CHAPTER 33

LIGHTS

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33-40-00	9	Jan 24/86
33-40-00	10	Jan 24/86
* 33-40-01	201	Sep 25/92
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LIGHTS - DESCRIPTION AND OPERATION

1. **Description**
   A. Aircraft lighting is divided into five major systems: flight compartment lights, passenger compartment lights, baggage and service compartment lights, exterior lights, and emergency lights.
   B. Flight compartment lighting consists of instrument panel lights, floodlights, and map lights.
   C. Passenger compartment lighting consists of general lighting in the upper center panel and individual lights throughout the cabin.
   D. Exterior lighting consists of the landing and taxi lights, navigation lights, anti-collision lights, strobe lights, recognition light(s), wing inspection/emergency egress light(s), and a wing ice inspection light.
   E. Baggage and service compartment lighting consists of two *(Aircraft 35-002 and Subsequent)* or three *(Aircraft 36-002 and Subsequent)* lights installed in the baggage compartment and a tailcone maintenance light *(Aircraft 35-634 and Subsequent, 36-058 and Subsequent)*.
   F. Emergency lighting consists of a depressurization system and an emergency exit system. The depressurization system consists of the cabin cold cathode lights operated by the oxygen aneroid switch. The emergency exit system consists of the cabin door light and wing inspection light(s).
   G. The lighting circuits and related components presented in this chapter are to be used in conjunction with the wiring diagrams and electrical control schematics.
   H. General trouble shooting procedures are provided in this section because light circuits require some basic steps to locate the trouble. In most cases, inoperative lamps, open circuit breakers, blown fuses, and such troubles are obvious.
   I. Figure 1, Lamp Replacement Chart, is provided as an aid to maintenance personnel to easily identify the part numbers of lamps used throughout the aircraft.

INTERIOR	
Glareshield	
Fire	327 G.E.
Armed	327 G.E.
Glareshield Floodlight	10-900VM-1L-20.0 Hermetic
Ice Detector	62 Shelly
Warning Light Panel Lights	CM6839 Chicago Miniature
Master Warning	327 G.E.
Landing Gear Control Panel	
Landing Gear - Unsafe	62 Shelly
Landing Gear - Locked Down	62 Shelly
Anti-Skid Generator	62 Shelly
Fuel Control Panel	
Crossflow Valve	62 Shelly
Fuselage Tank Empty	62 Shelly
Fuselage Tank	62 Shelly
Jet Pump	62 Shelly
Panel Lights	715 Shelly or 262-1101-030 Jay-El
Fuel Jettison	62 Shelly
Miscellaneous	
Utility Light Tailcone	313 G.E.
Reading	1309 G.E. *(35-001 thru 35-091, 36-001 thru 36-024)* 303 G.E. *(35-092 and Subsequent, 36-025 and Subsequent)*
Entry or Courtesy	1665 G.E.
Map	1309 G.E.
Edge Light	715 G.E.
Baggage	1309 G.E.
No Smoking and Fasten Seat Belt	A9906-7 Grimes
Upper Center Panel (Cold Cathode)	6635-320 or 6645-320 Hermetic

CAUTION: ALL UPPER CENTER PANEL COLD CATHODE LIGHTS MUST BE EITHER 6635-320 OR 6645-320. DO NOT MIX PART NUMBERS.

EXTERIOR	
Aft Bullet	1683 G.E.
Lower Anti-Collision Beacon	A7079B-24 Grimes
Landing Light	4580 G.E.
Navigation Tail Light	1683 G.E.
Navigation Light Wing Tip	A7512-24 Grimes
Upper Anti-Collision Beacon	A7079B-24 Grimes
Recognition Light	4552 or Q4559 G.E.
Wing Ice Inspection Light	LJ 111 Assembly
Wing Inspection/Emergency Egress Light	1683 G.E.
Tailcone Maintenance Light	MS35478-1683

Replacement with an equivalent lamp is approved as long as voltage and amperage rating is the same.

Lamp Replacement Chart
Figure 1

LIGHTS - TROUBLE SHOOTING

1. TROUBLE SHOOTING

NOTE: The following trouble shooting steps are provided to augment specific circuit information found in the wiring diagrams and to serve as a basis for developing the more detailed procedures required to locate a cause for light system troubles.

A. Tools and Equipment

NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Voltmeter	260 or	Simpson	Continuity checks.
Voltmeter	3430A	Hewlett Packard	Continuity checks.

B. When possible, investigate report of trouble at source to ascertain conditions leading to and under which trouble occurred and whether failure of other light circuits or electrical systems occurred simultaneously. Such information, carefully analyzed, is often indicative of the nature and most likely location of trouble.

C. Study circuit wiring diagrams covering affected light system and its related power supply. A thorough understanding of the function is necessary before a trouble shooting procedure can be effectively planned and executed. By combining a knowledge of applicable circuits with information gained from trouble report, an investigation usually indicates circuit, or section of circuit, in which trouble is located.

D. Visually inspect circuit for open circuit breakers, blown fuses, broken wiring, loose wire connections, loose electrical connectors, and evidence of shorting. Observe particularly, security of connections and presence of foreign matter.

E. Perform continuity check. A blown fuse, burned wires, or other evidence of shorting indicates that a power-on check would create a hazardous condition. With power off, isolate defective circuit and check one section at a time until shorted or open circuit section is found.

F. Perform a power-on check only when it has been determined that such a check cannot create a hazardous condition. With power on, perform operational tests to confirm report of trouble and to determine, if possible, whether cause of trouble is in light circuit or in power supply system. A voltmeter or test light may also be used for a power check at various breakpoints in circuit, such as terminal strips and equipment input terminals, to determine if power is available at these points.

G. Replace any light assembly or component that remains inoperative after making certain that power is available at unit and that ground connections are secure at unit.

FLIGHT COMPARTMENT LIGHTING - DESCRIPTION AND OPERATION

1. Description
   A. Flight compartment lighting consists of fluorescent, incandescent, and electroluminescent lights.
   B. The power required for the different types of lighting varies as follows:
      (1) 115 vac for electroluminescent lighting.
      (2) 600 vac for fluorescent lighting.
      (3) 5 vdc and 28 vdc for incandescent lighting.
   C. Component Description (See figure 1.)
      (1) Map Lights
         (a) On *Aircraft 35-002 thru 35-067 except 35-036, 35-056 and 35-063 thru 35-066 and 36-002 thru 36-018,* a reading light and gasper assembly (map light) is installed in the cockpit headliner. Each assembly incorporates an adjustable control for conditioned air, a rheostat for light intensity adjustment, and a lever for light pattern adjustment.
         (b) On *Aircraft 35-036, 35-056, 35-063 thru 35-066, 35-068 and Subsequent and 36-019 and Subsequent,* a map light assembly is mounted on each side of the cockpit and consists of a base, flex-neck, lens cap, incandescent lamp, and rheostat for control.
         (c) On *Aircraft 35-417 and Subsequent and 36-048 and Subsequent*, a dome light (map light) is installed on each side of the headliner just forward of the ring vent. Each light consists of a bezel switch, adjustable light, and rheostat. The rheostat is located on the side panel. This light is in addition to the map light on the side of the cockpit.
      (2) Glareshield Floodlight
         (a) The floodlight system consists of a cold cathode transformer, a rheostat, a resistor installation, and a floodlight assembly. The floodlight assembly is installed beneath the glareshield just forward of the glareshield annunciator assembly. The rheostat control is installed on the pilot's side panel. The resistor installation is located in the nose compartment between frames 1 and 2 at stringer 11R. On *Aircraft 35-002 thru 35-006 and 36-002 and 36-003*, the cold cathode transformer is installed on the aft side of frame 5 at RBL 8. On *Aircraft 35-007 and Subsequent and 36-004 and Subsequent*, the cold cathode transformer is installed on the inside RH side of the forward pedestal.
      (3) Control Panel Lighting
         (a) Electroluminescent lighting is utilized for the circuit breaker panels, audio control panels, anti-ice and avionics panel, power and ignition panel, test switch panel, cabin climate and lights panel, and trim switch panel.

            NOTE: On Aircraft equipped with a narrow pedestal, the trim switch panel lighting is powered by 28 vdc.

         (b) Two 115 vac terminal boards (TB511 and TB512) are located on the aft side of frame 7 between stringers 11 and 12. Terminal board TB511 is on the LH side of the cabin and TB512 is on the RH side. The electroluminescent panels are controlled by two rheostats, one on the pilot's side panel and one on the copilot's side panel.
      (4) Master Warning Light and Glareshield Annunciator System
         (a) The master warning light and glareshield annunciator system consists of the glareshield annunciator assembly, the Master Warning Light Assemblies, and the warning light control box. The system provides a visual indication of a system malfunction.
         (b) The glareshield annunciators are located in the aft center section of the glareshield. The glareshield annunciator dimmer transistors are installed along the RH and LH sides of the nose compartment forward of frame 4. The annunciators consist of warning (red), caution (amber), indicator (green), and spare (white) annunciators.

(c) The Master Warning Light and switch assemblies are installed in the pilot's and copilot's instrument panels. The assemblies consist basically of a push-type switch with the lens as an integral part of the switch. Each assembly contains two lamps for lighting purposes. On *Aircraft 35-002 thru 35-389, and 36-002 thru 36-047*, a Master Warning Light power regulator (transistor Q211) consists of a transistor and heat sink. The power regulator is located in the nose compartment aft of frame 2 on the RH side.

(d) The warning light control box is installed on the aft side of frame 1 at LBL 5. The control box incorporates various printed circuit boards utilized to monitor system conditions. Two electrical connectors provide electrical connection to the box.

(5) Instrument Panel Lighting

(a) Instrument panel lights are incandescent. Most instruments are integrally lighted. The instrument and panel lights are dimmed by dimmer controls located on either side of the cockpit. The lights are operated by 5 vdc. Terminal boards on the pilot's and copilot's instrument panels are the intermediary points for the lights and the dimmer controls.

(b) The light dimmer assemblies are mounted in the nose compartment. The light dimming control panels are located on either side of the cockpit outboard of the pilot's and copilot's seats. The light dimmer assemblies incorporate exterior mounted fuses.

2. Operation

A. Component Operation

(1) Map Lights (See figure 2.)

(a) On *Aircraft 35-002 thru 35-067 except 35-036, 35-056 and 35-063 thru 35-066, and 36-002 thru 36-018,* each map light receives 28 vdc from its respective pilot or copilot INST LTS circuit breaker. Brightness and on-off operation are controlled by a dimmer-switch assembly which incorporates a rheostat.

(b) On *Aircraft 35-036, 35-056, 35-063 thru 35-066, 35-068 and Subsequent and 36-019 and Subsequent,* each map (flex-neck) light receives 28 vdc from its respective pilot or copilot INST LTS circuit breaker. Brightness and on-off operation are controlled by a dimmer switch assembly which incorporates a rheostat.

(c) On *Aircraft 35-417 and Subsequent and 36-048 and Subsequent*, each map (dome) light is controlled by an ON-OFF-REMOTE switch located adjacent to the light. In the ON position each light receives 28 vdc from the CAB LTS circuit breaker. In the REMOTE position each light receives 28 vdc from the ENTRY LT circuit breaker. The REMOTE position allows the map (dome) lights to be controlled by the entry light switch, thus illuminating the cockpit before entering the aircraft.

(2) Glareshield Floodlight (See figure 3.)

(a) The floodlight operates on 600 vac received from the cold cathode transformer. The cold cathode transformer operates on 115 vac (400 Hz) received through the resistor installation and the dimmer rheostat.

(3) Control Panel Lighting (See figure 4.)

(a) The electroluminescent panels operate on 115 vac controlled by dimmer rheostats. *On Aircraft 35-673 and Subsequent; 36-064 and Subsequent,* EL controllers regulate the output of the electroluminescent panel potentiometers to provide a stable voltage to the electroluminescent panels.

(4) Master Warning Light and Glareshield Annunciator Systems (See figure 5.)

(a) The glareshield annunciators illuminate when a system malfunctions. Red lights indicate a warning malfunction, requiring immediate corrective action. Amber lights indicate a caution malfunction, requiring attention, but not immediate attention. The annunciator will remain illuminated until corrective action is taken.

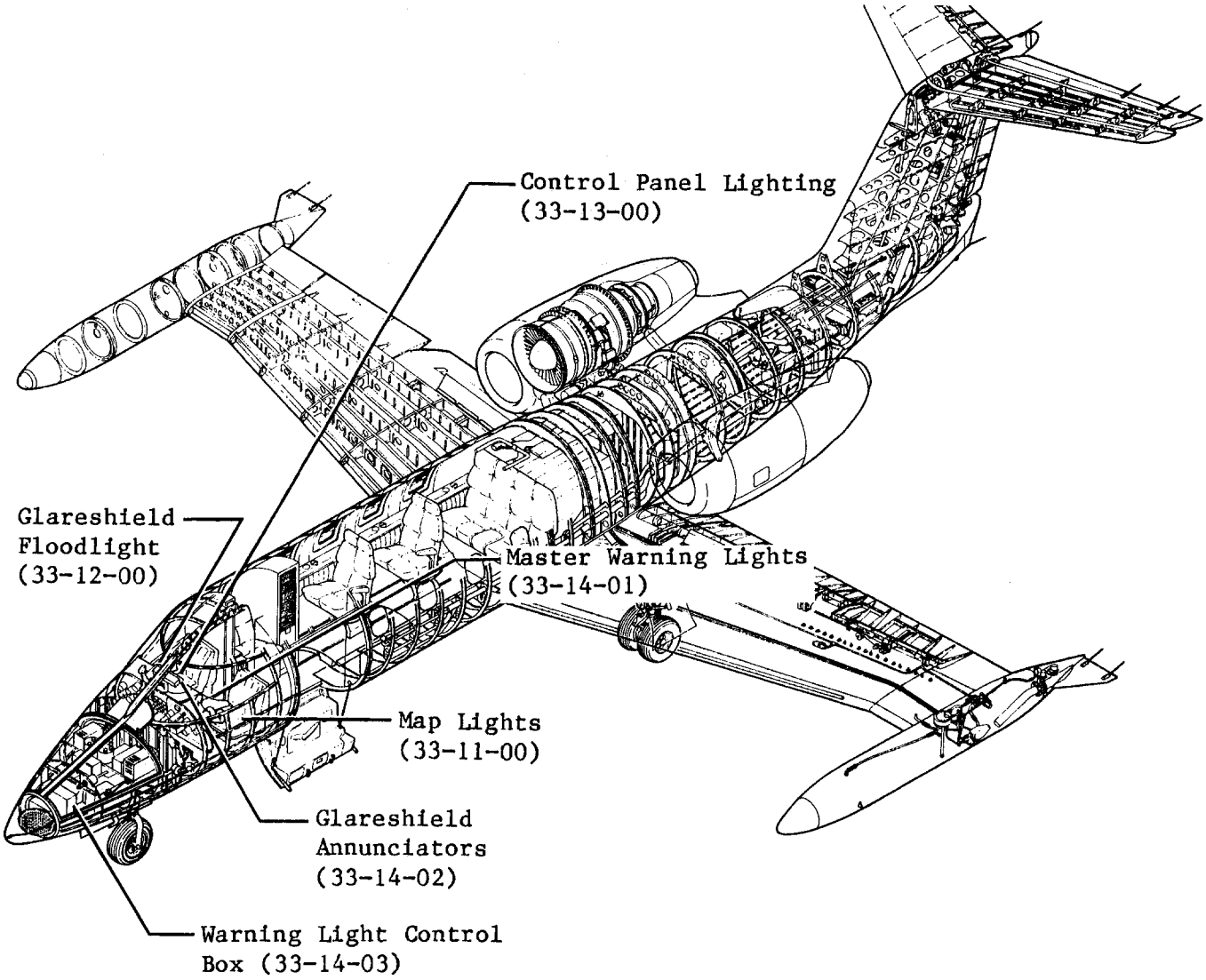
(b) The Master Warning Lights are coupled with the warning (red) annunciators in the glareshield warning light panel. When any warning (red) annunciator on the glareshield is illuminated, indicating a system malfunction, both Master Warning Lights will start to flash. The Master Warning Lights are extinguished by depressing the lens. Action can then be taken to correct the system malfunction.

NOTE:
- *On Aircraft 35-002 thru 35-431 and 36-002 thru 36-049*, the Master Warning Lights cannot be extinguished when the Stall Warning, Spoiler, or Fire glareshield annunciators are flashing. If the Stall Warning or Spoiler glareshield annunciators are steady, the Master Warning Lights can be extinguished.

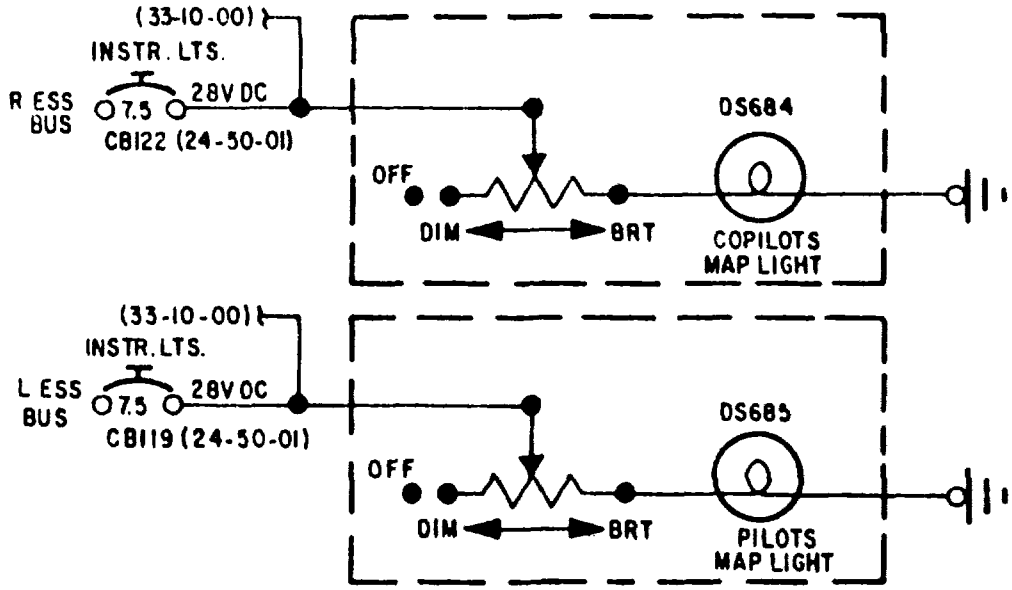
- *On Aircraft 35-432 and Subsequent and 36-050 and Subsequent*, the Master Warning Lights can be extinguished when the Stall Warning, Spoiler, or Fire glareshield annunciators are flashing.

(c) The warning light control box monitors the operation of the Master Warning Lights and glareshield annunciators and provides a ground to switch off Master Warning Lights.

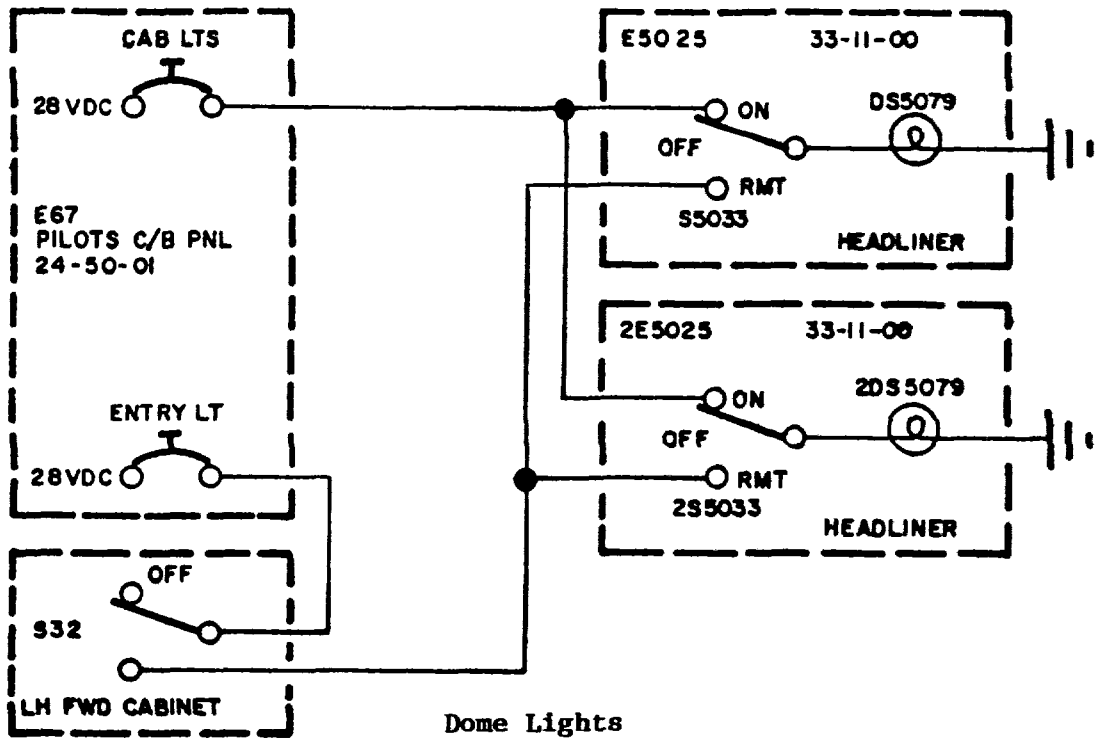
(5) Instrument Panel Lighting (See figure 6.)
(a) Instrument panel lights operate on 5 vdc through light dimmers and terminal boards.
(b) The light dimmer assemblies receive 28 vdc through the INSTR LTS circuit breakers and convert it to 5 vdc which is used to power various instrument lights.



Flight Compartment Lighting Locator
Figure 1

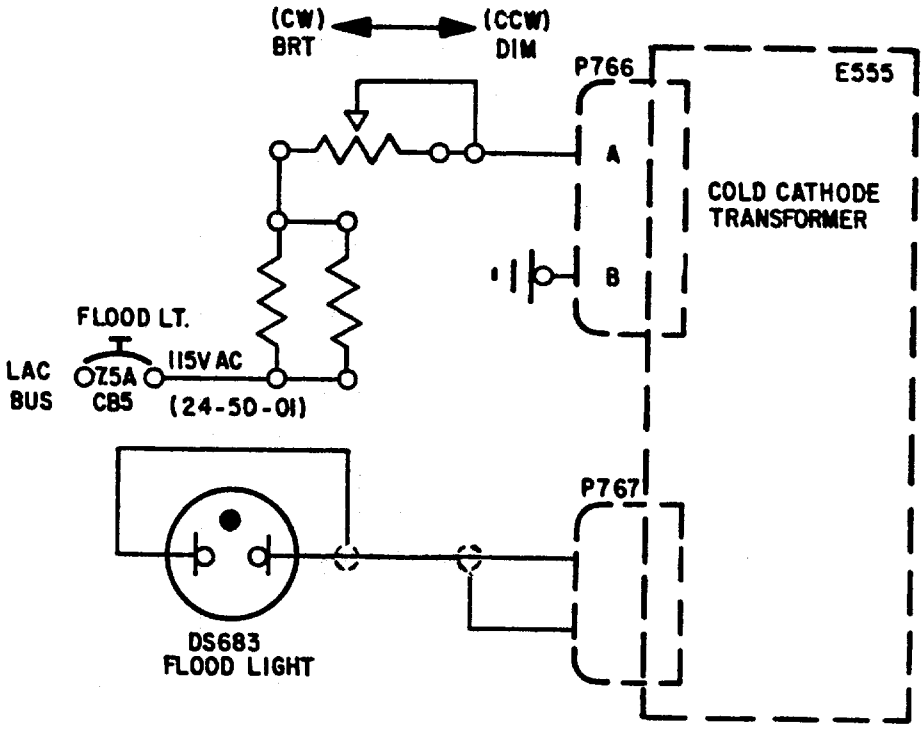


Light and Gasper Assemblies and Flex-Neck Lights

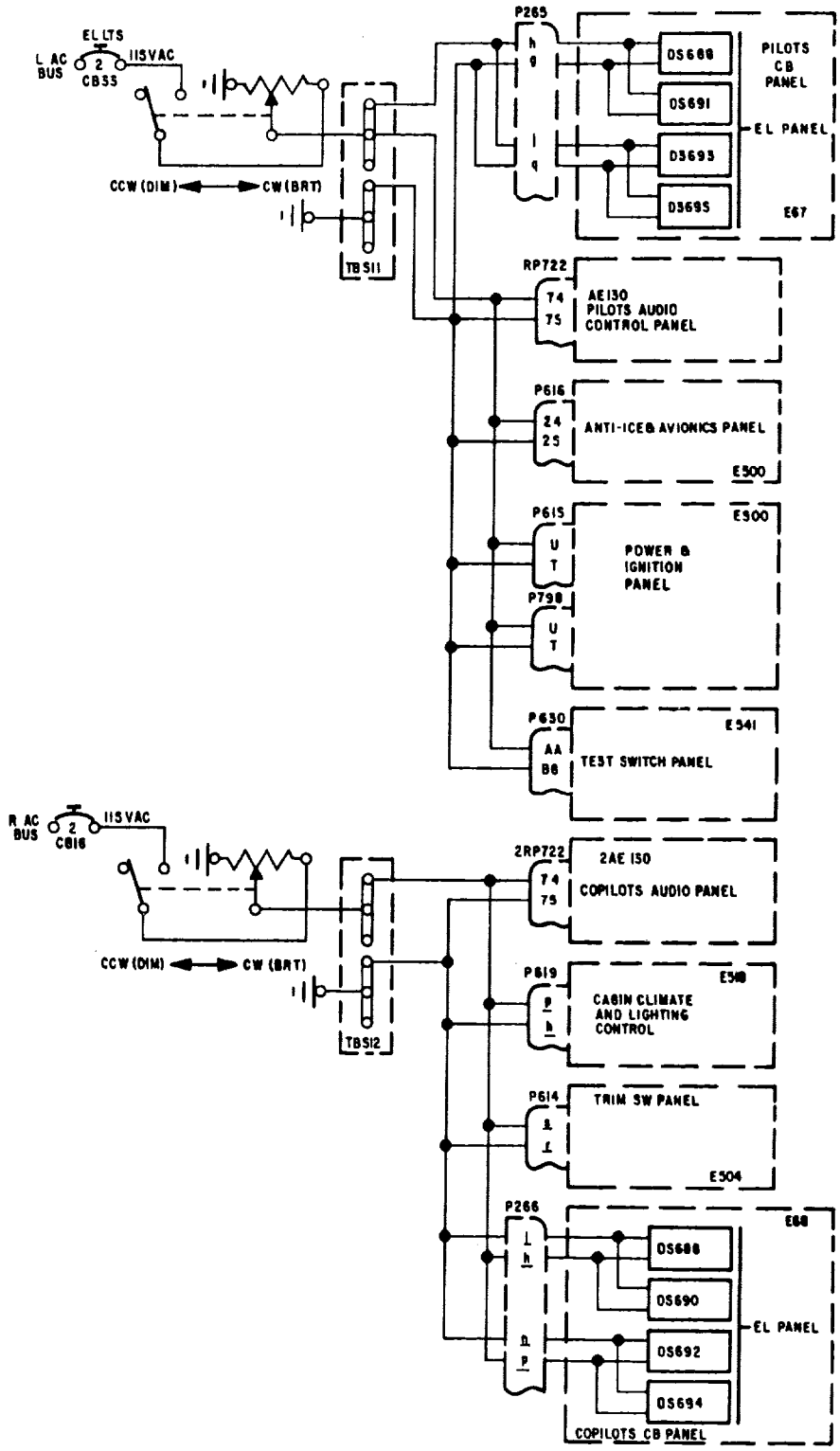


Dome Lights

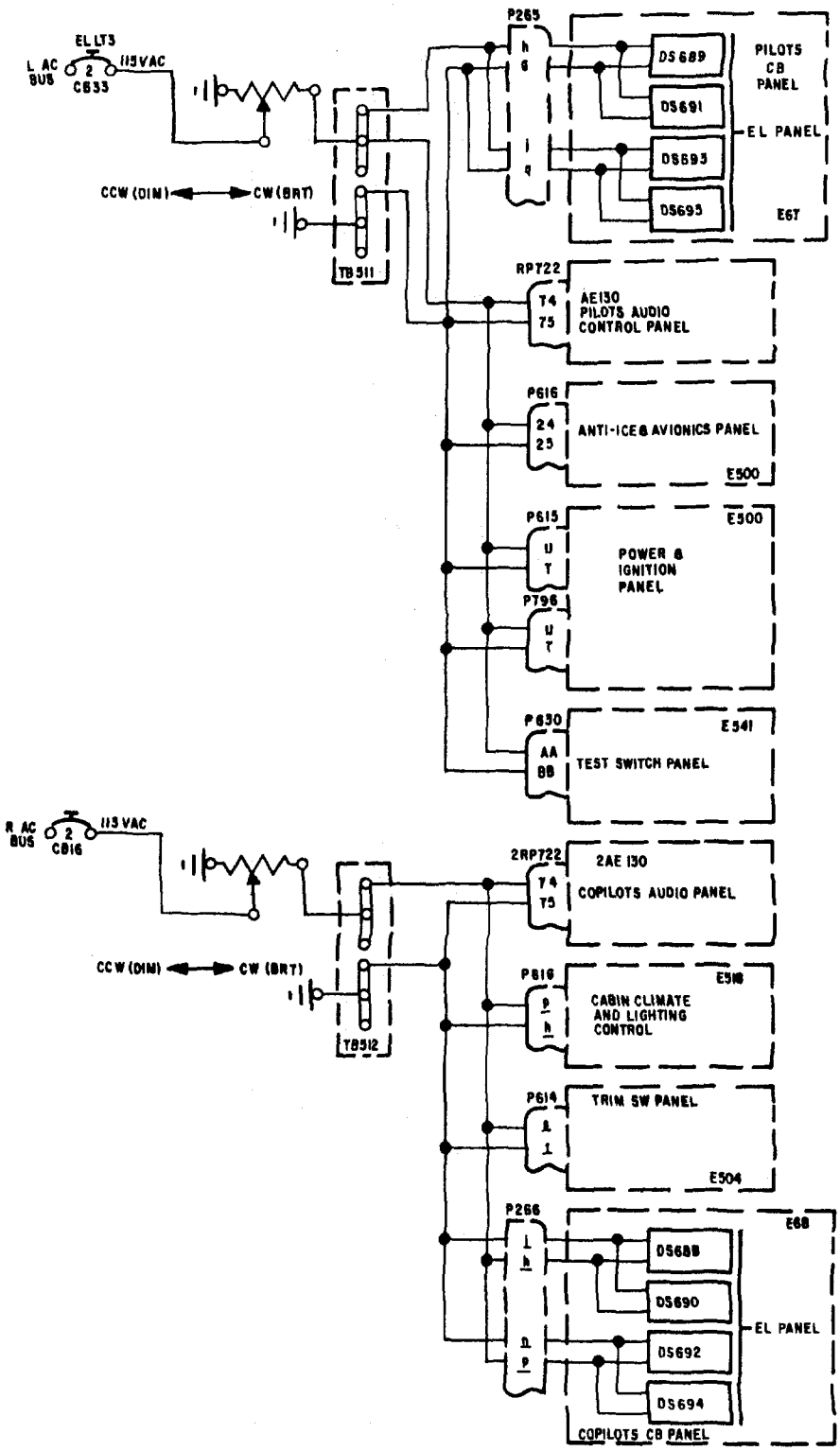
Map Light Electrical Control Schematic
Figure 2



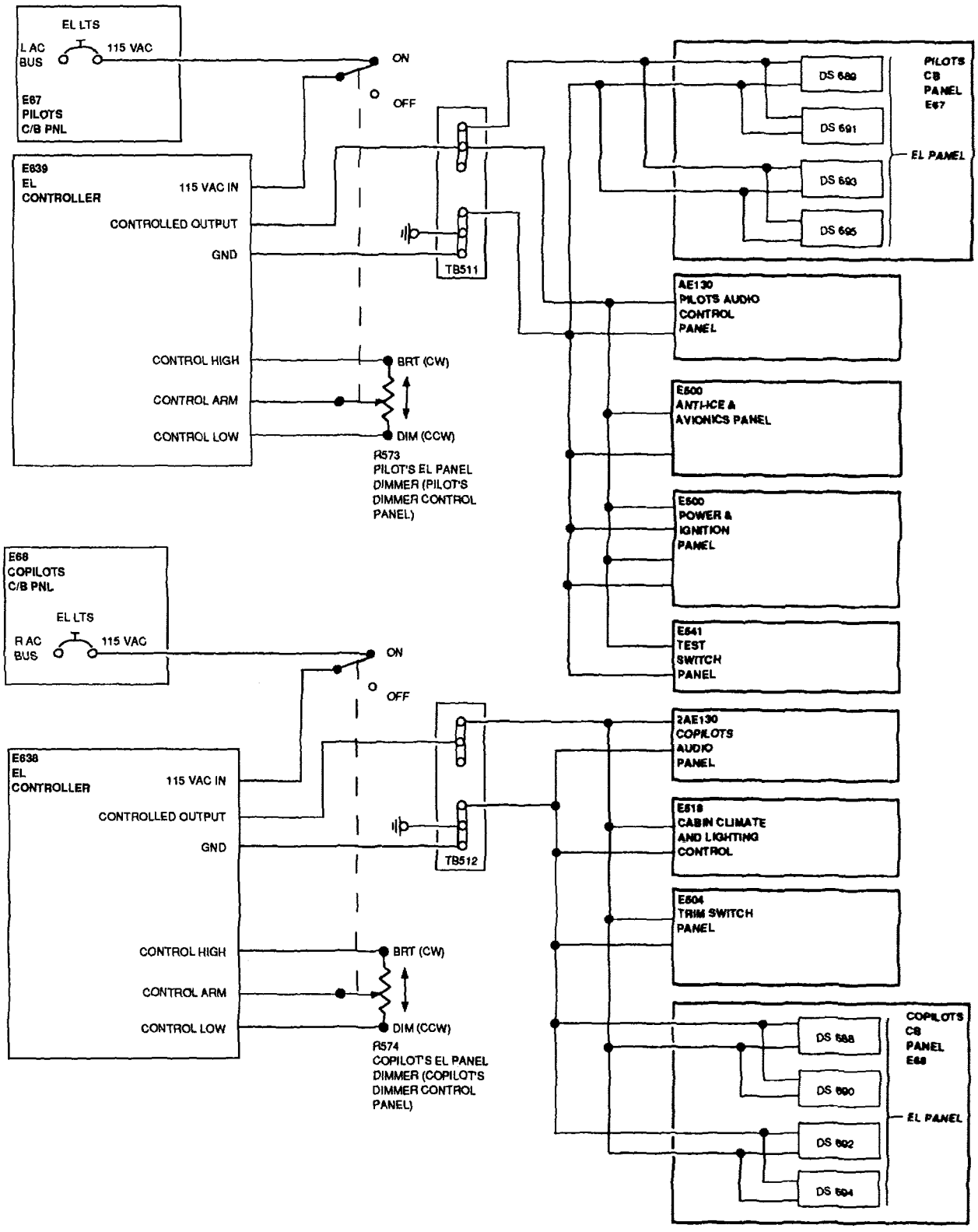
Flood Light Electrical Control Schematic
Figure 3



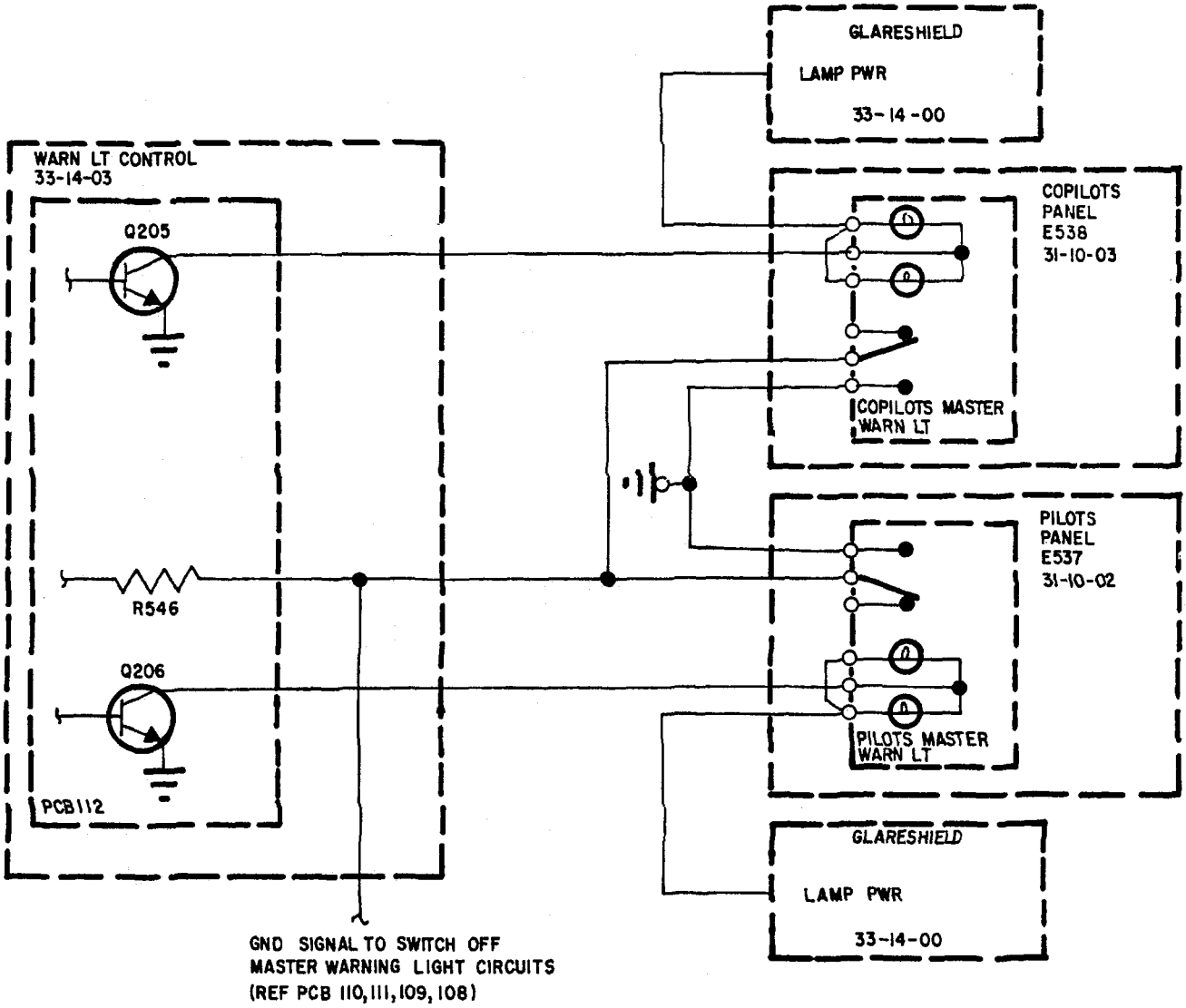
Electroluminescent Panels Electrical Control Schematic
Figure 4 (Sheet 1 of 3)



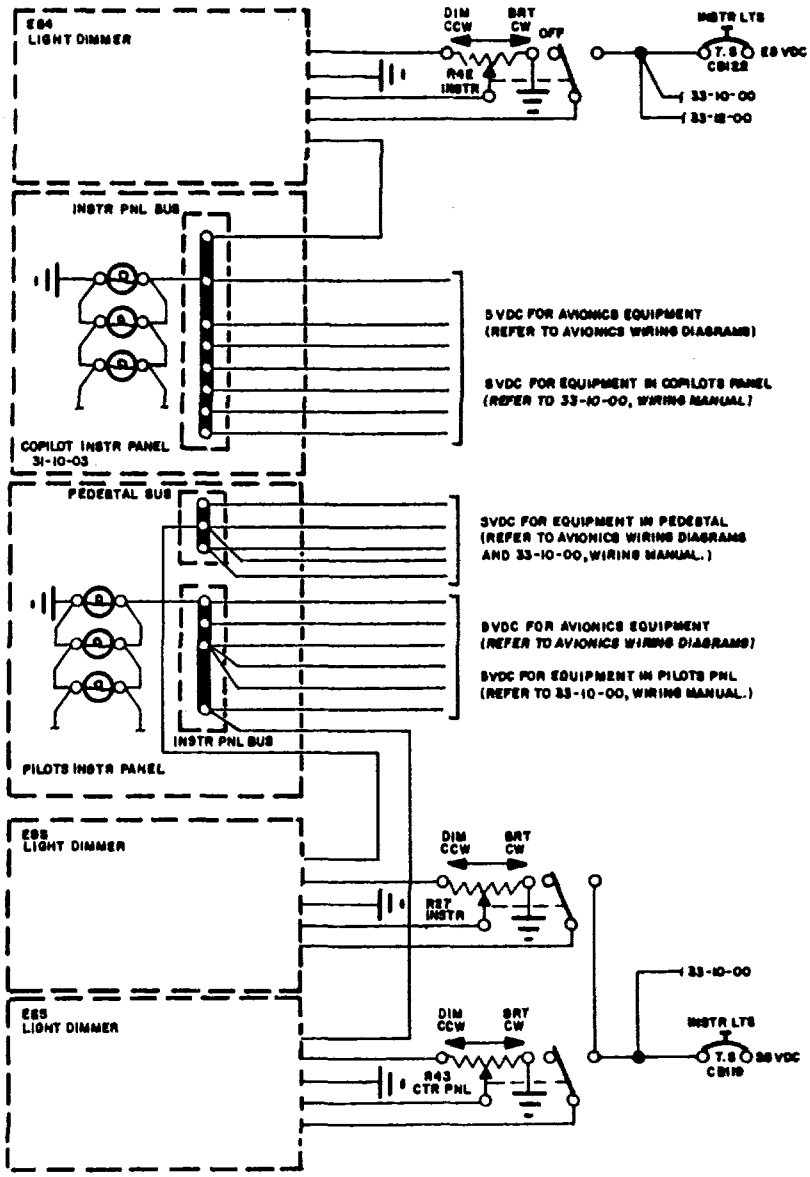
Electroluminescent Panels Electrical Control Schematic
Figure 4 (Sheet 2 of 3)



Electroluminescent Panels Electrical Control Schematic
Figure 4 (Sheet 3 of 3)



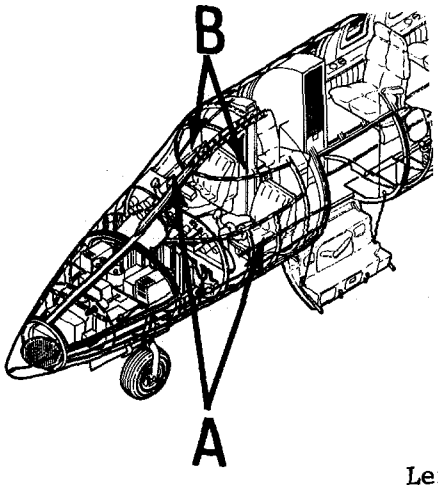
Master Warning Light Electrical Control Schematic
Figure 5

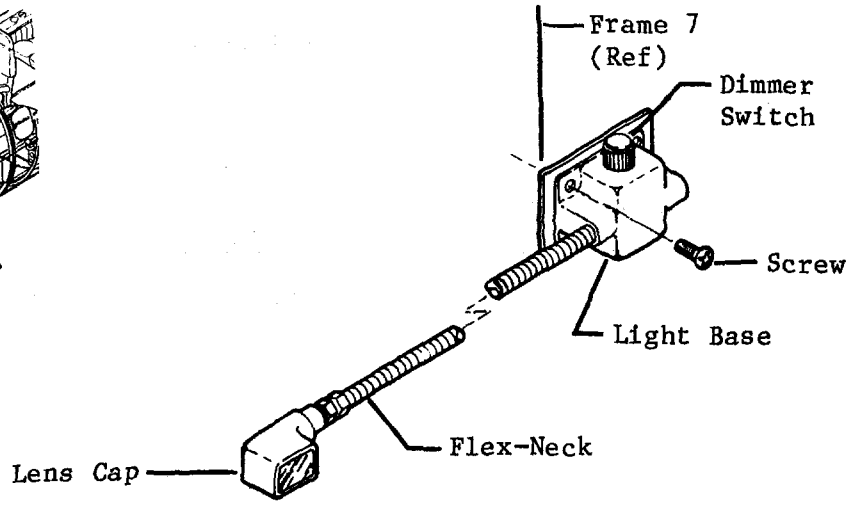


Instrument Panel Lighting Electrical Control Schematic
Figure 6

MAP LIGHTS - MAINTENANCE PRACTICES

1. **REMOVAL/INSTALLATION**
   - **A. Replace Lamp** (See figure 201.)
     - (1) On Aircraft equipped with overhead map light, pull cover off and disengage lamp.
     - (2) On Aircraft equipped with flex-neck map light, pull lens cap off flex-neck and disengage lamp.
     - (3) Refer to Lamp Replacement Chart (refer to 33-00-00) for lamp number.

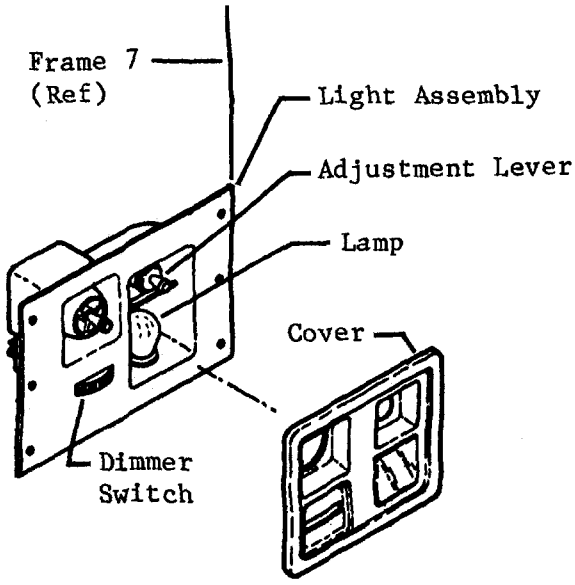




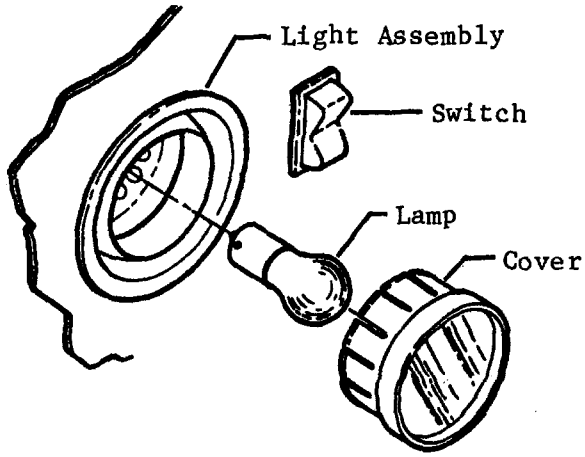
Aircraft 35-002 thru 35-067
Except 35-036, 35-056, 35-063
thru 35-066, and 36-002 thru
36-018

Flex-Neck Map Lights

Detail A



Aircraft 35-036, 35-056, 35-063 thru
35-066, 35-068 and Subsequent and
36-019 and Subsequent



Aircraft 35-417 and Subsequent
and 36-048 and Subsequent

Overhead Map Lights

Detail B

Map Light Installation
Figure 201

9-168B
13-81C-2

EFFECTIVITY: NOTED
MM-99
Disk 912

GLARESHIELD FLOODLIGHTS - MAINTENANCE PRACTICES

1. **Removal/Installation**

WARNING: GLARESHIELD FLOODLIGHTS OPERATE ON 600 VAC. ENSURE THAT ALL ELECTRICAL POWER IS OFF BEFORE PERFORMING ANY MAINTENANCE ON THE GLARESHIELD FLOODLIGHTS.

CAUTION: MATERIAL WITHIN THE COLD CATHODE LAMPS MAY BE DETRIMENTAL TO AIRCRAFT SURFACES SHOULD CONTACT OCCUR. THEREFORE, EXTREME CARE SHALL BE USED WHEN REMOVING AND INSTALLING THESE UNITS. (IF BREAKAGE OCCURS, REFER TO 33-22-00, CLEANING/PAINTING.)

A. Remove Glareshield Floodlight Assembly (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Disconnect wiring from floodlight assembly.
   (3) Remove attaching parts and floodlight assembly from glareshield.

B. Install Glareshield Floodlight Assembly (See figure 201.)
   (1) Install floodlight and secure with attaching parts.
   (2) Connect electrical wiring to floodlight assembly.
   (3) Restore electrical power to aircraft.

C. Remove Cold Cathode Transformer *(Aircraft 35-002 thru 35-006 and 36-002 thru 36-003)* (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Lower copilot's instrument panel.
   (3) Disconnect electrical connectors from transformer.
   (4) Remove attaching parts and transformer from frame 5.

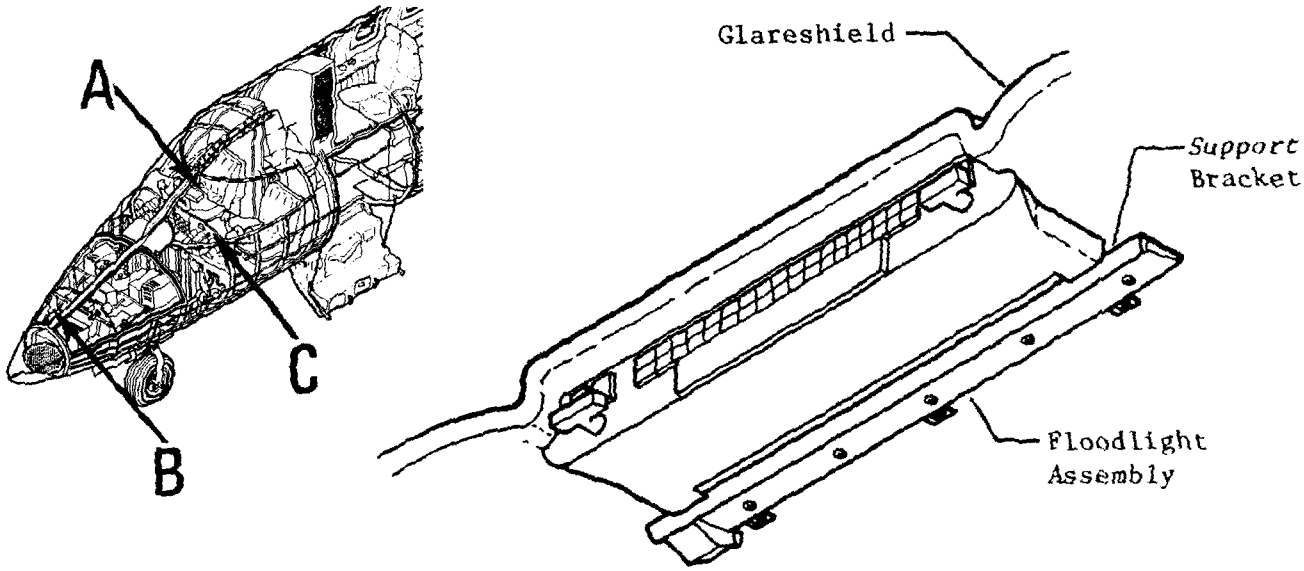
D. Install Cold Cathode Transformer *(Aircraft 35-002 thru 35-006 and 36-002 thru 36-003)* (See figure 201.)
   (1) Position transformer on frame 5 and secure with attaching parts.
   (2) Connect electrical connectors to transformer.
   (3) Raise and secure copilot's instrument panel.
   (4) Restore electrical power to aircraft.

E. Remove Cold Cathode Transformer *(Aircraft 35-007 and Subsequent and 36-004 and Subsequent)* (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove upholstery as required from RH side of forward pedestal.
   (3) Remove screws and side panel from structure sufficiently to gain access to transformer.
   (4) Disconnect electrical connectors from transformer.
   (5) Remove attaching parts and transformer from forward pedestal.

F. Install Cold Cathode Transformer *(Aircraft 35-007 and Subsequent and 36-004 and Subsequent)* (See figure 201.)
   (1) Install transformer and secure with attaching parts.
   (2) Connect electrical connectors to transformer.
   (3) Install pedestal side panel and secure with attaching parts.
   (4) Install previous removed upholstery.
   (5) Restore electrical power to aircraft.

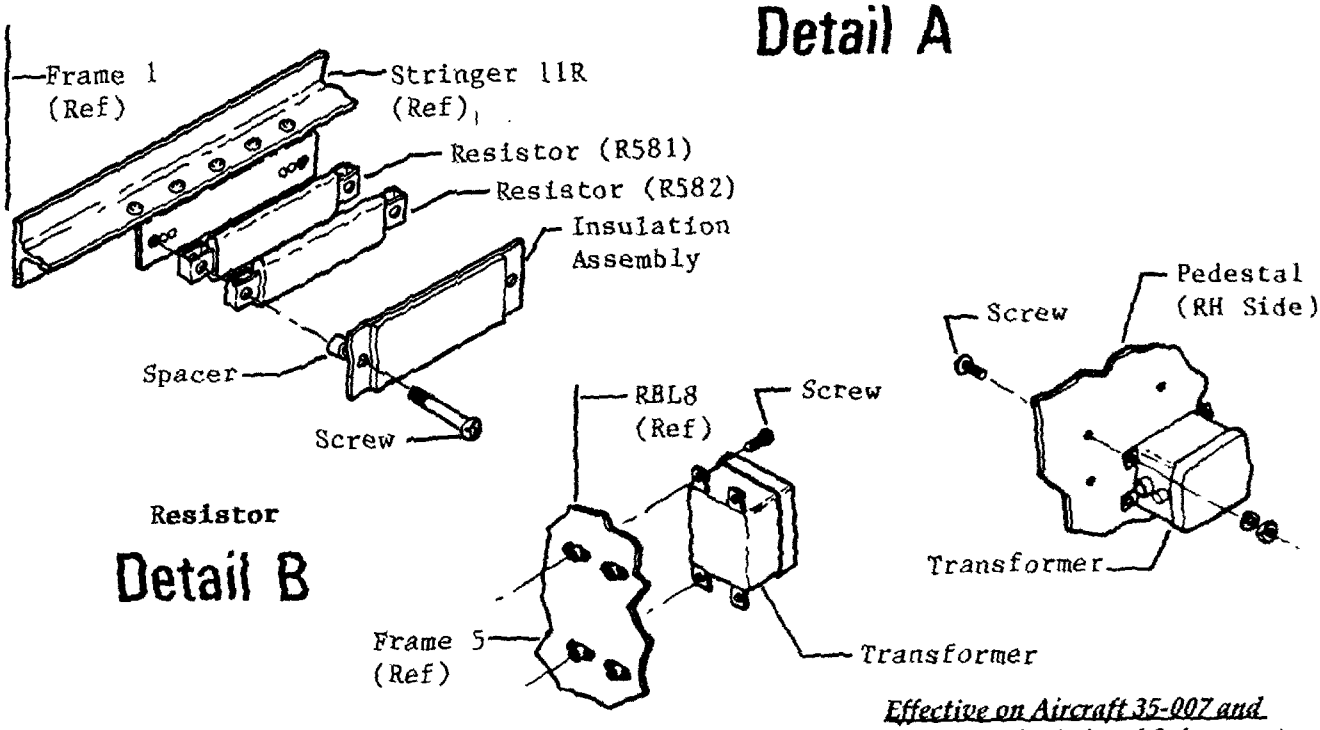
G. Remove R581 and R582 (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove RH nose compartment door.
   (3) Gain access to resistor installation at stringer 11R just aft of frame 1.
   (4) Remove screws holding insulation assembly and resistors together.
   (5) Disconnect and identify wiring from resistors.
   (6) Remove resistors from aircraft.

H. Install R581 and R582 (See figure 201.)
   (1) Identify and connect wiring to resistors.
   (2) Install resistor assembly and secure with attaching parts.
   (3) Install RH nose compartment door.
   (4) Restore electrical power to aircraft.



Glareshield Floodlight

Detail A



Resistor

Detail B

Effective on Aircraft 35-002 thru 35-006 and 36-002 thru 36-003

Effective on Aircraft 35-007 and Subsequent; 36-004 and Subsequent

Transformer

Detail C

9-210A
9-207A
9-210A-1

Glareshield Floodlight System Installation
Figure 201

CONTROL PANEL LIGHTING - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

NOTE: The following procedures are general maintenance procedures applicable to the appropriate panel being replaced.

A. Remove Light Panel

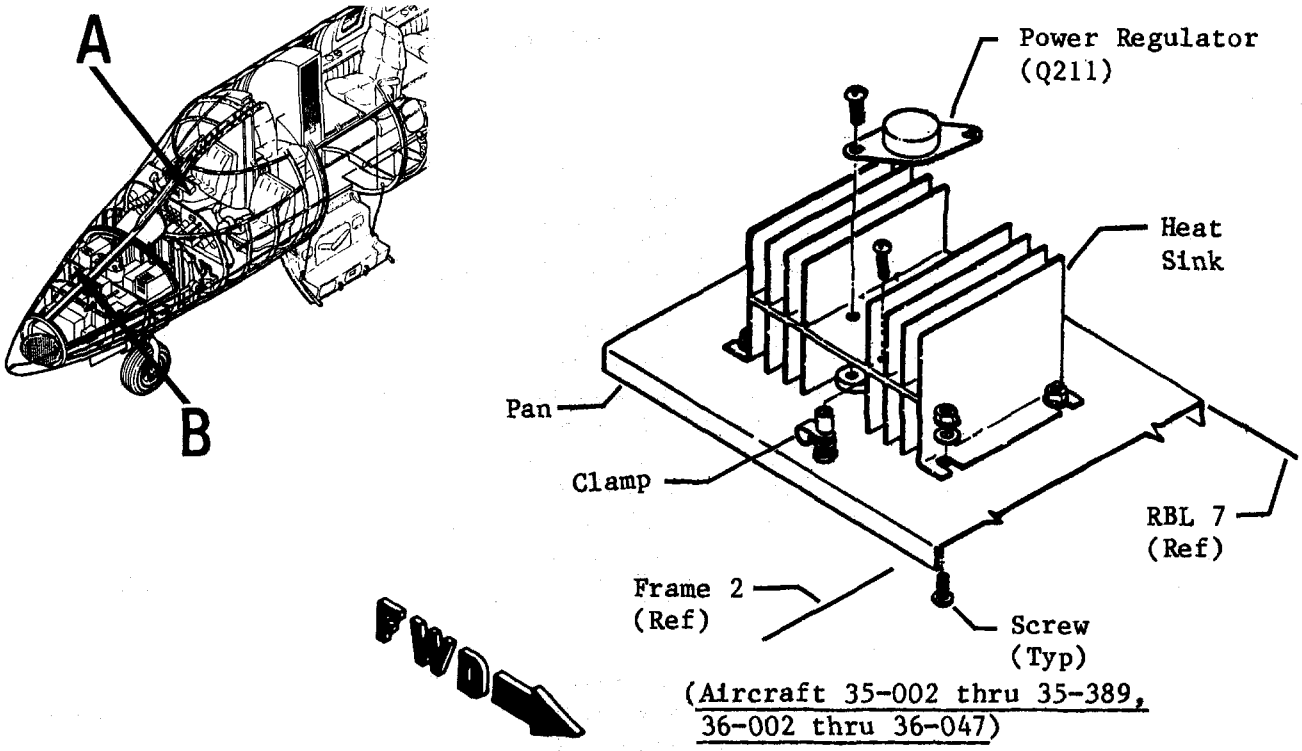
(1) Remove electrical power from aircraft.
(2) Remove control knobs that interfere with light panel removal.
(3) Disconnect light panel electrical wiring at applicable connector.
(4) Remove attaching parts and light panel from panel.

B. Install Light Panel

(1) Install light panel and secure with attaching parts.
(2) Connect light panel electrical wiring to applicable connector.
(3) Install control knobs.
(4) Restore electrical power to aircraft.

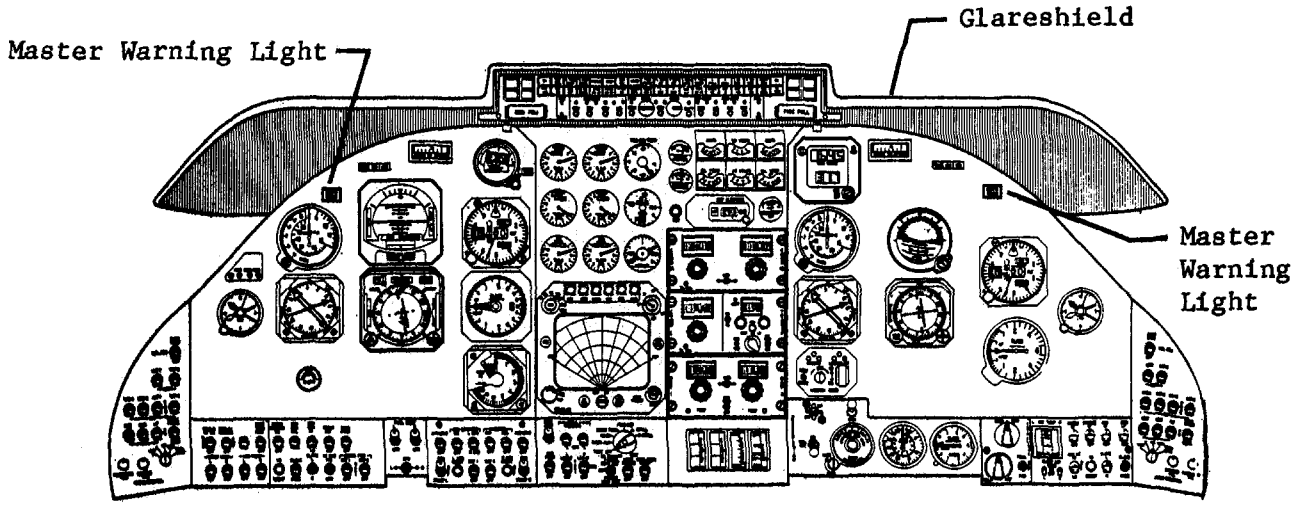
MASTER WARNING LIGHT - MAINTENANCE PRACTICES

1. **REMOVAL/INSTALLATION**
   - **A. Replace Lamp** (See figure 201.)
     - (1) Lamp replacement is accomplished by pulling lens straight out and removing lamp from switch assembly.
     - (2) Refer to Lamp Replacement Chart (33-00-00) for lamp number.
   - **B. Remove Power Regulator Q211** (Aircraft 35-002 thru 35-389, 36-002 thru 36-047) (See figure 201.)
     - (1) Remove electrical power from aircraft.
     - (2) Remove RH nose compartment access door.
     - (3) Gain access to power regulator and heat sink installation on RH side of nose compartment just aft of frame 2.
     - (4) Remove screws attaching heat sink to pan.
     - (5) Disconnect and identify electrical wiring from heat sink.
     - (6) Remove heat sink and power regulator from aircraft.
     - (7) Remove power regulator from heat sink.
   - **C. Install Power Regulator Q211** (Aircraft 35-002 thru 35-389, 36-002 thru 36-047) (See figure 201.)
     - (1) Install power regulator Q211 on heat sink.
     - (2) Identify and connect wiring to power regulator.
     - (3) Install power regulator and heat sink and secure with attaching parts.
     - (4) Install RH nose compartment access door.
     - (5) Restore electrical power to aircraft.



Power Regulator

Detail B



Detail A

Master Warning Light and Power Regulator Installation
Figure 201

9-309B

GLARESHIELD ANNUNCIATORS ASSEMBLY - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION
   A. Remove Light Dimmer Transistors and Heat Sinks (See figure 201.)
      (1) Remove electrical power from aircraft.
      (2) Remove nose compartment access doors.
      (3) Remove equipment as necessary to gain access to heat sinks.
      (4) Remove attaching parts and transistors and heat sinks from aircraft.
   B. Install Light Dimmer Transistors and Heat Sinks (See figure 201.)
      (1) Install transistors and heat sinks and secure with attaching parts.
      (2) Install equipment removed to gain access to heat sinks.
      (3) Install nose compartment access doors.
      (4) Restore electrical power to aircraft.
   C. Replace Glareshield Annunciator Light Bulb (See figure 202.)

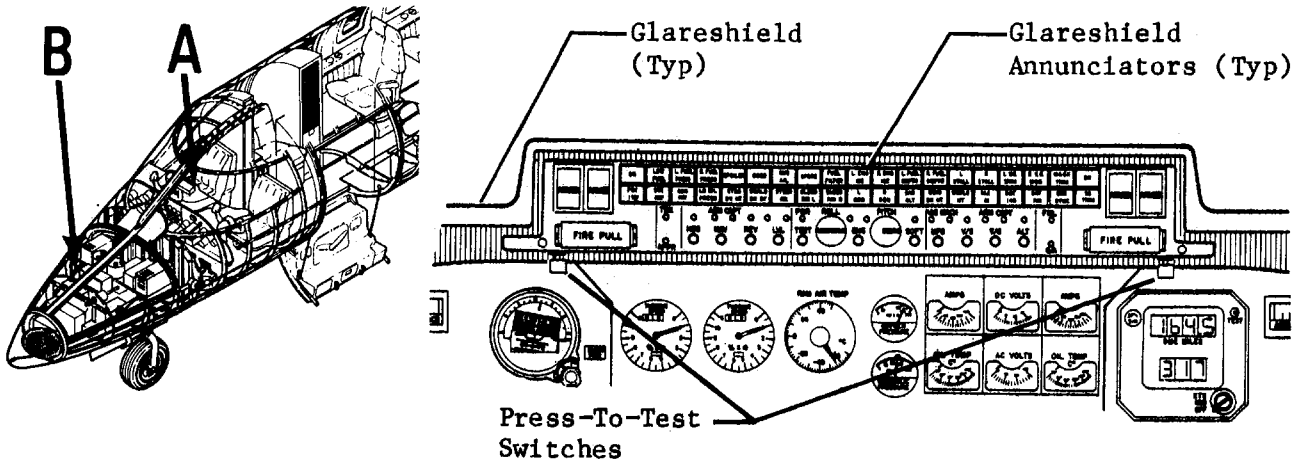
      NOTE:
      - Refer to Lamp Replacement Chart (33-00-00) for lamp number.
      - Remove cap assemblies and replace bulbs one at a time.
      - Each cap assembly is indexed differently so it cannot be replaced in the glareshield annunciator light assembly in any position but the correct one. If the cap assembly does not snap in easily, do not force entry. Pull cap assembly out, rotate 180° and replace cap assembly in glareshield annunciator light assembly.
      - Ensure annunciator nomenclature lens is properly clocked for display.

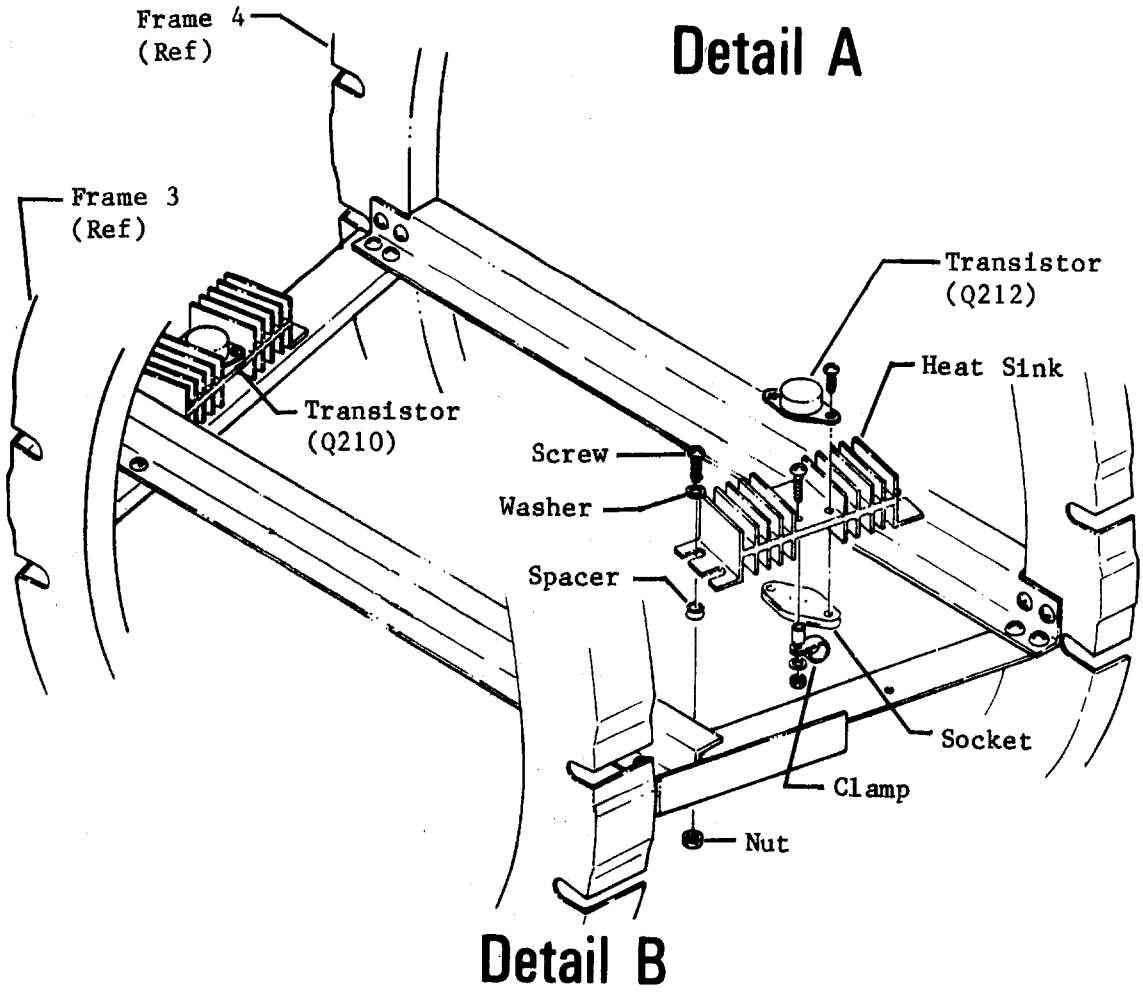
      (1) Remove electrical power from aircraft.
      (2) Using a large pair of thin legged tweezers, grasp desired glareshield annunciator light cap assembly and pull straight out.
      (3) Remove both bulbs from behind cap assembly, and replace bulbs.
      (4) Position cap assembly in glareshield annunciator light assembly and push in until cap assembly snaps into place.
      (5) Restore electrical power to aircraft.
      (6) Test glareshield annunciators. (Refer to Adjustment/Test, below.)
      (7) Restore aircraft to normal.
   D. Remove Annunciator Terminal Board *(Aircraft 35-490 and Subsequent, 36-051 and Subsequent)* (See figure 203.)

      NOTE: Annunciator Terminal Boards TB1 and TB2 are installed at RBL 5 and LBL 2, respectively immediately aft of the glareshield floodlight.

      (1) Remove electrical power from aircraft.
      (2) Disconnect and identify electrical wiring from terminal board assembly.
      (3) Remove attaching parts and terminal boards from glareshield structure.
   E. Install Annunciator Terminal Board *(Aircraft 35-490 and Subsequent, 36-051 and Subsequent)* (See figure 203.)
      (1) Position terminal board on glareshield structure and secure with attaching parts.
      (2) Identify and connect electrical wiring to terminal board assembly.
      (3) Restore electrical power to aircraft.

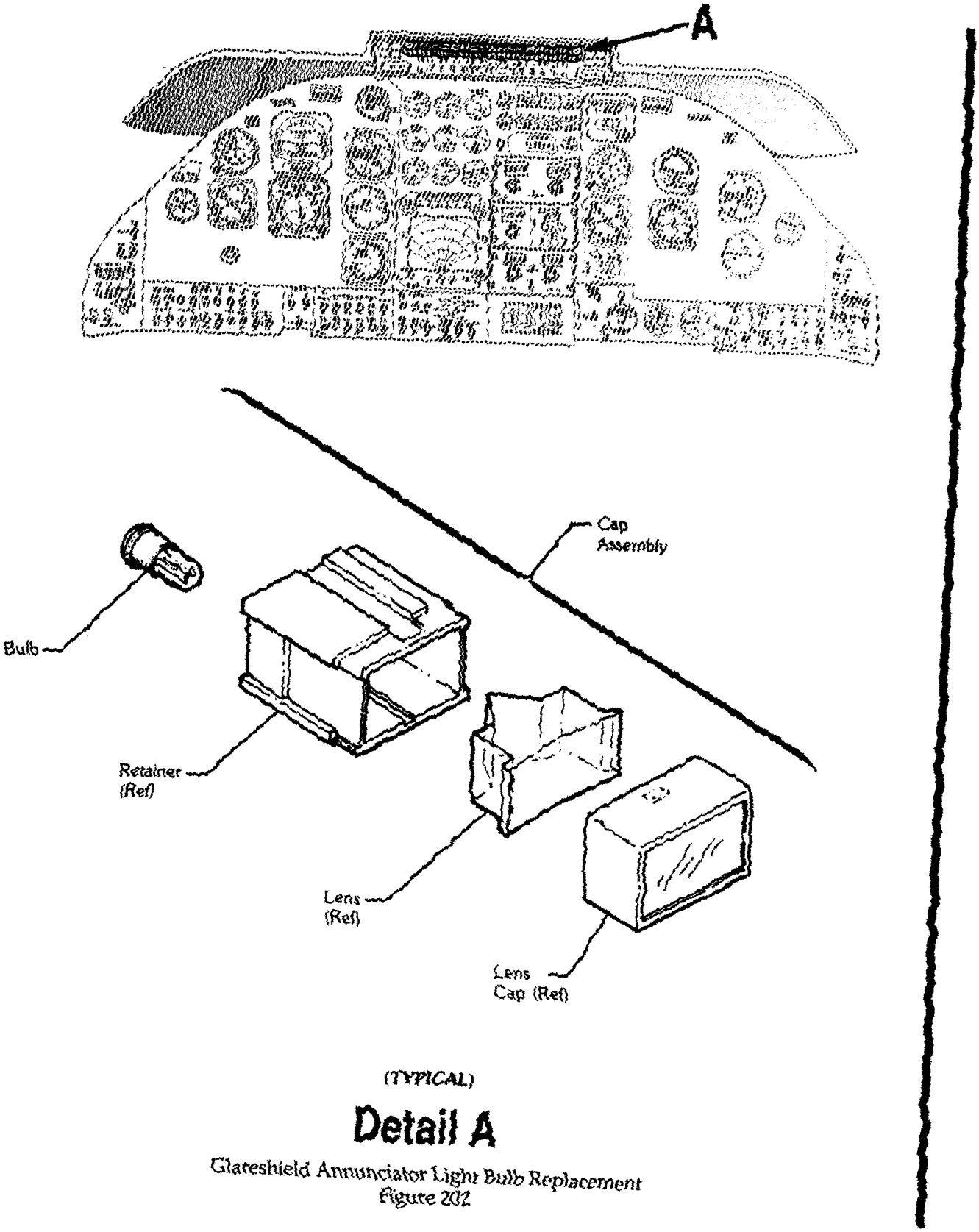
2. ADJUSTMENT /TEST
   A. The glareshield annunciators are tested by depressing either Press-To-Test Switch. The switches are located on the lower LH and RH sides of the glareshield.





9-309C

Glareshield Annunciator Assembly Installation
Figure 201



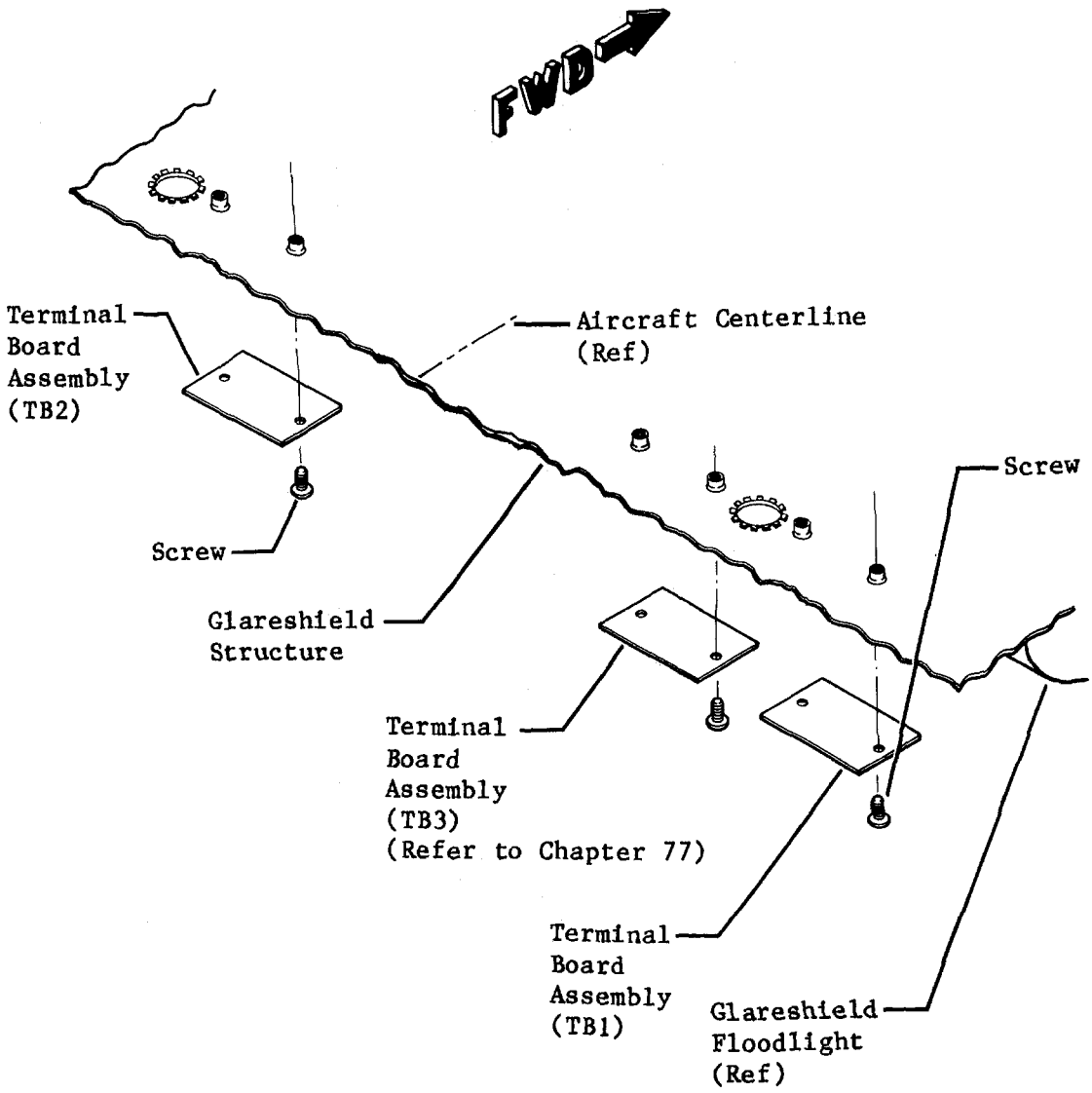
(TYPICAL)

A9-385A

Detail A

Glareshield Annunciator Light Bulb Replacement
Figure 202

EFFECTIVITY: ALL

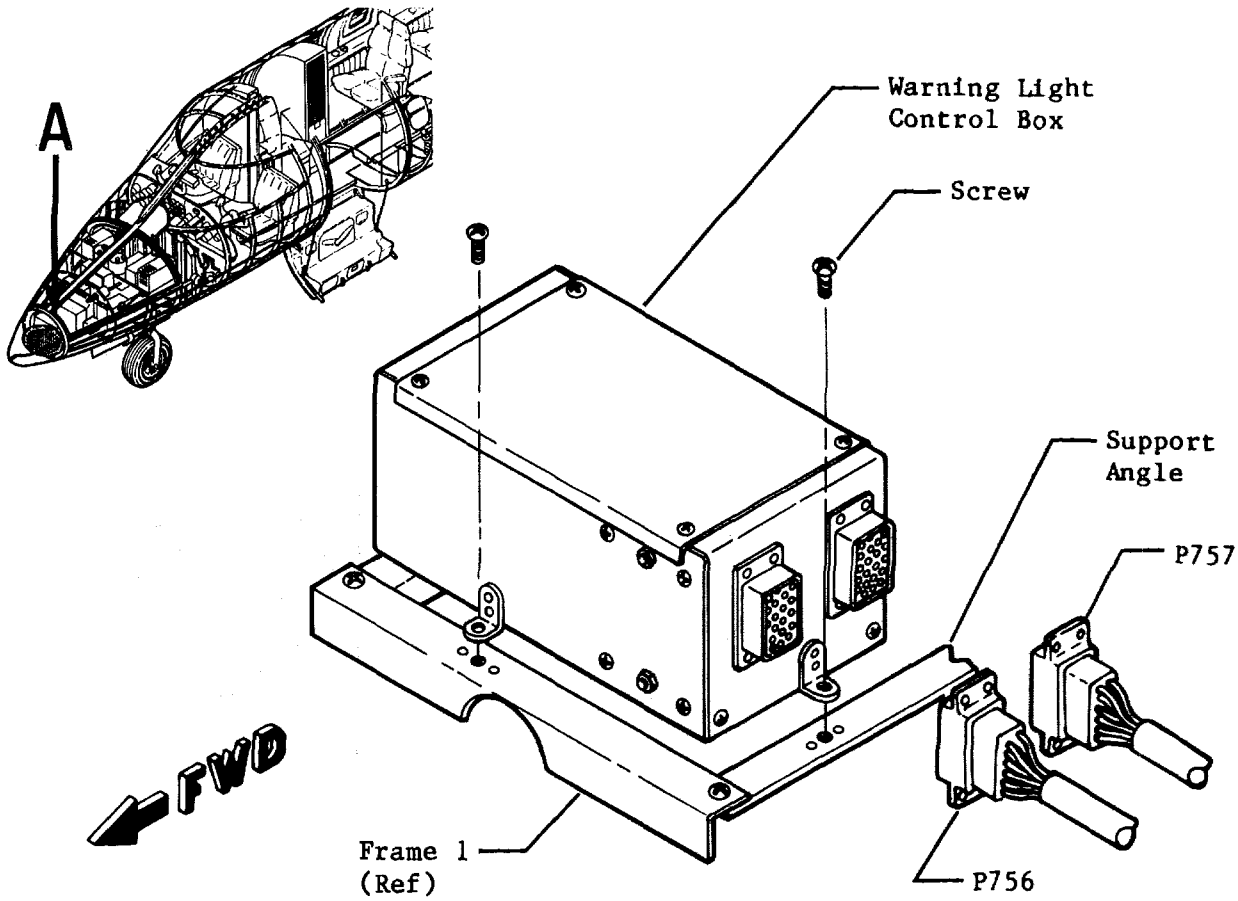


9-356A

Glareshield Annunciator Assembly Terminal Board Installation
Figure 203

WARNING LIGHT CONTROL BOX - MAINTENANCE PRACTICES

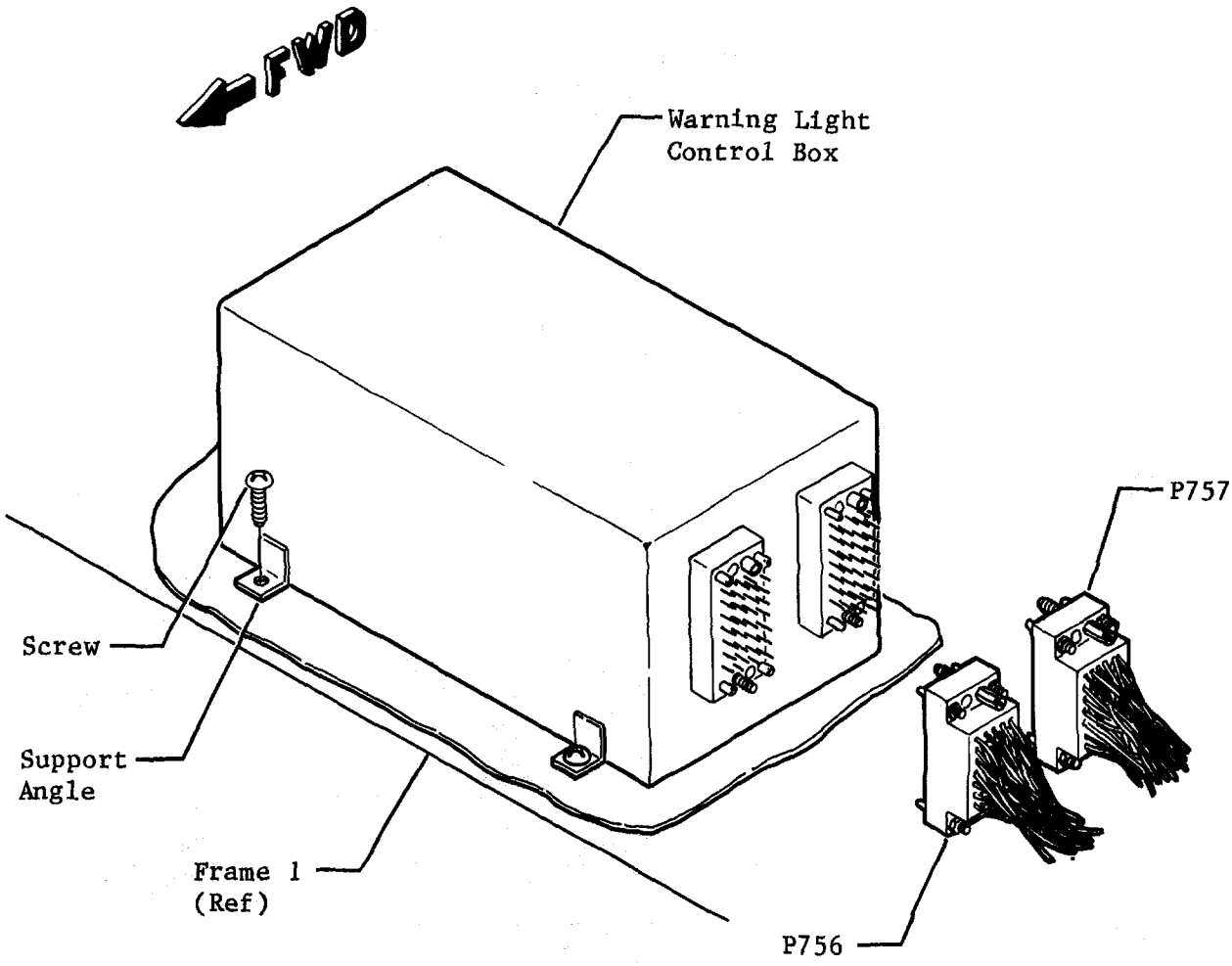
1. **REMOVAL/INSTALLATION**
   - **A. Remove Warning Light Control Box** (See figure 201.)
     - (1) Remove electrical power from aircraft.
     - (2) Remove nose compartment access doors.
     - (3) Disconnect electrical connectors from warning light control box.
     - (4) Remove attaching parts and control box.
   - **B. Install Warning Light Control Box** (See figure 201.)
     - (1) Install control box and secure with attaching parts.
     - (2) Connect electrical connectors.
     - (3) Install nose compartment access doors.
     - (4) Restore electrical power to aircraft.



Detail A

Aircraft 35-002 thru 35-389, 36-002 thru 36-047

Warning Light Control Box Installation
Figure 201 (Sheet 1 of 2)



Detail A

Aircraft 35-390 and Subsequent and 36-048 and Subsequent

Warning Light Control Box Installation
Figure 201 (Sheet 2 of 2)

A10-32B

EFFECTIVITY: NOTED
MM-99
Disk 913

INSTRUMENT PANEL LIGHTING - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

NOTE ° Removal and installation procedures for all the light dimmer assemblies are identical.

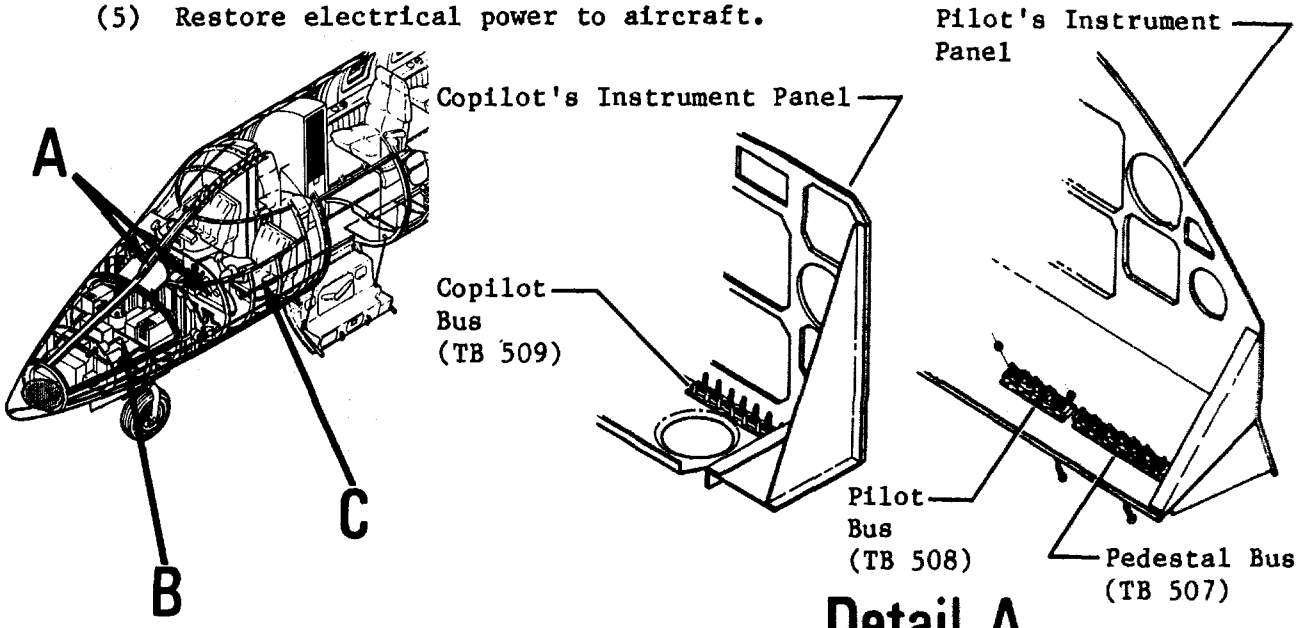
° The copilot's light dimmer assembly is located on the right side of the nose wheel box aft of frame 2. The pilot's light dimmer assembly is located on the left side of the nose wheel box aft of frame 3. The pedestal and engine instruments light dimmer assembly is located on the right side of the nose wheel box aft of frame 3.

A. Remove Light Dimmer Assembly (See figure 201.)

(1) Remove electrical power from aircraft.
(2) Remove nose compartment access doors.
(3) Remove avionics equipment and racks as required to gain access to light dimmer assembly.
(4) Disconnect electrical connector.
(5) Remove attaching parts and light dimmer assembly from aircraft.

B. Install Light Dimmer Assembly (See figure 201.)

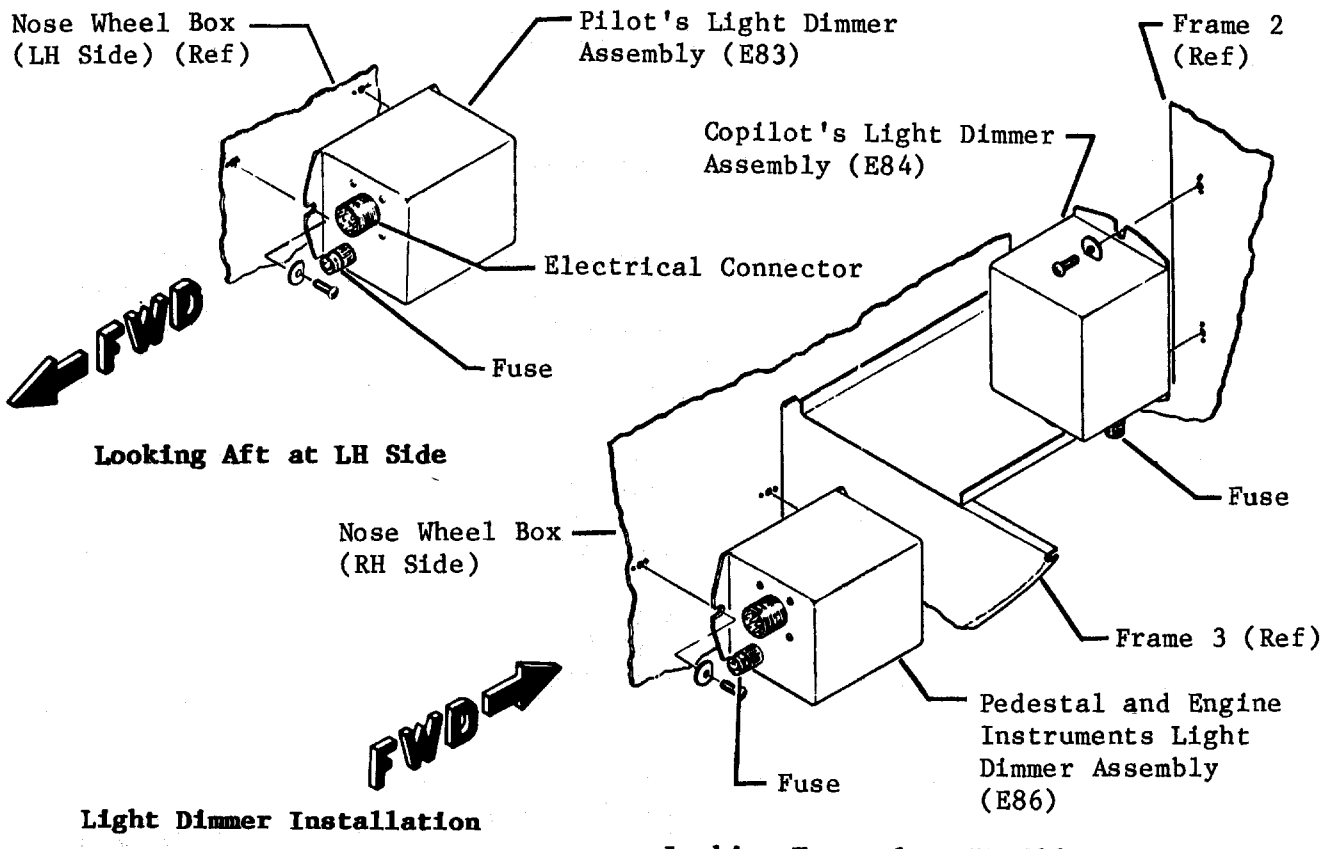
(1) Install light dimmer assembly and secure with attaching parts.
(2) Connect electrical connector.
(3) Install racks and avionics equipment previously removed.
(4) Install nose compartment access doors.
(5) Restore electrical power to aircraft.



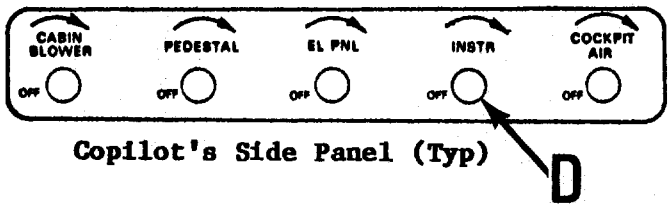
Detail A

Instrument Panel Buses

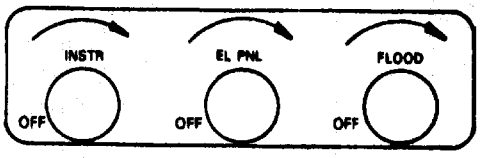
Instrument Panel Lighting Control Installation
Figure 201 (Sheet 1 of 2)



Detail B

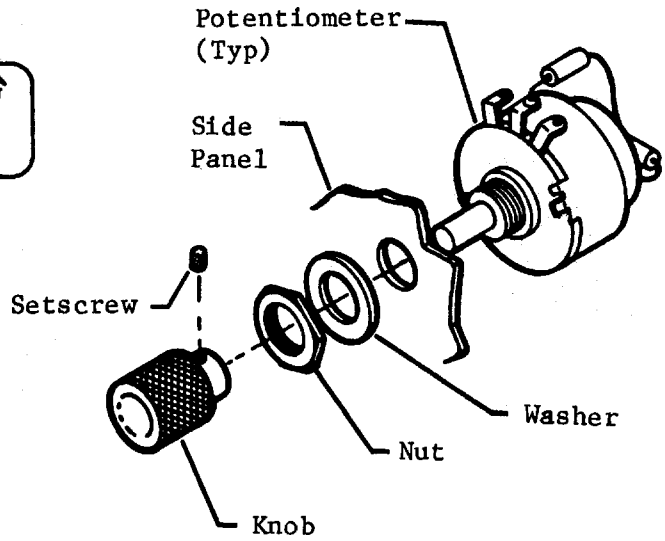


Copilot's Side Panel (Typ)



Pilot's Side Panel (Typ)

Detail C



Detail D

Instrument Panel Lighting Control Installation
Figure 201 (Sheet 2 of 2)

AVIONICS LIGHT DIMMER CONTROL BOX - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

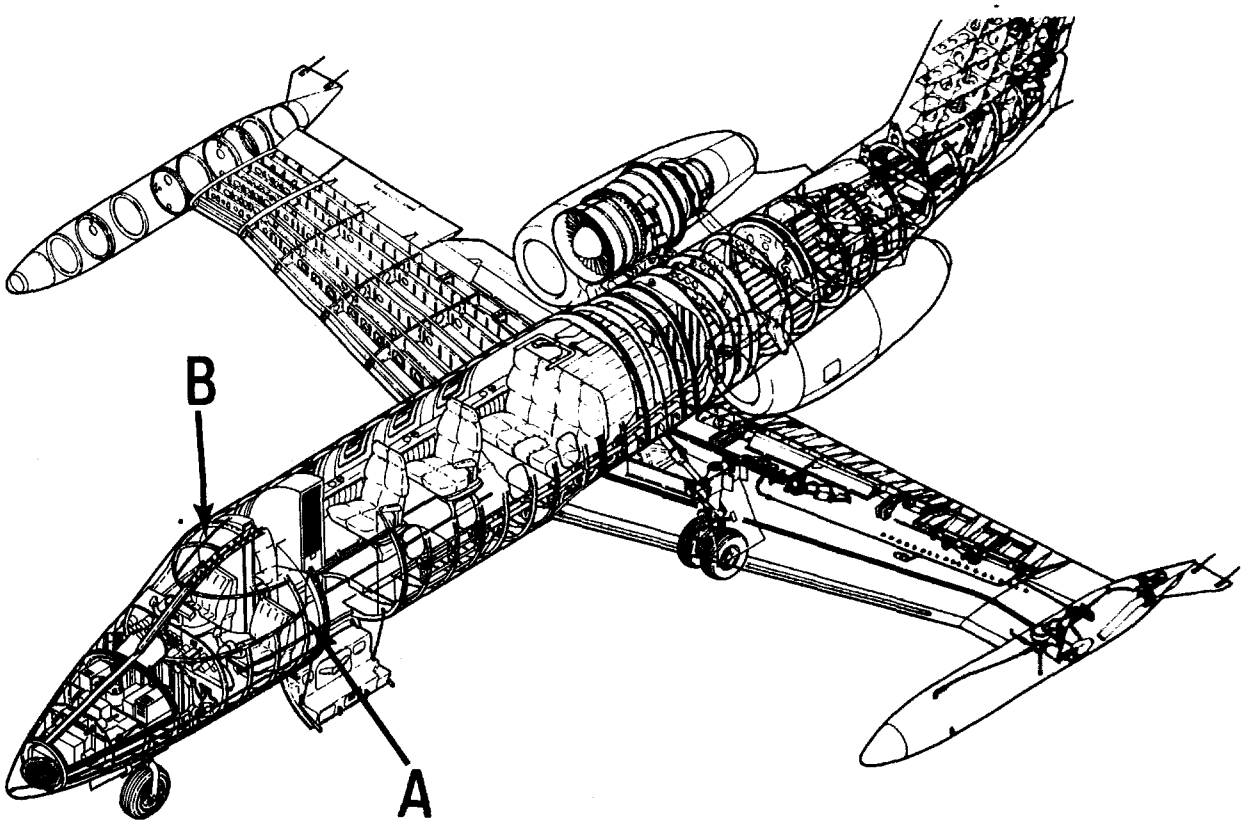
NOTE: The avionics light dimmer control boxes (AE194 and 2AE194) are located aft of frame 9 between stringers 11 and 12 on the LH and RH sides of the aircraft, respectively.

A. Remove Avionics Light Dimmer Control Box (See figure 201.)

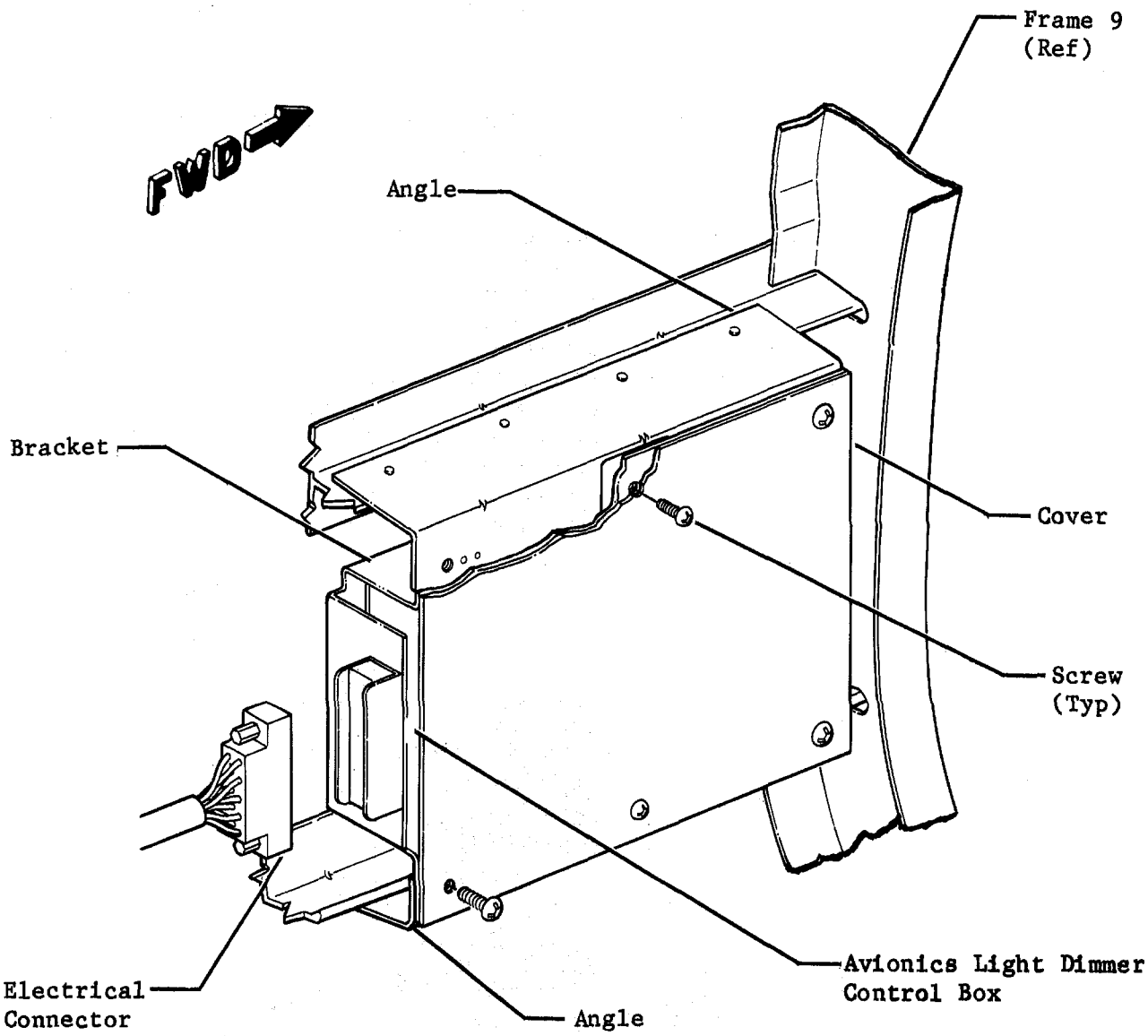
(1) Remove electrical power from aircraft.
(2) Remove upholstery as required from applicable side of aircraft aft of frame 9 to gain access to control box.
(3) Disconnect electrical connector from control box.
(4) Remove attaching parts and control box from aircraft.

B. Install Avionics Light Dimmer Control Box (See figure 201.)

(1) Position control box on angles and secure with attaching parts.
(2) Connect electrical connector to control box.
(3) Install upholstery removed to gain access to control box.
(4) Restore electrical power to aircraft.



Avionics Light Dimmer Control Box Installation
Figure 201 (Sheet 1 of 3)

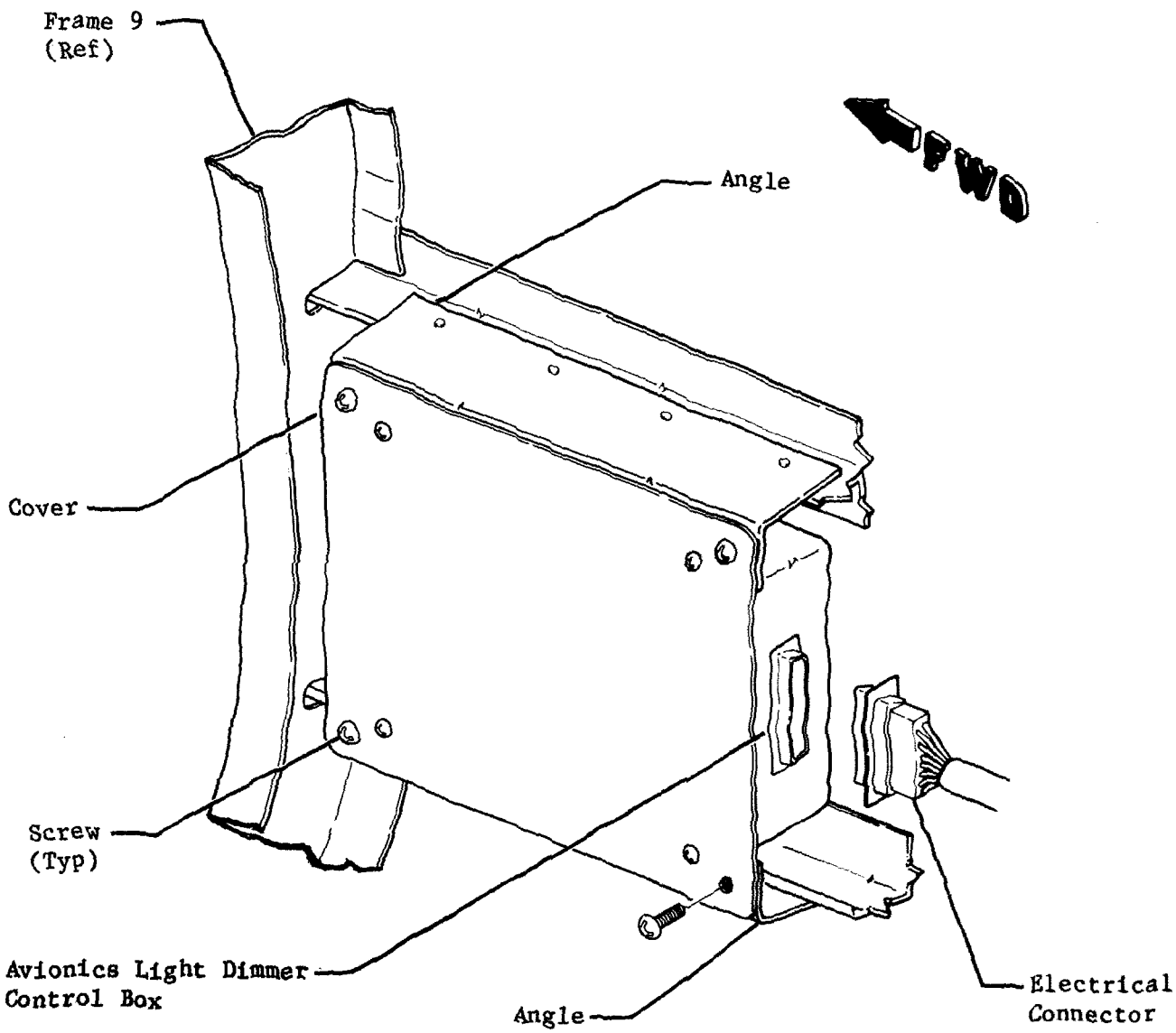


LH SHOWN

Aircraft 35-141 and Subsequent, 36-035 and Subsequent
(and RH typical, when installed, on 35-164, 35-183 thru 35-231, and 36-039 thru 36-044)

Detail A

Avionics Light Dimmer Control Box Installation
Figure 201 (Sheet 2 of 3)



RH SHOWN

Aircraft 35-232 and Subsequent, 36-045 and Subsequent

Detail B

Avionics Light Dimmer Control Box Installation
Figure 201 (Sheet 3 of 3)

ELECTROLUMINESCENT (EL) CONTROLLER -- MAINTENANCE PRACTICES

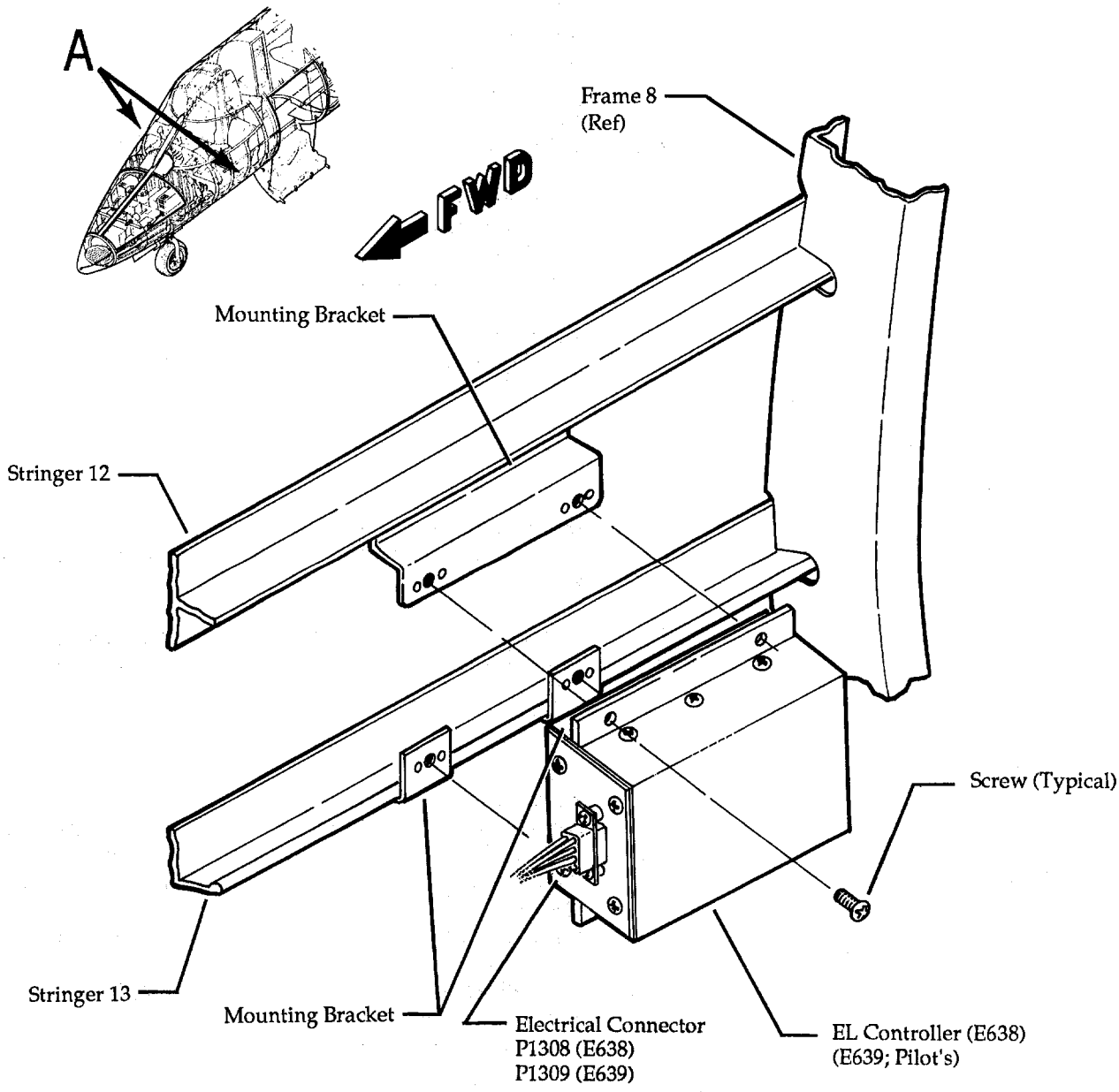
1. **Removal/Installation**
   A. Remove EL Controller (See figure 201.)
      (1) Set Battery Switches off and pull both EL LT circuit breakers.
      (2) Remove applicable side panel as follows:
         (a) Remove knobs, nuts, and placard from light dimming control panel.
         (b) Remove applicable crew seat from aircraft.
         (c) Remove applicable map light assembly. (Refer to 33-11-00.)
         (d) Remove applicable armrest and support angle.
         (e) Remove applicable nut and cover assembly from oxygen valve outlet.
         (f) Remove screws securing side panel to conditioned air outlet, oxygen control panel (pilot's side) and aircraft structure.
      (3) Disconnect electrical connector from EL controller.
      (4) Remove attaching parts and EL controller from aircraft.
   B. Install EL Lighting Terminal Board (See figure 201.)
      (1) Position EL controller on mounting brackets and secure with attaching parts.
      (2) Connect electrical connector.
      (3) Install all previously removed equipment. (Refer to step A.(2).)
      (4) Perform Adjustment/Test of EL controller. (Refer to Adjustment/Test, this section.)
      (5) Return aircraft to normal.

2. **Adjustment/Test**
   A. Functional Test of EL Controller.

      NOTE:
      - The Pilot's EL PNL potentiometer controls the electroluminescent lighting for the Pilot's circuit breaker panel, oxygen valve panel, Pilot's switch panel, test switch panel, and Pilot's audio control panel.
      - The Copilot's EL PNL potentiometer controls the electroluminescent lighting for the Copilot's circuit breaker panel, cabin and climate lights panel, and Copilot's audio control panel.

      (1) Connect external electrical power to aircraft.
      (2) Set Battery Switches on.
      (3) Set Primary and Secondary Inverter Switches on.
      (4) Rotate Pilot's and Copilot's EL PNL potentiometers completely counterclockwise. Verify that EL panels controlled by Pilot's and Copilot's EL PNL potentiometers are dim or extinguished.
      (5) Rotate Copilot's EL PNL potentiometer completely clockwise. Verify that EL panels controlled by Copilot's EL PNL potentiometer are full bright.
      (6) Rotate Pilot's EL PNL potentiometer completely clockwise. Verify that EL panels controlled by Pilot's EL PNL potentiometer are full bright.
      (7) Pull R EL LT circuit breaker located on Copilot's circuit breaker panel. Verify that EL panels controlled by Copilot's EL PNL potentiometer are extinguished.
      (8) Pull L EL LT circuit breaker located on Pilot's circuit breaker panel. Verify that EL panels controlled by Pilot's EL PNL potentiometer are extinguished.
      (9) Depress L EL LT and R EL LT circuit breakers.
      (10) Slowly rotate Copilot's EL PNL potentiometer completely counterclockwise. Verify that the intensity of EL panels controlled by Copilot's EL PNL potentiometer evenly decreases from full bright to dim.
      (11) Slowly rotate Pilot's EL PNL potentiometer completely counterclockwise. Verify that the intensity of EL panels controlled by Pilot's EL PNL potentiometer evenly decreases from full bright to dim.

(12) Set Battery Switches to off.
(13) Set Primary and Secondary Inverter Switches to OFF.
(14) Disconnect external electrical power from aircraft.
(15) Return aircraft to normal.



Detail A

9-473A

Electroluminescent (EL) Controller Installation
Figure 201

PASSENGER COMPARTMENT LIGHTING - DESCRIPTION AND OPERATION

1. DESCRIPTION

A. Passenger compartment lighting consists of individual passenger lighting, general cabin lighting, entry lighting, and no smoking - fasten seat belt lighting.

B. Component Description (See figure 1.)

(1) Individual passenger lighting consists of reading light or reading light and gasper assemblies installed in the LH and RH upper panels.

(2) General cabin lighting consists of cold cathode (fluorescent) lights installed in recesses along either side of the upper center panel, high-voltage and high-frequency inverters, reflector assemblies, dimmer controls, and system control switches. On *Aircraft equipped with variable intensity lighting*, two potentiometers allow the cabin lights to be dimmed to varying degrees of intensity.

(a) On *Aircraft 35-002 and Subsequent*, eight cold cathode lights are installed in the upper center panel. Four are located on the LH side and four on the RH side. On *Aircraft 36-002 and Subsequent*, six cold cathode lights are installed in the upper center panel. Three are located on the LH side and three on the RH side. The lamps are held in place by lamp holders. The cold cathode lights are also used as depressurization lighting. (Refer to 33-50-00.)

(b) The high-voltage, high-frequency inverters are installed in the upper center panel adjacent to the speakers. The inverters have an output of 800 vac at 52 kHz. Therefore, maintenance personnel should exercise extreme caution when performing maintenance.

(c) The reflector assemblies provide housing for the cold cathode lamps. The assemblies are bonded directly to the upper center panel and incorporate the lamp holders which are bonded to the reflector assemblies.

(d) The dimmer controls reduce the 28 vac input to the inverters, thus dimming the lights.

(e) Control switches in the LH service cabinet are utilized to electrically connect the dimmers into the circuits.

(f) On *Aircraft equipped with variable intensity lighting*, the potentiometers are located on the armrest and on the LH aft cabinet.

(3) Two entry lights are installed in the aircraft. One is located in the upper center panel directly over the door opening and the other is installed in the LH service cabinet to light the steps in the lower door.

(4) The No Smoking - Fasten Seat Belt light assemblies snap into the recessed portion of the upper center panel. The lights are controlled by a switch on the test switch panel. An audible tone is also present when the switch is actuated.

2. OPERATION

A. Component Operation (See figure 1.)

(1) Individual passenger lights are operated by a push-type switch adjacent to each light.

(a) On *Aircraft 35-002 thru 35-091 and 36-002 thru 36-024*, the light beam is controlled by an adjustment lever and mirror assembly.

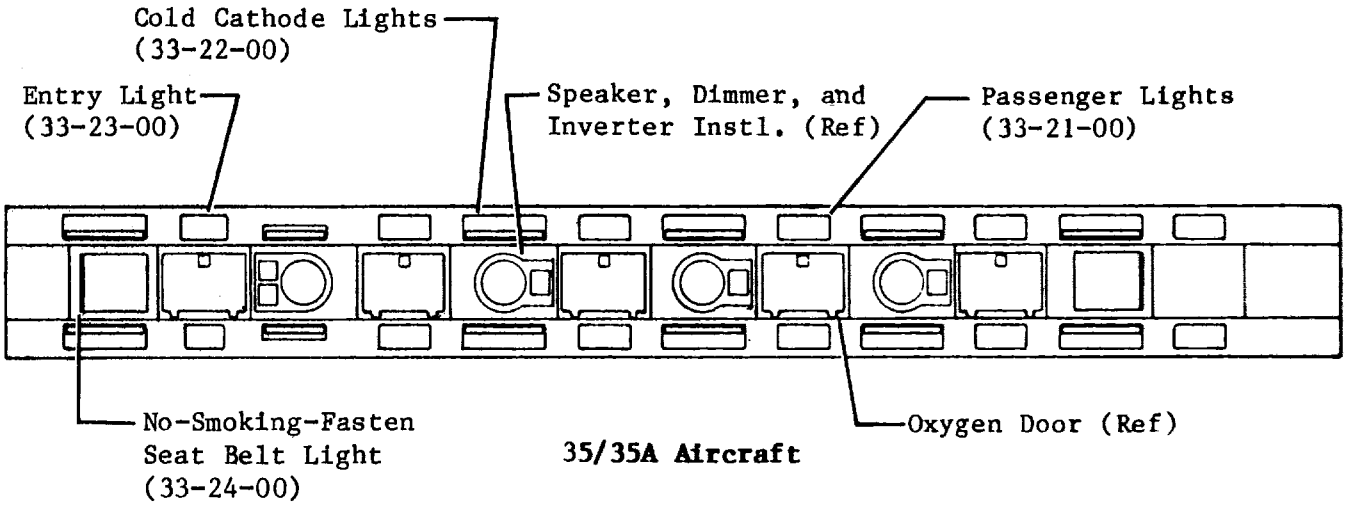
(b) On *Aircraft 35-092 and Subsequent and 36-025 and Subsequent*, the light beam is adjustable by swiveling the light cover with the fingers.

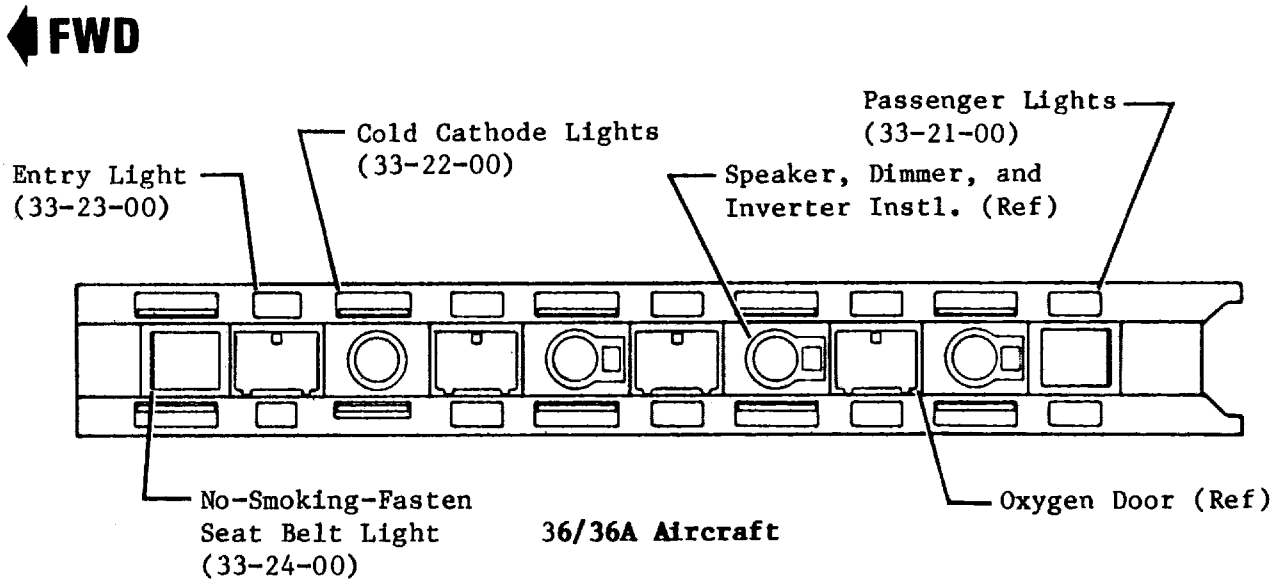
(2) The cold cathode lights are controlled by dimmers and inverters installed in the upper center panel adjacent to the cabin speakers.

CAUTION: THE COLD CATHODE LIGHT SWITCH SHOULD BE SET TO BRT FOR 2 TO 3 MINUTES AND THEN TO DIM, WHEN THE DIM MODE OF OPERATION IS DESIRED. SELECTING THE DIM POSITION FIRST CAN CAUSE SYSTEM DAMAGE.

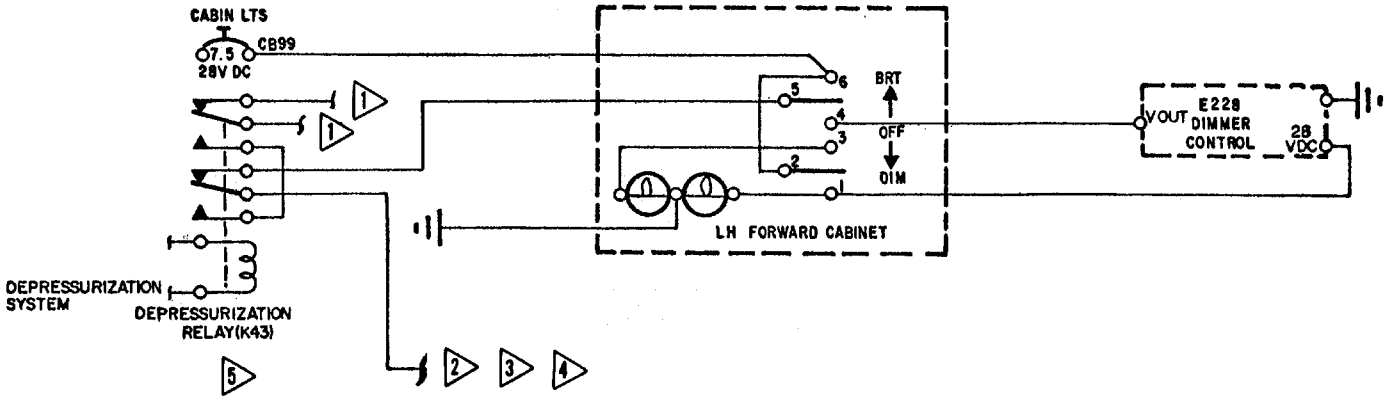
(a) On *Aircraft 35-002 and Subsequent*, four cold cathode lights are installed on each side of the upper center panel as standard equipment. On *Aircraft 35-002 thru 35-010*, the four RH side lights are powered by an inverter installed adjacent to the third speaker, while the four LH side lights are powered by an inverter adjacent to the aft speaker. On *Aircraft 35-011 thru 35-084*, two lights on each side of the upper center panel are powered by each inverter. On *Aircraft 35-085 and Subsequent*, refer to Avionics and Optional Electrical Customization Wiring Manual for information on which inverter controls specific lights. A switch located in the LH forward cabinet is used to dim the lights. Indicator lights adjacent to the switch indicate the (BRT, DIM, or OFF) position of the switch. On *Aircraft equipped with variable intensity lighting*, the cabin lights are dimmed to the desired intensity by rotating either of the CABIN DIM potentiometers located on the LH cabinet and the armrest. These potentiometers are enable when their respective CABIN LIGHTS CONTROLS switches are depressed. In the event of emergency depressurization, the cabin lights will automatically return to their brightest level.

(b) On *Aircraft 36-002 and Subsequent*, three cold cathode lights are installed on each side of the upper center panel as standard equipment. On *Aircraft 36-002 thru 36-007*, the three LH side lights are powered by an inverter adjacent to the aft speaker, while the three RH side lights are powered by an inverter adjacent to the third speaker. On *Aircraft 36-008 thru 36-021*, an inverter adjacent to the aft speaker powers one light on the LH side and one light on the RH side, while an inverter adjacent to the third speaker powers two lights on each side. On *Aircraft 36-022 and Subsequent*, refer to the Avionics and Optional Electrical Customization Wiring Manual for information on which inverter controls specific lights. A switch located in the LH forward cabinet is used to dim the lights. Indicator lights adjacent to the switch indicate the (BRT, DIM, or OFF) position of the switch. On *Aircraft equipped with variable intensity lighting*, the cabin lights are dimmed to the desired intensity by rotating either of the CABIN DIM potentiometers located on the LH cabinet and the armrest. These potentiometers are enabled when their respective CABIN LIGHTS CONTROLS switches are depressed. In the event of emergency depressurization, the cabin lights will automatically return to their brightest level.



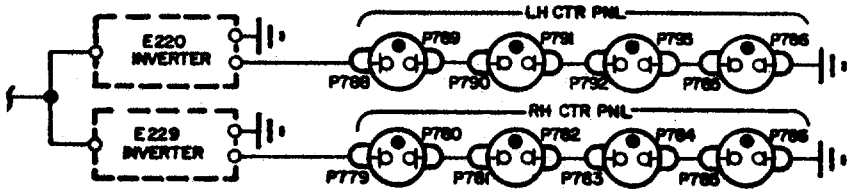


Passenger Compartment Lighting Locator
Figure 1

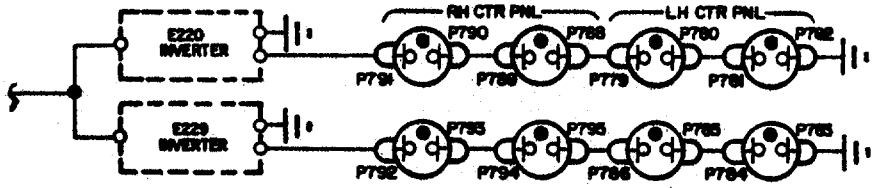


1 Provisions for optional lighting

2 Effective on Aircraft 35-002 thru 35-010



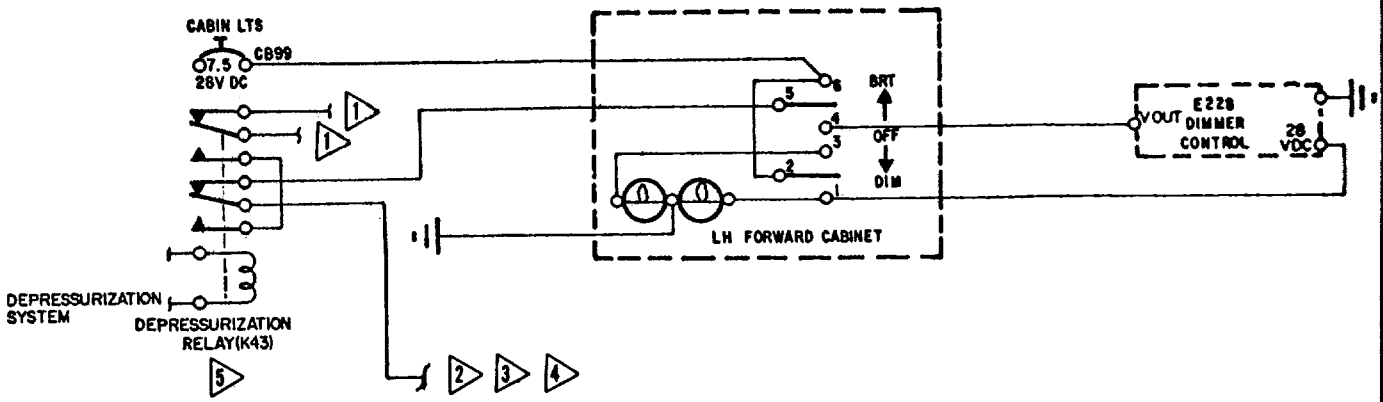
3 Effective on Aircraft 35-011 thru 35-084



4 On Aircraft 35-085 and Subsequent, refer to Avionics and Optional Electrical Customization Wiring Manual.

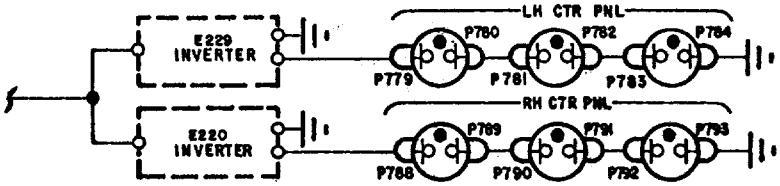
5 Effective Aircraft 35-238 and Subsequent, K43 is contained in the Cold Cathode Light Control Box and is identified as K1.

Cold Cathode Lights Electrical Control Schematic
Figure 2 (Sheet 1 of 2)

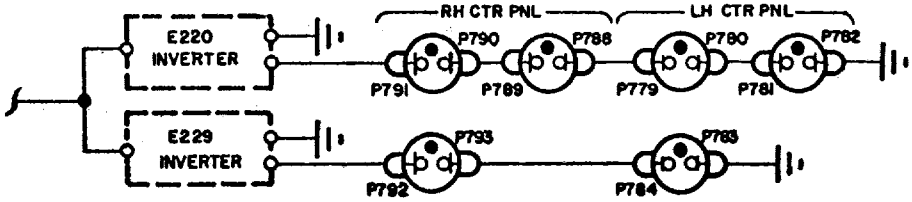


1 Provisions for optional lighting

2 Effective on Aircraft 36-002 thru 36-007



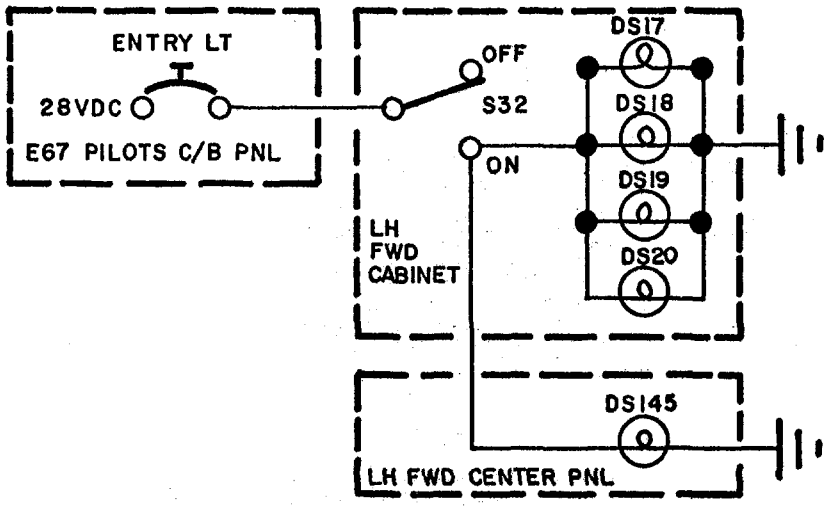
3 Effective on Aircraft 36-008 thru 36-021



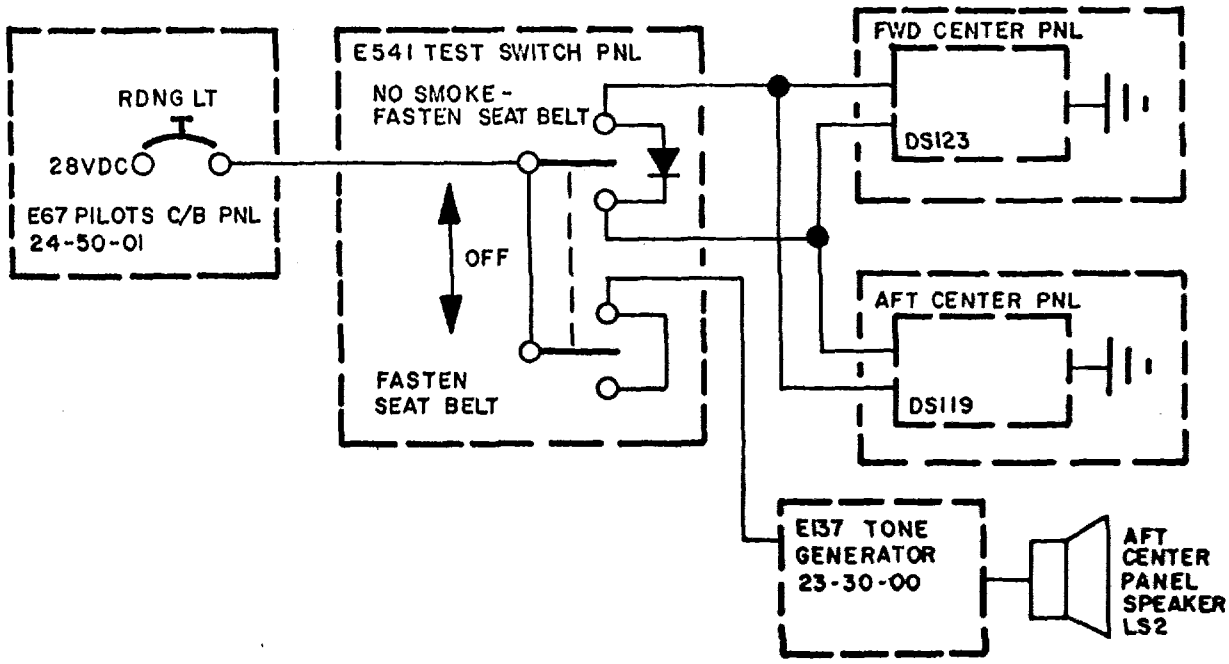
4 On Aircraft 36-022 and Subsequent, refer to Avionics and Optional Electrical Customization Wiring Manual.

5 Effective Aircraft 36-045 and Subsequent, K43 is contained in the cold cathode light control box and is identified as K1.

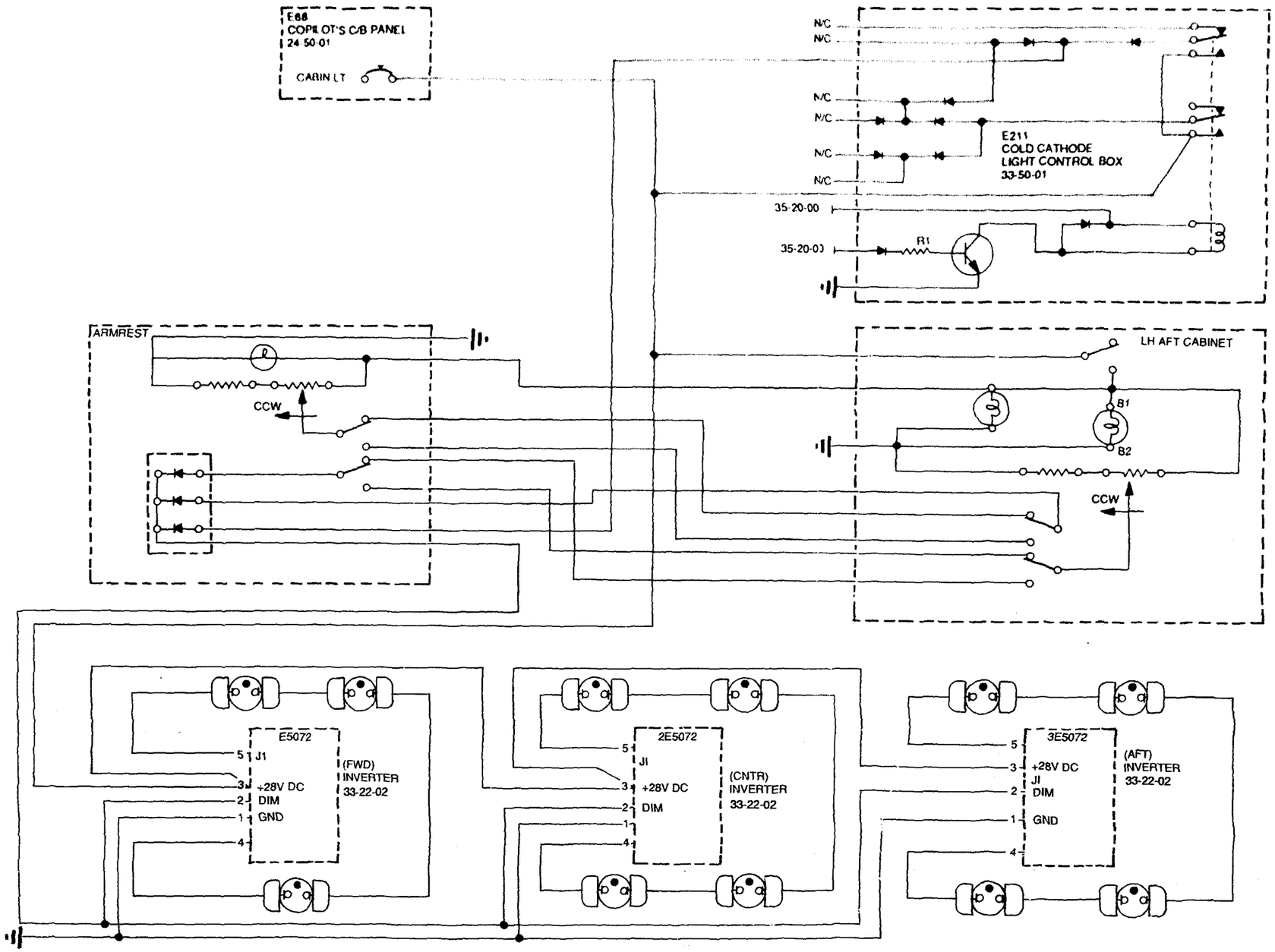
Cold Cathode Lights Electrical Control Schematic
Figure 2 (Sheet 2 of 2)



Entry Lights Electrical Control Schematic
Figure 3



No Smoke - Fasten Seat Belt Electrical Control Schematic
Figure 4



20-41C

Variable Intensity Cabin Lighting Electrical Control Schematic
Figure 5

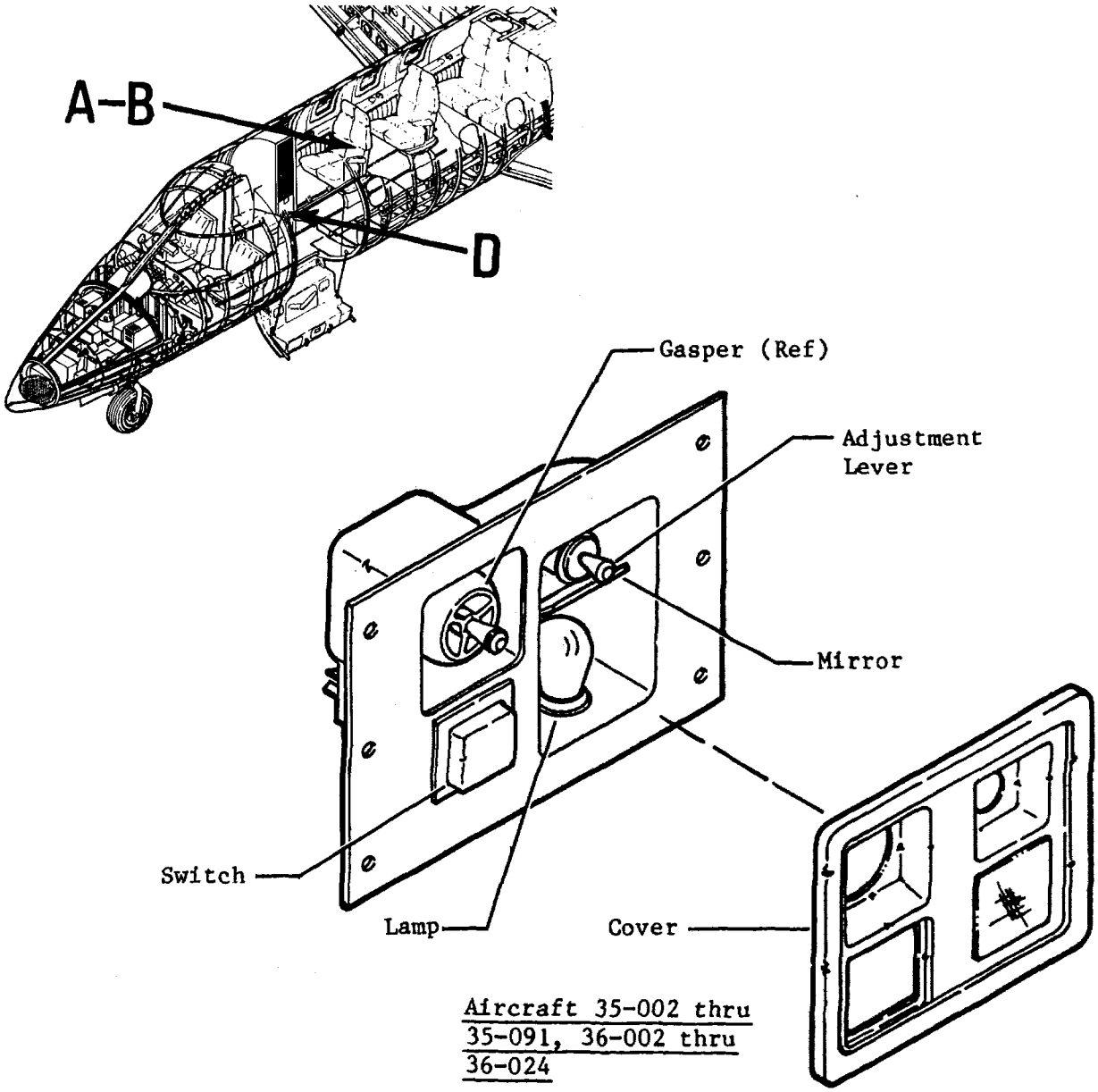
INDIVIDUAL PASSENGER LIGHTING - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

A. Replace Lamp (See figure 201.)

(1) Remove cover and disengage lamp.

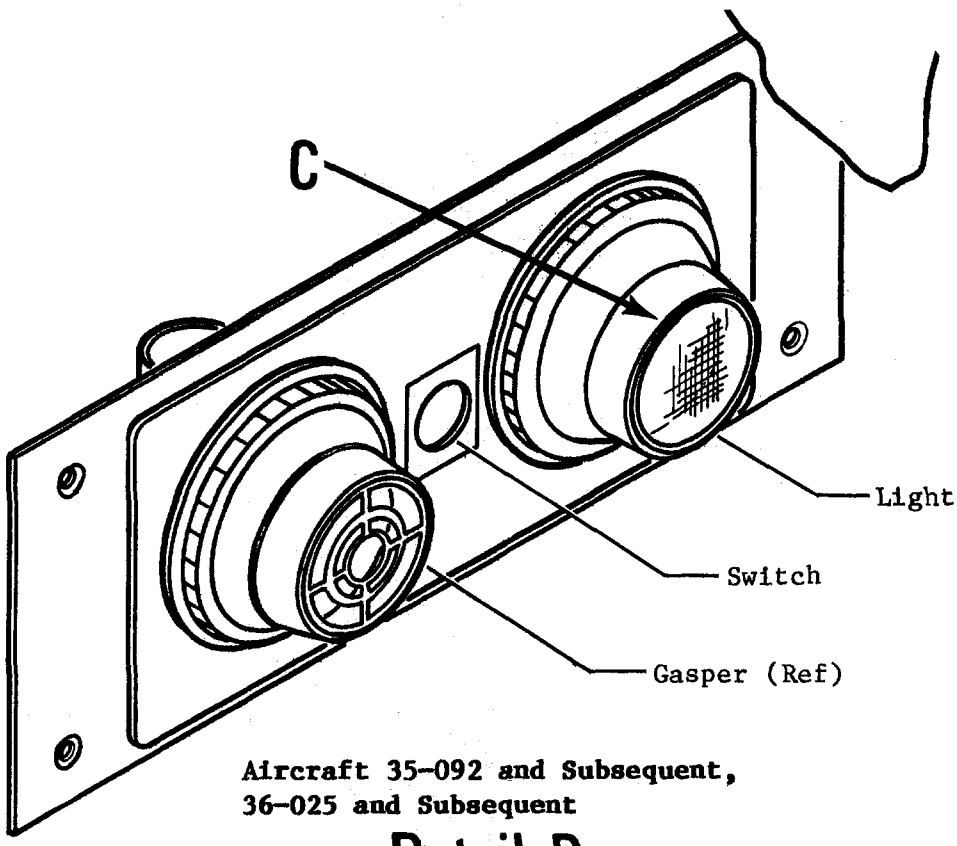
(2) Refer to Lamp Replacement Chart (33-00-00) for lamp number.



Aircraft 35-002 thru 35-091, 36-002 thru 36-024

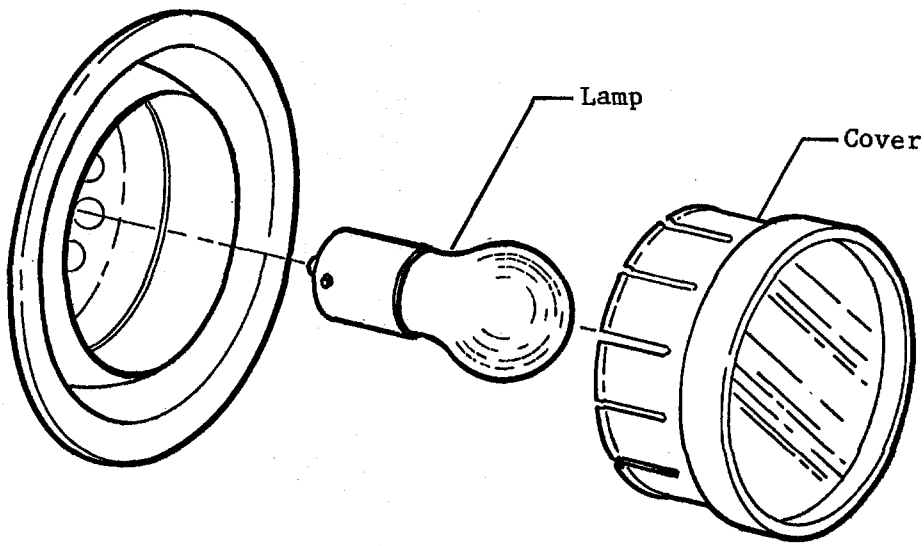
Detail A

Individual Passenger Lighting Installation
Figure 201 (Sheet 1 of 3)



**Aircraft 35-092 and Subsequent,
36-025 and Subsequent**

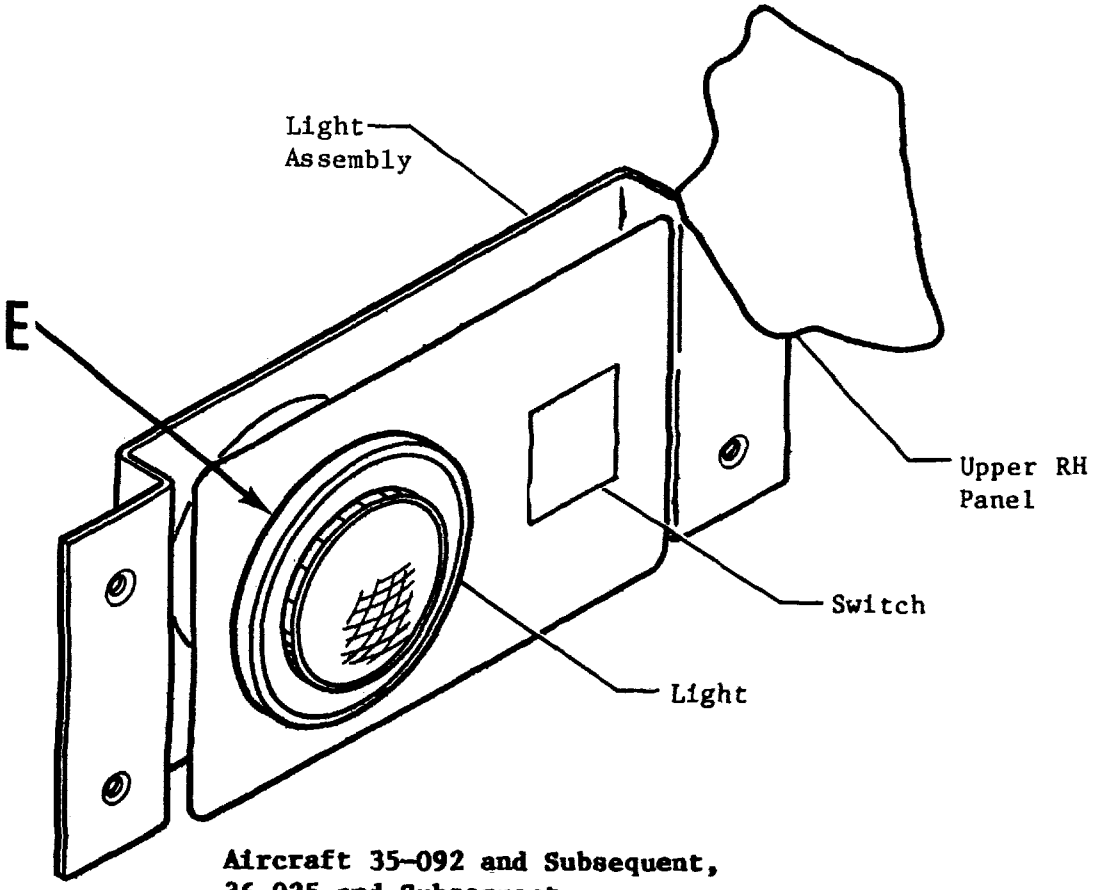
Detail B



Detail C

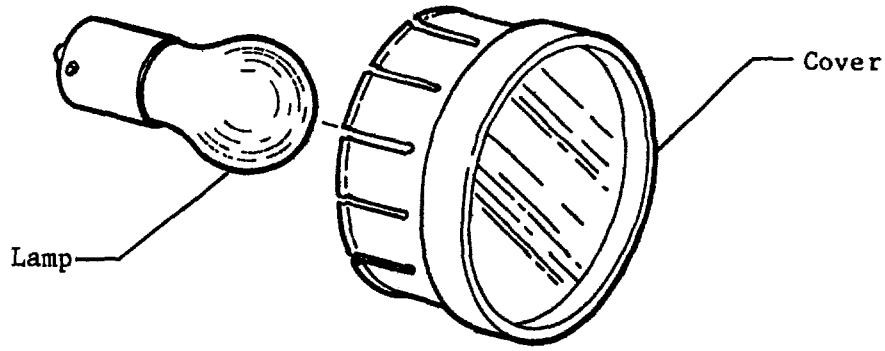
**Individual Passenger Lighting Installation
Figure 201 (Sheet 2 of 3)**

9-277A



Aircraft 35-092 and Subsequent,
36-025 and Subsequent
RH FORWARD READING LIGHT

Detail D



Detail E

Individual Passenger Lighting Installation
Figure 201 (Sheet 3 of 3)

1. Removal/Installation

WARNING: THE COLD CATHODE LAMPS ARE POWERED BY 800 VAC AT 52 kHz. ENSURE THAT ALL POWER IS OFF BEFORE REMOVING/INSTALLING LAMPS FROM HOLDERS.

CAUTION: MATERIAL WITHIN THE COLD CATHODE LAMPS MAY BE DETRIMENTAL TO AIRCRAFT SURFACES SHOULD CONTACT OCCUR. THEREFORE, EXTREME CARE SHALL BE USED WHEN REMOVING AND INSTALLING THESE UNITS.

A. Remove Cold Cathode Lamp--Overhead Convenience (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove applicable upholstery panel from upper center panel.

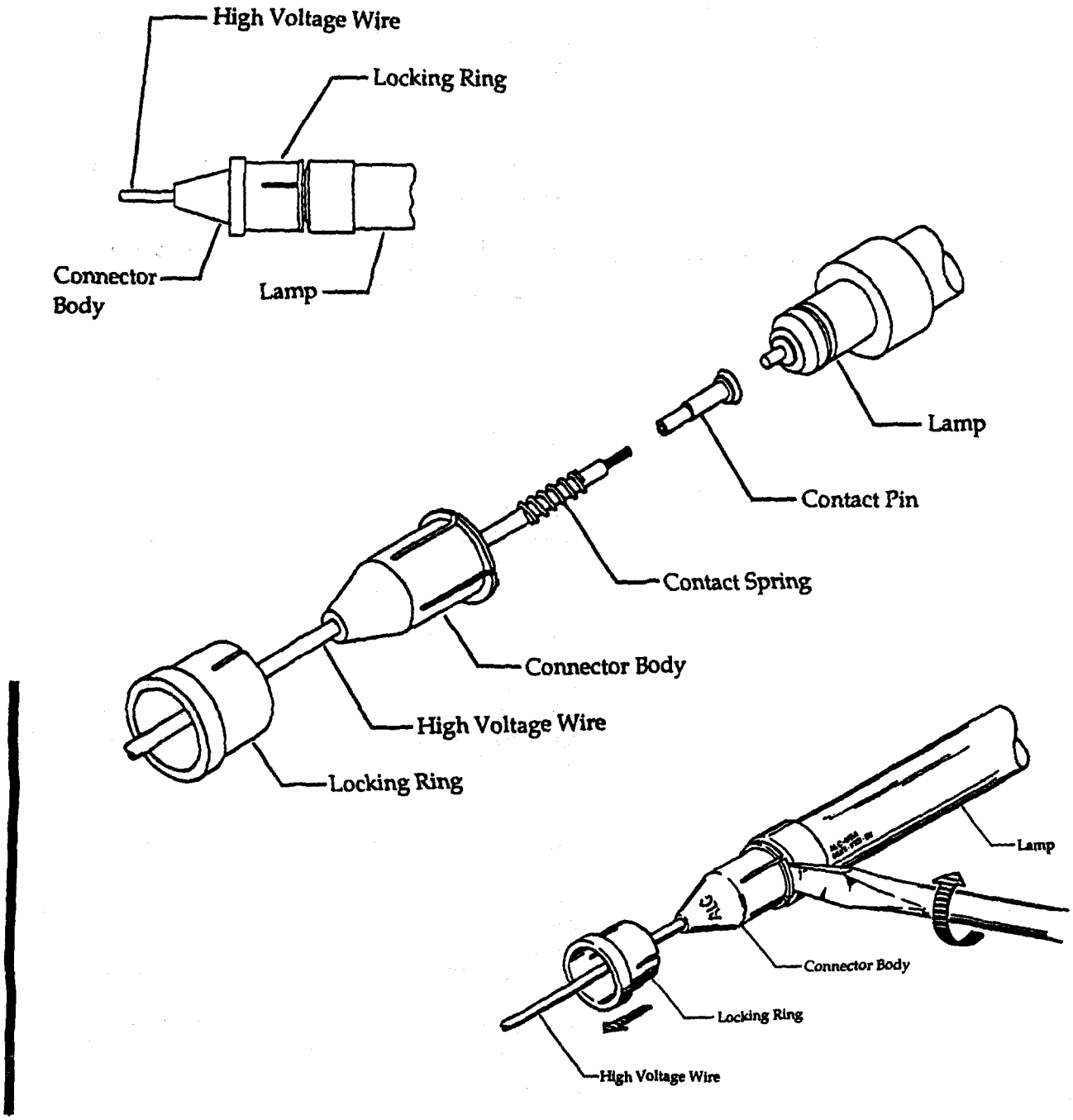
   NOTE: Upholstery panels are attached to the upper center panel by Velcro fasteners. Using slight pressure under edges of upholstery panels will disengage these fasteners.

   (3) Gently grasp lamp with fingers next to lamp holders. Using a light downward pressure, rotate lamp out of holders.
   (4) Slide outer locking ring from connector plug.
   (5) Gently pull lamp from connector plug and contact pin.
   (6) Repeat step 1.A.(4) and 1.A.(5) to remove lamp connector assembly from other end of lamp. Remove lamp from aircraft.
   (7) Inspect lamp connector assembly for defects, broken wires, and electrical arching. Replace components as required.

B. Install Cold Cathode Lamp--Overhead Convenience (See figure 201.)

   CAUTION: A LOOSE COLD CATHODE CONNECTION CAN CREATE A HIGH HEAT, MELTING, OR COMBUSTIBLE CONDITION BECAUSE OF HIGH VOLTAGE ARCING BETWEEN COLD CATHODE LAMP AND LAMP CONNECTOR ASSEMBLY. SERIOUS DAMAGE CAN RESULT AND FLIGHT SAFETY CAN BE JEOPARDIZED.

   (1) Place contact pin on contact end of lamp. Ensure that lamp enters and is correctly positioned inside contact pin.
   (2) Slide contact pressure spring over contact pin.
   (3) Maintain pressure on pressure spring, contact pin, and lamp. Slide connector plug over this entire assembly until lamp snaps into place in connector plug.
   (4) Move outer locking ring over connector plug and snug up on connector plug collar to a fully locked position.
   (5) Gently grasp lamp with fingers and rotate lamp into lamp holders using a light upward pressure.
   (6) Install previously removed upholstery panel on upper center panel by pressing panel into place.
   (7) Restore aircraft to normal.
   (8) Restore electrical power to aircraft.



Cold Cathode Lamp Installation
Figure 201

C. Remove Cold Cathode Lamp--Cabin Entry (See figure 202.)
   (1) Remove electrical power from aircraft.
   (2) Open LH forward cabinet door adjacent to forward cabin light assembly.
   (3) Remove attaching parts securing cabinet compartment closure panel and remove (if installed).
   (4) Rotate retainers to unlatch light assembly and remove light assembly from cabinet.
   (5) Gently grasp lamp with fingers next to lamp holders. Using a light pressure, rotate lamp out of lamp holders.
   (6) Complete steps 1.A.(4) thru 1.A.(7).

D. Install Cold Cathode Lamp--Cabin Entry (See figure 202.)

CAUTION: A LOOSE COLD CATHODE CONNECTION CAN CREATE A HIGH HEAT, MELTING, OR COMBUSTIBLE CONDITION BECAUSE OF HIGH VOLTAGE ARCING BETWEEN COLD CATHODE LAMP AND LAMP CONNECTOR ASSEMBLY. SERIOUS DAMAGE CAN RESULT FROM MELTING AND SMOKE POTENTIAL.

   (1) Complete steps 1.B.(1) thru 1.B.(4).
   (2) Gently grasp lamp with fingers and rotate lamp into lamp holders using a light pressure.
   (3) Position light assembly in cabinet and secure using retainers rotated into a latch position.
   (4) Position cabinet compartment closure planel and secure with attaching parts (if installed).
   (5) Close LH forward cabin door adjacent to forward cabinet light assembly.
   (6) Restore aircraft to normal.
   (7) Restore electrical power to aircraft.

E. Remove Inverters and Dimmer Controls

WARNING: THE COLD CATHODE INVERTER OUTPUT IS 800 VAC AT 52 kHz. ENSURE THAT ALL POWER IS OFF BEFORE REMOVING/INSTALLING INVERTERS.

   (1) Remove electrical power from aircraft.
   (2) Remove speaker upholstery panel from upper center panel.

   NOTE: Upholstery panels are attached to the upper center panel by Velcro fasteners. Using slight pressure under edges of upholstery panel will disengage these fasteners.

   (3) Loosen and remove attaching parts from inverters and/or dimmer control.
   (4) Lower inverters and/or dimmer controls sufficiently to gain access to electrical wiring.
   (5) Disconnect and identify electrical wiring from inverter and/or dimmer control.

F. Install Inverters and Dimmer Control
   (1) Identify and connect electrical wiring to inverter and/or dimmer control.
   (2) Position inverter and/or dimmer control in upper center panel and secure with attaching parts.
   (3) Install previously removed upholstery panels on upper center panel by pressing panels into place.
   (4) Restore aircraft to normal.
   (5) Restore electrical power to aircraft.

2. Inspection/Check
   A. The cold cathode lamp should be replaced when it starts to turn black at the ends. Ensure that the outer locking ring is locked onto the outer plug. If locking ring becomes loose, tension of contact spring will allow contact pin to back off from cold cathode lamp and result in a poor electrical connection.

      CAUTION:
      - **A LOOSE COLD CATHODE CONNECTION CAN CREATE A HIGH HEAT, MELTING, OR COMBUSTIBLE CONDITION BECAUSE OF HIGH VOLTAGE ARCING BETWEEN COLD CATHODE LAMP AND LAMP CONNECTOR ASSEMBLY. SERIOUS DAMAGE CAN RESULT FROM MELTING AND SMOKE POTENTIAL.**
      - **THE SYSTEM SHALL NOT BE OPERATED IF A COLD CATHODE TUBE IS BURNED OUT. OPERATING THE SYSTEM UNDER THIS CONDITION WILL SHORTEN THE SERVICEABLE LIFE OF THE REMAINING TUBES AND THE INVERTER.**

3. Cleaning/Painting
   A. Cold cathode lamps contain small amounts of mercury. Should a lamp be broken in the aircraft, the mercury will flow to the lowest possible level. Mercury will cause deterioration of metal surfaces, including the aircraft skin. Therefore, it is extremely important that the following cleaning procedure be followed if a lamp is broken.
   B. Tools and Equipment

      NOTE: Equivalent substitutes may be used in lieu of the following:

NAME	PART NUMBER	MANUFACTURER	USE
Sublimed sulfur (Flowers of sulfur)		Commercially Available	Remove mercury
Vacuum sweeper		Commercially Available	Pick up mercury

   C. Remove Mercury Traces from Aircraft
      (1) Remove upholstery, seats, and equipment, as required, in the area of a broken cold cathode lamp.
      (2) Locate areas of mercury concentration by sprinkling sublimed sulfur onto suspected areas of contamination.

         NOTE: Mercury has a tendency to collect in low-lying areas such as along seat rails, stringers, or edges of frames. There is approximately 200 mg of mercury in each cold cathode lamp. Since this is an extremely minute amount, diligent searching is required to locate the mercury.

      (3) Ensure that vacuum sweeper is empty of dirt and trash.
      (4) Vacuum up sublimed sulfur along with mercury.
      (5) Check upholstery, seats, and equipment to ensure there are no traces of mercury remaining.
      (6) Install upholstery, seats, and equipment removed in step 3.C.(1).

CAUTION: TO PREVENT ANY POSSIBLE DAMAGE TO AIRCRAFT CAUSED BY A CHEMICAL REACTION THE MERCURY MAY HAVE WITH OTHER VACUUM SWEEPER CONTENTS, EMPTY VACUUM SWEEPER CONTENTS IN SUITABLE PROTECTIVE WASTE CONTAINER AWAY FROM AIRCRAFT.

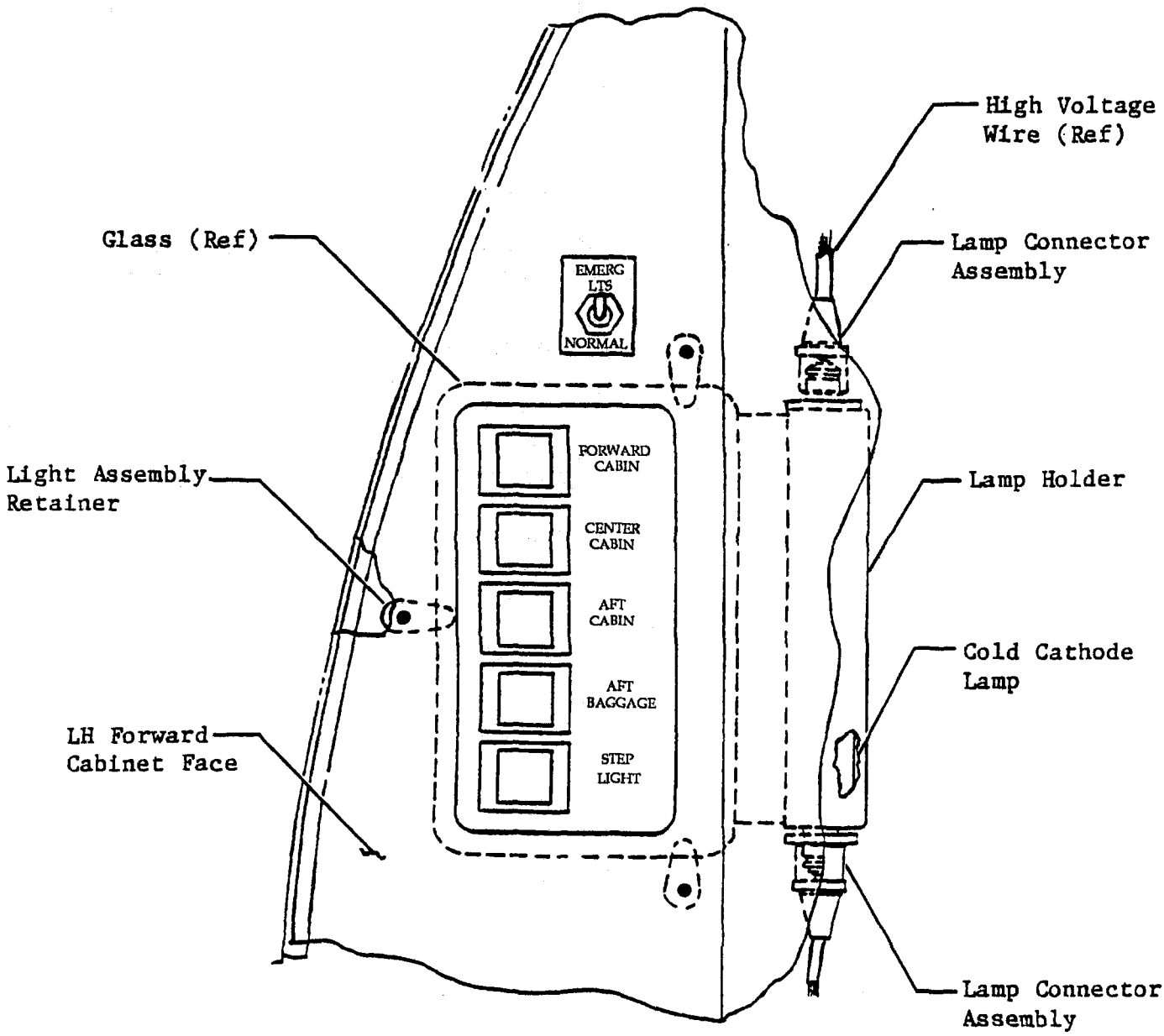
(7) Empty vacuum sweeper. This will prevent any possible damage to vacuum sweeper or aircraft caused by a chemical reaction the mercury could have with other vacuum sweeper contents.

4. **Approved Repairs**

CAUTION:

- DO NOT USE SPLICES ON HIGH VOLTAGE WIRES.
- DO NOT EXPOSE MORE WIRE THAN REQUIRED TO ENSURE PROPER POSITIONING AND CONTACT INSIDE THE CONTACT PIN. ENSURE STRANDS OF WIRE ARE NOT NICKED OR BROKEN.
- DO NOT USE A CRIMPING TOOL THAT COULD ENLARGE THE OUTER DIAMETER OF THE CONTACT PIN. DEFORMATION OF CONTACT PIN COULD PREVENT CONTACT SPRING FROM BEING POSITIONED OVER THE PIN.
- FAILURE TO PROPERLY INSTALL LOCKING RING MAY RESULT IN INADVERTENT DISCONNECTION BETWEEN CONNECTOR AND LAMP.

A. Refer to Chapter 20 of the Wiring Manual for connector repair procedures.



VIEW OF LH FORWARD CABINET LOOKING FORWARD
(TYPICAL)

Cabin Entry Light Installation
Figure 202

ENTRY LIGHTS - MAINTENANCE PRACTICES

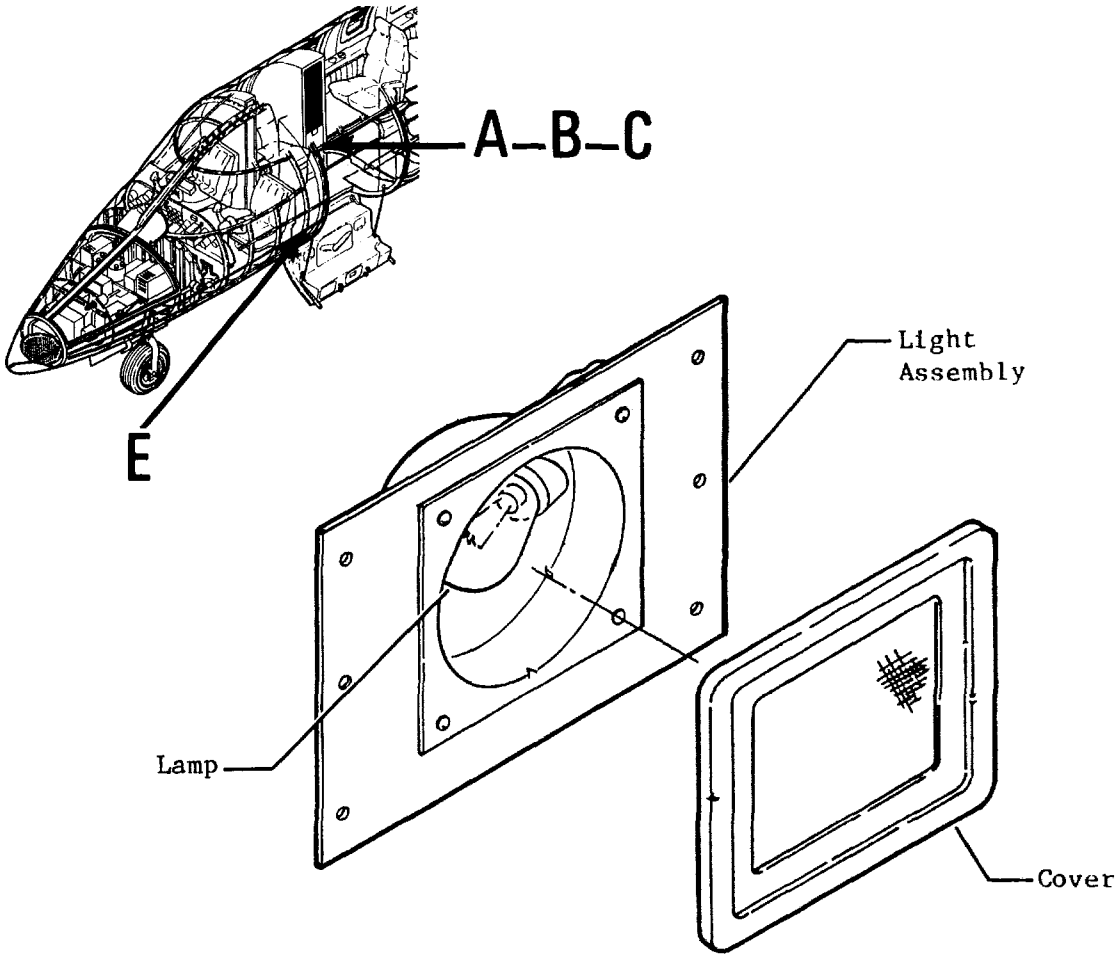
1. REMOVAL/INSTALLATION

A. Replace Lamp (See figure 201.)

(1) Entry light located in upper LH center panel, remove cover from light assembly and disengage lamp.

(2) Entry light located in LH forward cabinet, open upper cabinet door, remove access panel in bottom of compartment, reach down and remove lamp and socket from reflector and disengage lamp.

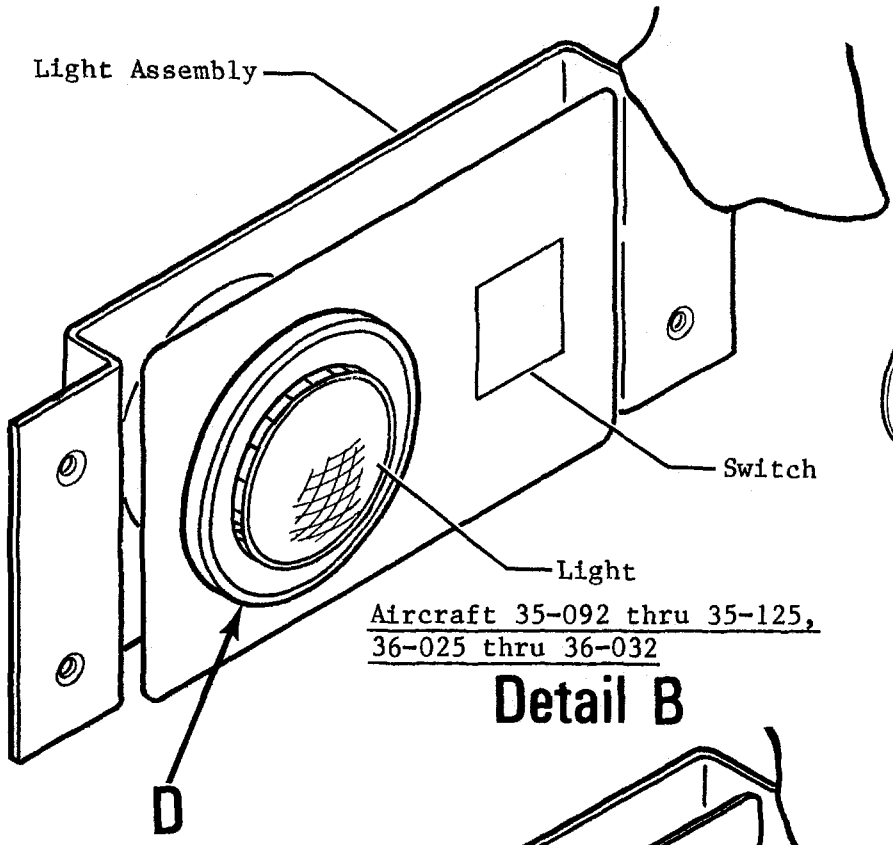
(3) Refer to Lamp Replacement Chart (33-00-00) for lamp number.



Aircraft 35-002 thru 35-091,
36-002 thru 36-024

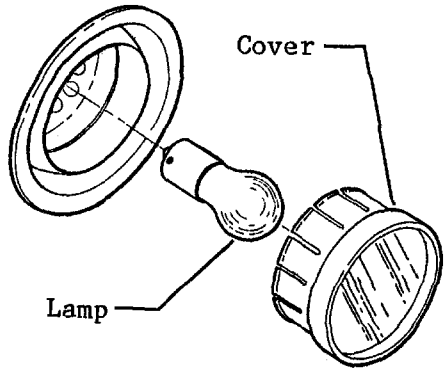
Detail A

Entry Light Installation
Figure 201 (Sheet 1 of 3)

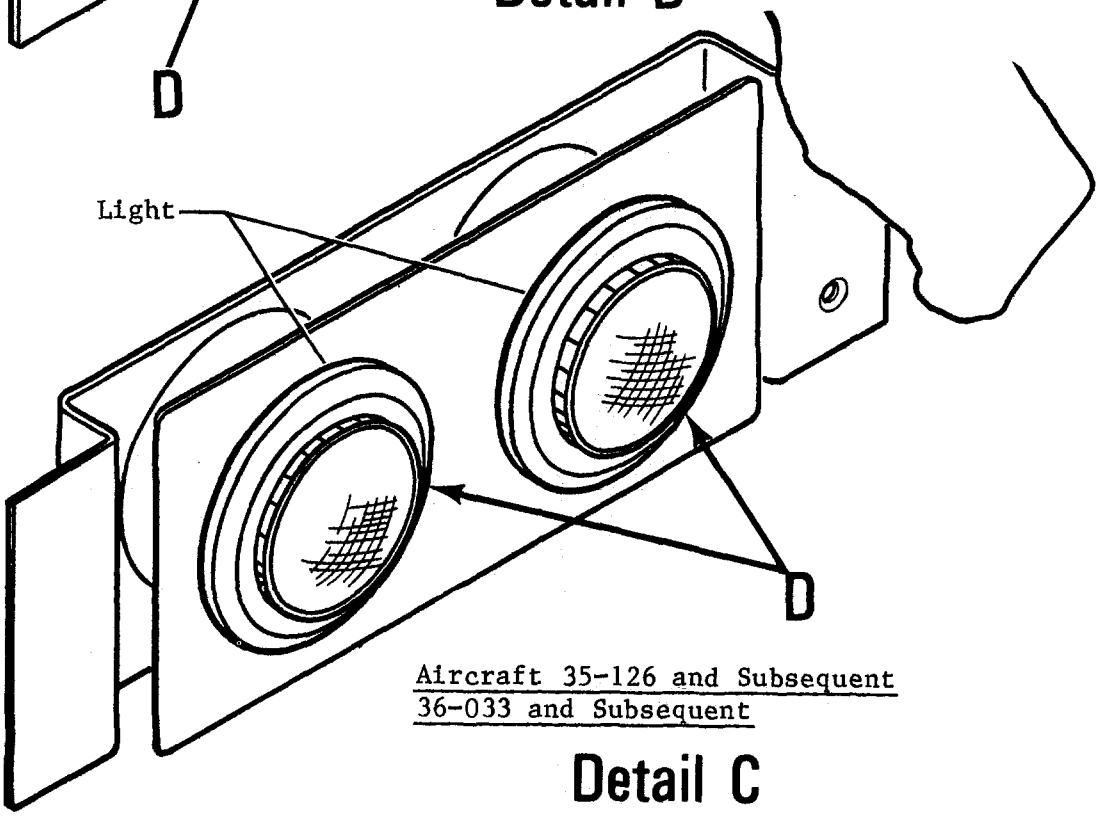


Aircraft 35-092 thru 35-125,
36-025 thru 36-032

Detail B



Detail D

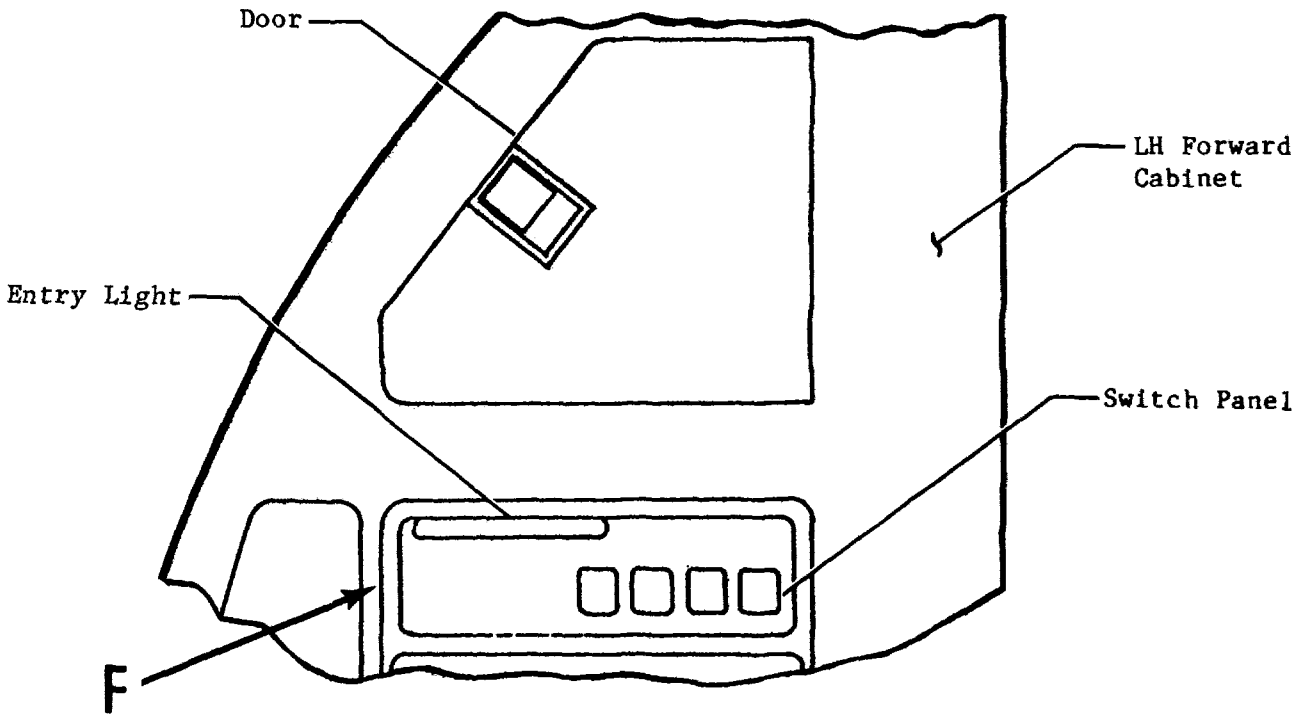


Aircraft 35-126 and Subsequent
36-033 and Subsequent

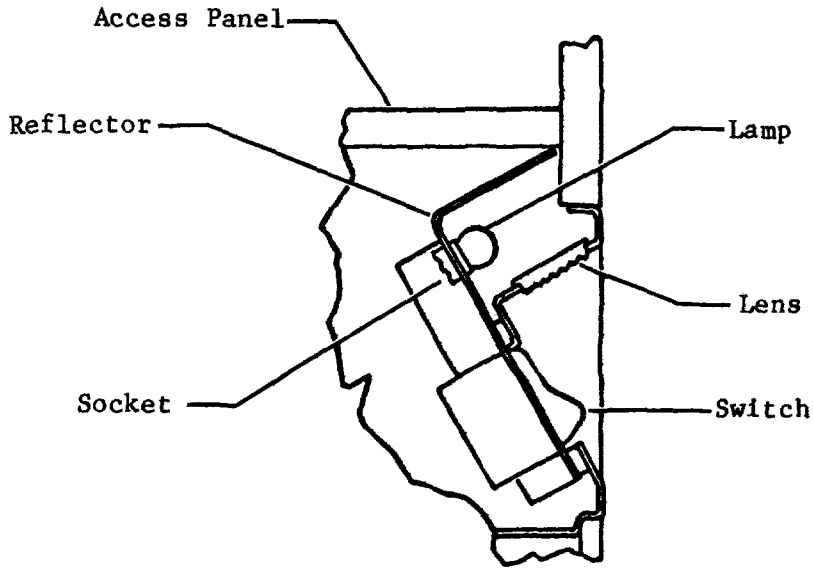
Detail C

9-277A
9-179A-7

Entry Light Installation
Figure 201 (Sheet 2 of 3)



Detail E

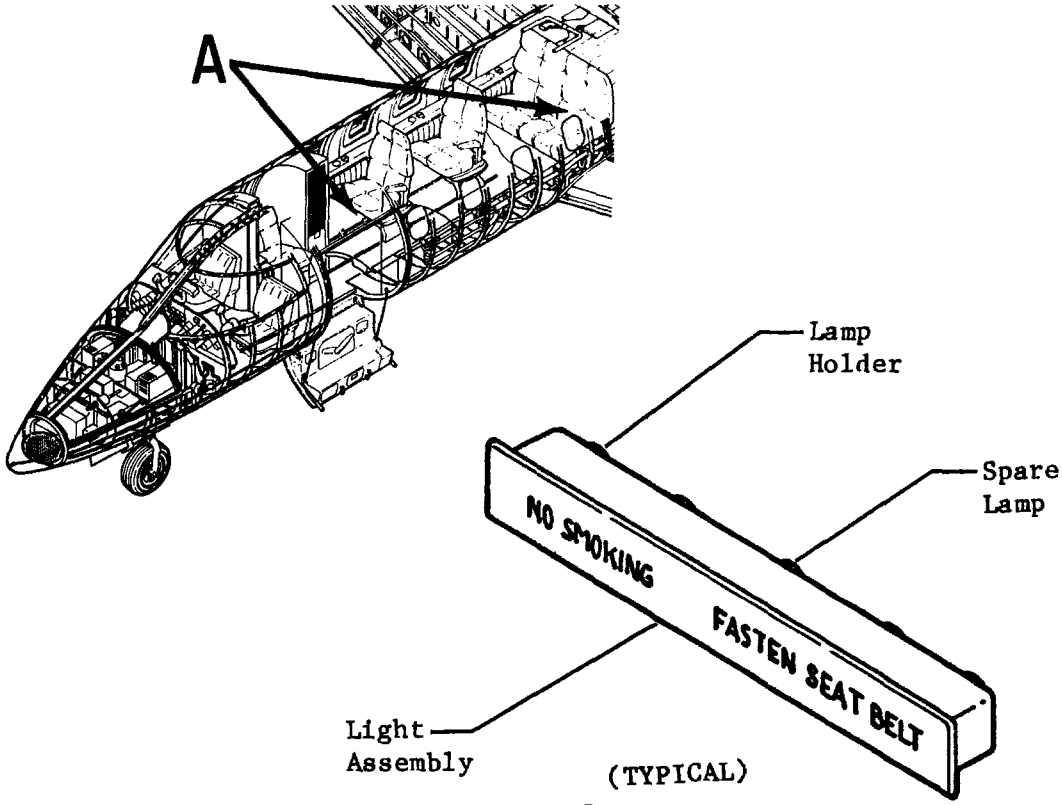


Detail F

Entry Light Installation
Figure 201 (Sheet 3 of 3)

NO SMOKING - FASTEN SEAT BELT LIGHT - MAINTENANCE PRACTICES

1. **REMOVAL/INSTALLATION**
   - **A. Remove Light Assembly** (See figure 201.)
     - (1) Remove electrical power from aircraft.
     - (2) Grasp the light assembly with fingers and pull out. Remove far enough to reach wiring.
     - (3) Disconnect and identify wiring.
     - (4) Remove light assembly from aircraft.
   - **B. Install Light Assembly** (See figure 201.)
     - (1) Identify and connect wiring.
     - (2) Insert light assembly into slot until it snaps into place.
     - (3) Restore electrical power to aircraft.
   - **C. Replace Lamp**
     - (1) Remove light assembly per steps 1.A.(1) thru (4).
     - (2) Unscrew lamp holders from back of light assembly.
     - (3) Refer to Lamp Replacement Chart (33-00-00) for lamp number.
     - (4) Replace lamp in light assembly.
     - (5) Install light assembly per steps 1.B.(1) thru (3).



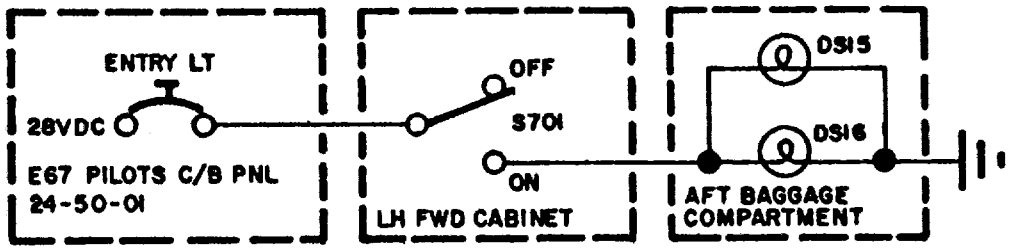
No Smoking - Fasten Seat Belt Light Installation
Figure 201

9-278A-1

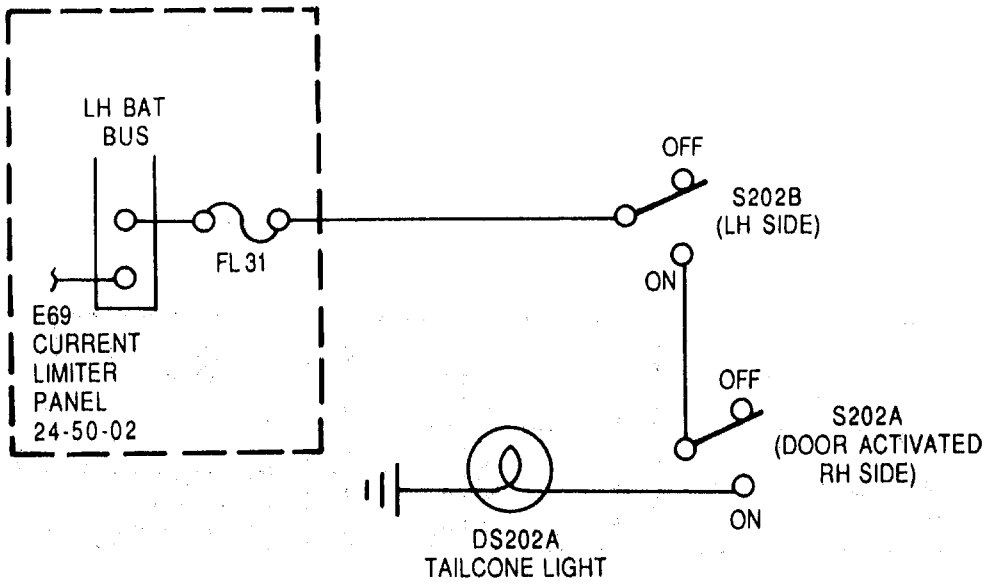
BAGGAGE AND SERVICE COMPARTMENT LIGHTING - DESCRIPTION AND OPERATION

1. DESCRIPTION (See figures 1 and 2.)
   A. On *Aircraft 35-002 and Subsequent*, two lights are installed in the aft baggage compartment.
   B. On *Aircraft 36-002 and Subsequent*, three baggage compartment lights are installed. Two lights are located in the aft baggage compartment and one in the forward baggage compartment.
   C. On *Aircraft 35-634 and Subsequent and 36-058 and Subsequent*, a tailcone maintenance light is installed along the aft edge of the RH electrical equipment tray.

2. OPERATION (See figures 1 and 2.)
   A. On *Aircraft 35-002 and Subsequent*, the lights are controlled by a switch located on the LH service cabinet.
   B. On *Aircraft 36-002 and Subsequent*, the aft baggage compartment lights are controlled by a switch on the LH service cabinet. The forward baggage compartment light is controlled by a switch located in the forward end of the upper center panel.
   C. On *Aircraft 35-634 and Subsequent and 36-058 and Subsequent*, the tailcone maintenance light is controlled by two switches. One switch, installed on the RH side of frame 26, is actuated when the tailcone access door is opened. The other switch is installed on the LH side of frame 26. When this switch is set to on, a 28 vdc power circuit is completed thru both switches to the light. Power is provided through a 5 amp current limiter directly from the LH battery.



Baggage Compartment Lights Electrical Control Schematic
Figure 1



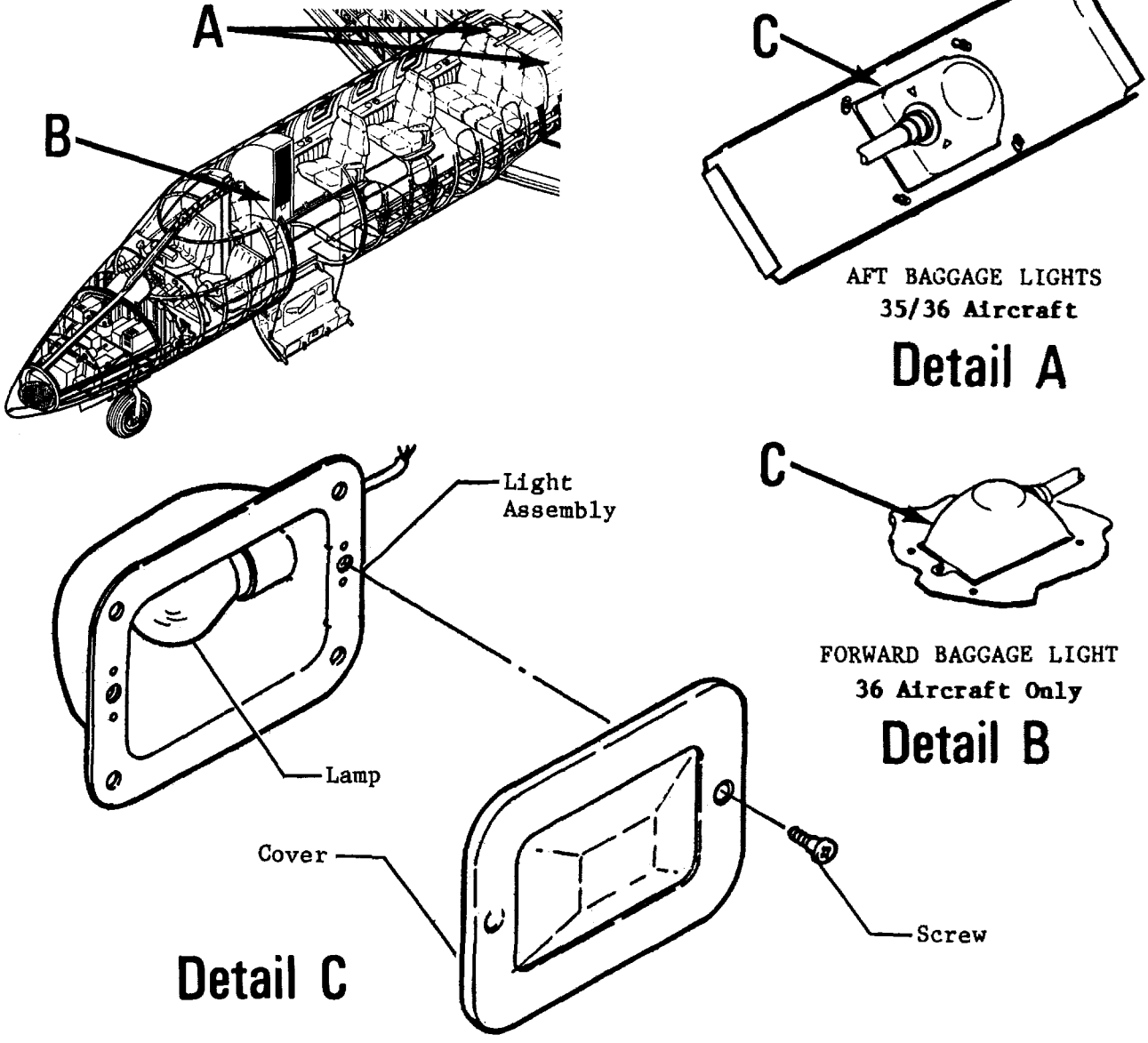
Tailcone Maintenance Light Electrical Control Schematic
Figure 2

BAGGAGE COMPARTMENT LIGHTING - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

A. Replace Lamp (See figure 201.)

(1) Remove electrical power from aircraft.
(2) Remove screws attaching cover to light assembly. Disengage lamp.
(3) Refer to Lamp Replacement Chart (33-00-00) for lamp number.
(4) Replace lamp and install cover.
(5) Restore electrical power to aircraft.



9-216A
9-179A-3

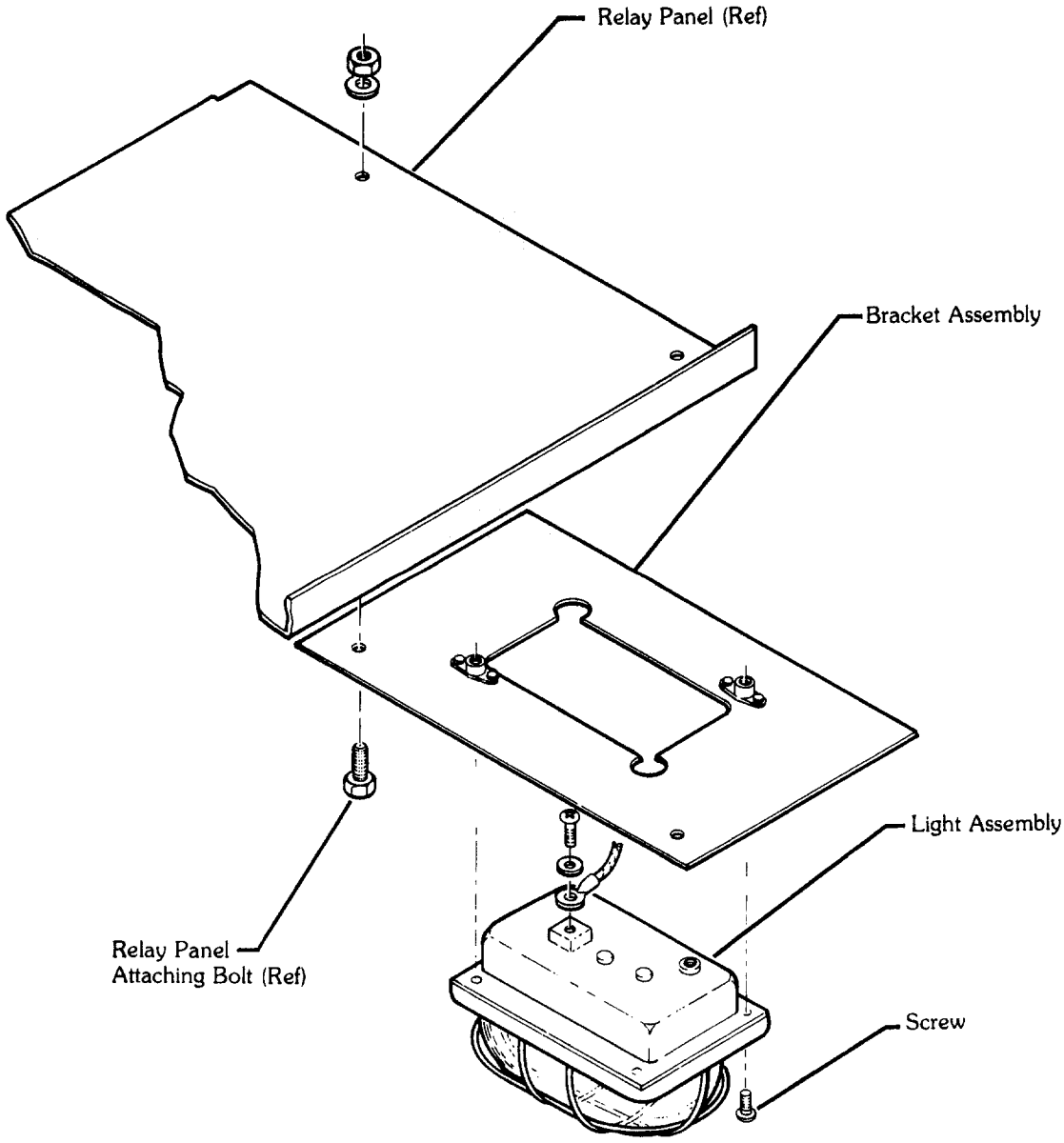
Baggage Compartment Lighting Installation
Figure 201

TAILCONE MAINTENANCE LIGHT - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION
   A. Remove Lamp (See figure 201.)
      (1) Open tailcone access door and disconnect both aircraft battery quick-disconnects.
      (2) Remove lens guard and lens from light assembly.
      (3) Remove defective lamp from light assembly.
   B. Install Lamp (See figure 201.)
      (1) Install new lamp in light assembly.
      (2) Install lens and lens guard.
      (3) Connect both aircraft battery quick-disconnects. Set Battery Switches on. Check operation of light.
   C. Remove Light Assembly (See figure 201.)

      WARNING: THE TAILCONE MAINTENANCE LIGHT IS WIRED DIRECTLY TO THE LH BATTERY. DISCONNECT BOTH BATTERIES BEFORE WIRING IS DISCONNECTED.

      (1) Open tailcone access door and disconnect both aircraft battery quick-disconnects.
      (2) Disconnect electrical wiring from light assembly. Install protective sleeve over wire terminals to protect against shorting.
      (3) Remove attaching parts and light assembly from aircraft.
   D. Install Light Assembly (See figure 201.)
      (1) Position light assembly on bracket and secure with attaching parts.
      (2) Remove protective sleeves from wiring. Connect wiring to light to light assembly.
      (3) Connect battery quick-disconnects and check operation of light.
      (4) Close tailcone access door.



Tailcone Maintenance Light Installation
Figure 201

9-183A-3

EFFECTIVITY: 35-634 AND SUBSEQUENT, 36-058 AND SUBSEQUENT

TAILCONE MAINTENANCE LIGHT SWITCH - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

A. Remove Light Switch (S202A, Door Actuated) (See figure 201.)

WARNING: THE TAILCONE MAINTENANCE LIGHT IS WIRED DIRECTLY TO THE LH BATTERY. BOTH BATTERIES MUST BE DISCONNECTED BEFORE WIRING IS DISCONNECTED.

(1) Open tailcone access door and disconnect both battery quick-disconnects.
(2) Remove attaching parts and bracket cover from switch assembly.
(3) Disconnect electrical wiring from switch.

NOTE: Note position of jam nuts on switch to aid in installation of new switch.

(4) Remove safety wire, loosen and remove jam nuts, and remove switch assembly from bracket.

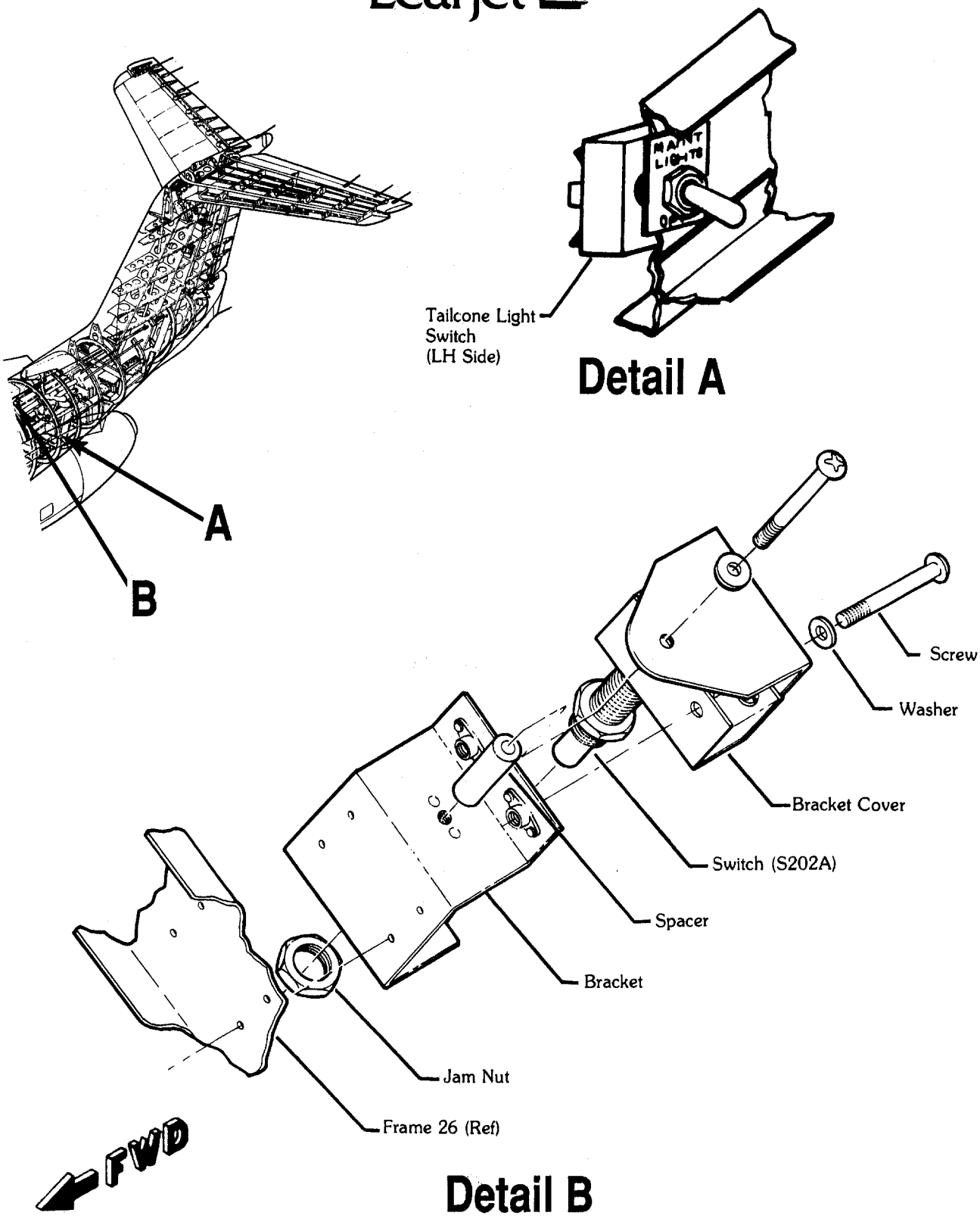
B. Install Light Switch (S202A, Door Actuated) (See figure 201.)
(1) Loose assemble switch on bracket. Position jam nuts in approximately the same position as noted in step A.(4).
(2) Connect electrical wiring to switch. Apply GLPT insulating varnish to terminals.
(3) Assemble bracket cover and attaching parts on switch. Tighten jam nuts.
(4) Check that switch actuator travel is no more than 0.250 inch when door is closed.
(5) Connect both battery quick-disconnects. Check operation of tailcone maintenance light.

C. Remove Light Switch (S202B) (See figure 201.)

WARNING: THE TAILCONE MAINTENANCE LIGHT IS WIRED DIRECTLY TO THE LH BATTERY. BOTH BATTERIES MUST BE DISCONNECTED BEFORE WIRING IS DISCONNECTED.

(1) Open tailcone access door and disconnect both battery quick-disconnects.
(2) Disconnect electrical wiring from switch.
(3) Loosen and remove jam nut and switch from frame.

D. Install Light Switch (S202B) (See figure 201.)
(1) Position light switch on frame. Assure that switch is in off position when installed. Install jam nut and secure switch.
(2) Connect electrical wiring to switch.
(3) Connect both battery quick-disconnects. Check operation of tailcone maintenance light.



Tailcone Light Switch Installation
Figure 201

9-183A

EXTERIOR LIGHTING - DESCRIPTION AND OPERATION

1. DESCRIPTION

A. The aircraft exterior lighting systems consist of a combination landing and taxi light, navigation lights, anti-collision lights, high-intensity strobe lights, a recognition light(s), an optional wing inspection/emergency egress light(s), and an optional wing ice inspection light. (See figure 1.)

B. Component Description

(1) A 450-watt landing light is installed on each main landing gear. The landing lights also serve as taxi lights.

(2) The navigation lights are located on the outboard side of each tip tank and in the aft bullet fairing.

(3) A dual-bulb anti-collision light assembly is mounted on top of the vertical stabilizer and on the bottom of the fuselage. The resistor installation for the vertical stabilizer anti-collision light is in the tailcone at frame 28 between stringers 6R and 7R. The resistor installation for the bottom anti-collision light is in the cabin at frame 13A between stringers 20L and 21L.

(4) The strobe light system consists of three power supply modules, a timing circuit module, three strobe light assemblies, a strobe light switch, and a circuit breaker.

(5) The recognition light system consists of a 250-watt lamp located in the RH tip tank nose cap, a control relay located in the tailcone equipment section, a 30 amp current limiter located on the power distribution panel, a RECOG LT Switch located on the lighting and climate control switch panel, and a RECOG LT circuit breaker located on the copilot circuit breaker panel. An optional LH recognition light may be installed in the LH tip tank nose cap. The current limiter for the optional light is located on the power distribution panel. The control relay for the LH recognition light is located in the tailcone at frame 26A at stringer 14L.

(6) An optional wing inspection/emergency egress light may be installed on the RH side of the aircraft adjacent to the lower forward corner of the emergency exit window. An additional wing inspection/emergency egress light may be installed on the LH side of the aircraft, directly opposite the RH light. These wing inspection lights are used to observe the tops of the wings in normal use and in conjunction with the cabin door exit light in emergency conditions. (Refer to 33-50-00.)

NOTE: When an optional wing ice inspection light is installed adjacent to the RH side of the cockpit, the wing inspection/emergency egress light(s) is (are) used only as emergency lighting.

(7) An optional wing ice inspection light may be installed on the RH side of the aircraft adjacent to the cockpit. This light enables the copilot to observe the leading edge of the RH wing in icing conditions.

2. OPERATION

A. Component Operation

(1) Each landing light is controlled by its respective LDG - TAXI - OFF Switch located on the test switch panel. The landing light circuits are wired through the main landing gear down-and-locked switches (main gear actuator); therefore, the landing lights are inoperative with the gear retracted. (See figure 2.)

(2) The navigation lights are controlled by the NAV LT Switch located on the lighting and climate control switch panel. Access to the navigation lamp for replacement is gained by removing the screws which retain the lens. (See figure 3.)

CAUTION: DO NOT LEAVE NAVIGATION LIGHTS ON FOR EXTENDED PERIODS OF TIME WHILE THE AIRCRAFT IS IN THE HANGAR. WITHOUT COOLING AIR, THE TAIL NAVIGATION LIGHT MAY GENERATE ENOUGH HEAT TO DISTORT THE LENS.

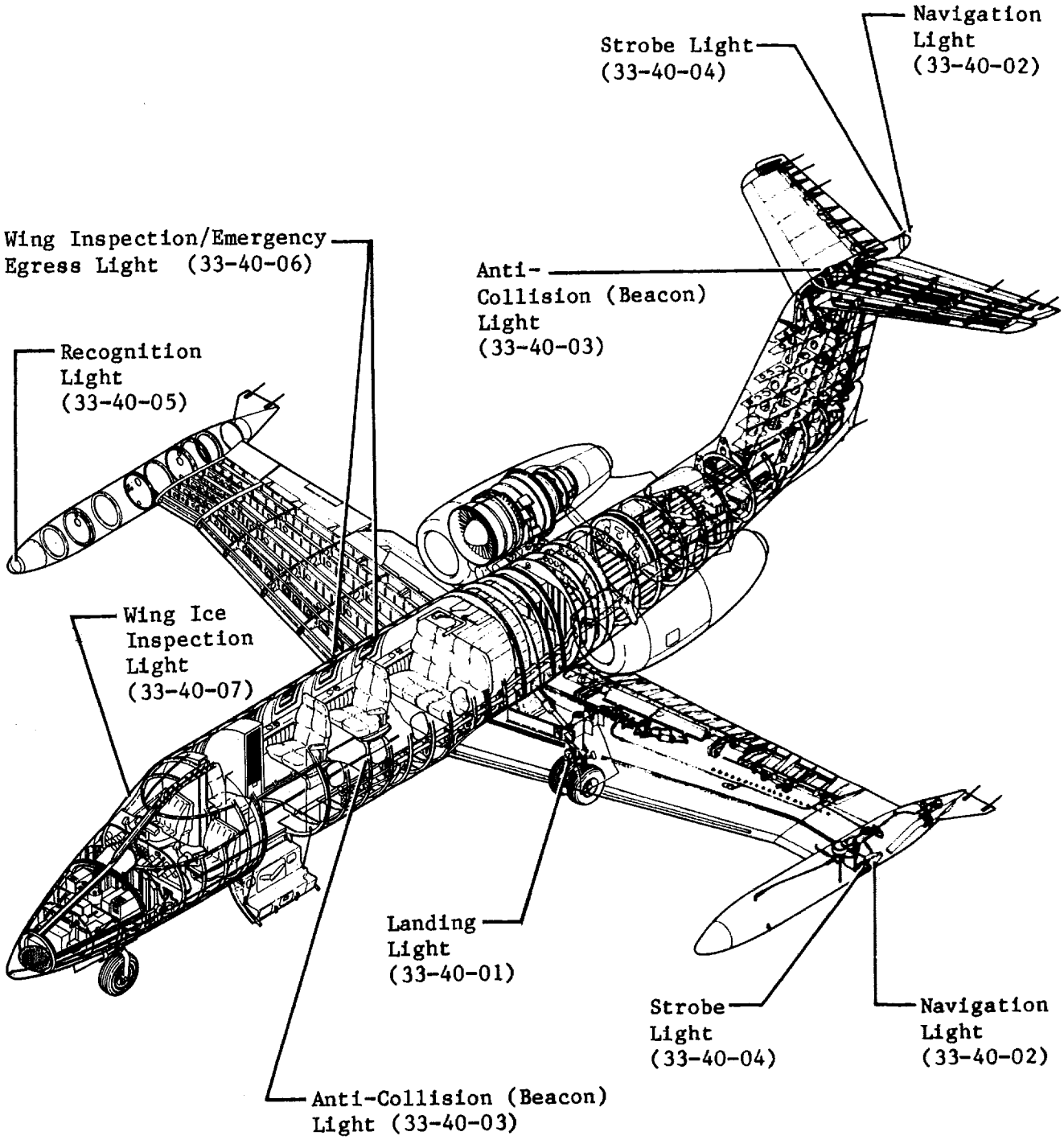
(3) The dual-mounted anti-collision lamps oscillate approximately 180° at 45 cycles per minute. The beam is concentrated by an integral lens in the lamp that produces an illusion of 90 "flashes" per minute due to the oscillations. The lights are controlled by the BCN LTS Switch on the lighting and climate control switch panel. (See figure 4.)

(4) The strobe lights, mounted adjacent to each navigation light, may be operated independently of the navigation lights. The timing circuit provides a pulse approximately 50 times a minute to each of the strobe power supply modules. Each module furnishes 450 vdc to operate its applicable strobe light. Each module is protected by an internally mounted 3 amp fuse. The strobe lights are controlled by the STROBE LT Switch on the lighting and climate control switch panel. (See figure 5.)

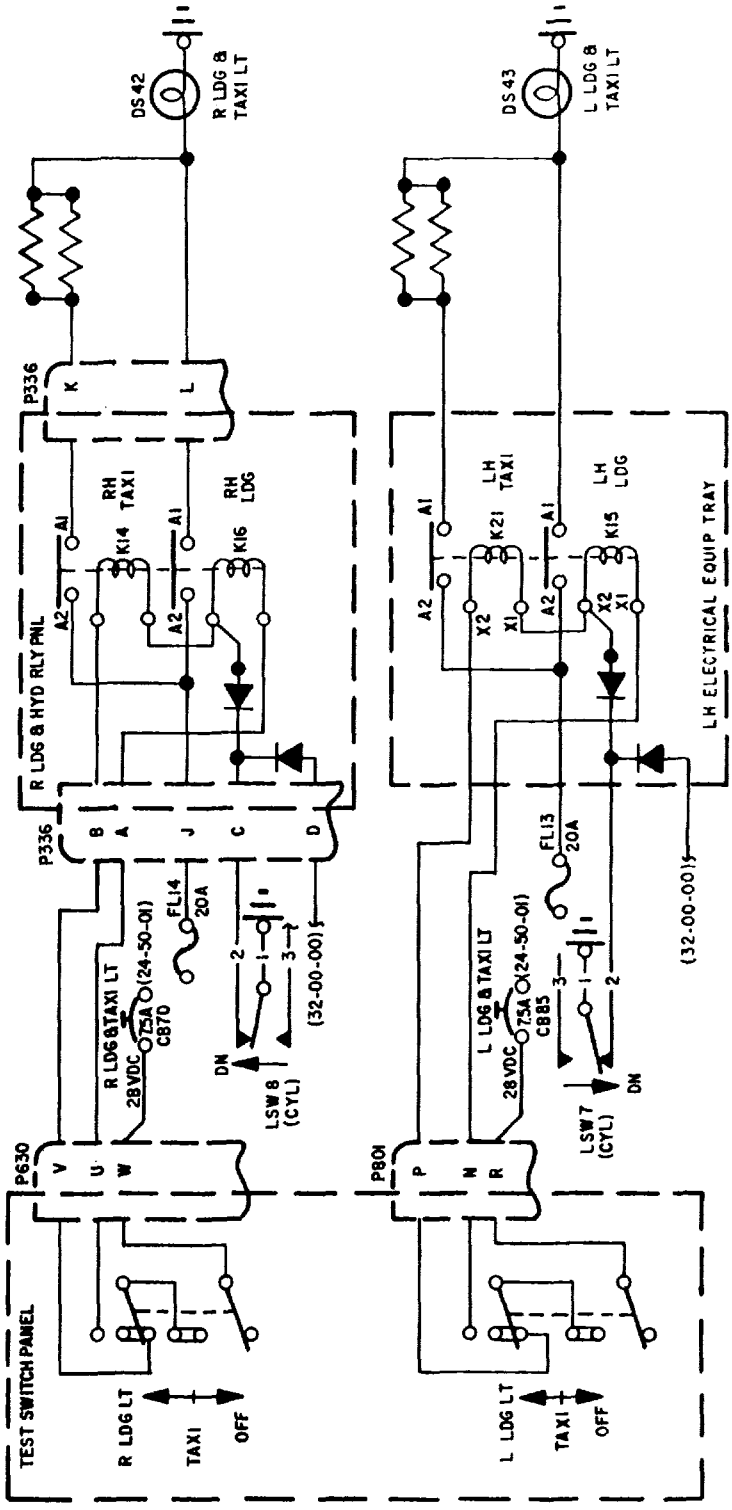
(5) When the RECOG LT Switch is set to ON, 28 vdc is applied through the 7.5 amp RECOG LT circuit breaker to the control relay. With the control relay energized, 28 vdc is applied through the 30 amp current limiter to the recognition light. (See figure 6.)

(6) The optional wiring inspection/emergency egress light(s) is(are) powered by 28 vdc through a 5 amp circuit breaker. The light(s) is(are) controlled by a switch located on the pedestal. (See figure 7.)

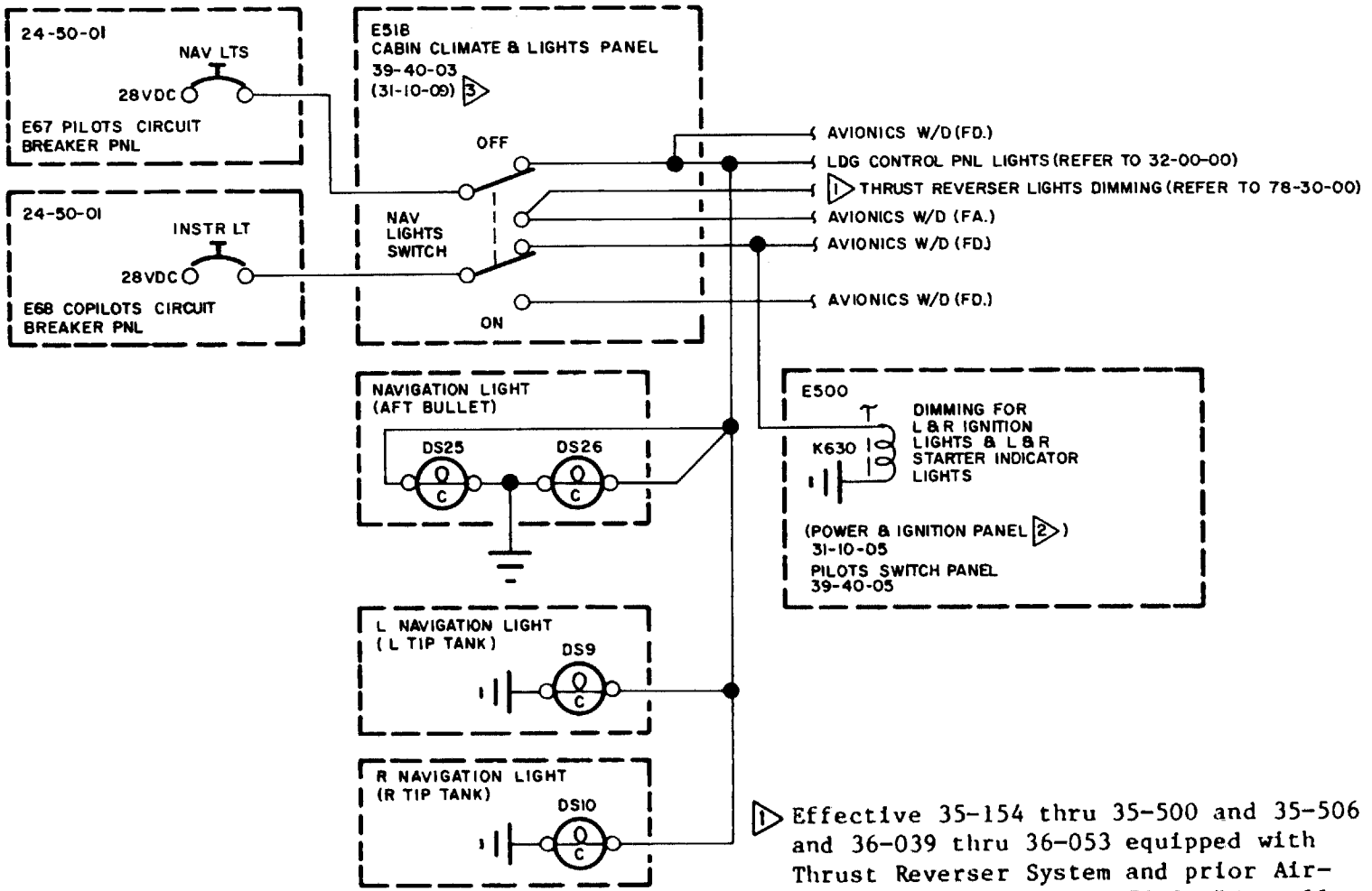
(7) The optional wing ice inspection light is controlled by a switch on the dimming control panel on the copilot's side of the cockpit. It is powered by 28 vdc through a 5 amp circuit breaker. (See figure 8.)



Exterior Lighting Locator
Figure 1



Landing and Taxi Light Electrical Control Schematic
Figure 2



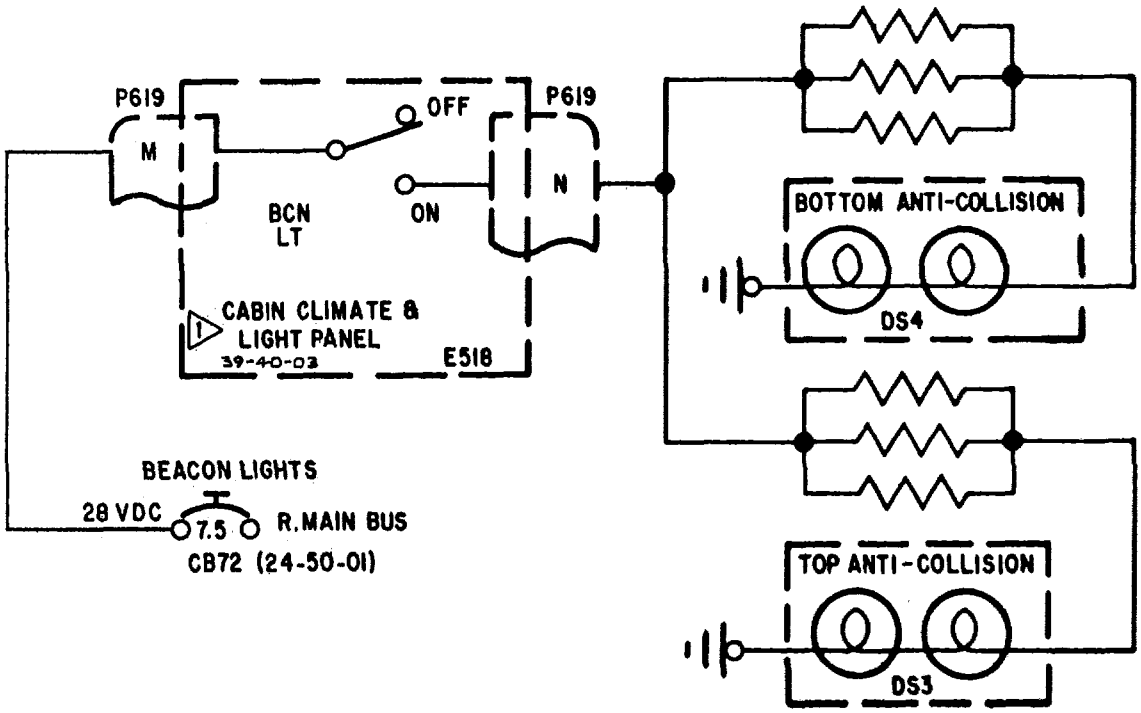
Navigation Lights Electrical Control Schematic
Figure 3

1 Effective 35-154 thru 35-500 and 35-506 and 36-039 thru 36-053 equipped with Thrust Reverser System and prior Aircraft modified per AAK 77-9, "Installation of Engine Thrust Reversers."

2 Power and Ignition Panel, 31-10-05, effective 35-002 thru 35-505 and 36-002 thru 36-053.

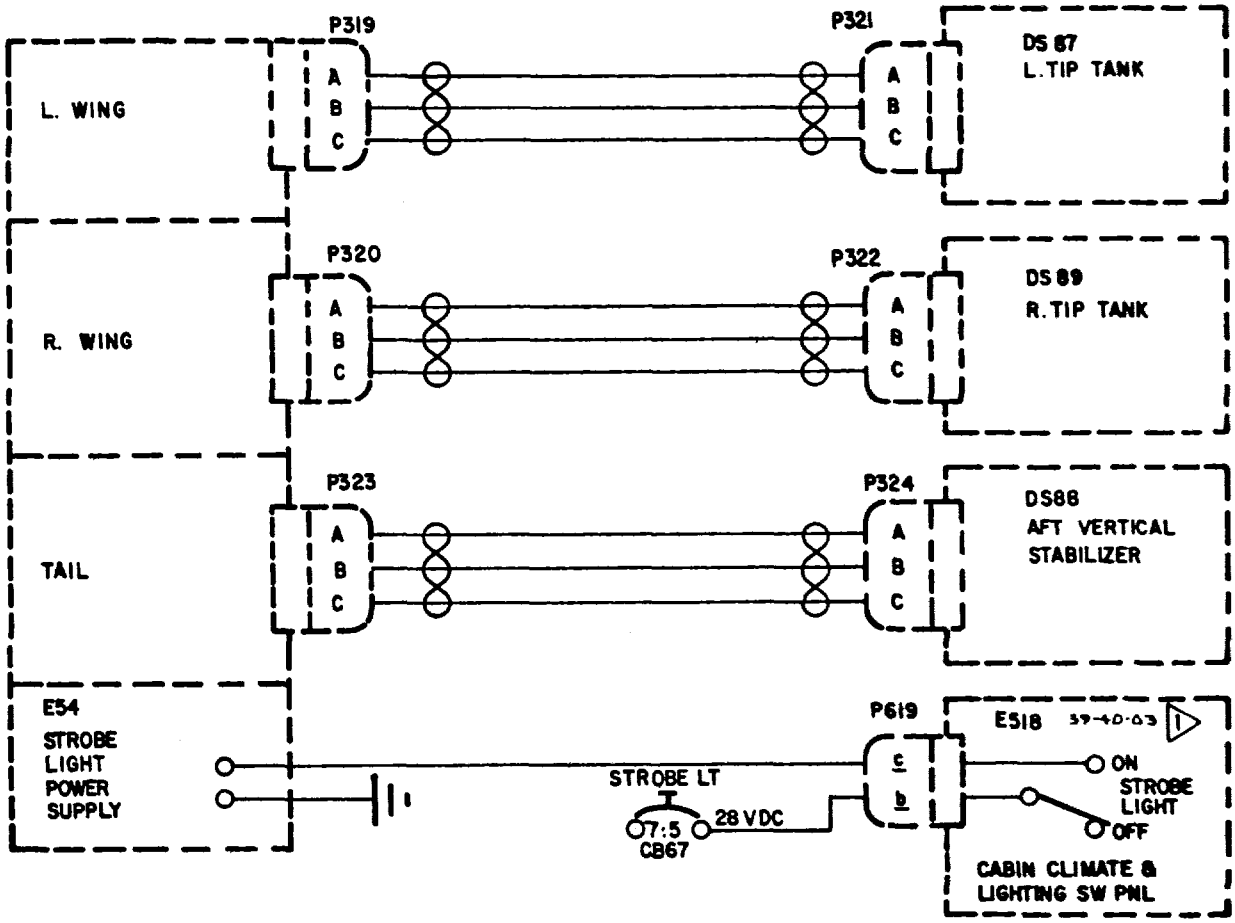
3 Cabin Climate and Lighting Panel, 31-10-09, effective 35-002 thru 35-505 and 36-002 thru 36-053.

1 Effective 35-002 thru 35-505 and 36-002 thru 36-053, refer to Cabin Climate & Lighting Panel, 31-10-09. 35-506 and Subsequent and 36-054 and Subsequent, refer to 39-40-03.



Anti-Collision Light Electrical Control Schematic
Figure 4

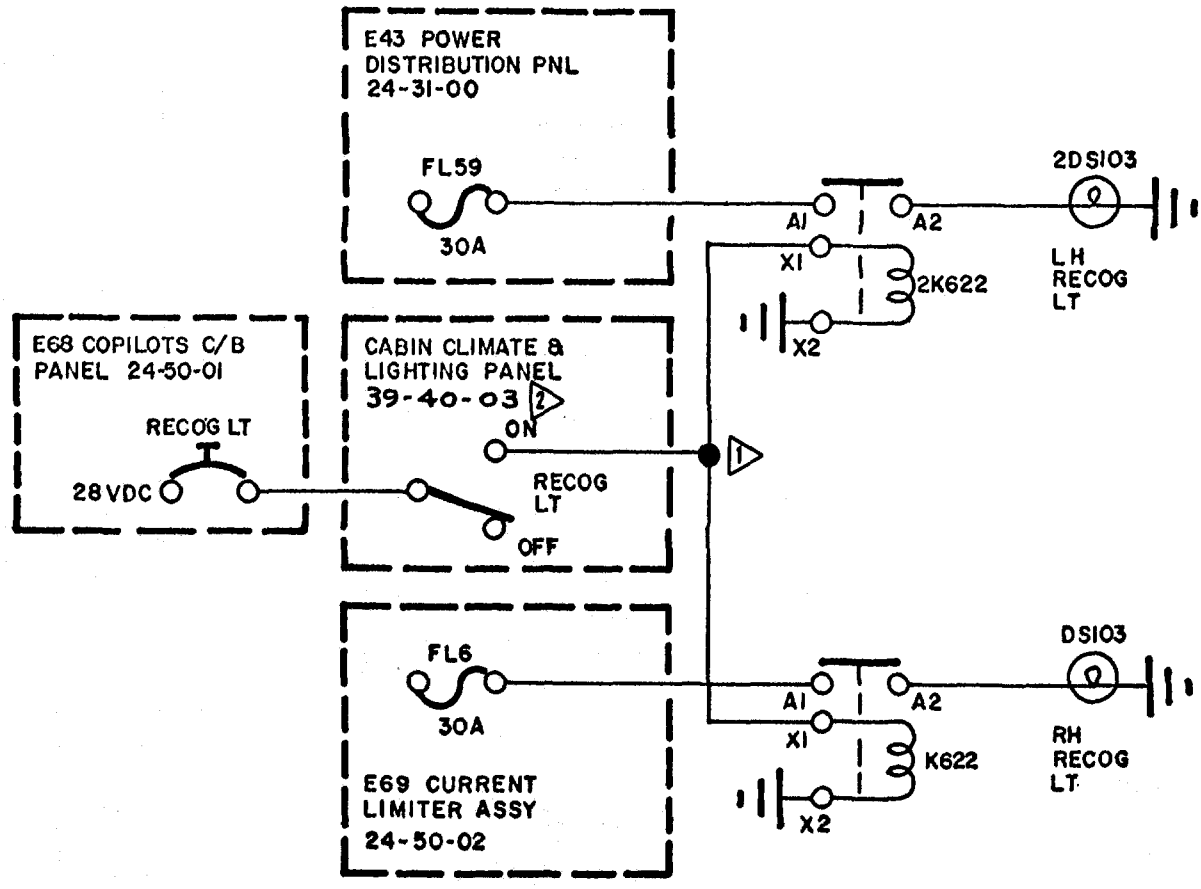
▷1 Effective 35-002 thru 35-505 and 36-002 thru 36-053, refer to Cabin Climate & Lighting Panel, 31-10-09. 35-506 and Subsequent and 36-054 and Subsequent, refer to 39-40-03.



Strobe Light Electrical Control Schematic
Figure 5

1 LH Recognition Light is optional on Aircraft 35-257 and Subsequent and 36-045 and Subsequent.

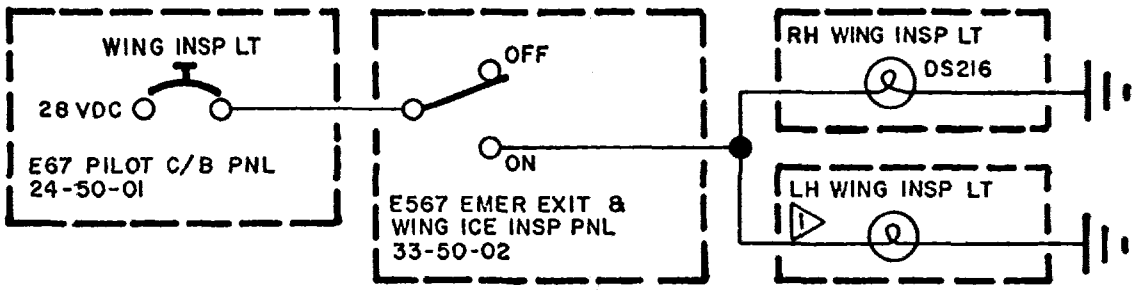
2 Effective on Aircraft 35-002 thru 35-505 and 36-002 thru 36-053. Refer to Cabin Climate and Lighting Panel, 31-10-09.



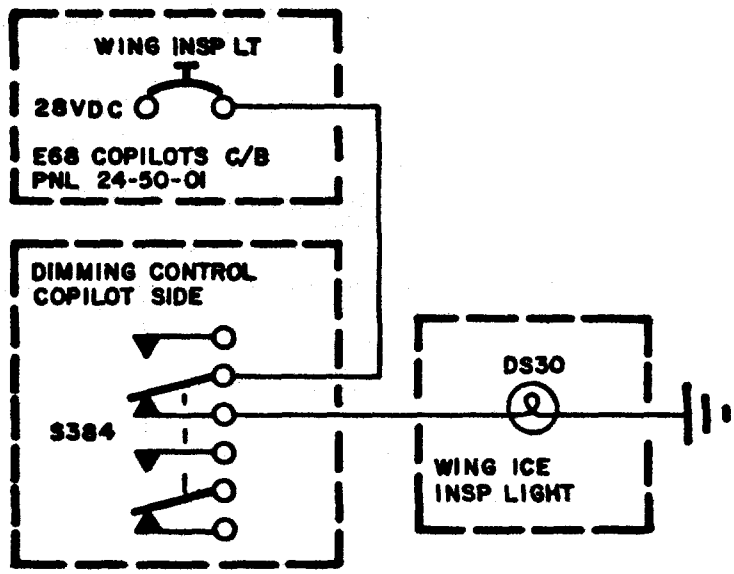
Recognition Light Electrical Control Schematic
Figure 6

NOTE: *This schematic may only be used when an optional wing ice inspection light* is not *installed.*

1 Optional LH wing inspection light.



Wing Inspection/Emergency Egress Light Electrical Control Schematic
Figure 7



Wing Ice Inspection Light Electrical Control Schematic
Figure 8

LANDING AND TAXI LIGHTS - MAINTENANCE PRACTICES

1. Removal/Installation

NOTE: Removal and installation procedures are identical for both LH and RH light installations.

A. Remove Landing and Taxi Light. (See Figure 201.)
   (1) Remove attaching parts securing lamp retainer *and protective lens cover on aircraft modified per AAK 85-11 "Installation of Landing Light Lens Protective Cover"* to lamp housing.
   (2) Remove lamp from housing and disconnect and identify electrical wiring.

B. Install Landing and Taxi Light. (See Figure 201.)
   (1) Identify and connect electrical wiring to lamp.
   (2) Install lamp in housing, ensuring that filament is in a vertical position.
   (3) Install retainer *and protective lens cover on aircraft modified per AAK 85-11 "Installation of Landing Light Lens Protective Cover"* and secure with attaching parts.
   (4) Set Battery Switches on. Set applicable switch, located on Test Switch panel, to L or R LANDING LIGHT. Landing and taxi light shall illuminate full bright.
   (5) Set applicable Landing Light Switch to TAXI. Landing and taxi lamp shall dim.
   (6) Set applicable Landing Light Switch off. Landing and taxi lamp shall extinguish.
   (7) Set Battery Switches off.
   (8) Restore aircraft to normal.

2. Adjustment/Test

NOTE: Adjustment procedures are identical for both LH and RH landing and taxi light installations.

A. Adjust Landing and Taxi Light Installation. *(Aircraft equipped with adjustable landing and taxi light bracket.)* (See Figure 201.)

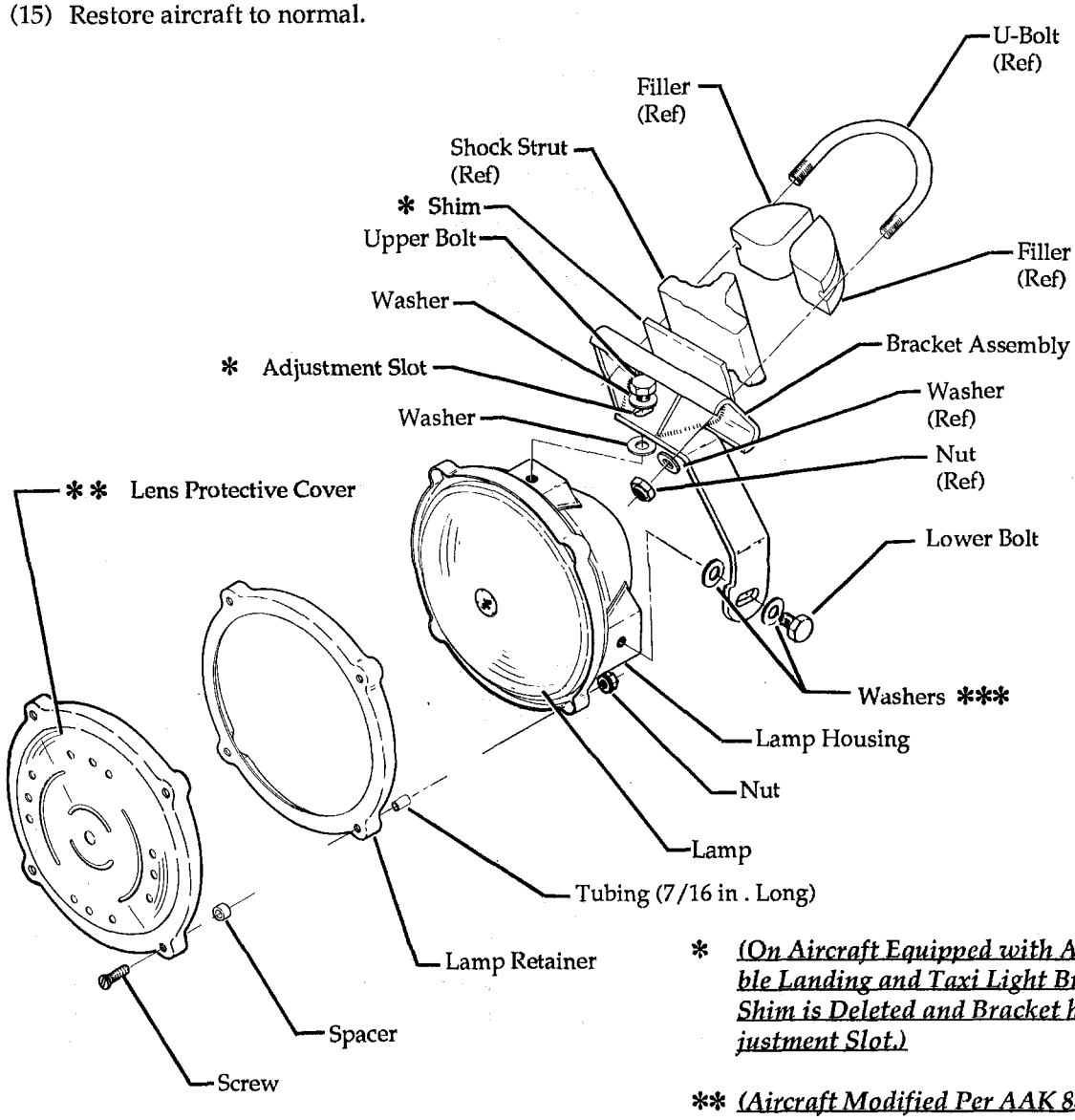
CAUTION: WHEN ADJUSTING ANGLE OF LANDING AND TAXI LIGHT INSTALLATIONS, ENSURE THAT LAMP RETAINERS CLEAR AIRCRAFT WHEEL WELL STRUCTURE WHEN MAIN LANDING GEAR IS FULLY RETRACTED. OTHERWISE, DAMAGE TO LANDING AND TAXI LIGHT INSTALLATIONS MAY RESULT.

   (1) Place aircraft on jacks. (Refer to Chapter 7.)
   (2) Set Battery Switches on.
   (3) Disconnect applicable door closure link assembly between main gear outboard door and main gear strut assembly.
   (4) Loosen attaching parts securing lamp housing to bracket assembly.
   (5) Adjust lamp housing as required to obtain desired lamp position and to ensure proper clearance.

CAUTION: WHEN ADJUSTING ANGLE OF LANDING AND TAXI LIGHT INSTALLATIONS, ENSURE THAT LAMP RETAINERS CLEAR AIRCRAFT WHEEL WELL STRUCTURE WHEN MAIN LANDING GEAR IS FULLY RETRACTED. OTHERWISE, DAMAGE TO LANDING AND TAXI LIGHT INSTALLATIONS MAY RESULT.

   (6) Tighten attaching parts securing lamp housing to bracket assembly.
   (7) Connect external hydraulic power source to aircraft and pressurize hydraulic system to 1500 (±50) psi.
   (8) Slowly retract landing gear while observing to ensure that landing and taxi light installation clears aircraft structure.

(9) Extend landing gear. Repeat steps 2.A.(5) thru (8), if necessary, to ensure proper clearance between landing and taxi light installation and aircraft structure.
(10) Depressurize hydraulic system and disconnect external hydraulic power source from aircraft.
(11) Set Battery Switches off.
(12) Connect door closure link assembly between main gear outboard door and main gear strut assembly.
(13) Check hydraulic reservoir fluid level. (Refer to Chapter 29.)
(14) Remove aircraft from jacks. (Refer to Chapter 7.)
(15) Restore aircraft to normal.



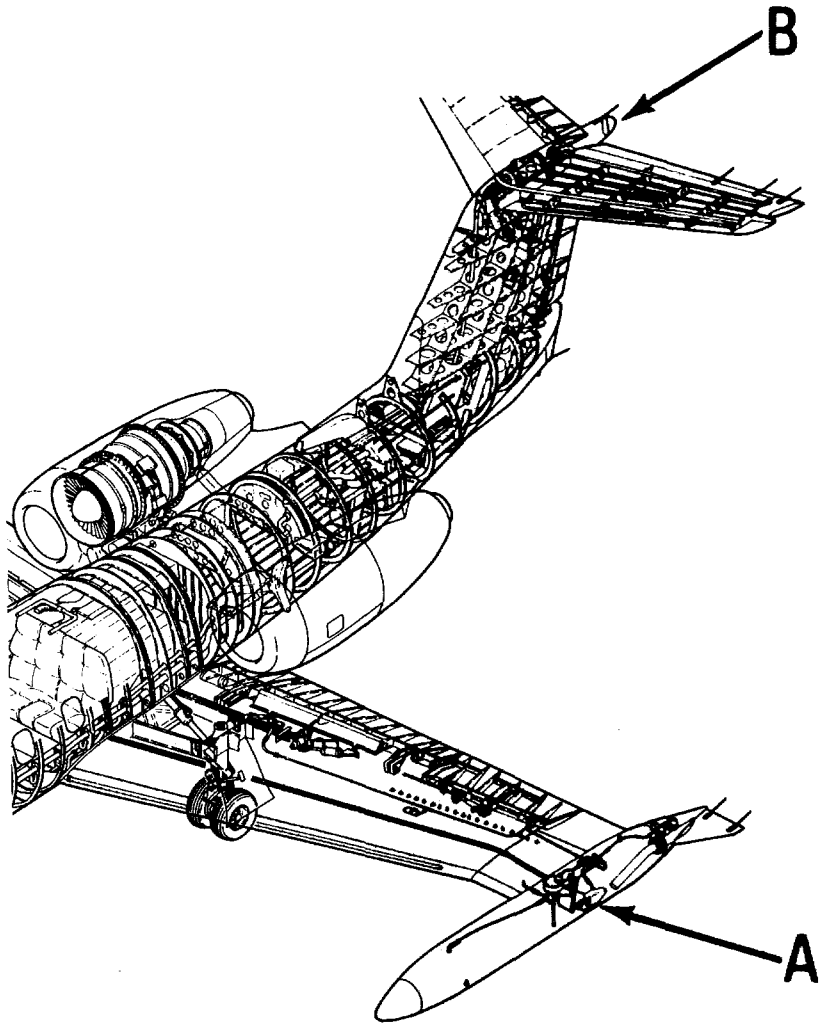
* *(On Aircraft Equipped with Adjustable Landing and Taxi Light Bracket, Shim is Deleted and Bracket has Adjustment Slot.)*

** *(Aircraft Modified Per AAK 85-11 "Installation of Landing Light Lens Protective Covers")*

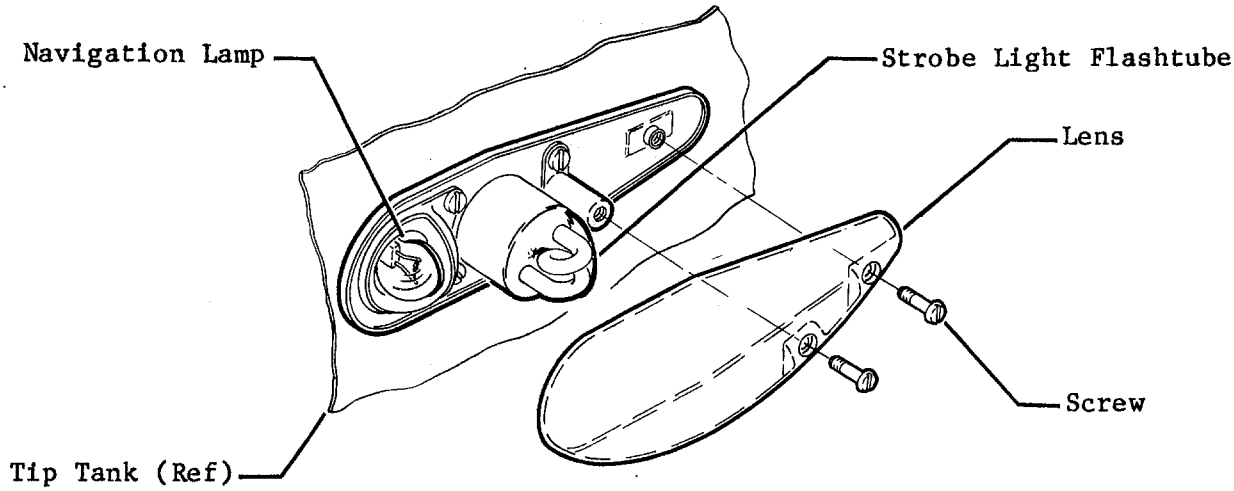
*** *(Effective Aircraft 35-673 and Sub ; 36-064 and Sub)*

Landing and Taxi Light Installation
Figure 201

1. REMOVAL/INSTALLATION
   A. Remove Navigation Lamp (See figure 201.)
      (1) Remove attaching parts and lens from applicable navigation light installation.
      (2) Remove lamp.
   B. Install Navigation Lamp (See figure 201.)
      (1) Install lamp.
      (2) Install lens and secure with attaching parts.

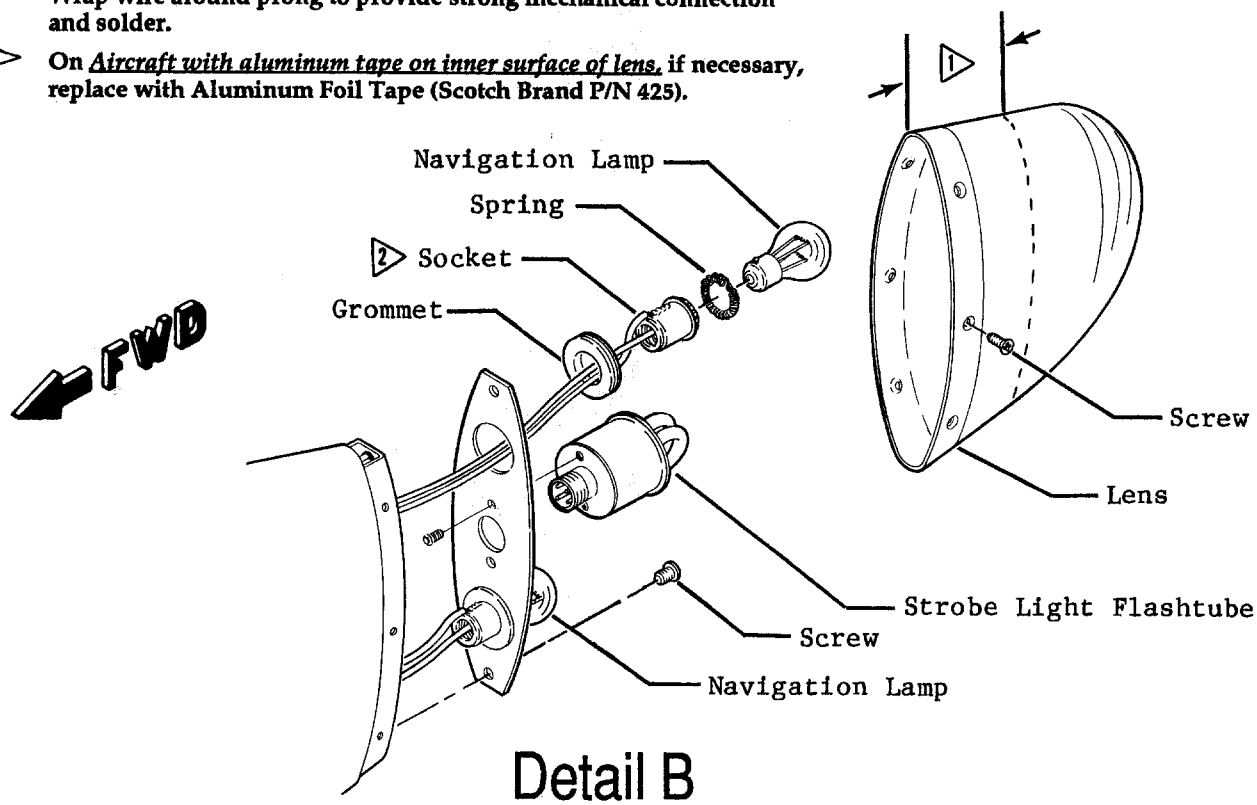


Navigation Light Installation
Figure 201 (Sheet 1 of 2)



Detail A

1. Finish exterior surface of lens in area as follows:
   (1) Mask area to be finished and lightly sand with 400-grit abrasive paper.
   (2) Wipe with MEK and clean cotton cloth.
   (3) Apply wash primer, intermediate primer, and #6160 Matterhorn White Alumigrip urethane enamel.
2. When replacing socket, drill 0.063 hole in socket flange next to prong. Wrap wire around prong to provide strong mechanical connection and solder.
3. On *Aircraft with aluminum tape on inner surface of lens,* if necessary, replace with Aluminum Foil Tape (Scotch Brand P/N 425).



Detail B

A9-13B-1
B9-31C-1

Navigation Light Installation
Figure 201 (Sheet 2 of 2)

ANTI-COLLISION LIGHT - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

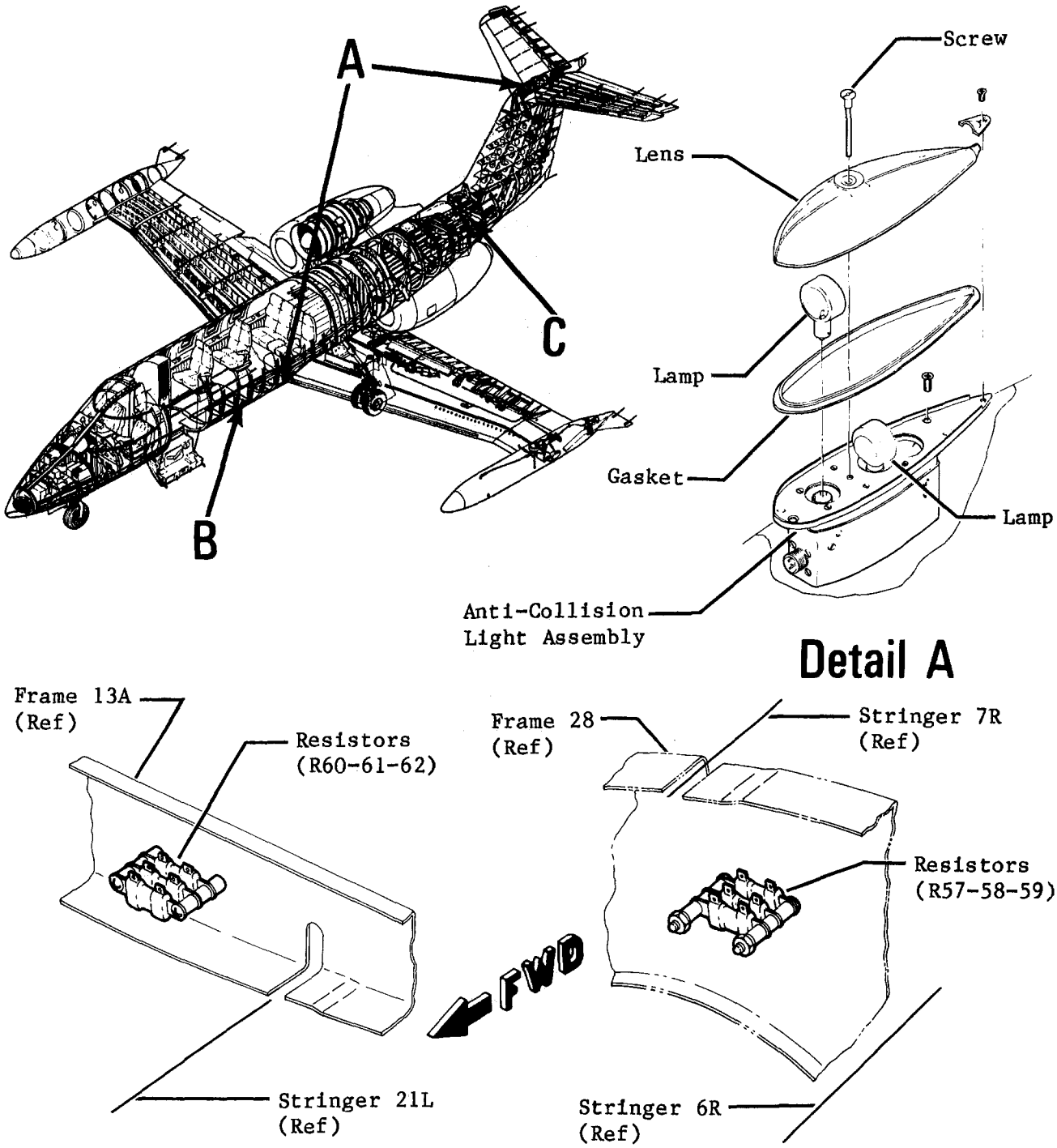
NOTE: Removal and installation procedures for both anti-collision lights and resistor installations are identical.

A. Remove Anti-Collision Lamp (See figure 201.)
(1) Remove attaching parts, gasket, and lens from anti-collision light assembly.
(2) Remove lamp.

B. Install Anti-Collision Lamp (See figure 201.)
(1) Install lamp.
(2) Inspect gasket and replace if required.
(3) Install gasket and lens and secure with attaching parts.
(4) Fillet seal around lower light assembly and lens using Pro Seal 890 sealant.

C. Remove Resistor Installation (See figure 201.)
(1) Remove electrical power from aircraft.
(2) Gain access to resistor installation.
(3) Disconnect and identify wiring from resistors.
(4) Remove resistors and attaching parts from aircraft.

D. Install Resistor Installation (See figure 201.)
(1) Install resistors and attaching parts in aircraft.
(2) Identify and connect wiring to resistors.
(3) Install any parts removed to gain access to resistor installation.
(4) Restore electrical power to aircraft.



9-11B-1
9-11C

Anti-Collision Light Installation
Figure 201

EFFECTIVITY: ALL
MM-99
Disk 924

1. Removal/Installation

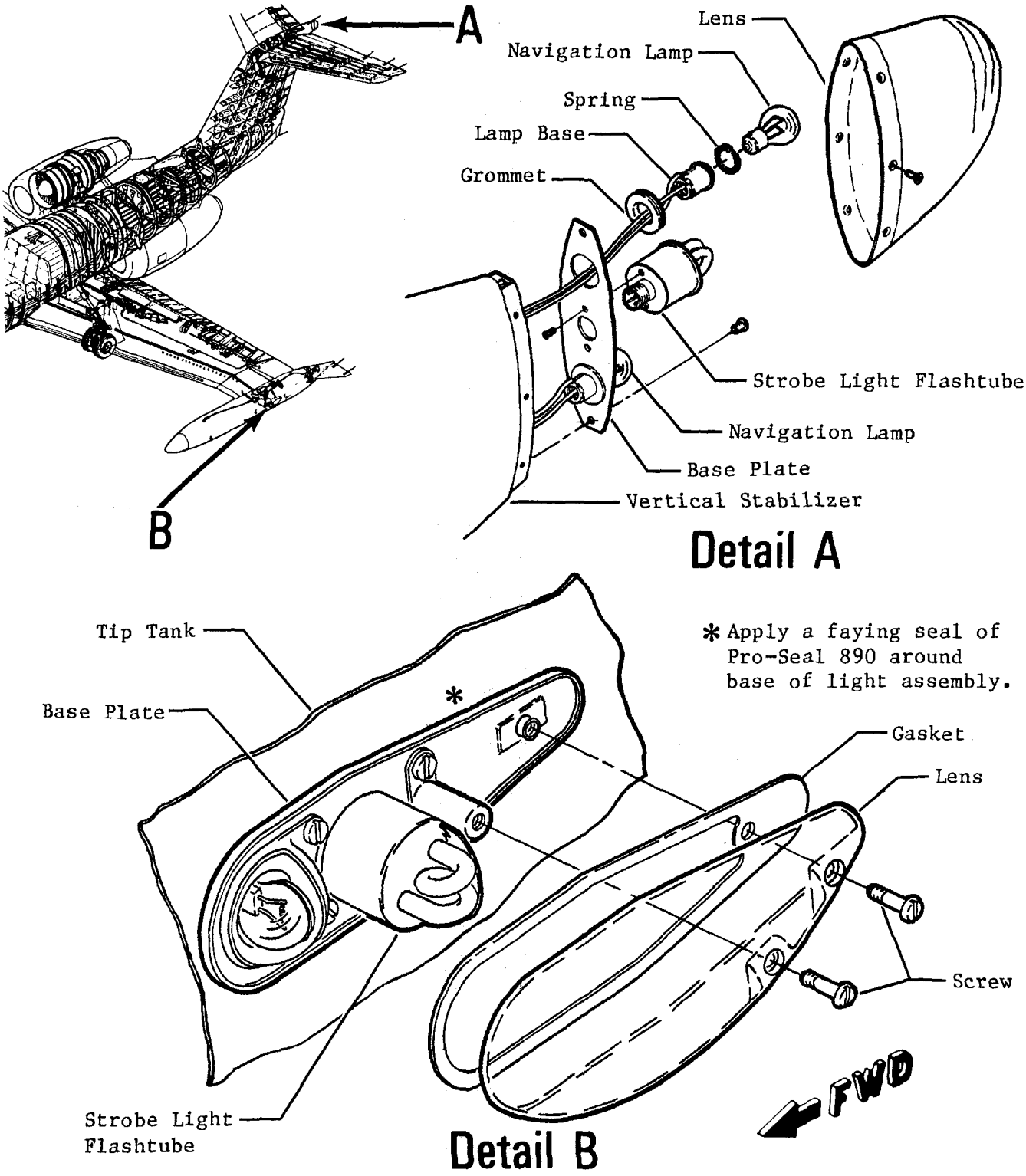
WARNING: ENSURE ALL ELECTRICAL POWER IS REMOVED FROM AIRCRAFT BEFORE REPLACING STROBE LIGHT OR POWER SUPPLY. FAILURE TO DO SO COULD RESULT IN ELECTRICAL SHOCK AND EQUIPMENT DAMAGE.

A. Remove Strobe Light Flashtube (See figure 201.)
   (1) Remove electrical power from aircraft.
   (2) Remove lens and attaching parts from aircraft.
   (3) Remove mounting screws and base plate.
   (4) Disconnect electrical connector from flashtube.
   (5) Remove flashtube and attaching screws from base plate.

B. Install Strobe Light Flashtube (See figure 201.)
   (1) Install flashtube on base plate and secure with attaching parts.
   (2) Connect electrical connector to flashtube.
   (3) Install base plate and lens and secure with attaching parts.
   (4) Restore electrical power to aircraft.

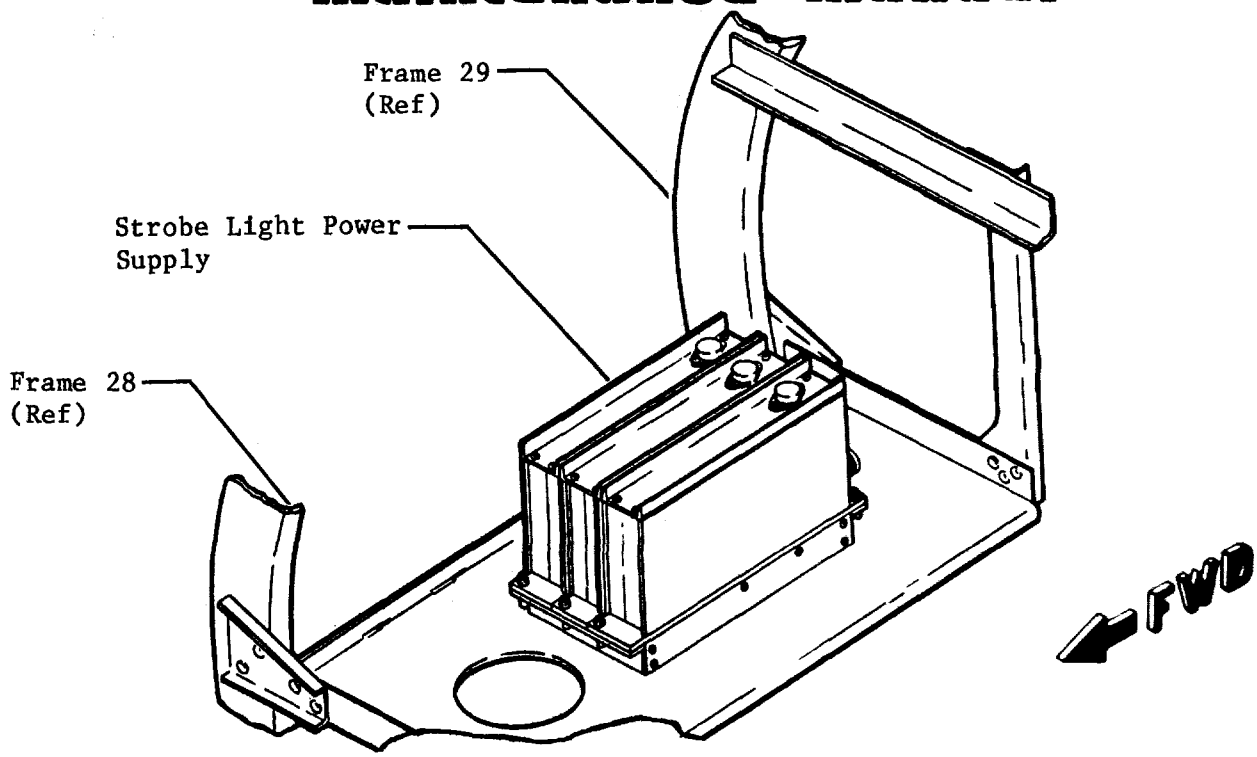
C. Remove Strobe Light Power Supply (See figure 202.)
   (1) Remove electrical power from aircraft.
   (2) Disconnect electrical connector from power supply unit.
   (3) All electrical connections between the power supply unit and the base are completed when the power supply unit is installed and secured in place. When removing power supply unit from base, lift unit straight up from base. This will prevent damage to connector. Remove hold-down screws and power supply unit from aircraft.
   (4) If base is to be removed, disconnect electrical connector, remove attaching parts and base from aircraft.

D. Install Strobe Light Power Supply (See figure 202.)
   (1) Install base and secure with attaching parts. Connect electrical connector.
   (2) Place power supply unit on base and press down until unit is firmly in place. Secure power supply unit with hold-down screws.
   (3) Connect electrical connector to power supply unit.
   (4) Connect aircraft batteries.
   (5) Perform operational check of strobe lights.
   (6) Secure tailcone access door.

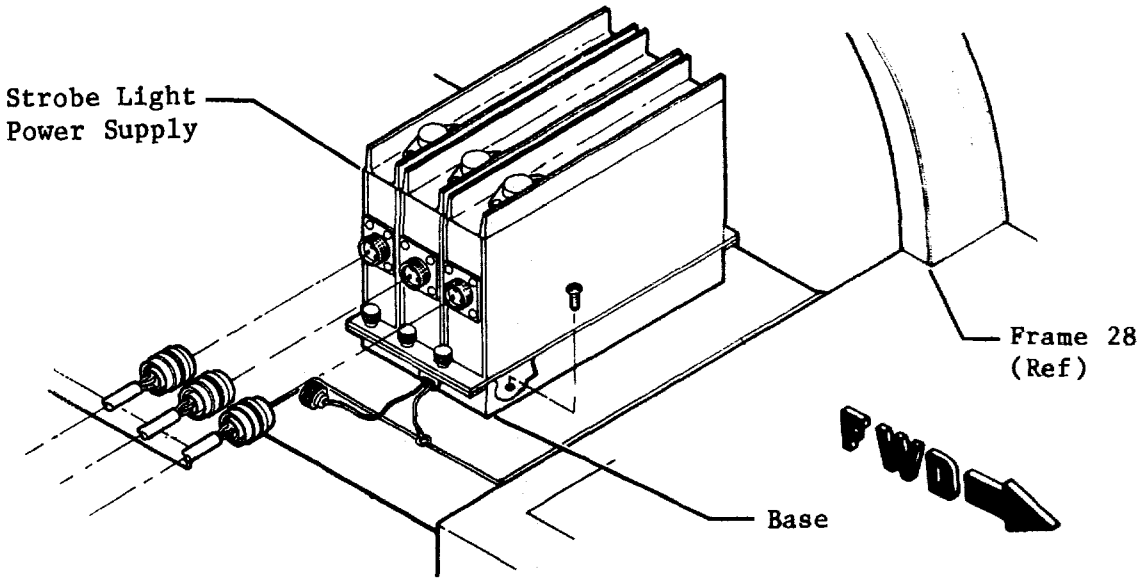


9-13B
9-31C-1

Strobe Light Installation
Figure 201

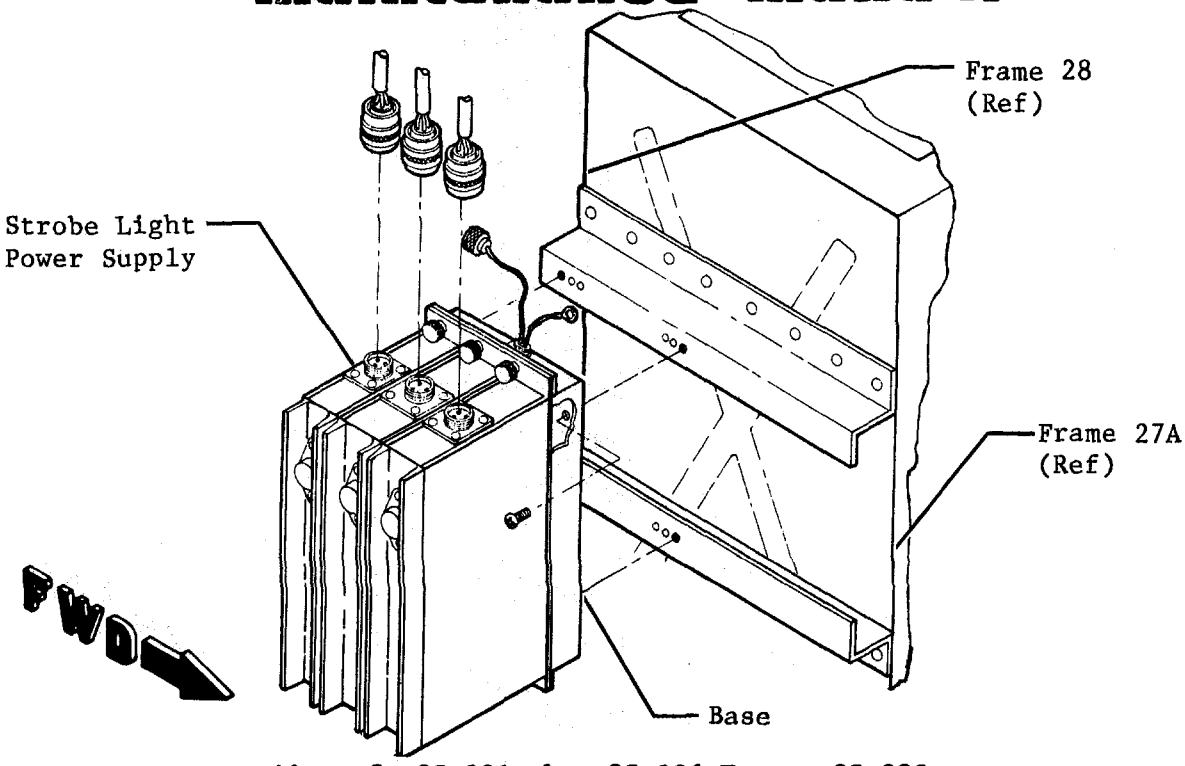


Aircraft 35-001 thru 35-066, 36-001 thru 36-017, Except Aircraft modified per AAK 76-8, "Relocation of Strobe Light Power Supply."

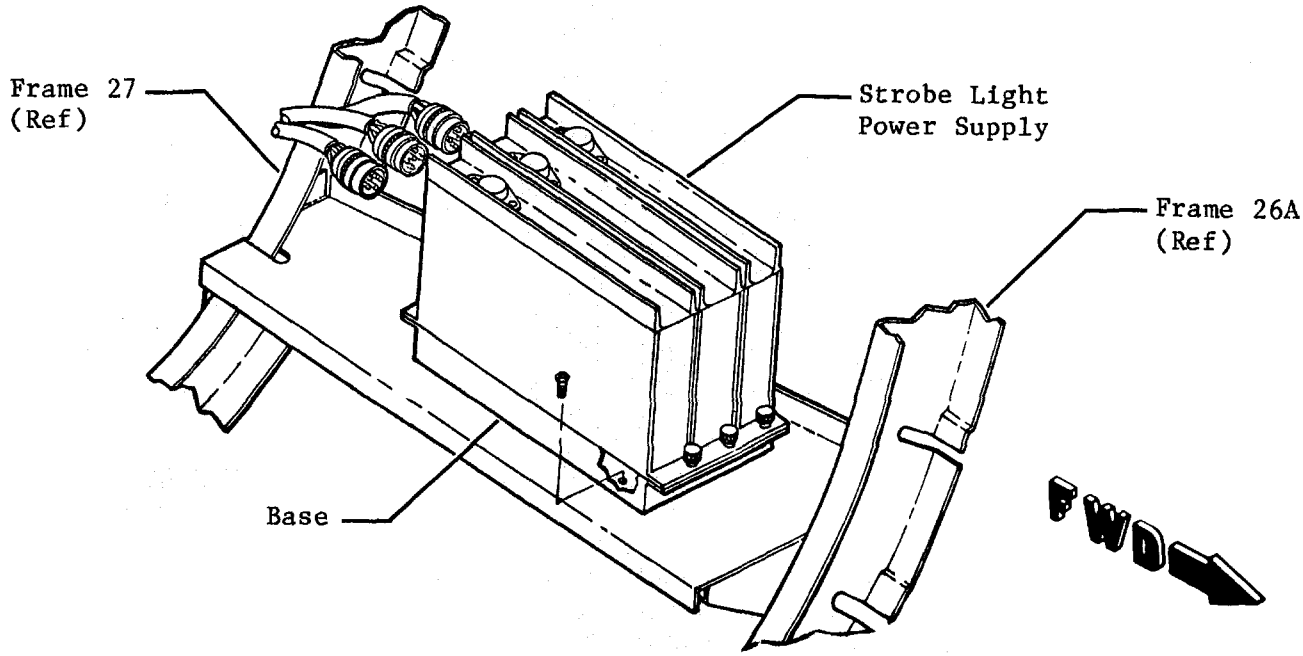


Aircraft 35-067 thru 35-086, 36-018 thru 36-022, Except Aircraft modified per AAK 76-8, "Relocation of Strobe Light Power Supply."

Strobe Light Power Supply Installation
Figure 202 (Sheet 1 of 2)



Aircraft 35-001 thru 35-086 Except 35-082, 36-001 thru 36-022 Modified per AAK 76-8, "Relocation of Strobe Light Power Supply."



Aircraft 35-087 and Subsequent, 36-023 and Subsequent

Strobe Light Power Supply Installation
Figure 202 (Sheet 2 of 2)

9-133C

RECOGNITION LIGHT - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

A. Remove Recognition Light Lamp (See figure 201.)

(1) Remove electrical power from aircraft.
(2) Remove tip tank nose cone and attaching parts.
(3) Loosen and remove clamp.
(4) Disconnect and identify electrical wiring from lamp and remove lamp from tip tank.

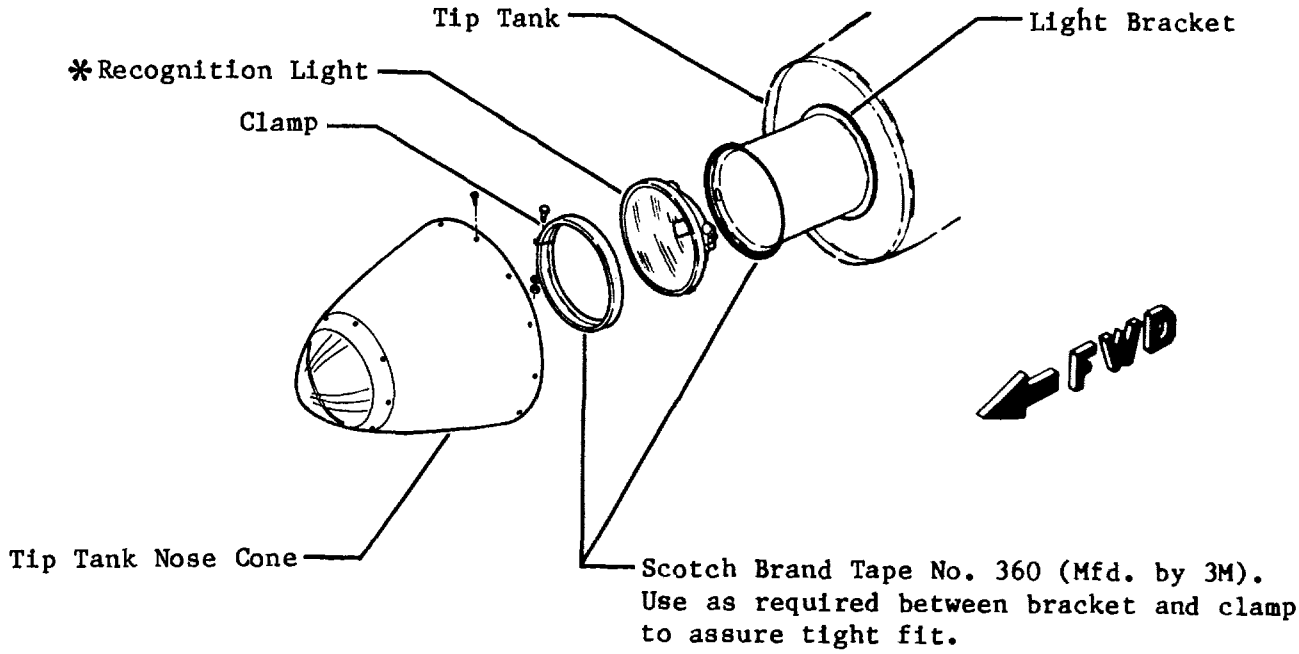
B. Install Recognition Light Lamp (See figure 201.)

(1) Identify and connect electrical wiring to lamp.
(2) Install lamp and secure with clamp.

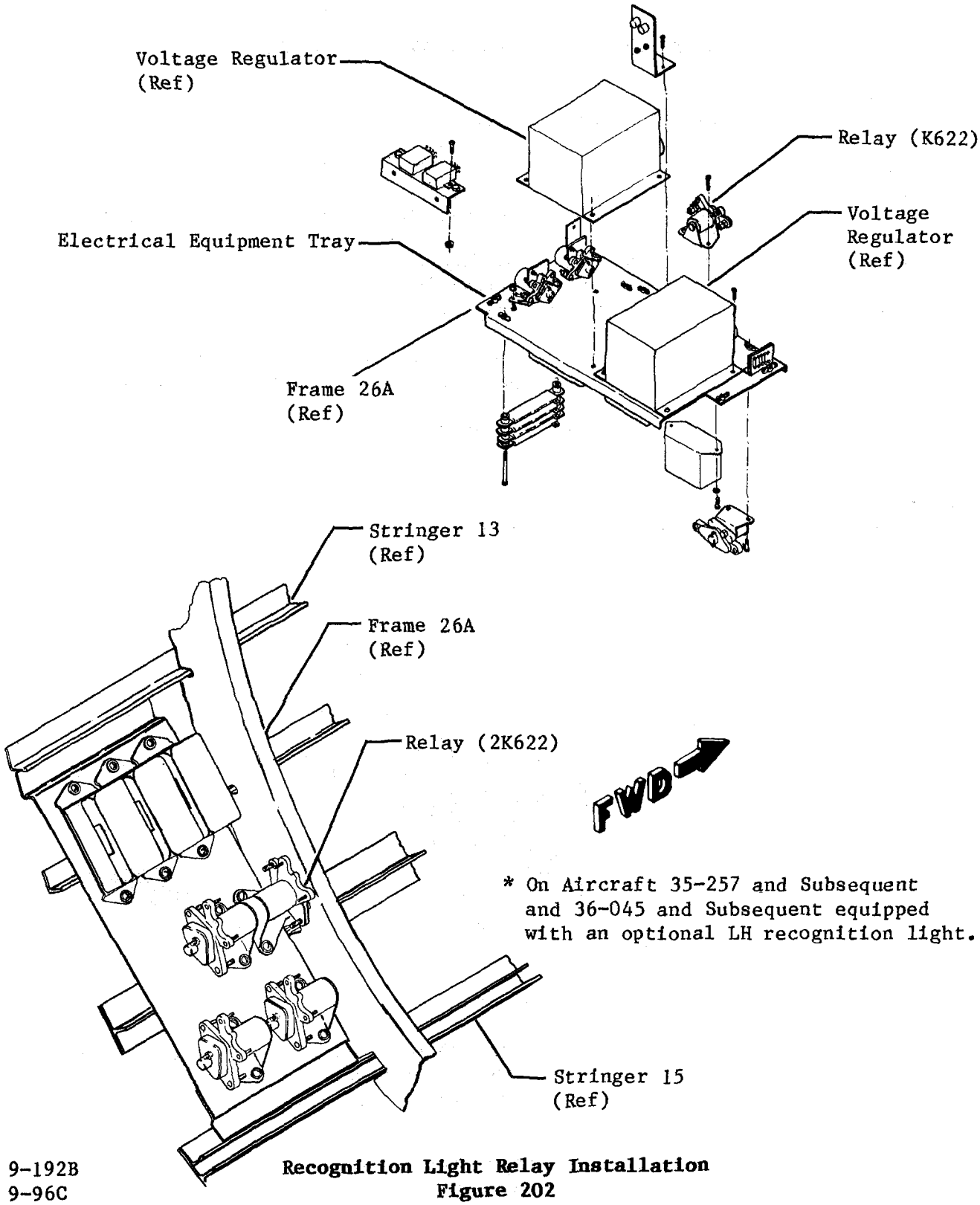
NOTE: When lamp is installed, ensure that filament shield is on the inboard side and perpendicular to the copilot's line of sight.

(3) Install tip tank nose cone and secure with attaching parts.

*Lamp to be installed such that filament shield is on inboard side and perpendicular to copilot's line of sight.



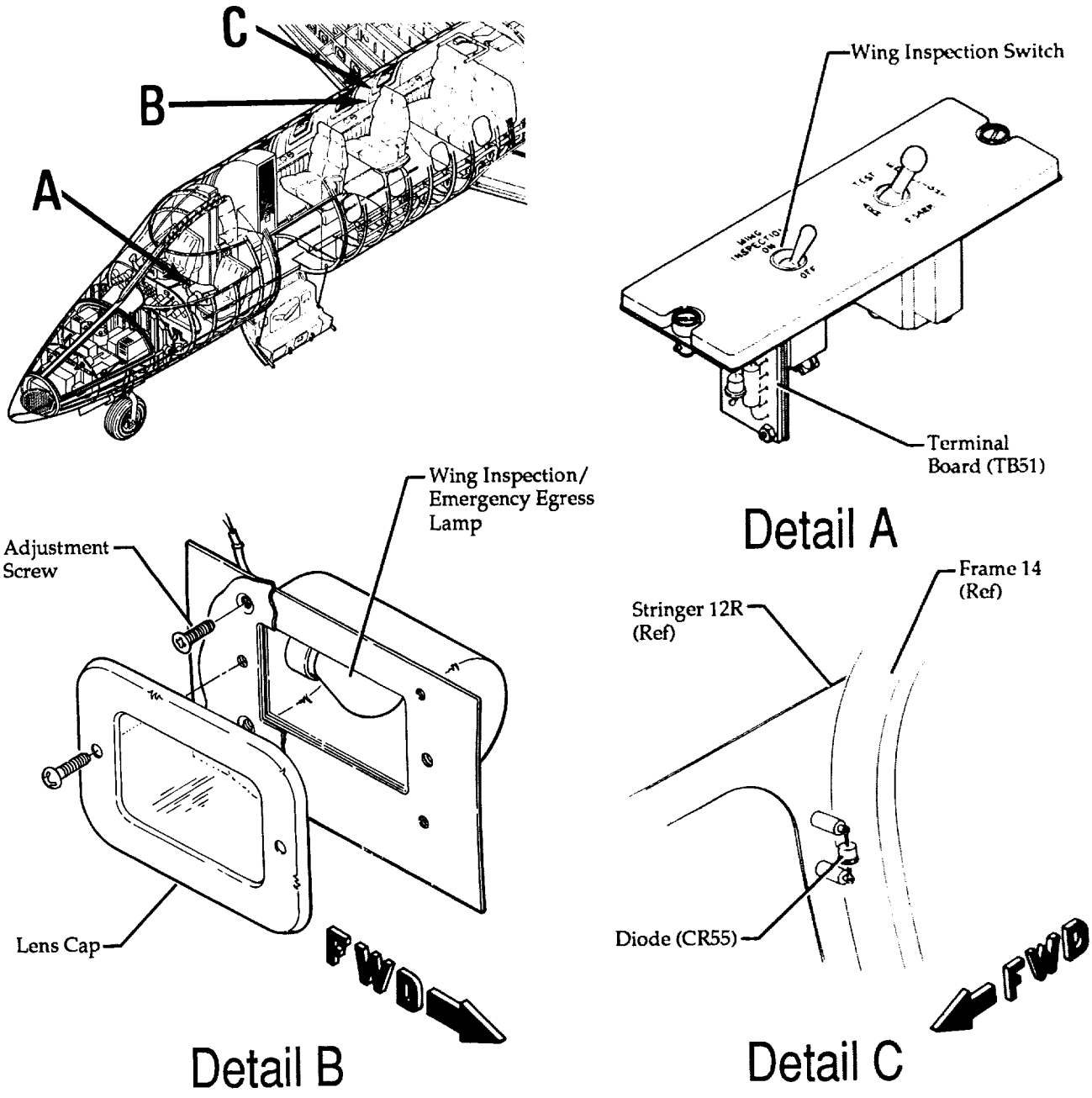
Recognition Light Installation
Figure 201



9-192B
9-96C

Recognition Light Relay Installation
Figure 202

1. **Removal/Installation**
   A. Replace Lamp. (See figure 201.)
      (1) Remove lens cap and wing inspection/emergency egress light lamp.
      (2) Install lamp and original lens cap.
      (3) Refer to Lamp Replacement Chart (33-00-00) for lamp number.



9-171C-1

Wing Inspection/Emergency Egress Light Installation
Figure 201

WING ICE INSPECTION LIGHT - MAINTENANCE PRACTICES

1. **Removal/Installation**
   A. Remove Lamp Assembly. (See Figure 201.)
      (1) Remove electrical power from aircraft.
      (2) Remove lens and retainer assembly and attaching parts.
      (3) Remove lamp retainer and attaching parts.
      (4) Disconnect electrical connector and remove lamp assembly.
   B. Install Lamp Assembly. (See Figure 201.)
      (1) Connect electrical connector.
      (2) Install lamp retainer and secure with attaching parts.
      (3) Restore electrical power to aircraft.
      (4) Perform functional test per steps 2.A.(1) thru 2.A.(8).
   C. Remove Wing Inspection Light Target. (See Figure 201.)
      (1) Apply MEK dampened cloth to target.
      (2) Completely remove target and adhesive using a plastic scraper.
      (3) Thoroughly clean surface with MEK. Wipe surface dry using a clean cloth.
   D. Install Wing Inspection Light Target. (See Figure 201, Detail C.)
      (1) Locate and place adhesive backed target on wing leading edge.
         (a) Target is centered left to right on WS 190.47.
         (b) Target top edge is located 3.35 inches along contour, measured from aft edge of leading edge.
      (2) Press target to wing leading edge starting at the center of target and working to the outer edge.
      (3) Seal target edge using Scotch-Cal No. 3950 adhesive (or equivalent).

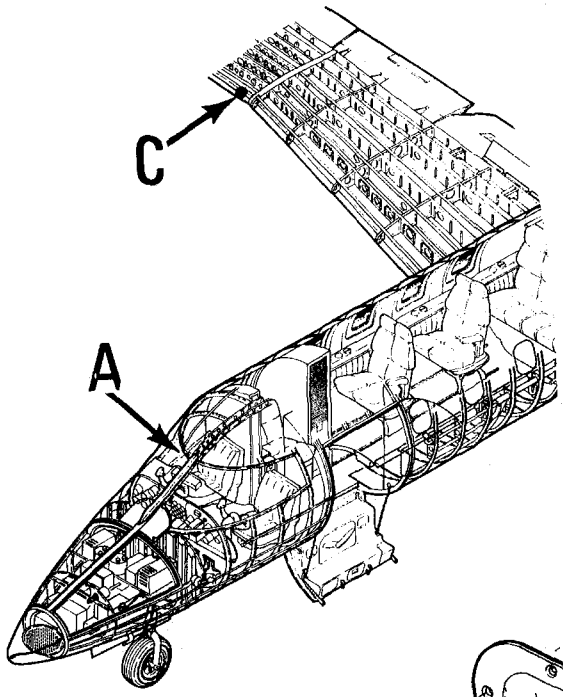
2. **Adjustment/Test**
   A. Functional Test of Wing Ice Inspection Light

      NOTE: Functional test should be conducted in a dark or nearly dark area.

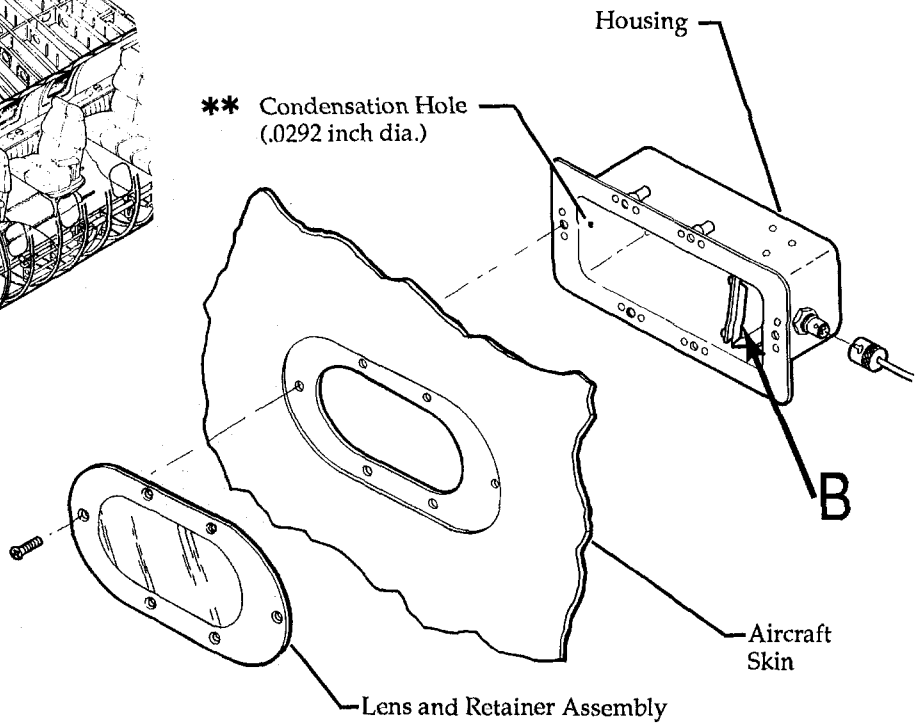
      (1) Connect external electrical power source to aircraft.
      (2) Set Battery Switches on.
      (3) Remove lens from light assembly.
      (4) Depress wing inspection light circuit breaker.
      (5) Depress and hold Wing Inspection Light Switch and verify that light illuminates. Verify that light beam strikes the target at the top edge. At this position, wing upbending during flight, allows the light beam to strike the center of the target.
      (6) Release Wing Inspection Light Switch and verify that light extinguishes.
      (7) Install lens.
      (8) Verify during flight test that wing inspection light beam is centered on 3 inch diameter black target on wing leading edge.

         NOTE: If beam is not centered, repeat steps 2.A.(5) through (8).

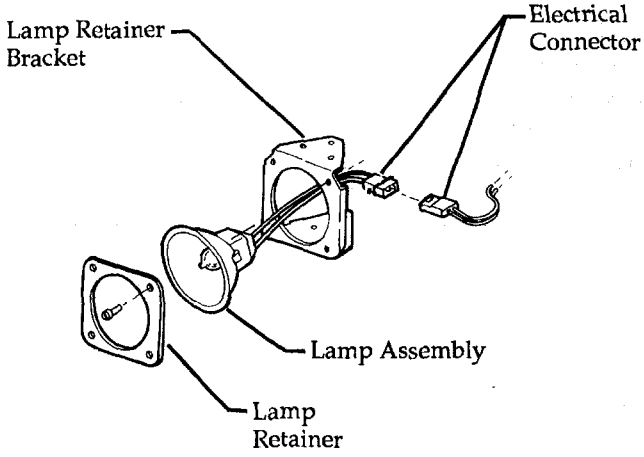
      (9) Set Battery Switches off.
      (10) Disconnect external electrical power from aircraft.



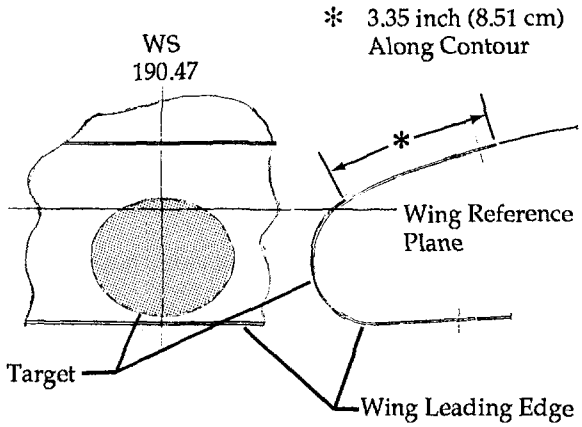
** *Effective 35-672 and Subsequent; 36-064 and Subsequent*



Detail A



Detail B



Detail C

9-171C

Wing Ice Inspection Light Installation
Figure 201

EMERGENCY LIGHTING - DESCRIPTION AND OPERATION

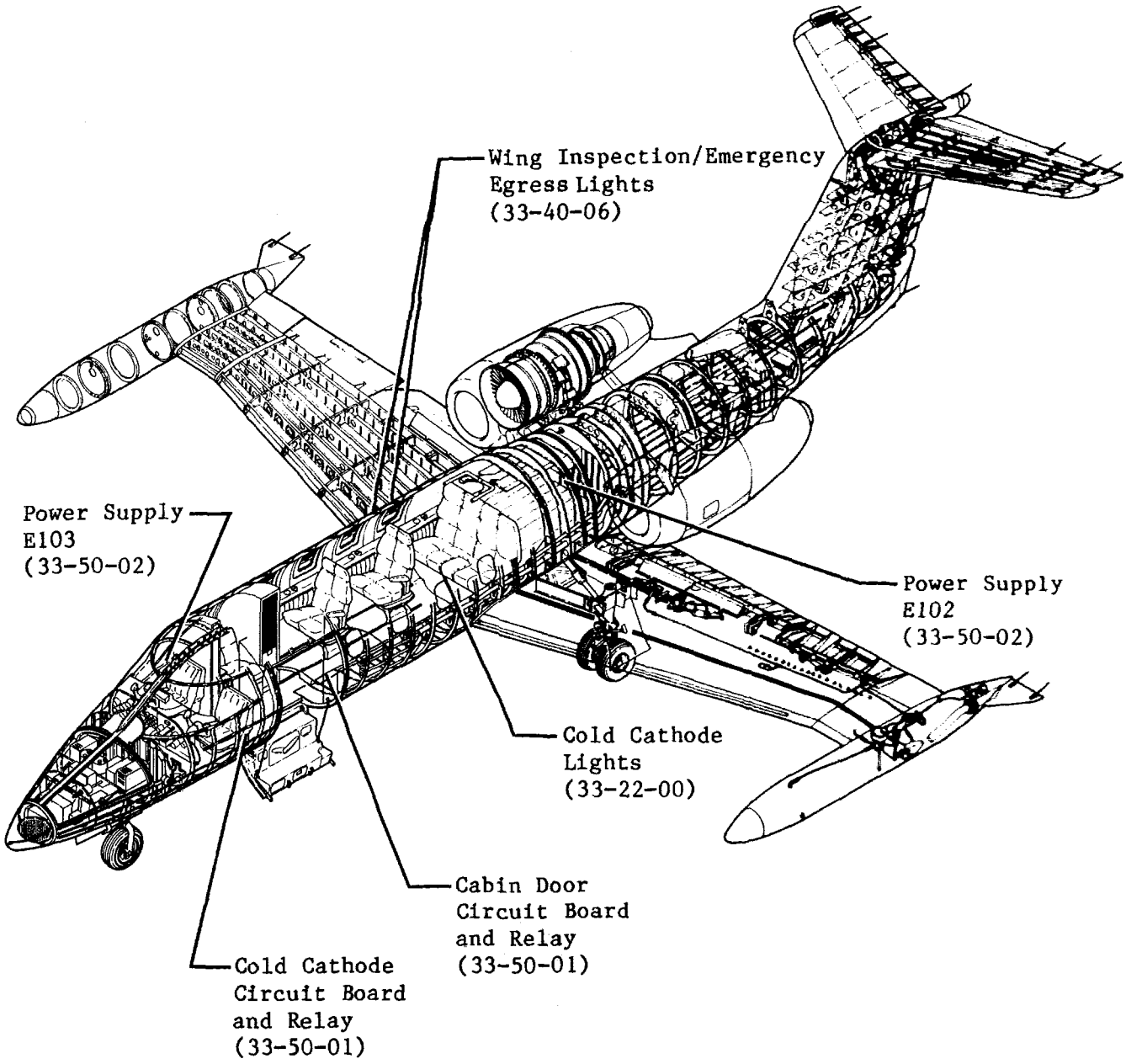
1. **DESCRIPTION** (See figure 1.)
   A. The emergency lighting system consists of a depressurization lighting system and an emergency exit lighting system.
   B. **Component Description**
      (1) The depressurization lighting system consists of an oxygen system aneroid switch, a circuit board, and a relay working in conjunction with the cold cathode cabin lights. On Aircraft 35-002 thru 35-237 and 36-002 thru 36-044, the circuit board (PCB124) and relay (K43) are located on frame 9, between stringers 12L and 13L. On Aircraft 35-238 and Subsequent and 36-045 and Subsequent, the circuit board and relay are incorporated into a control box assembly. The control box is located on brackets on frame 9 between stringers 12L and 13L.
      (2) The emergency exit lighting system consists of two power supplies, an emergency exit cabin door light, wing inspection/emergency egress light(s), and the cold cathode cabin lights.
         (a) Each power supply consists of two sealed nickel-cadmium batteries and a control circuitry module. One power supply (E103) is installed between frames 8 and 9 on the RH side of the cockpit. On 35 and 35A Aircraft, the second power supply (E102) is located on the forward side of frame 20, between stringers 7L and 9L. On 36 and 36A Aircraft, the second power supply (E102) is located on the aircraft centerline at frame 18 just above the floorboards.
         (b) The RH wing inspection/emergency egress light is installed on the RH side of the aircraft adjacent to the lower forward corner of the emergency exit window. The LH wing inspection/emergency egress light, if installed, is located directly opposite the RH light. (Refer to 33-40-06 for maintenance practices.)
         (c) The emergency exit cabin door light is installed in the upper cabin door. The light illuminates the lower cabin door and the immediate area around the door.
         (d) The cold cathode lights on the LH and RH sides of the upper center panel are powered by the emergency battery. (Refer to 33-22-00 for maintenance practices.)

2. **OPERATION**
   A. **Component Operation**
      (1) If a depressurization condition occurs, the oxygen system aneroid switch completes a 28 vdc circuit to the depressurization relay control circuit. A transistor completes a ground circuit, energizing the depressurization relay. With the relay energized, a ground circuit is completed to the cold cathode inverter. The remaining set of contacts in the depressurization relay completes a 28 vdc circuit to the cold cathode inverter and lights the upper center panel cold cathode lights. (See figure 2.)

(2) During normal operation, the emergency light DISARM - ARM - TEST Switch on pedestal is set to ARM and the EMER LT - NORM Switch on the LH Service cabinet is set to NORM. This applies 28 vdc to pins 2, 6, and 10 of each power supply. This maintains the control circuitry of the power supplies in a standby state and provides a trickle charge to the nickel-cadmium batteries. Upon loss of power at pin 10, whether by loss of aircraft power, by setting EMER LT - NORM Switch to EMER LT, or by setting emergency light DISARM - ARM - TEST Switch to the TEST position, the control circuit completes a power circuit between the batteries and pin 11. This applies power to the cold cathode lights, the emergency exit cabin door light, and the wing inspection/ emergency egress light(s). (See figures 3 and 4.)

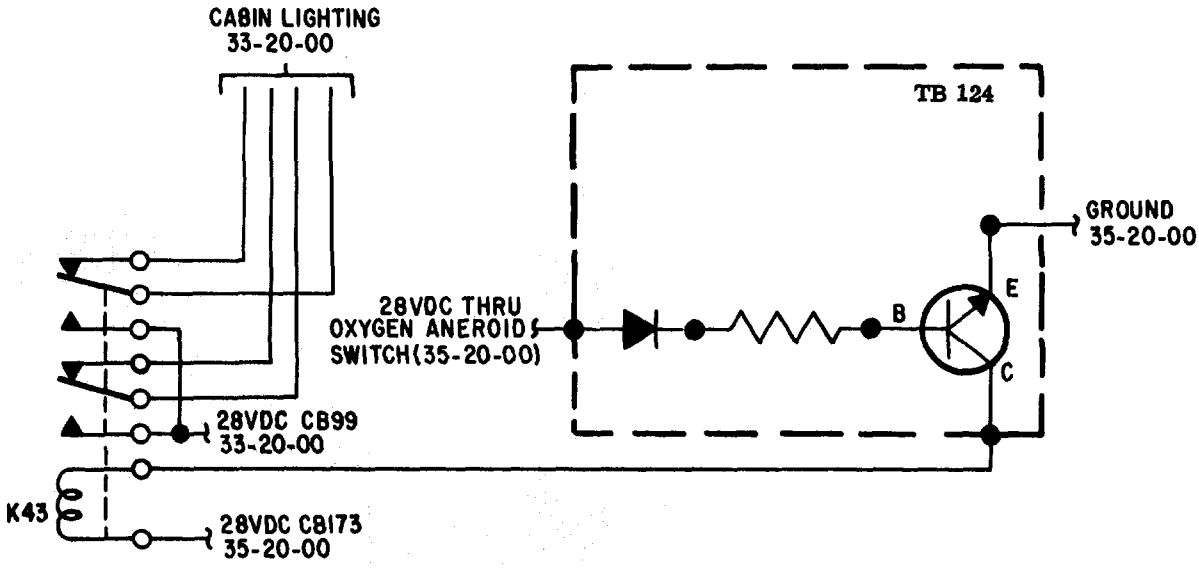
(3) The wing inspection/emergency egress light is normally powered by a 5 amp circuit breaker.

(4) The cockpit emergency power supply (E103) provides power to light the cold cathode cabin lights. The aft cabin emergency power supply (E102) provides power to light the emergency exit cabin door light and the wing inspection/emergency egress light(s).



Emergency Lighting System Locator
Figure 1

EFFECTIVITY: OPTIONAL
MM-99
Disk 924

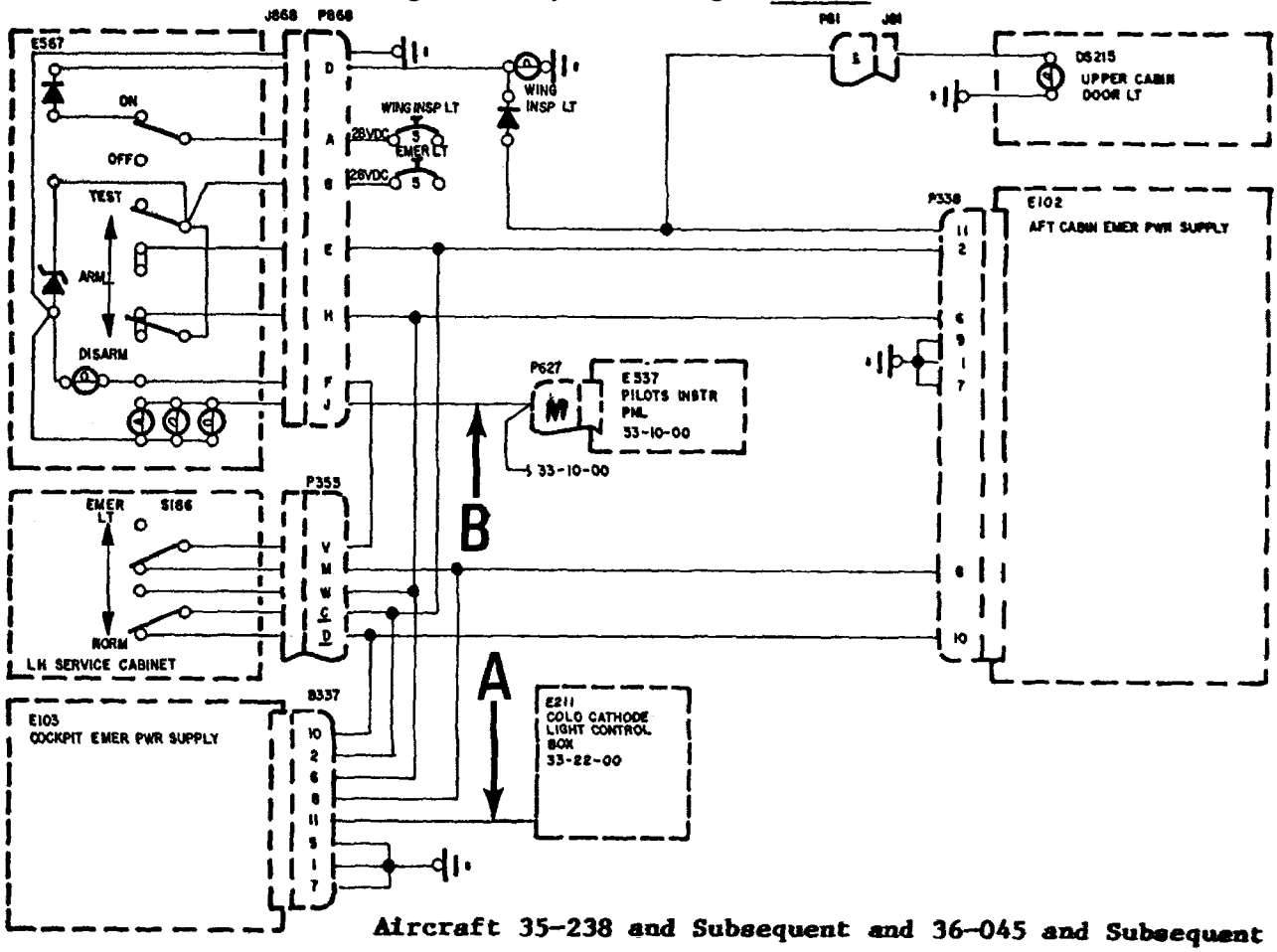


**Aircraft 35-091 thru 35-237 and
36-023 thru 36-044**

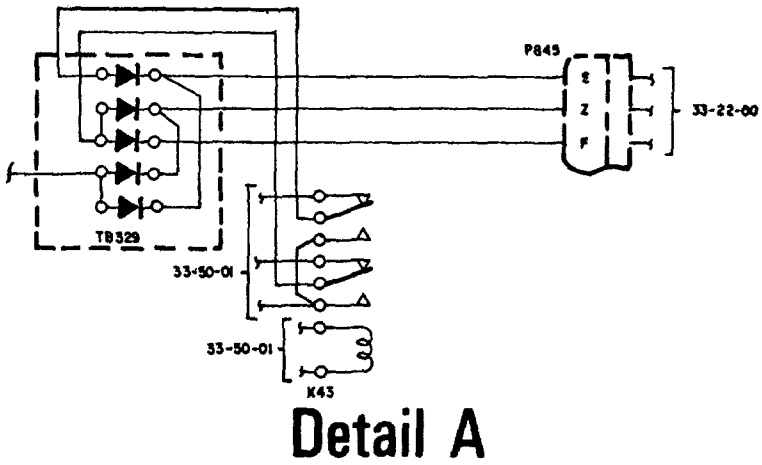
NOTE: On Aircraft 35-238 and Subsequent and 36-045 and Subsequent, the depressurization relay, resistor, diode, and transistor have been incorporated into the cold cathode light control box. (Refer to 33-22-00 of Wiring Manual.)

**Depressurization Lighting Electrical Control Schematic
Figure 2**

NOTE: This schematic is used only when an optional wing ice inspection light is not installed.

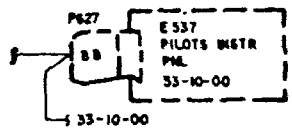


Aircraft 35-238 and Subsequent and 36-045 and Subsequent



Detail A

Aircraft 35-091 thru 35-237 and 36-023 thru 36-044

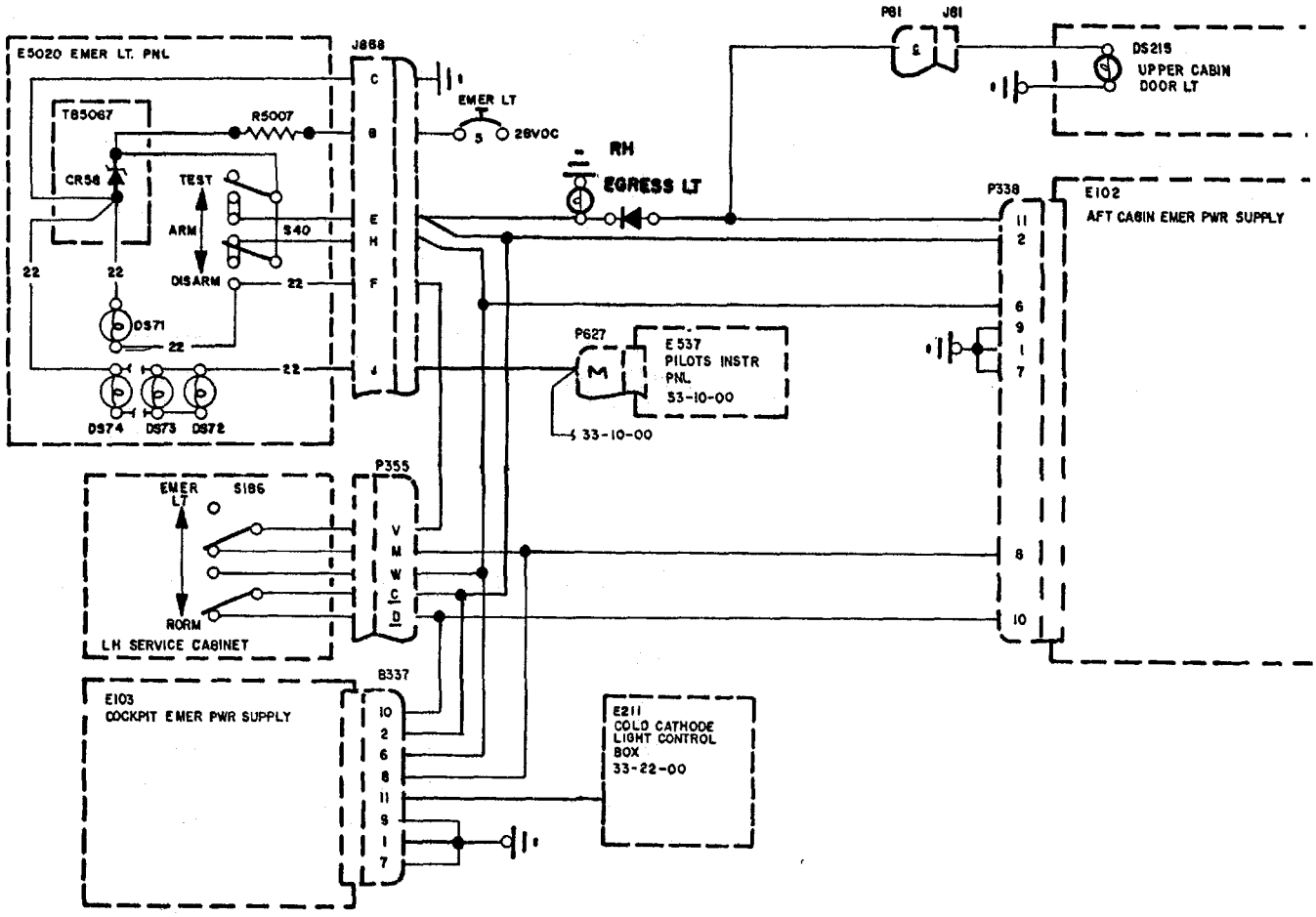


Detail B

Aircraft 35-091 thru 35-143 and 36-023 thru 36-034

Emergency Exit and Wing Inspection/Emergency Egress Light Electrical Schematic
Figure 3

NOTE: This schematic is used only when an optional wing ice inspection light is installed.



Emergency Exit Light Electrical Schematic
Figure 4

DEPRESSURIZATION LIGHTING - MAINTENANCE PRACTICES

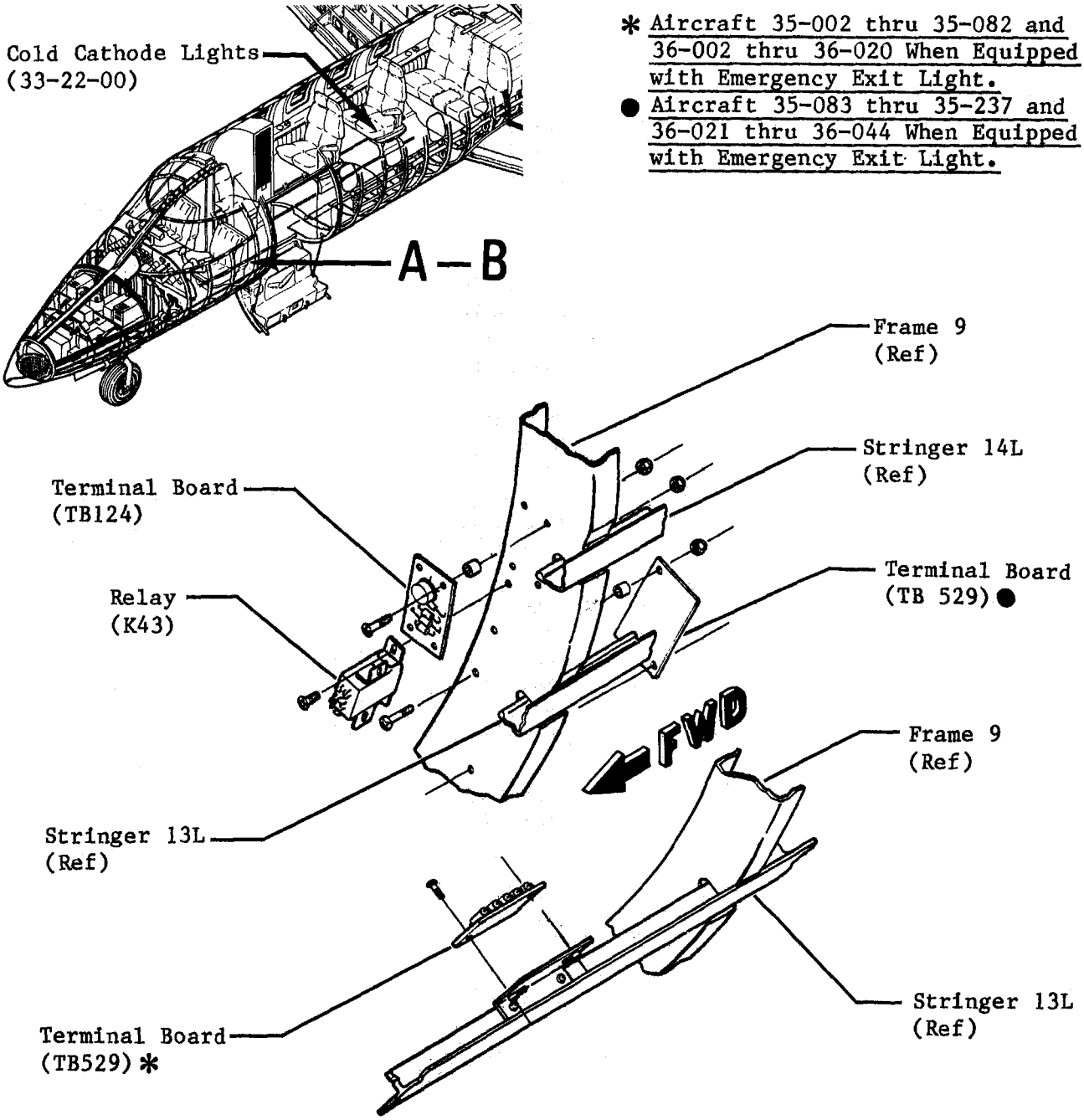
1. **REMOVAL/INSTALLATION**

   A. **Remove Terminal Board (TB124) and Relay (K43)** (Aircraft 35-001 thru 35-237 and 36-001 thru 36-044) (See figure 201.)
      (1) Remove electircal power from aircraft.
      (2) Remove upholstery as necessary to gain access to terminal board and relay.
      (3) Disconnect and identify wiring.
      (4) Remove attaching parts and terminal board and relay from aircraft.

   B. **Install Terminal Board (TB124) and Relay (K43)** (Aircraft 35-001 thru 35-237 and 36-001 thru 36-044) (See figure 201.)
      (1) Position and secure terminal board and relay to frame 9 with attaching parts.
      (2) Identify and connect electrical wiring.
      (3) Install previously removed upholstery.
      (4) Restore electrical power to aircraft.
      (5) Perform functional test of the oxygen system. (Refer to Chapter 35.)

   C. **Remove Cold Cathode Light Control Box** (Aircraft 35-238 and Subsequent and 36-045 and Subsequent) (See figure 201.)
      (1) Remove electrical power from aircraft.
      (2) Remove upholstery as necessary to gain access to control box.
      (3) Disconnect electrical connector.
      (4) Remove attaching parts and control box from aircraft.

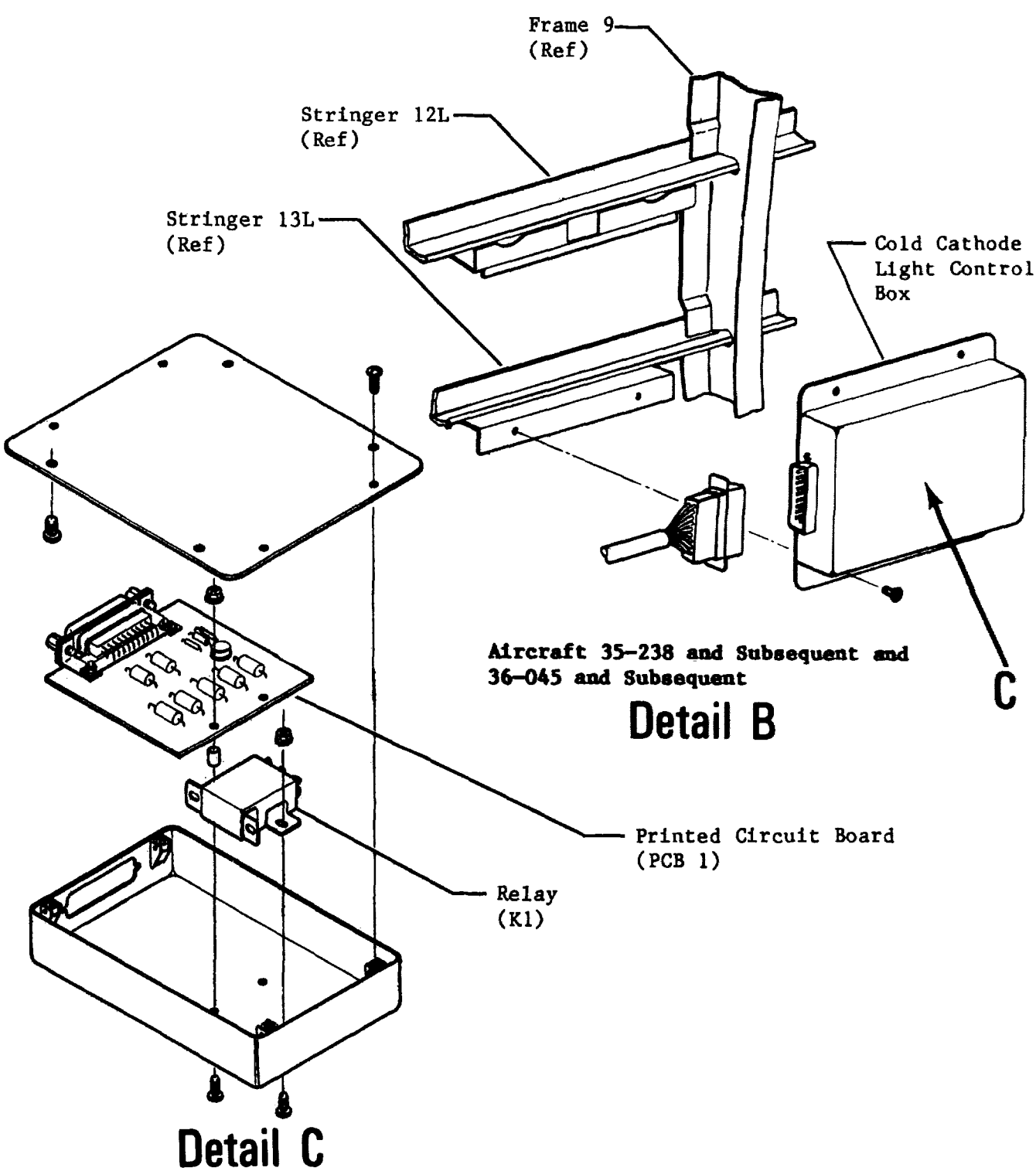
   D. **Install Cold Cathode Light Control Box** (Aircraft 35-238 and Subsequent and 36-045 and Subsequent) (See figure 201.)
      (1) Position and secure control box to frame 9 with attaching parts.
      (2) Connect electrical connector.
      (3) Install previously removed upholstery.
      (4) Restore electrical power to aircraft.
      (5) Perform functional test of the oxygen system. (Refer to Chapter 35.)



Aircraft 35-002 thru 35-237 and 36-002 thru 36-044.

Detail A

Depressurization Lighting Installation
Figure 201 (Sheet 1 of 2)



Deppresurization Lighting Installation
Figure 201 (Sheet 2 of 2)

9-161B

EMERGENCY EXIT LIGHT SYSTEM - MAINTENANCE PRACTICES

1. REMOVAL/INSTALLATION

A. Remove Cockpit Emergency Power Supply (E103) (See figure 201.)

(1) Remove electrical power from aircraft.
(2) Remove upholstery on right side of cockpit to gain access to power supply.
(3) Disconnect electrical connector from emergency power supply.
(4) Remove attaching parts and power supply from aircraft.

B. Install Cockpit Emergency Power Supply (E103) (See figure 201.)

(1) Install power supply and secure with attaching parts.
(2) Connect electrical connector to power supply.
(3) Install upholstery on right side of cockpit.
(4) Restore electrical power to aircraft.

C. Remove Aft Emergency Power Supply (E102) (See figure 201.)

(1) Remove electrical power from aircraft.
(2) On Aircraft 35/35A, remove cover held in place with Velcro fasteners.
(3) Disconnect electrical connector from emergency power supply.
(4) Remove attaching parts and power supply from aircraft.

D. Install Aft Emergency Power Supply (E102) (See figure 201.)

(1) Install power supply and secure with attaching parts.
(2) Connect electrical connector to power supply.
(3) On Aircraft 35/35A, install cover.
(4) Restore electrical power to aircraft.

E. Replace Cabin Door Emergency Exit Lamp (See figure 201.)

(1) Remove lens cap and lamp.
(2) Install lamp and lens cap.
(3) Refer to Lamp Replacement Chart (33-00-00) for lamp number.

2. INSPECTION/CHECK

A. Perform Operational Check of Emergency Exit Light Power Supply System

(1) Set Battery Switches ON.
(2) Ensure that all interior cabin lighting is switched OFF.
(3) Set Emergency Light DISARM - ARM - TEST Switch to ARM and Cabin Emergency Light EMER LT - NORM Switch to NORM.

NOTE: On Aircraft equipped with optional wing ice inspection light, skip steps 2.A.(4) and (5).

(4) Set Wing Inspection ON - OFF Switch to ON. Check that wing inspection/emergency egress light(s) is (are) illuminated.
(5) Set Wing Inspection ON - OFF Switch to OFF. Check that wing inspection/emergency egress light(s) extinguishes.
(6) Set Emergency Light DISARM - ARM - TEST Switch to TEST. The wing inspection/emergency egress, emergency exit cabin door, and cabin cold cathode lights shall illuminate.

NOTE: Depending upon cabin cold cathode light wiring, all the cabin cold cathode lights may not illuminate during this check. The mechanic should consult the Avionics and Optional Electrical Customization Wiring Manual.

(7) Set Emergency Light DISARM - ARM - TEST Switch to ARM. The lights referenced in step 2.A.(6) shall extinguish.

(8) Set EMER LT - NORM Switch to EMER LT. The wing inspection/emergency egress, emergency exit cabin door, and cabin cold cathode lights shall illuminate.

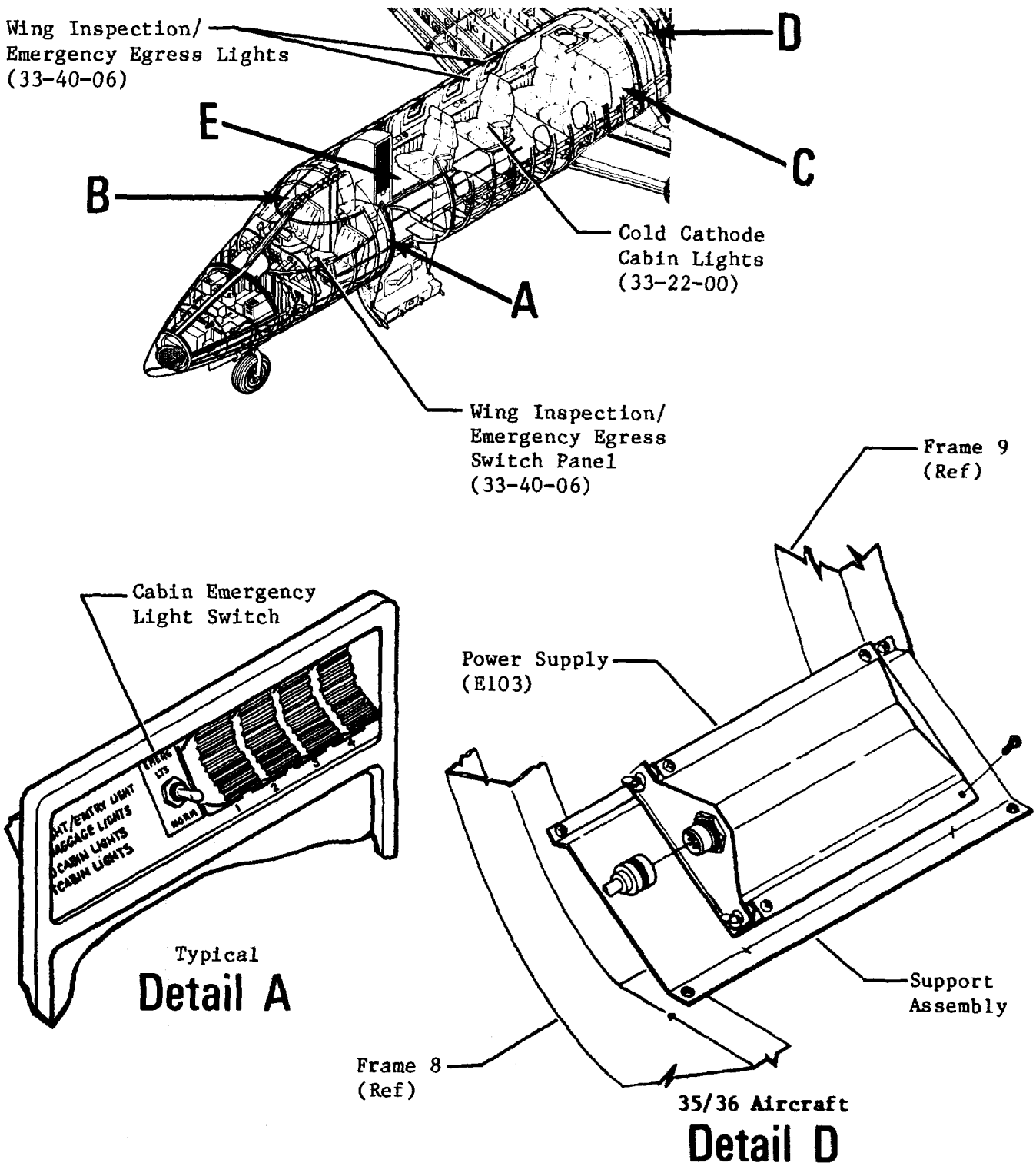
(9) Set EMER LT - NORM Switch to NORM. Lights referenced in step 2.A.(8) shall extinguish.

(10) Set Battery Switches to OFF. Lights referenced in step 2.A.(8) shall illuminate.

(11) Set Battery Switches to ON. Lights referenced in step 2.A.(8) shall extinguish.

(12) Set Emergency Light DISARM - ARM - TEST Switch to DISARM. Check that amber light adjacent to switch is illuminated.

(13) Set Battery Switches to OFF. Check that amber light extinguishes and lights referenced in step 2.A.(8) do not illuminate.



9-278A
9-279C

Emergency Exit Lighting Installation
Figure 201 (Sheet 1 of 3)

EFFECTIVITY: OPTIONAL
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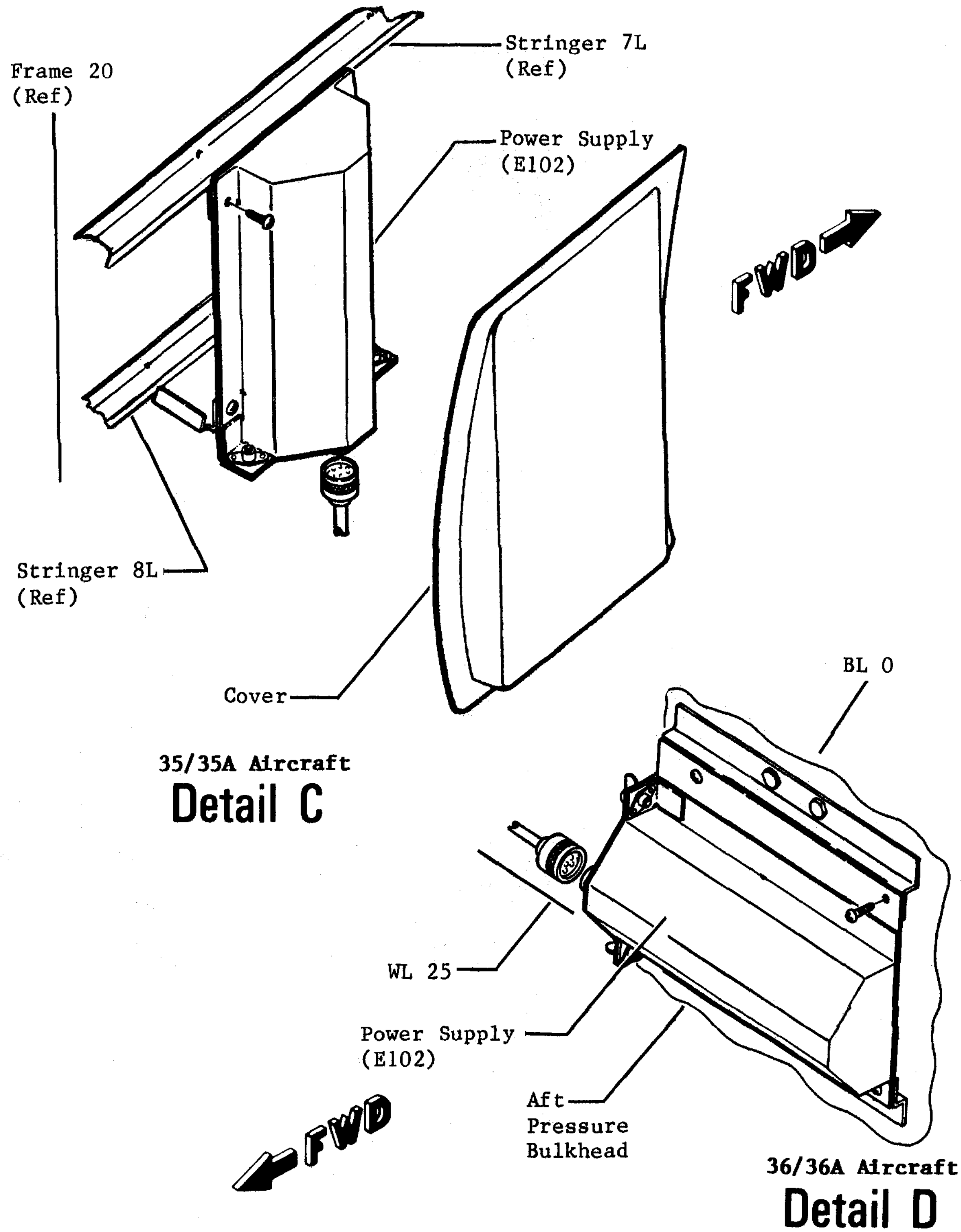
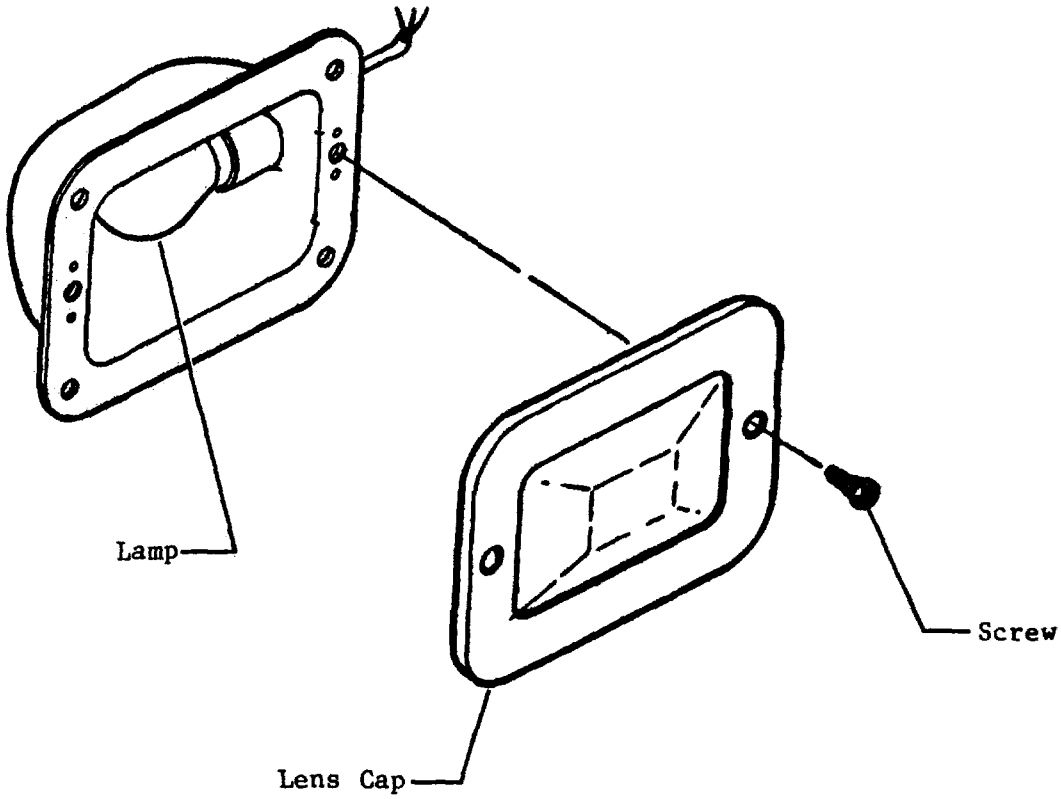


9-279C

Emergency Exit Lighting Installation
Figure 201 (Sheet 2 of 3)



Upper Cabin Door Emergency Exit Light

Detail E

Emergency Exit Lighting Installation
Figure 201 (Sheet 3 of 3)

9-179A-3

EFFECTIVITY: OPTIONAL
MM-99
Disk 924

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Jan 24/86