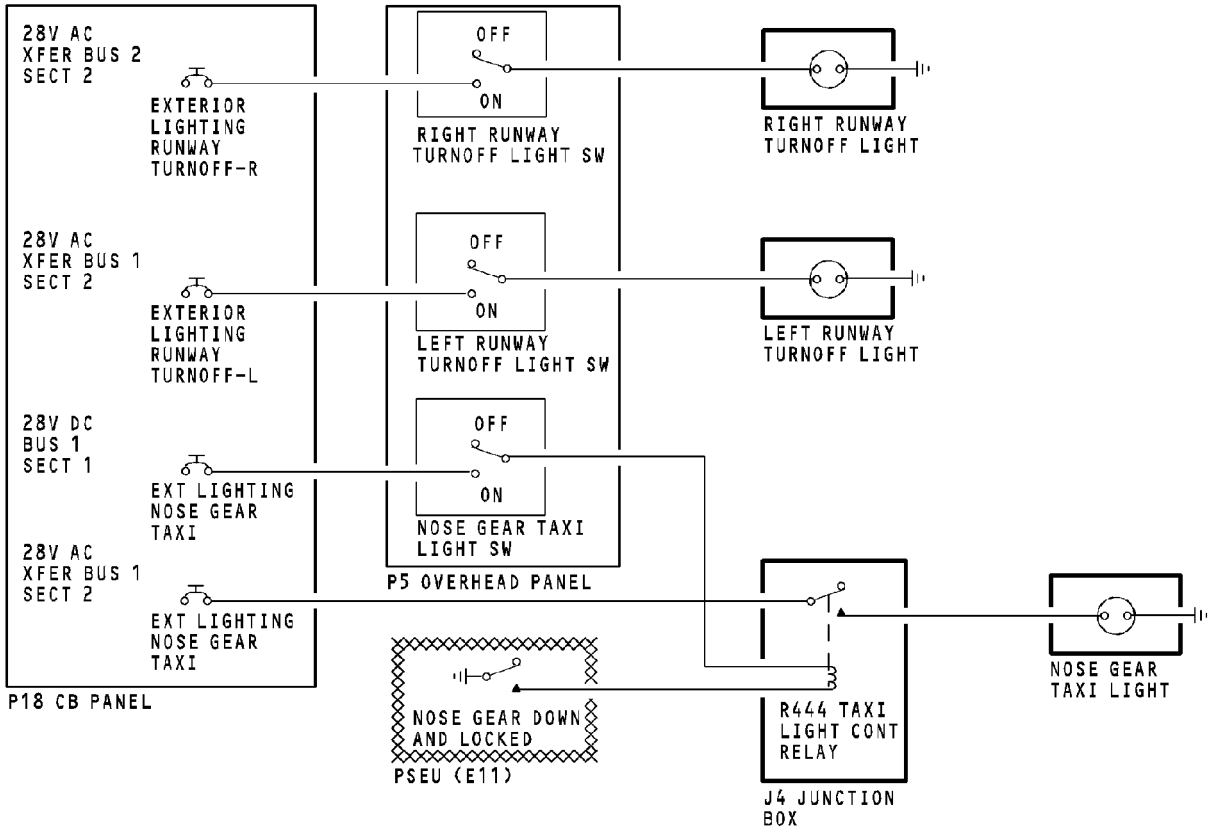
- Nose landing gear switch in AUTO
- Nose landing gear is NOT in the down and locked position.

HAP ALL

CAUTION: DO NOT OPERATE THE LIGHTS FOR MORE THAN FIVE MINUTES. ALLOW AN EQUAL AMOUNT OF TIME FOR THE LIGHTS TO BE OFF AS THEY WERE ON. BECAUSE OF THE HEAT, THE CONTINUED OPERATION OF THE LIGHTS CAN DECREASE THE LIFE OF THE LAMPS.



LIGHTS - TAXI AND RUNWAY TURNOFF LIGHTS - FUNCTIONAL DESCRIPTION



LIGHTS - TAXI AND RUNWAY TURNOFF LIGHTS - FUNCTIONAL DESCRIPTION

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Purpose

The logo lights help show the airline logo or emblem on the vertical stabilizer.

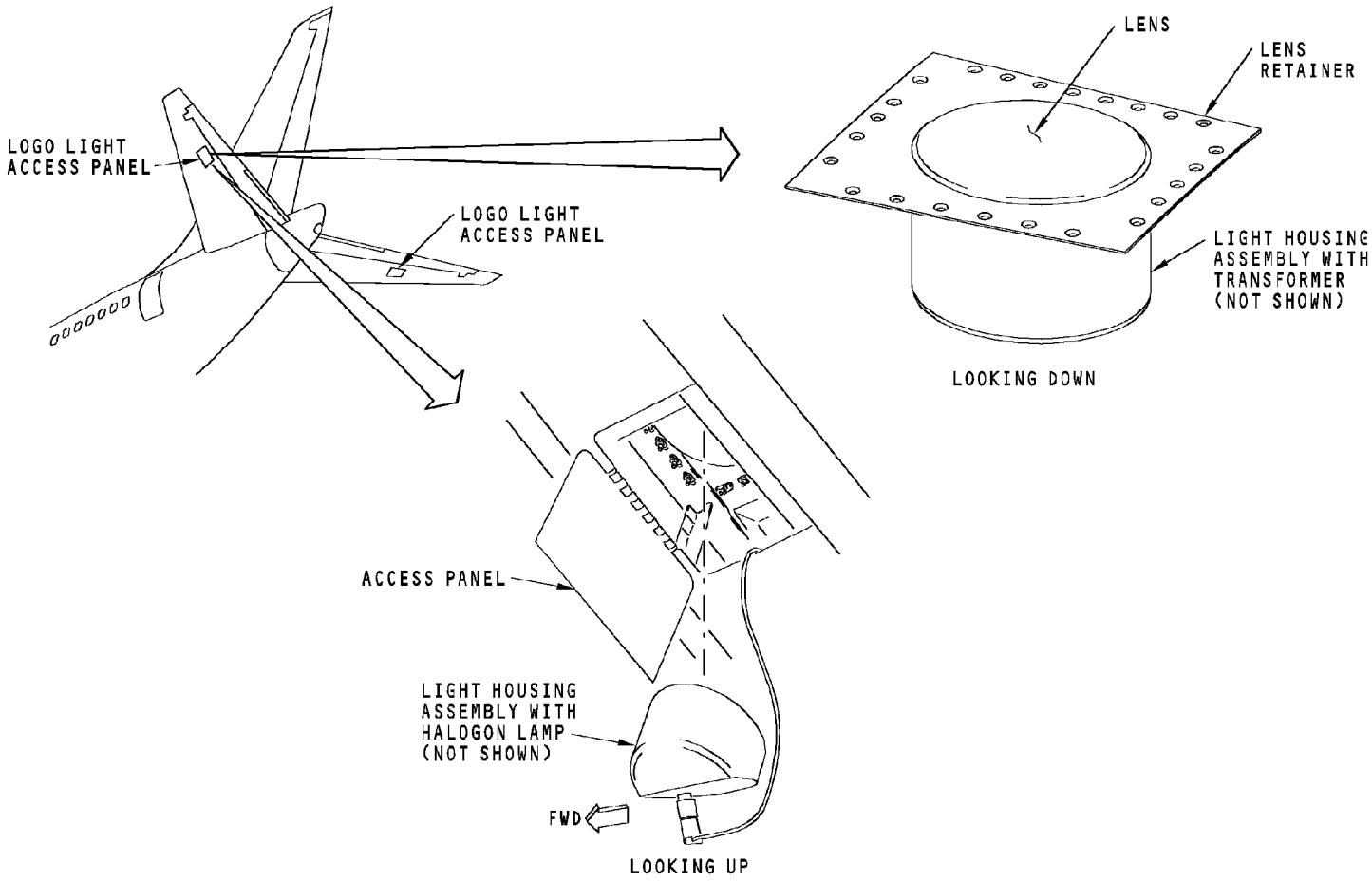
Physical Description

The lights are in the horizontal stabilizers. They have these components:

- Light housing assembly
- Lens
- Lens retainer
- Transformer (not shown).

Location

The lights are on the upper surface of each horizontal stabilizer. They are near the leading edge.



LIGHTS - LOGO LIGHTS - INTRODUCTION

EFFECTIVITY
HAP ALL

33-49-00-001

33-49-00

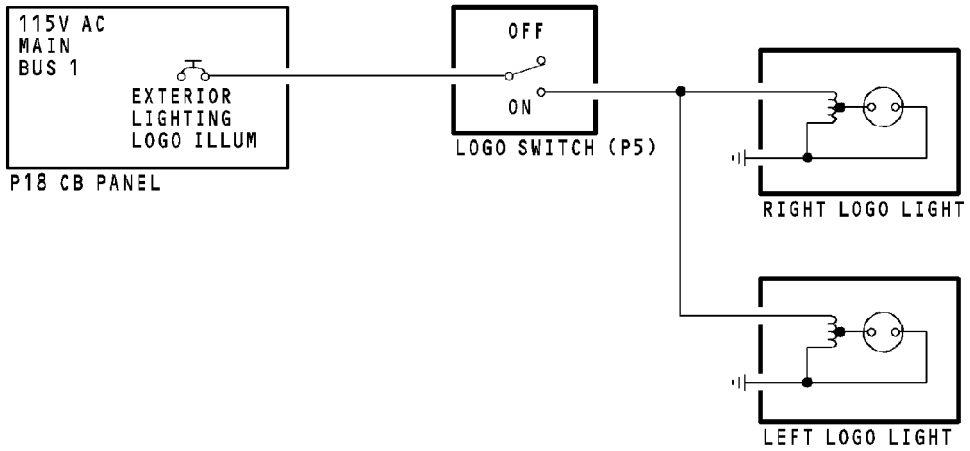
LIGHTS - LOGO LIGHTS - FUNCTIONAL DESCRIPTION

Operation

You use the logo light switch on the P5 forward overhead panel to control the logo lights operation.

Functional Description

When the logo lights switch is in the ON position, 115v ac goes to the logo light. The logo light has a step-down transformer. The transformer decreases the 115v ac to 12v ac.



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LIGHTS - EMERGENCY LIGHTING - INTRODUCTION

Purpose

The emergency lighting system puts lights on areas inside and outside of the airplane. The emergency lights also show the exit paths.

The emergency lights operate at these times:

- When emergency light system is on
- When there is a loss of airplane DC power and the P5 forward overhead panel emergency light switch is in the ARMED position.

Location

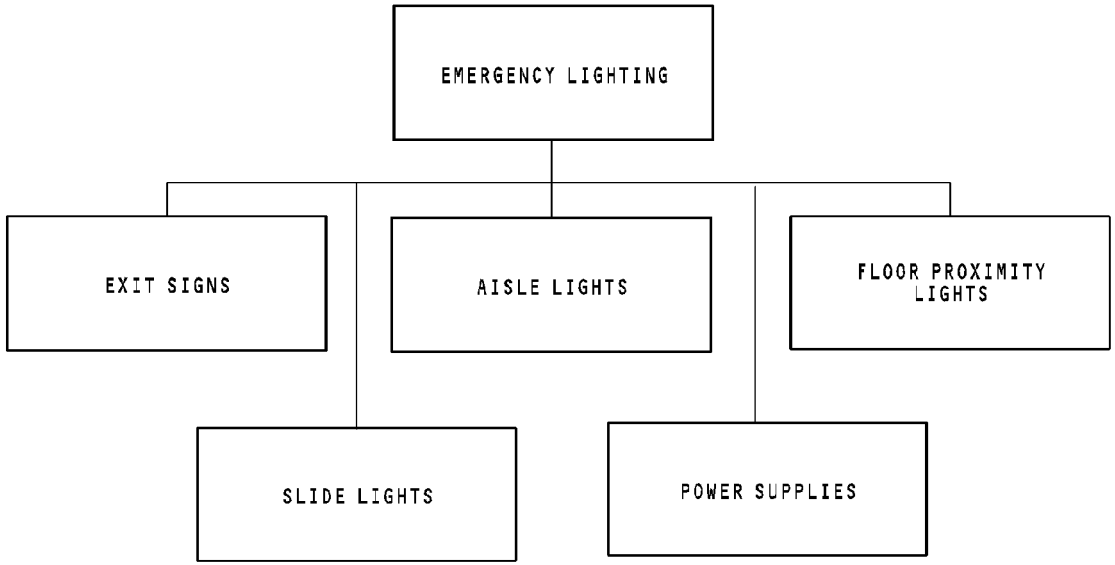
Control switches are at these locations:

- P5 forward overhead panel in the flight compartment
- P14 aft attendant panel.

General Description

The emergency lighting system has these components:

- Exit signs
- Aisle lights
- Floor proximity lights
- Slide lights
- Power supplies.



LIGHTS - EMERGENCY LIGHTING - INTRODUCTION

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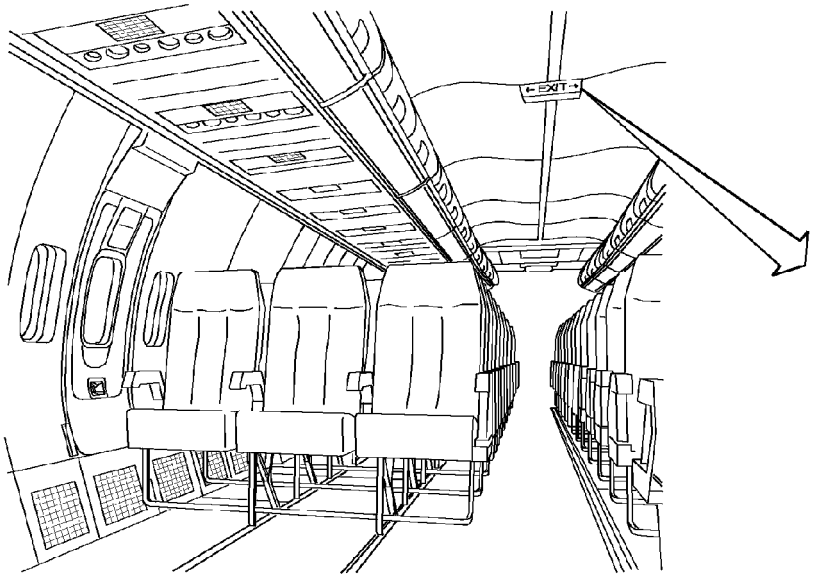
Purpose

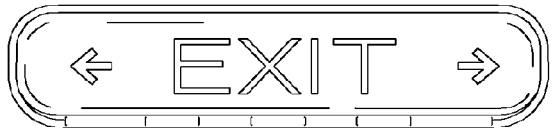
The exit sign lights come on to show the location of the exits.

Location

Exit signs are at these places:

- Passenger door
- Service door
- Overwing hatch
- Aisle near the ceiling.





EXIT SIGN
(TYPICAL)

Purpose

The aisle lights supply light to the general aisle area. They help passengers and crew see in an emergency.

Physical Description

The aisle lights have these components:

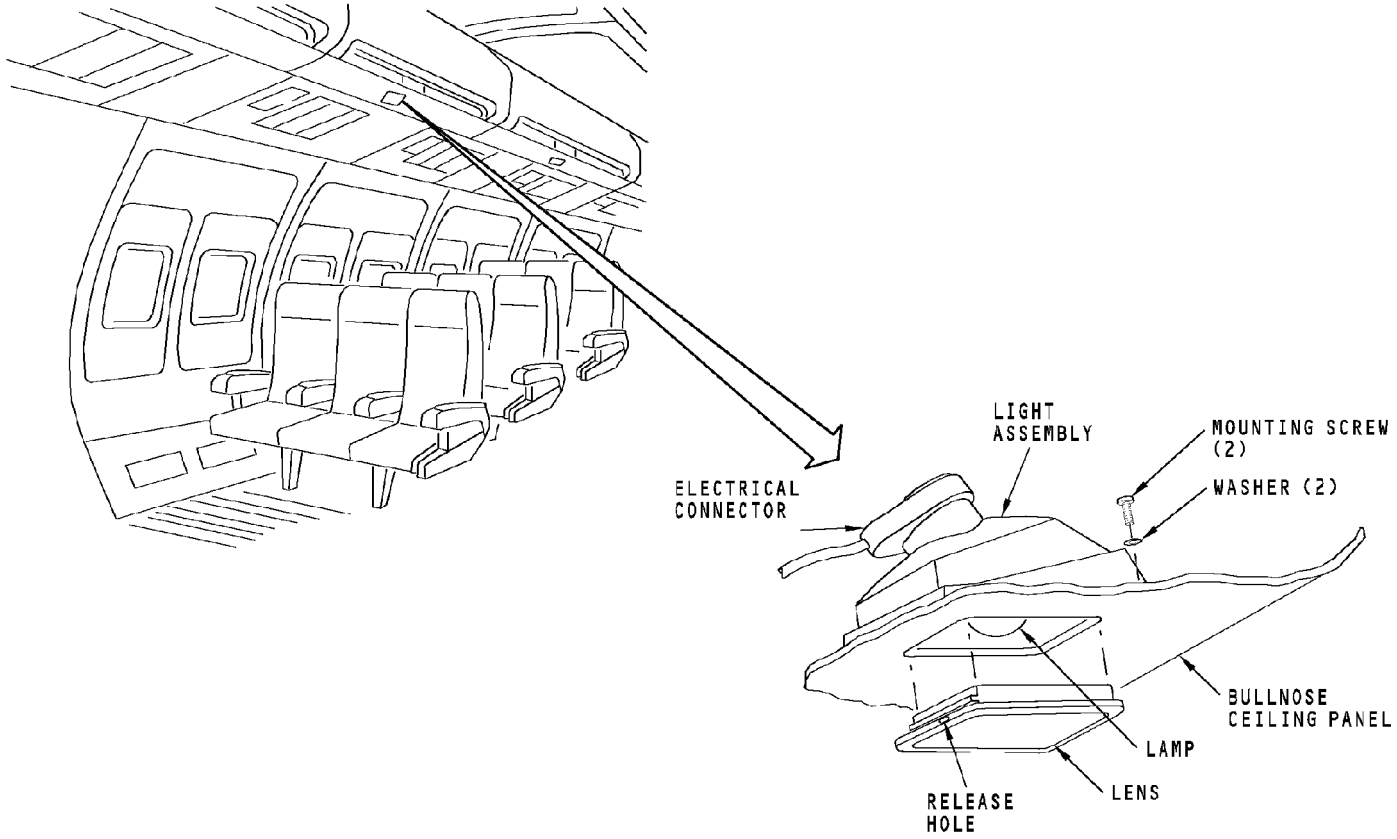
- Lamp
- Lens
- Light assembly
- Electrical connector.

Location

The aisle lights are in the bullnose ceiling panels areas throughout the passenger cabin.

Training Information Point

To get access to the lamp, insert a rod into the lens release hole. Then remove the lens.



LIGHTS - EMERGENCY LIGHTS - AISLE LIGHTS

Purpose

The floor proximity lighting supplies light at the floor level to show the passengers and crew the direction to all of the exits.

Physical Description

The floor proximity lighting has these components:

- Lens
- Lamps

HAP 031-054, 101-999

- Photo luminescent strip

HAP ALL

- Electrical connectors.

Location

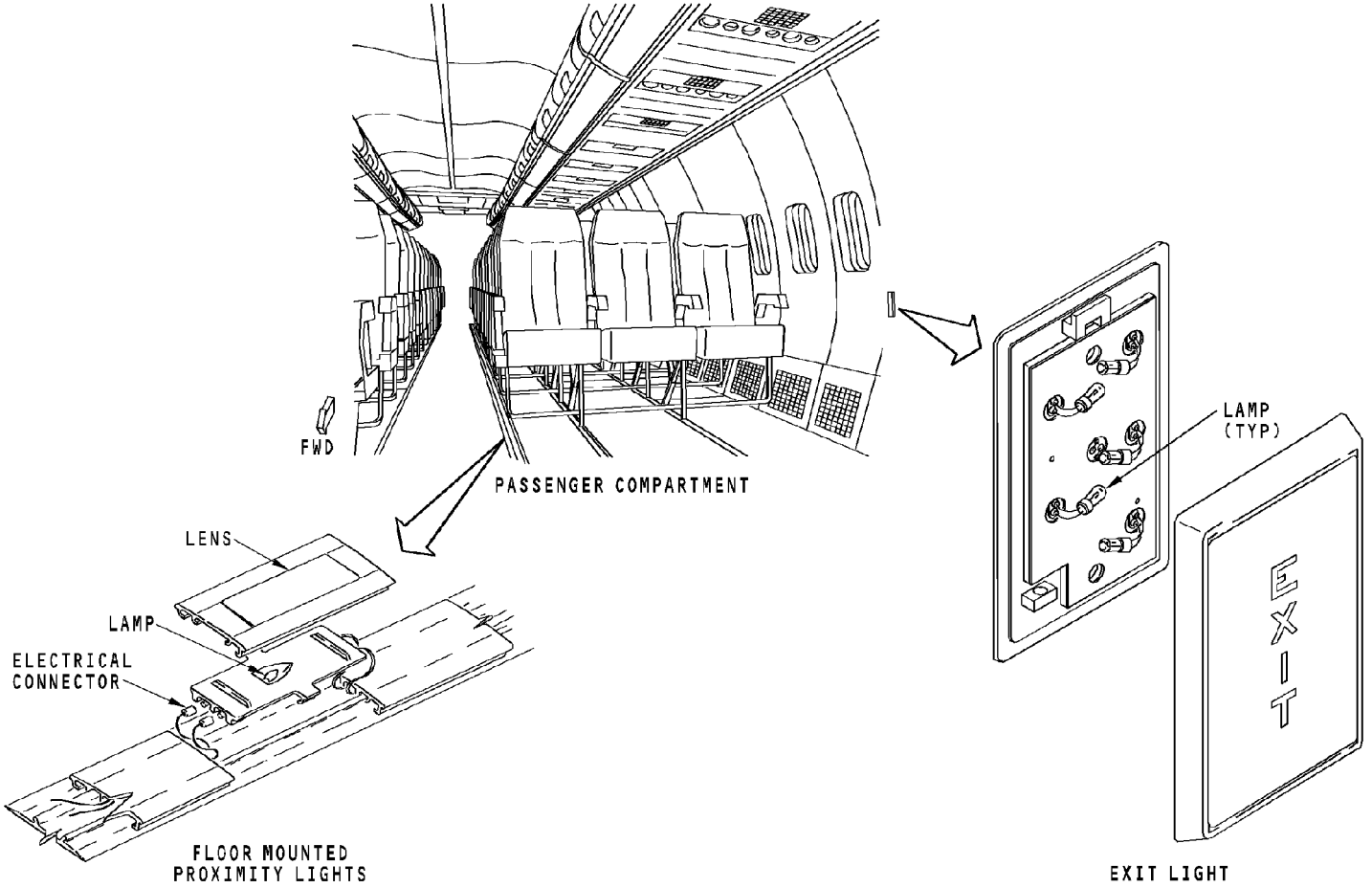
There are sidewall mounted EXIT lights near the airplane exits.

Floor mounted proximity lights are on the floor, left side.

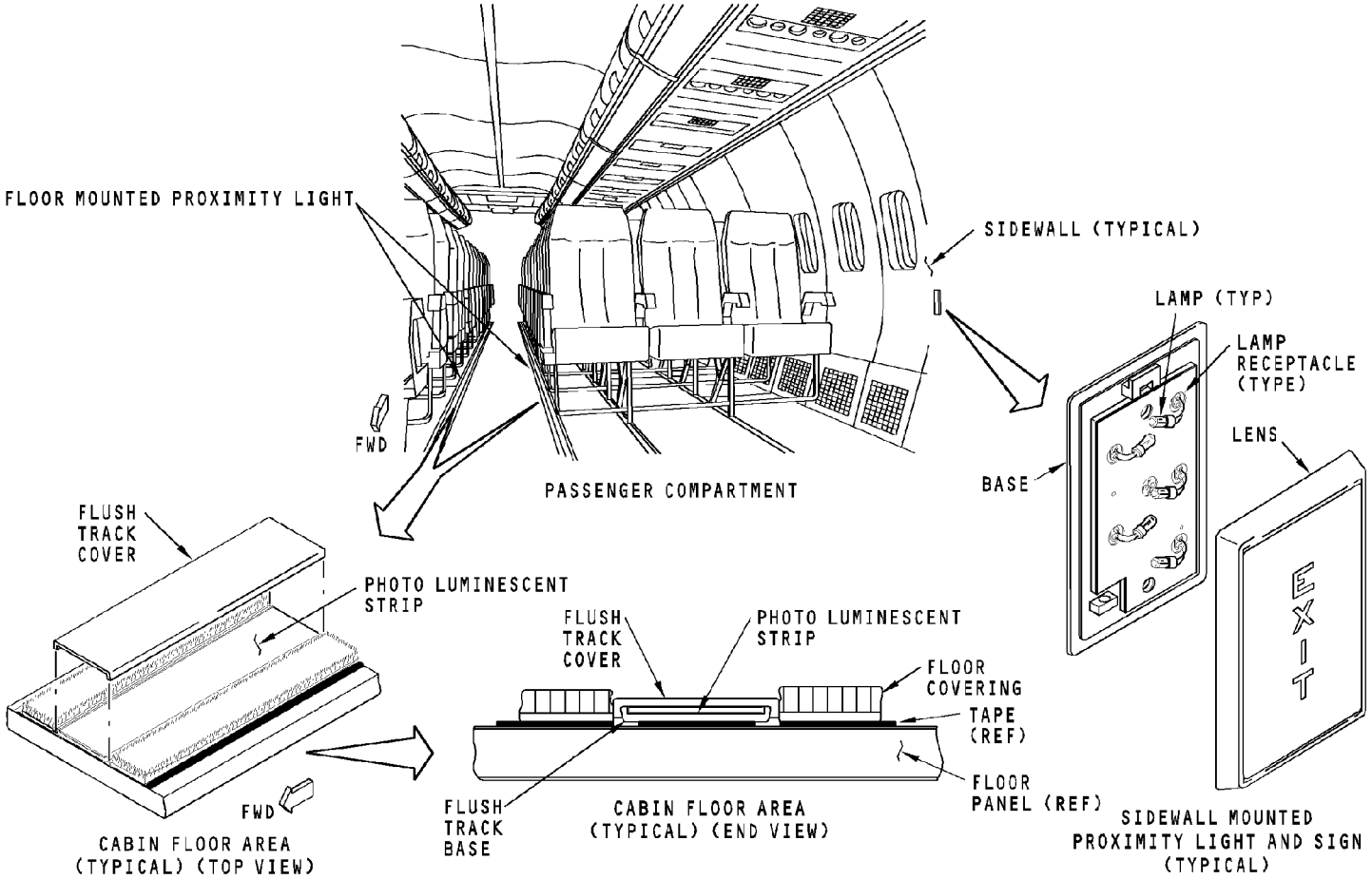
HAP 031-054, 101-999

The photo luminescent strips are on the floor, both left and right sides.

HAP ALL



LIGHTS - EMERGENCY LIGHTS - FLOOR PROXIMITY LIGHTS



LIGHTS - EMERGENCY LIGHTS - FLOOR PROXIMITY LIGHTS

EFFECTIVITY
HAP 031-054, 101-999

33-51-00

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Purpose

The slide lights supply light to the exit areas around the airplane.

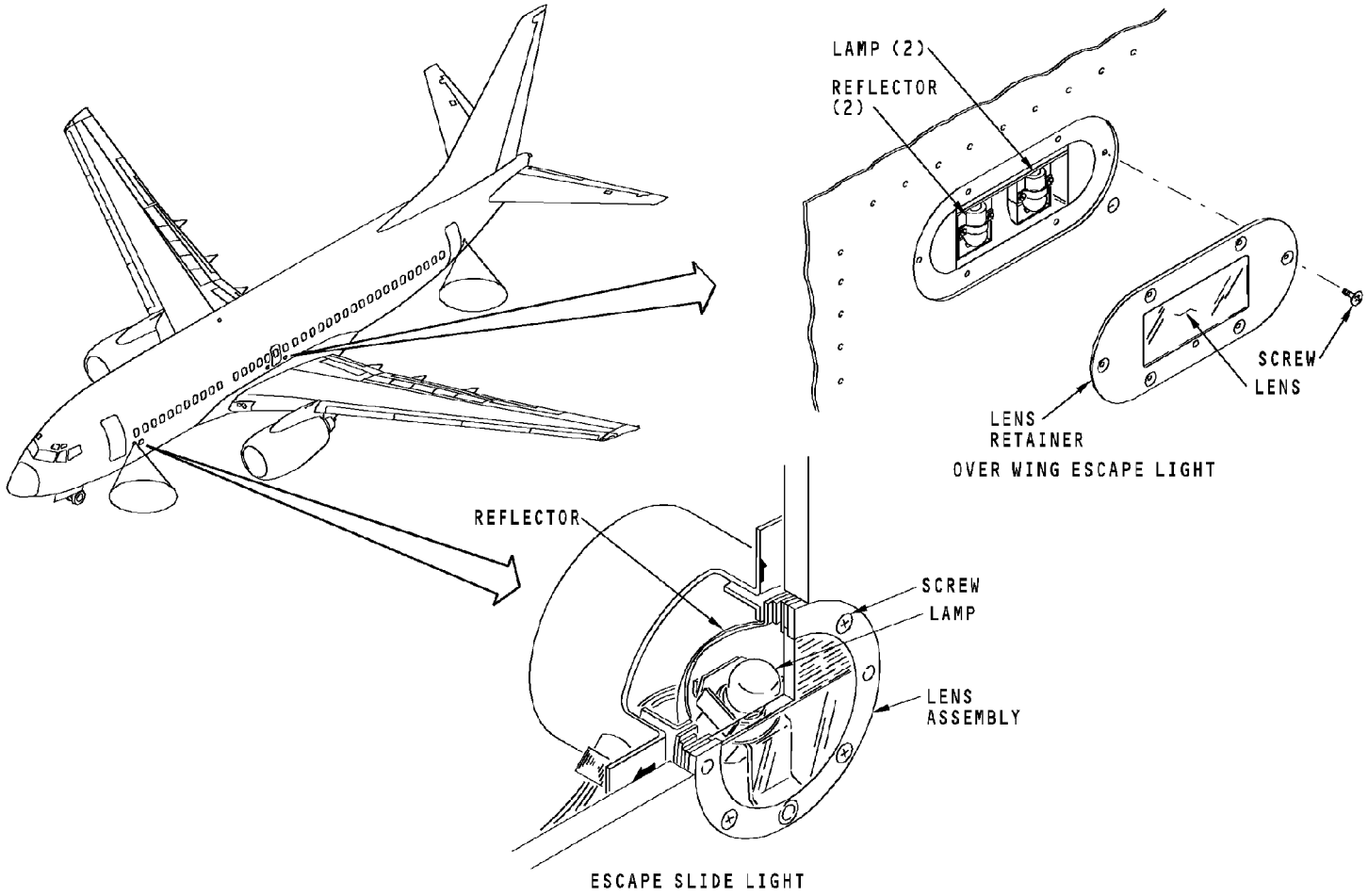
Physical Description

The slide lights have these components:

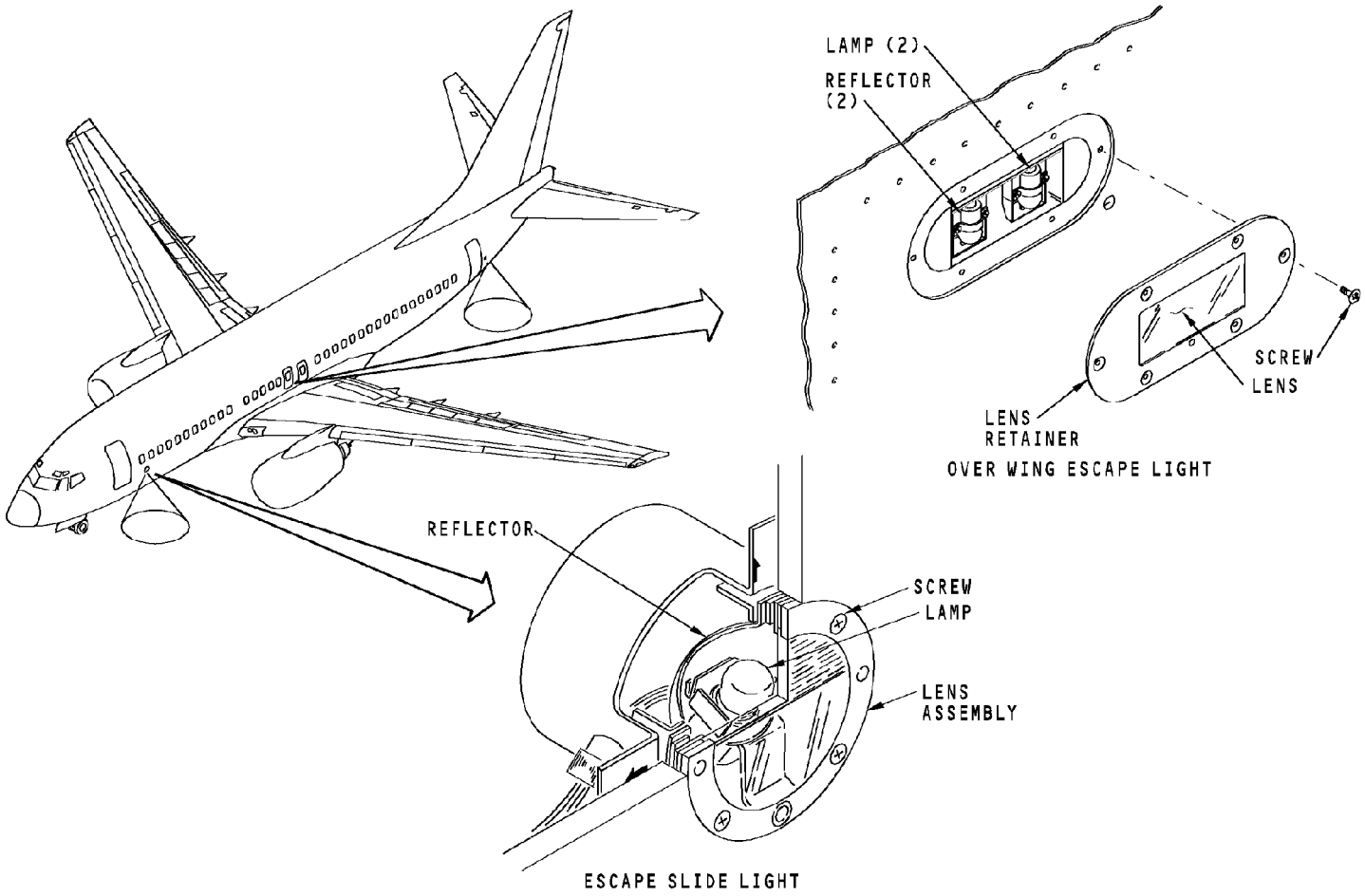
- Lens assembly
- Lamp
- Mounting screws
- Lamp reflector.

Location

The lights are on the outer surface of the airplane. They are aft of each exit.



LIGHTS - EMERGENCY LIGHTS - SLIDE LIGHTS



LIGHTS - EMERGENCY LIGHTS - SLIDE LIGHTS

EFFECTIVITY

HAP 001-013, 015-026, 028-054

33-51-00

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Purpose

The power supplies give power to internal and external emergency lights.

Physical Description

The power supplies have these components:

- Battery pack
- Test switch
- Electrical connector
- Control logic and charging circuit.

Location

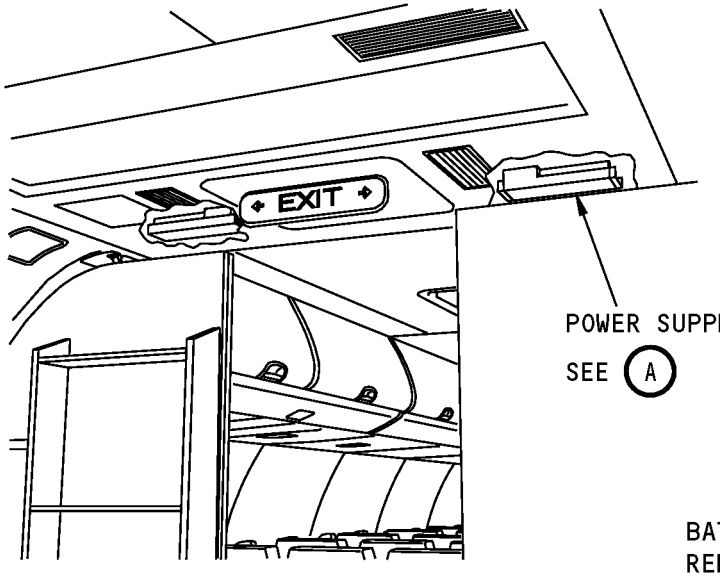
The power supplies are at these locations:

- Behind the ceiling panels at the forward entry area
- Behind the ceiling panels at the aft entry area
- On the side structure, near the floor.

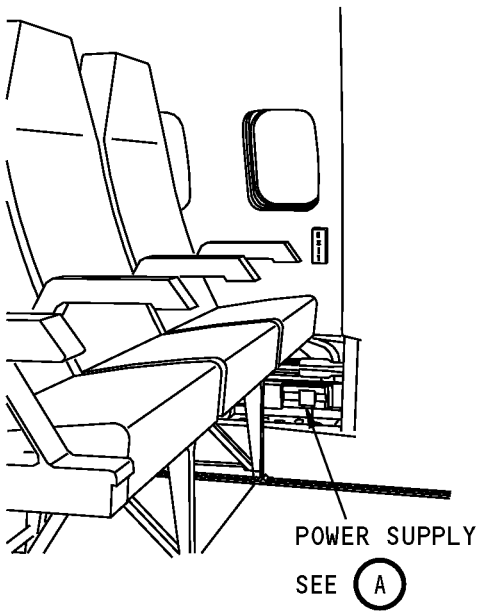
Training Information Point

HAP The battery packs can fully recharge in 16 hours.

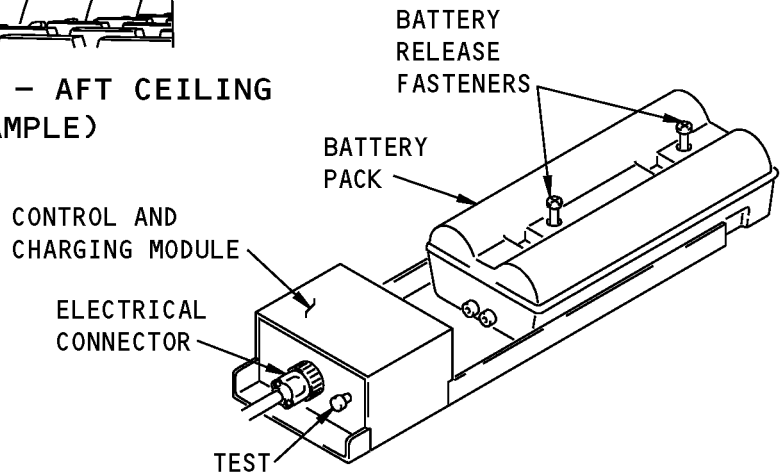
A test switch on the assembly turns on all the lights in the battery pack zone for zone lamp test.



BATTERY PACK - AFT CEILING
(EXAMPLE)



BATTERY PACK - FLOOR
(EXAMPLE)



POWER SUPPLY
A

Operation

You use the emergency exit light switch on the P5 forward overhead panel or the emergency exit switch on the attendant panel. These switches control the emergency lights. The emergency exit light switch on the P5 panel has these positions:

- ON - makes emergency lights come on
- OFF - prevents automatic operation
- ARM - prepares system for automatic operation.

The NOT ARMED and MASTER CAUTION lights are on when the emergency light switch on the P5 panel is in the ON or the OFF positions. The 28V DC bus 1 supplies power to these indication lights.

The emergency exit switch on the attendant panel has two positions, ON and NORMAL. The ON position makes the emergency lights come on. The NORMAL position sets automatic operation. The attendant panel switch will cause the lights to come on even if the P5 switch is OFF.

Functional Description

The power supplies use 28v dc for their charge and control logic circuits. The charge circuits charge the battery packs when these conditions occur:

- P5 emergency exit light switch is in the OFF or ARM position
- 28v dc bus 1 has power
- Attendant panel emergency exit light switch is in the NORMAL position.

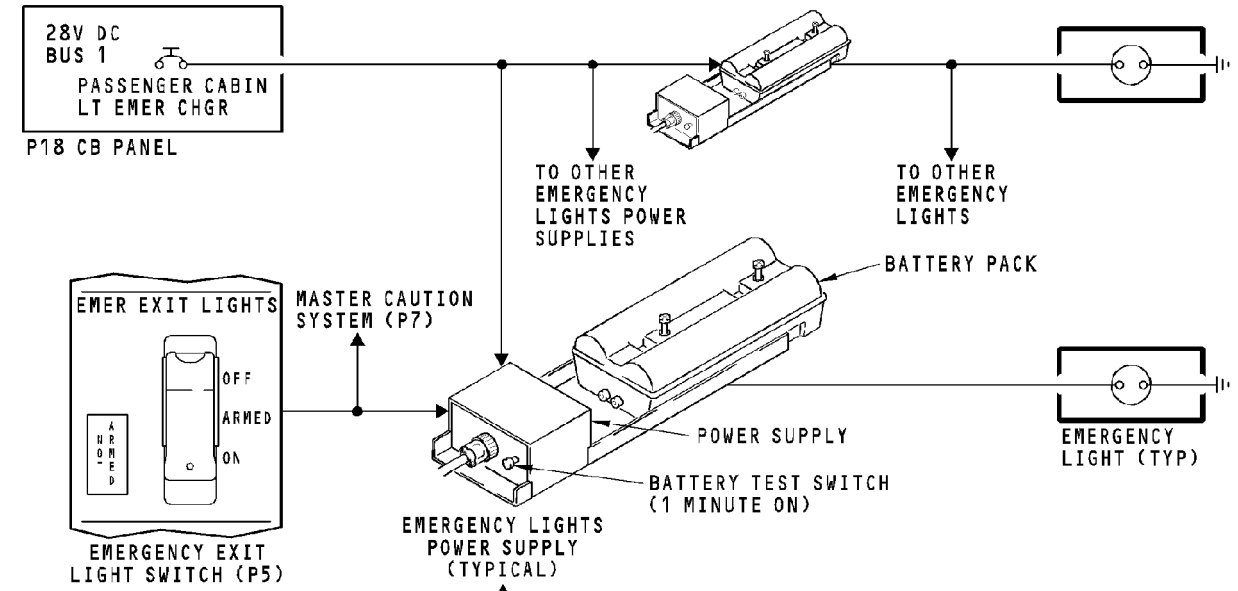
When the P5 switch is in the ARM position, the power supply makes the emergency lights come on when one of these conditions occur:

- Attendant panel emergency exit switch is in the ON position.
- 28v dc bus 1 power drops less than 12 volts.

Training Information Point

If you remove all power from the airplane, the P5 emergency exit light switch must be in the OFF position and the attendant switch in the NORM position. This prevents the emergency lights operation so the batteries do not discharge. Each power supply contains a battery test switch. If you push this switch, the emergency lights connected to its power supply circuit will come on for one minute.

Each power supply provides power to its series of emergency lights. When a power supply voltage goes low, the emergency lights in that circuit go off. The emergency lights operate for more than 10 minutes. When the 28v dc bus 1 has power and the emergency light switches on the P5 panel and the attendant panel are not ON, the battery packs are on charge. The time to fully charge the battery packs depends on the time that the emergency lights were on.



EMERGENCY EXIT LIGHTS OPERATION AND BATTERY PACK CHARGE LOGIC

EMERGENCY EXIT LIGHTS	28V DC BUS	LIGHT SW ATT PANEL	LIGHT SW P5 PANEL	MASTER CAUTION & NOT ARMED LIGHTS	BATTERY PACKS
ON	<12V	NORMAL	ARMED	OFF	DISCHARGE
ON	<12V	NORMAL	ON	ON	DISCHARGE
OFF	<12V	NORMAL	OFF	ON	CHARGE
ON	<12V	ON	OFF	ON	DISCHARGE
OFF	>12V	NORMAL	ARMED	OFF	CHARGE
ON	>12V	NORMAL	ON	ON	DISCHARGE
OFF	>12V	NORMAL	OFF	ON	CHARGE
ON	>12V	ON	ARMED	OFF	DISCHARGE
ON	>12V	ON	ON/OFF	ON	DISCHARGE