

# B-747 AIRCRAFT OPERATING MANUAL

## AIRPLANE GENERAL

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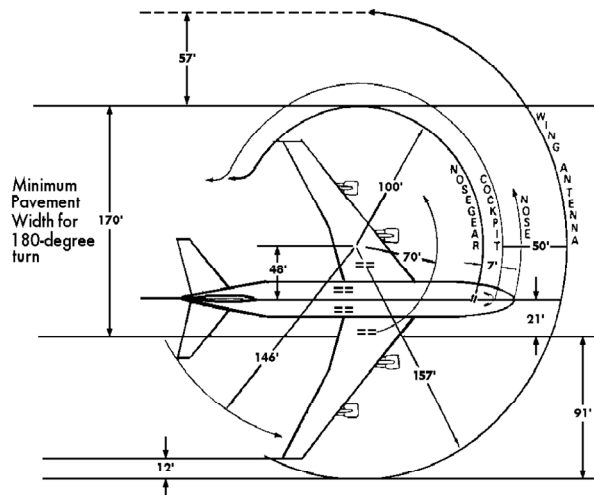
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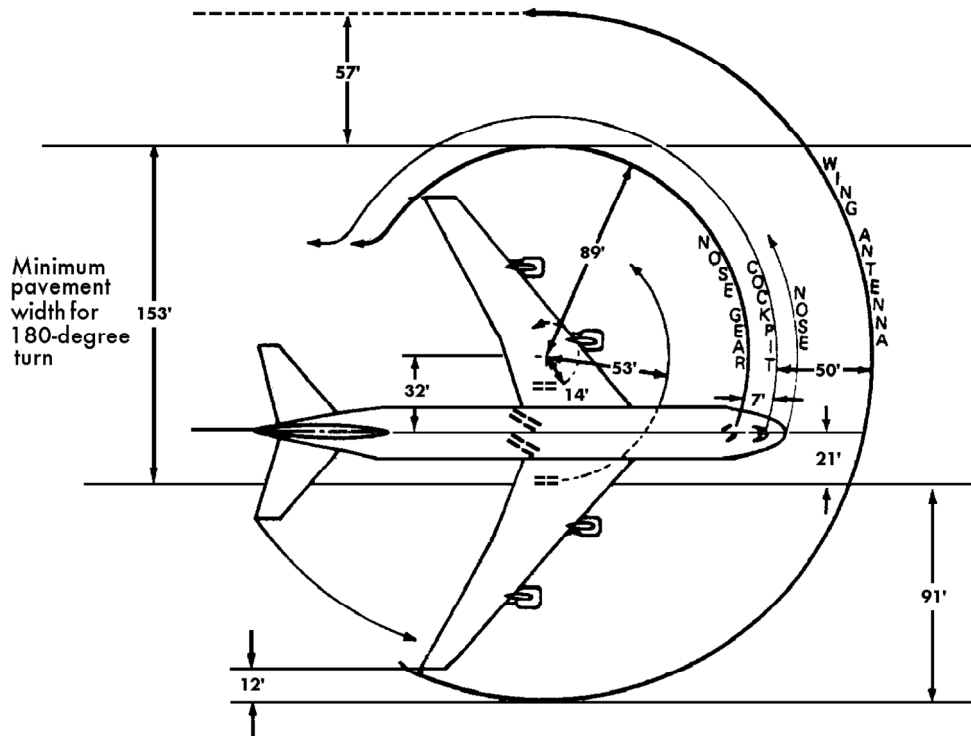
### INTRODUCTION

The dimensions given in this section are for the 747-100 and -200 airplane.

#### GROUND TURNING RADIUS WITHOUT BODY GEAR STEERING



#### GROUND TURNING RADIUS WITH BODY GEAR STEERING

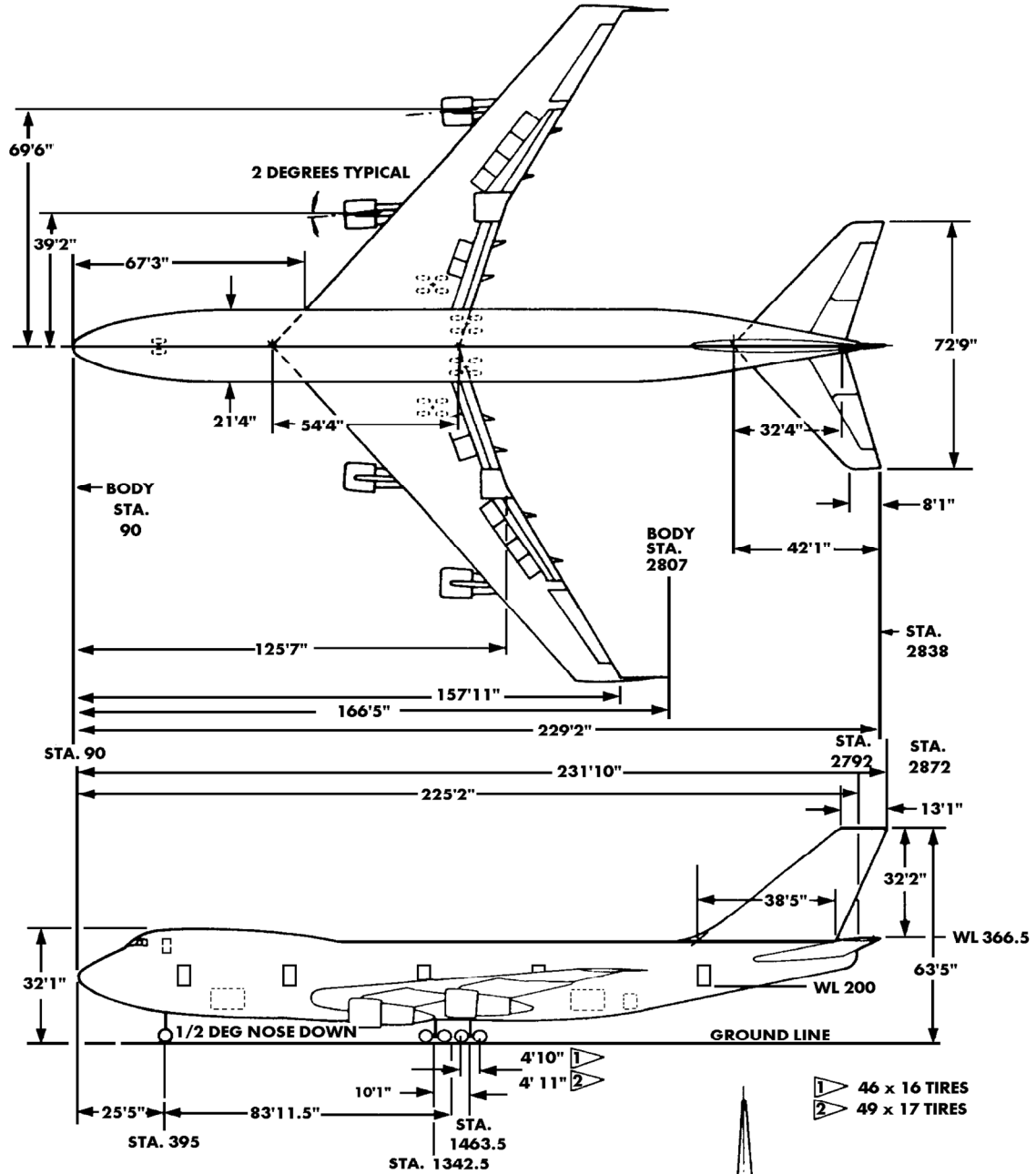


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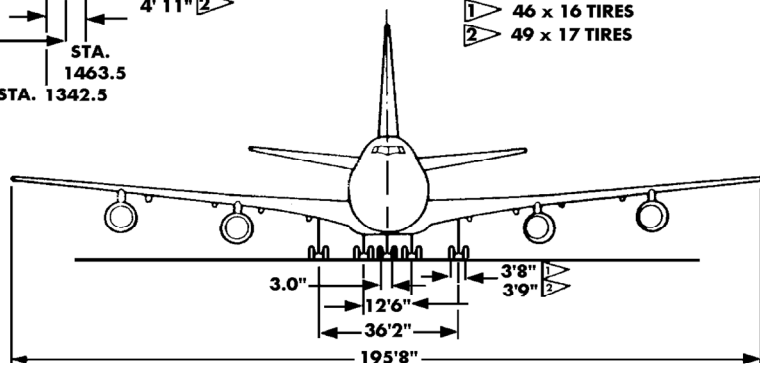
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### DIMENSIONS



**NOTE**  
 Airplane shown at 713,000  
 lb weight and CG at 24%  
 MAC.



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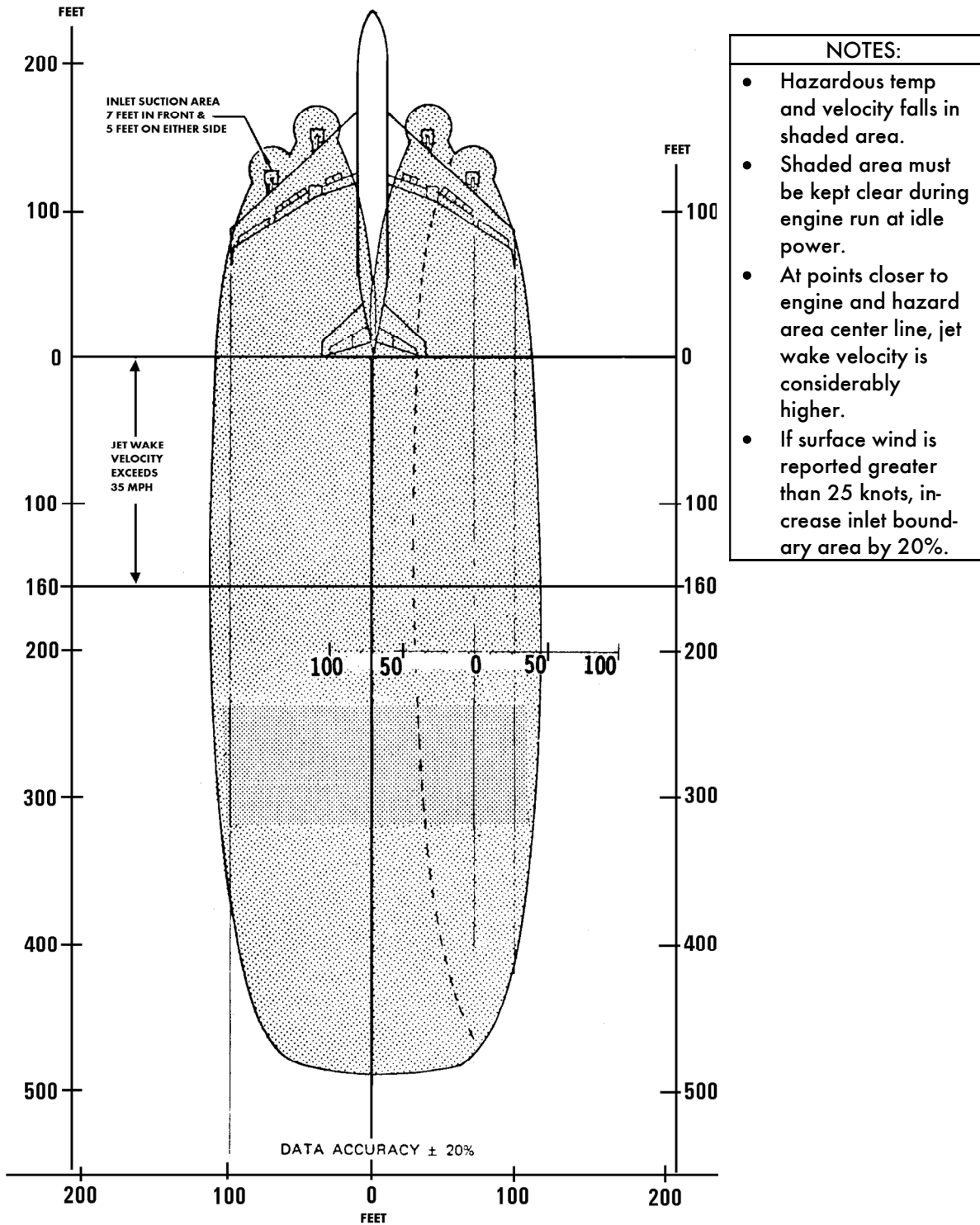
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### HAZARDOUS AREA (IDLE THRUST)

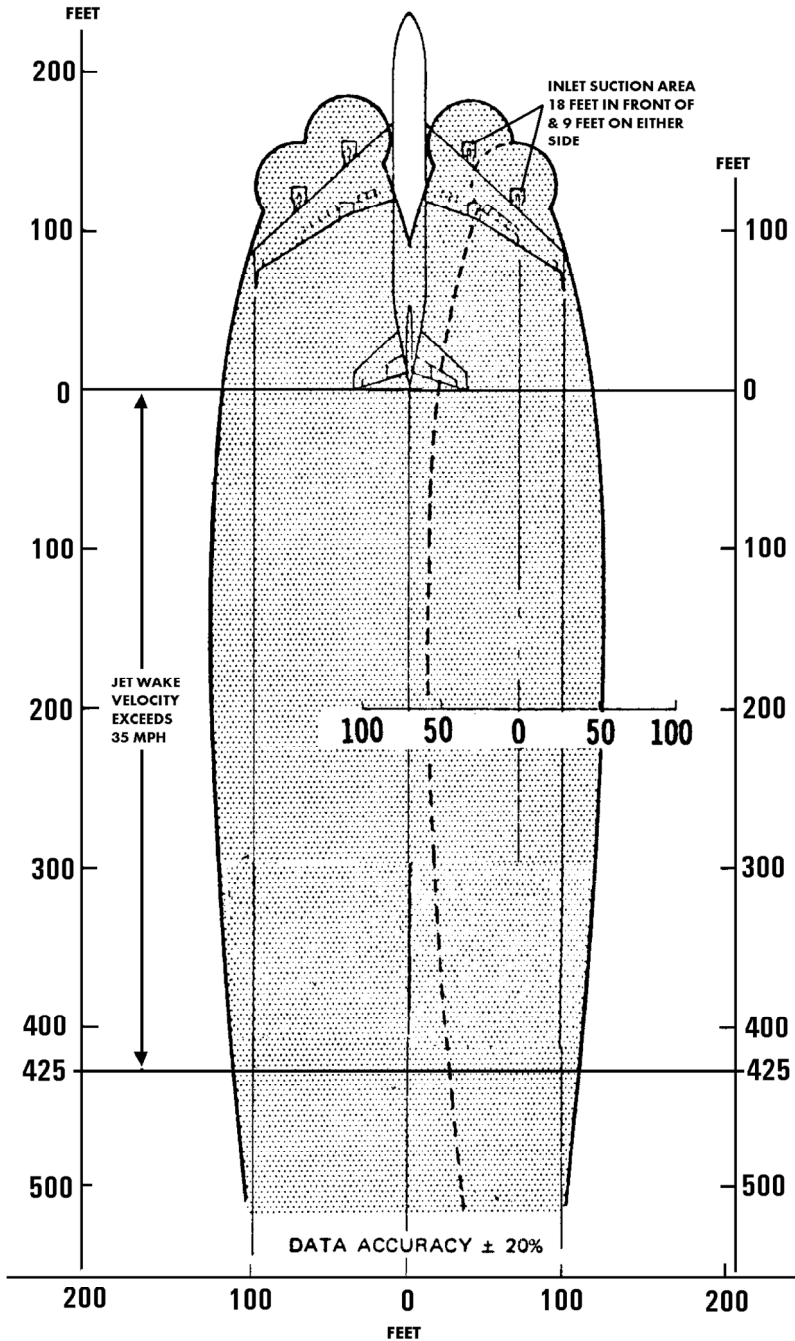


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### HAZARDOUS AREA (BREAKAWAY THRUST)



- | NOTES:   |
|--|
| • Hazardous temperature and velocity falls within shaded area.                                     |
| • Shaded area must be kept clear during engine run at breakaway power.                             |
| • At points closer to engine and hazard area centerline, jet wake velocity is considerably higher. |
| • If surface wind is reported greater than 25 knots, increase inlet boundary area by 20%.          |

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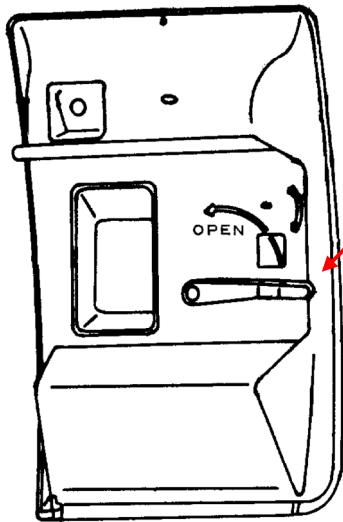
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## ENTRY DOORS

### MAIN ENTRY DOORS

Normal access to the aircraft is via two entry doors on the left side of the airplane at main deck level. The forward door is identified as L1 and the aft door as L5. Both doors are pressure sealed, plug-type doors and are operable from inside or outside the airplane. Under normal conditions, the main entry doors are approximately 16 feet above the ground. In a ditching situation, a height above the water of 3 to 6 feet may be anticipated.

Escape slides are not installed, but escape ropes/tapes are installed in the top portion of the main entry door frame.



#### OPERATING HANDLE

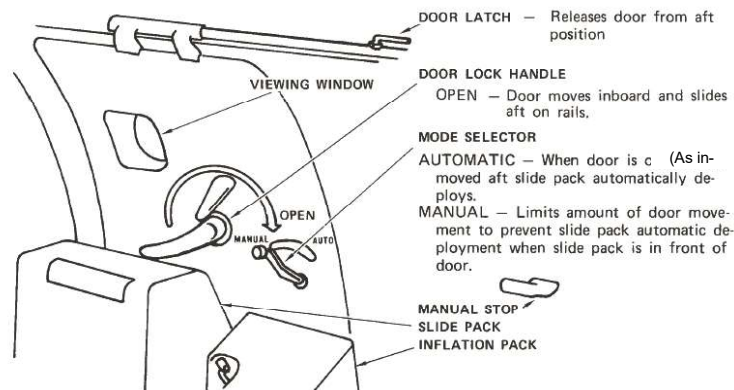
When rotated, operates door between full closed (locked) position and cocked position (30 degrees open). Door must be manually swung to the full open position

### CREW SERVICE DOOR

The crew service door is on the right side of the aircraft on the upper deck level. It is located at the aft end of the cockpit, just forward of the lavatory.

This door is identified as the primary emergency exit. The crew service door is equipped with an escape slide. Some installations include an automatic escape slide.

Certain airplanes are equipped with two upper deck doors, one on either side of the forward upper deck cabin, aft of the cockpit. Both doors are equipped with escape slides and some installations include automatic escape slides. Both doors are considered to be primary emergency exits.



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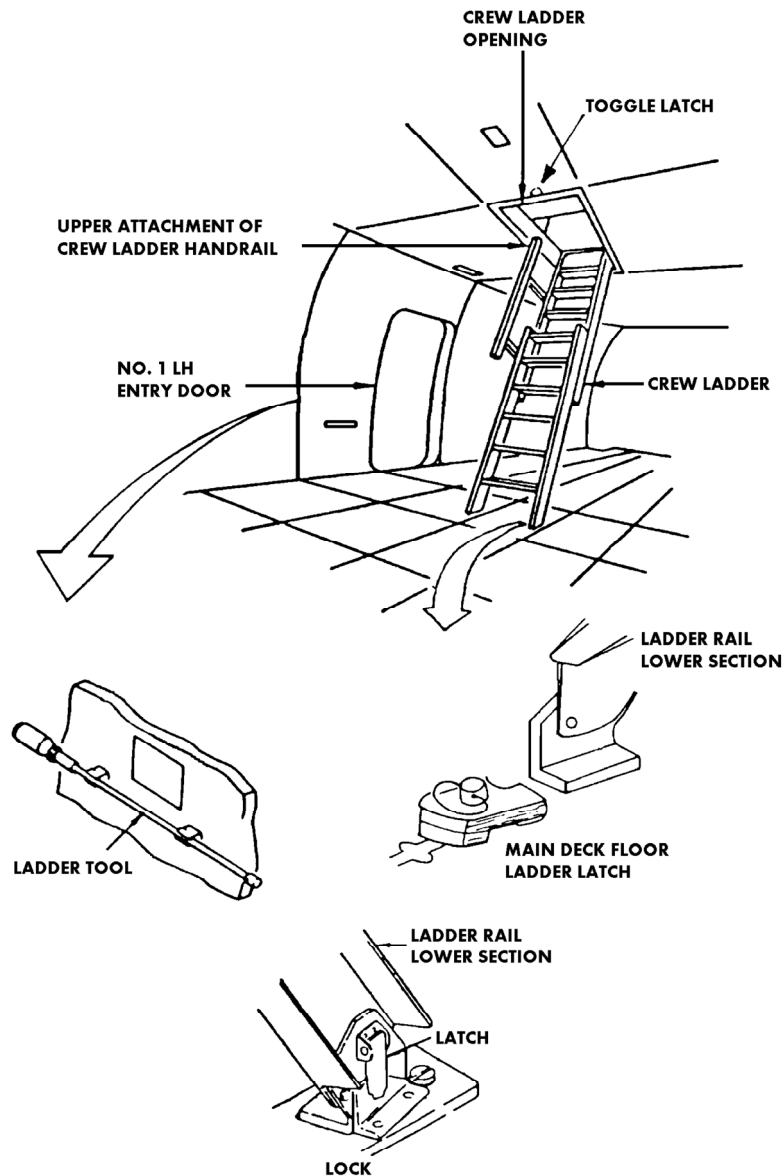
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### LADDER

Access between the upper deck and the main deck is provided by a permanently installed ladder. The ladder is hinged at the top, allowing it to swing upward, which provides clearance for cargo handling,

A latch mounted on the ceiling allows the ladder to be stowed in the raised position. A tool is provided to allow operation of the ceiling latch from the main deck floor. The latch may be operated by hand from the upper deck. When being lowered from the raised position, the ladder must be supported by hand since it will free fall when the latch is released.

Another latch is provided to secure the ladder to the main deck floor. To prevent injury, the floor latch should be engaged whenever the ladder is down.



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### GALLEY

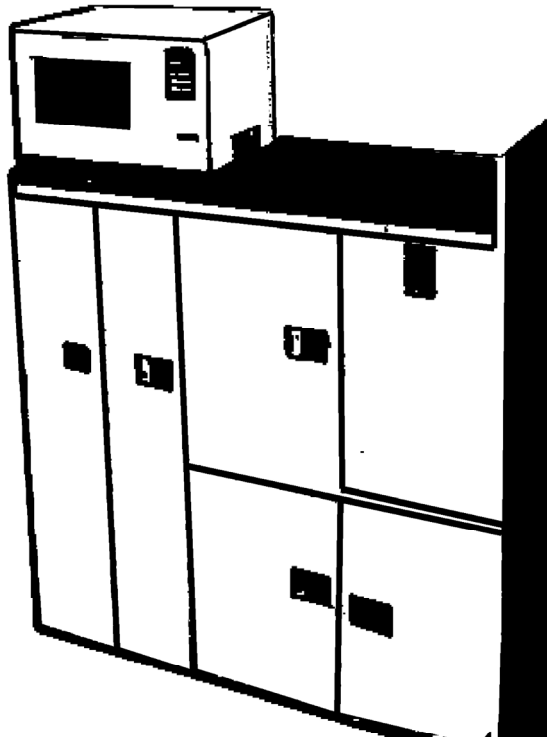
A galley is installed on the upper deck.

Power for galley equipment is obtained from the No. 1 galley power bus. The galley power control switch is located at the galley. A converter supplies 115VAC 60Hz power exclusively for the microwave oven.

#### NOTE:

Some airplanes are not equipped with galley power switches.

Galleys are not uniform and may differ in size and location from aircraft to aircraft.



### MAIN DECK VIEWER

A viewing window, located on the aft upper deck bulkhead, allows visual access to the main deck.

Some aircraft are equipped with a viewing port in the smoke door.

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## CARGO DOORS

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### MAIN DECK SIDE CARGO DOOR

A 120"(H) by 134" side cargo door provides access for main deck cargo handling. The door is located on the left side fuselage, aft of the wing.

The door may be operated from either of two control panels, one inside and one outside of the airplane. Both control panels are located aft of the cargo door at window level.

Neither control panel will operate the door unless the door's lock handle is unlocked.

The side cargo door opens outward and is driven by an electric motor and gearbox.

### MAIN DECK SIDE CARGO DOOR OPERATION

- Door motion can be stopped or reversed at any point by releasing or repositioning the control switch.

#### To open door:

#### NOTE:

To operate the door, the latch handle retainer which covers the interior latch lock handle must be in the released position.

**Power ON Light** .....CHECK ILLUMINATED

The main deck cargo handling bus must be powered to operate the door.

**Interior or Exterior Latch Lock Handle** ..... RELEASE & EXTEND

- If operating from interior, pull latch lock handle release then move interior latch lock handle to the extended position.
- If operating from exterior, press release at top of handle then move exterior latch lock handle to the extended position.
- LATCHES CLOSED light will illuminate.
- SIDE CARGO DOOR light on FE's panel will illuminate if DC BUS #1 power is available.

**Door Control Switch** .....HOLD IN OPEN

- LATCHES CLOSED light will extinguish. DOOR OPEN light will illuminate when door is fully open.

#### To close door:

**Power ON Light** .....CHECK ILLUMINATED

DOOR OPEN light will extinguish when door moves from full up position and LATCHES CLOSED light will illuminate when door is fully closed and latched.

**Interior or Exterior Latch Lock Handle** ..... MOVE TO LOCK

SIDE CARGO DOOR light on FE's panel and LATCHES CLOSED light will extinguish.

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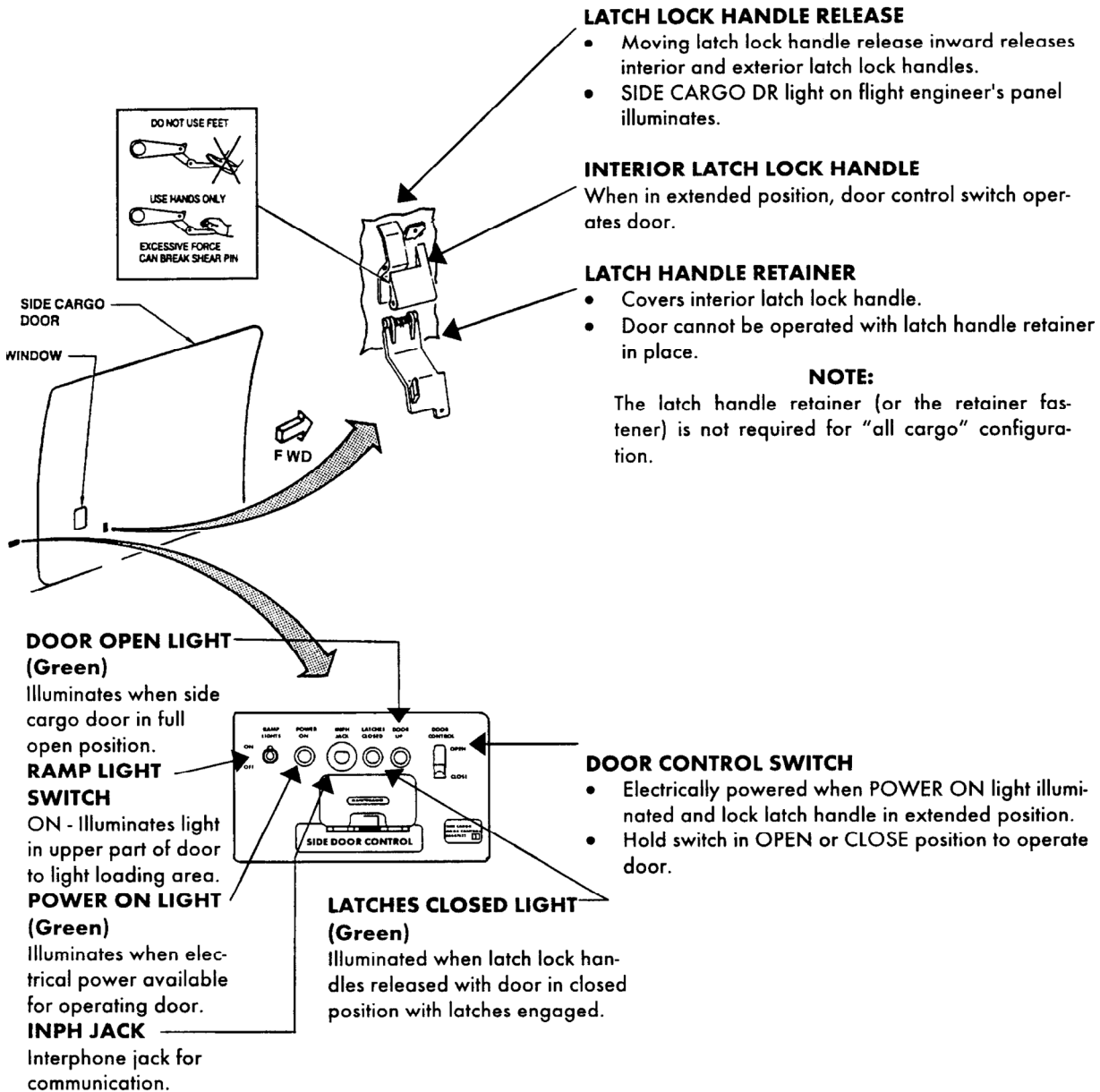
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## INTERIOR CONTROLS - MAIN DECK SIDE CARGO DOOR



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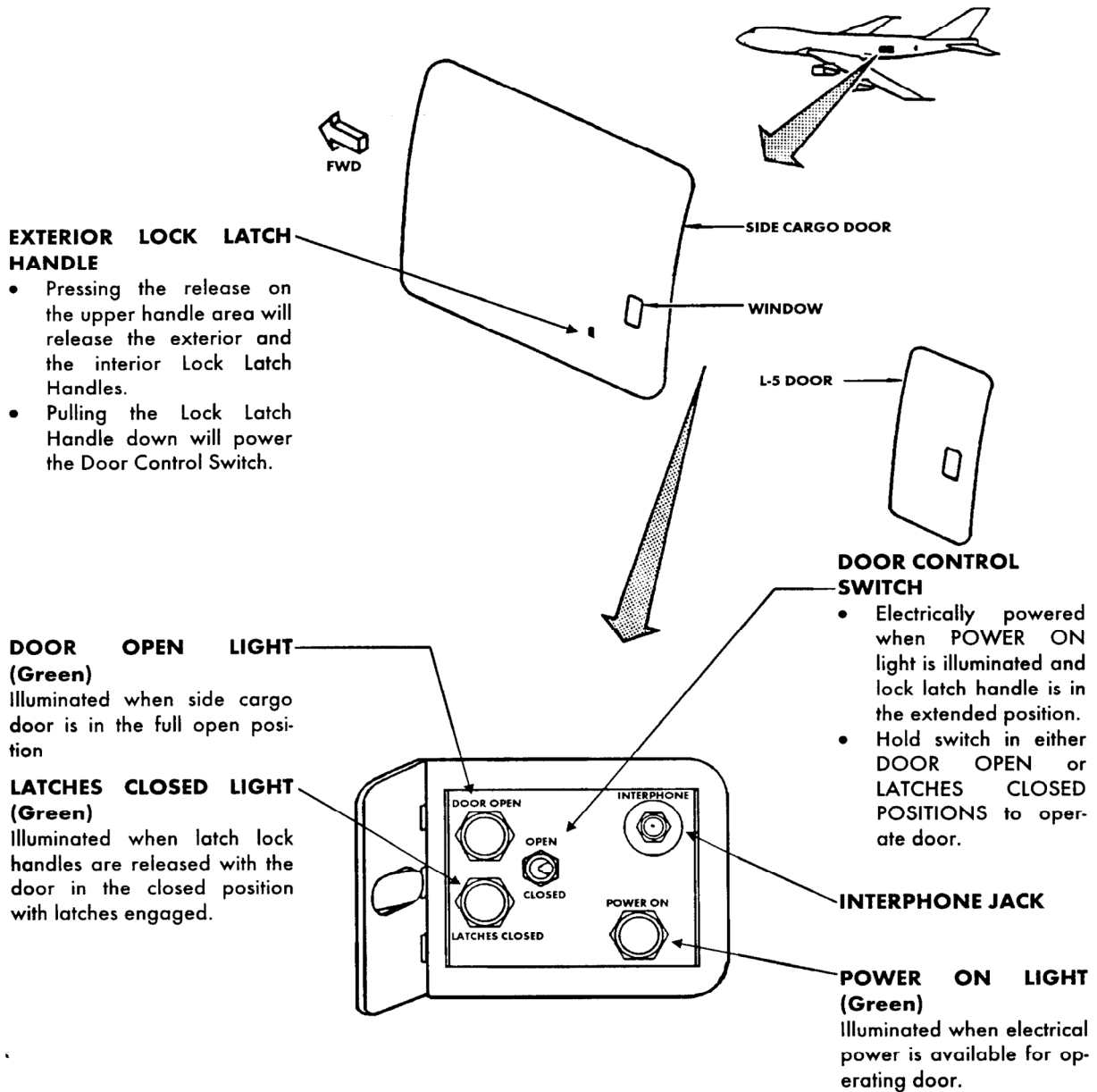
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## EXTERIOR CONTROLS – MAIN DECK SIDE CARGO DOOR



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### NOSE CARGO DOOR

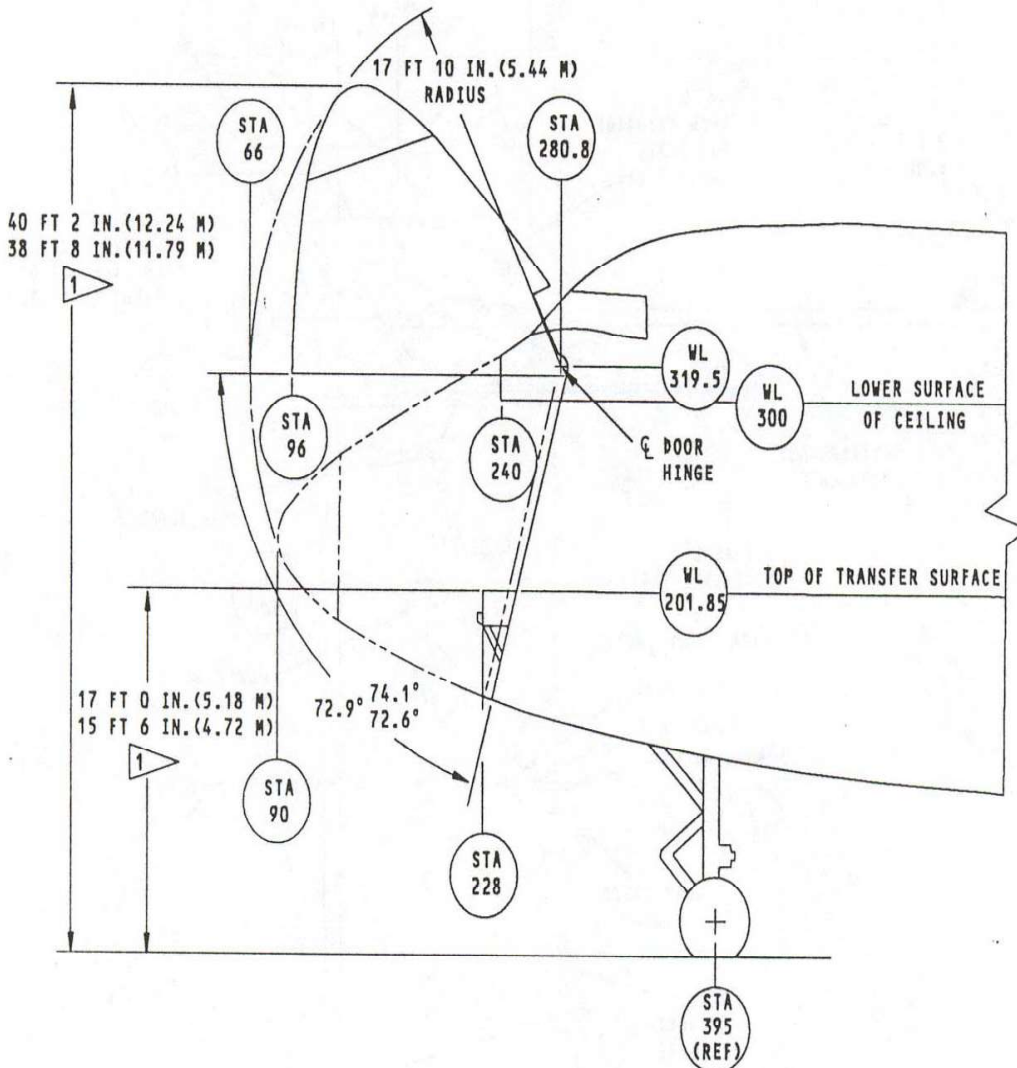
#### NOSE CARGO DOOR DESCRIPTION

##### NOTE:

The nose door will normally only be operated by loadmaster/maintenance personnel. Flight crews may only operate the nose door after coordination with MX Control.

The nose cargo door is top-hinged just forward of the pilots' windshield and opens forward and upward through an arc of 73 degrees, exposing a clear opening 98 inches high by 104 inches wide. Because of the ceiling height under the upper deck area, the maximum height for cargo loaded through the nose is 96". The airplane may be towed or taxied with the nose door open to interface with cargo loading facilities, if desired.

The door actuation system is designed to operate during horizontal wind loads up to 40 knots and can withstand loads up to 65 knots with the door in any static position.



**Nose Cargo Door Dimensions and Layout**

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### OPERATION

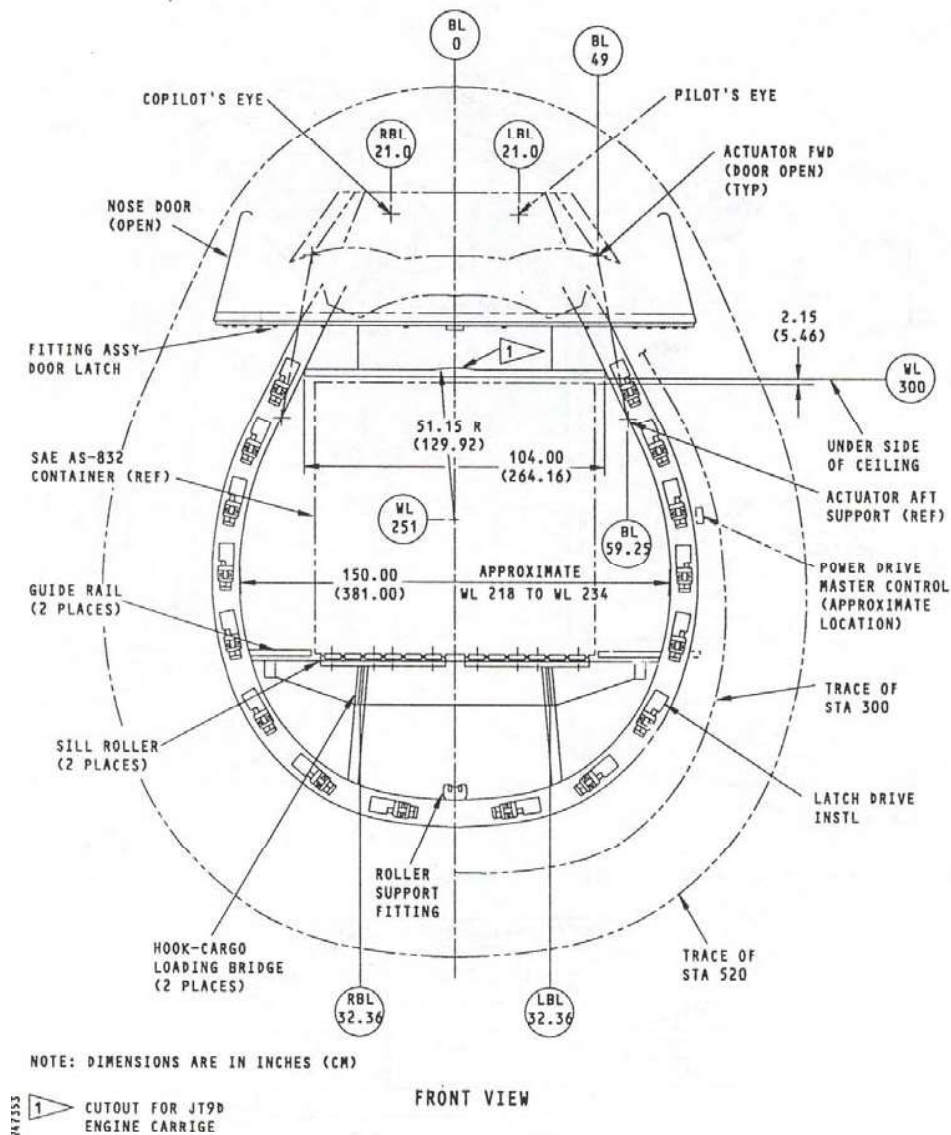
The door is opened by a single electric drive unit through two linear flexible drive shafts. Power is only available while on the ground with the #2 APU generator operating, but not connected to the airplane buses, or with #2 External power plugged in, but not connected to the airplane buses.

A full opening or closing cycle takes approximately two minutes.

Manual operation of the door may be accomplished with standard hand tools and two special drive extensions.

### LOCKING

16 mechanical latches manually secure the door closed. One of two types of nose door locking systems, an Electrical locking system or Mechanical locking system, will be found on airplanes with a nose cargo door.



**Nose Door Lock Locations**

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### **MECHANICAL LOCKING SYSTEM**

The Mechanical system uses 16 mechanical latches manually secure the door closed. After the door is closed, a Nose Door Safety Lock handle at the loadmaster's station operates a cable system that mechanically locks each of the 16 latches.

### **CONTROLS AND INDICATORS**

Controls for the door are located at the loadmaster's station and on the nose gear interphone box (P-37). The door may be opened from either position, although it can only be unlocked from inside the airplane.

The interior and exterior (nose gear) control panels consists of the following controls and indicators:

- **ARM/DISARM switch.**  
With both the interior and exterior switches in ARM, power is available to the OPEN/CLOSE switch. With either the interior or exterior switch in the DISARM position, power is removed from the OPEN/CLOSE switch.
- **SYSTEM DISARMED light (amber).**  
This light illuminates when either the interior or exterior ARM/DISARM switches are in the DISARM position.
- **OPEN/CLOSE switch.**  
Opens or closes the nose cargo door if both ARM/DISARM switches are in the ARM position.
- **LATCHES CLOSED light (green).**  
Latches are closed.
- **LATCHES UNLOCKED light (amber).**  
Latches are unlocked. This is a function of the Nose Door Safety Lock handle. Also illuminates an amber NOSE DR light on the FE panel and the Pilot's glareshield.

The following additional items are only installed on the interior control panel.

- **DOOR UP light (green).**  
Indicates the door is fully open.
- **LAMP TEST switch.**  
Tests operation of panel indicating lights.

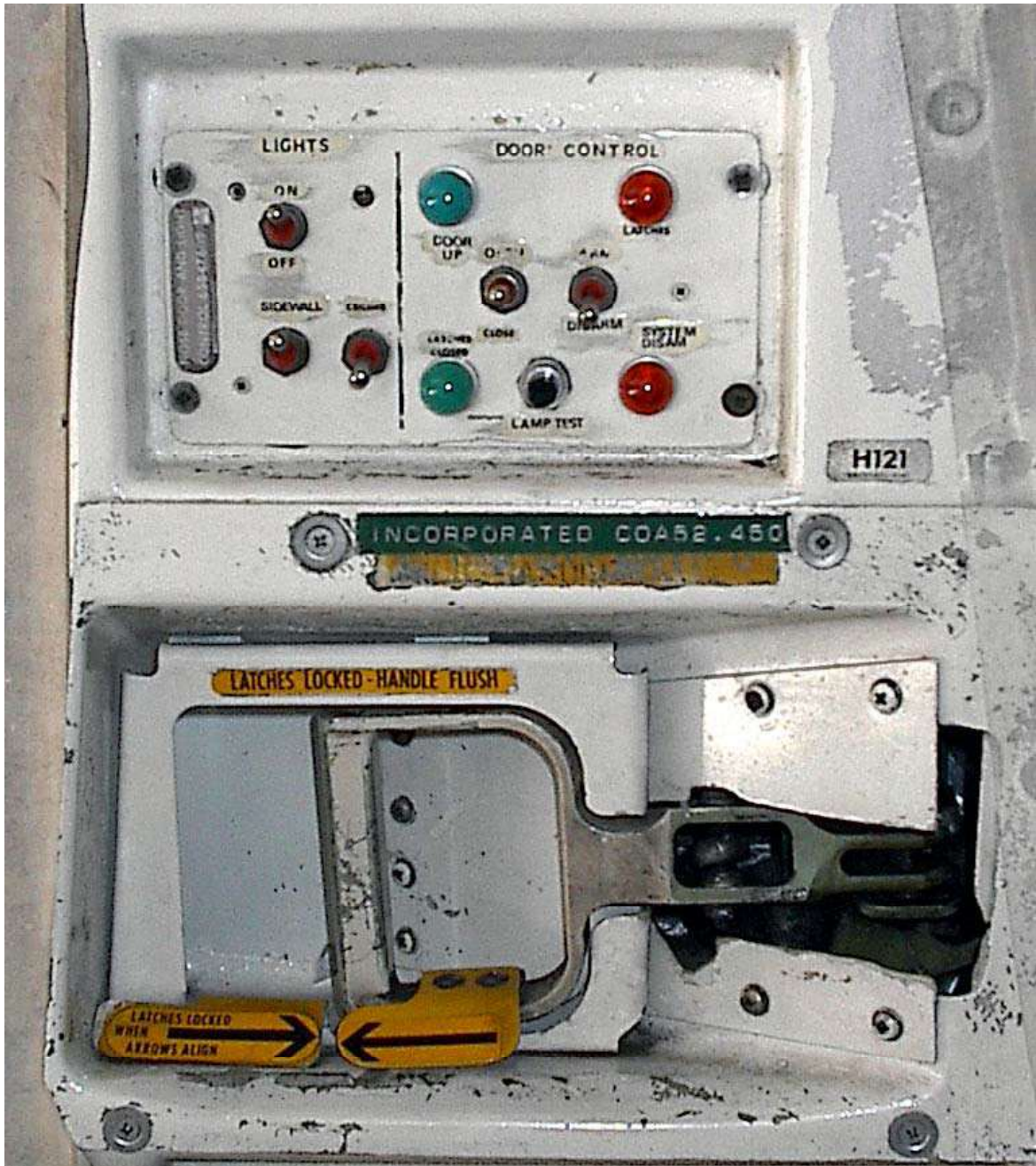
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**Nose Cargo Door Controls and Indicators - Manual Locking System**

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## **ELECTRICAL LOCKING SYSTEM**

The Electrical system uses 16 electrically powered linear latch actuators manually secure the door closed. Once the door is closed, a sequencing switch supplies power the latch actuators. The latch actuators may be operated manually with hand tools.

### **Nose Cargo Door Latch Annunciator**

The Nose Cargo Door Latch Annunciator consists of two individual indicator lights for each of the 16 latches. Each light has a press-to-test function.

- LATCHED light (green)  
Indicated door latch is latched.
- NOT LCHD (amber)  
Indicated door latch is not latched.

### **Cockpit Annunciators**

A single amber NOSE DR light (repeater) is located on the forward glare shield. The light will illuminate if any latch is not latched.

Located on the FE panel, is a module consisting of three NOSE DR lights and a TEST switch.

- (3) NOSE DR lights (amber) - Each light monitors the status of certain latches (see attached diagram). These will illuminate when any of monitored latch is not latched.
- TEST switch - Tests nose door light circuitry. All three lights plus the glareshield light will illuminate when pressed.

### **Latch Actuator Test Panel**

A Latch Actuator Test panel, for maintenance use only, is located on the right side of the Nose Cargo door opening.

## **CONTROLS AND INDICATORS**

Controls for the door are located at the loadmaster's station only.

### **Nose Cargo Door Control Panel**

The Nose Cargo Door control panel consists of the following controls and indicators:

- SYSTEM POWER switch (momentary).  
ON - arms the DOOR CONTROL switch. When released, power is removed from the DOOR CONTROL switch.  
OFF - Removes power to the door control indicator lights.
- POWER ON light (white).  
This light illuminates when the SYSTEM POWER switch is positioned to ON.
- DOOR CONTROL switch (momentary).  
Opens or closes the nose cargo door if the SYSTEM POWER switch is held ON.
- FULL OPEN light (blue)  
Illuminates when the door is fully open.
- FULL CLOSED light (green).  
Illuminates when the door is fully closed.
- LAMP TEST switch.  
Tests operation of panel indicating lights.



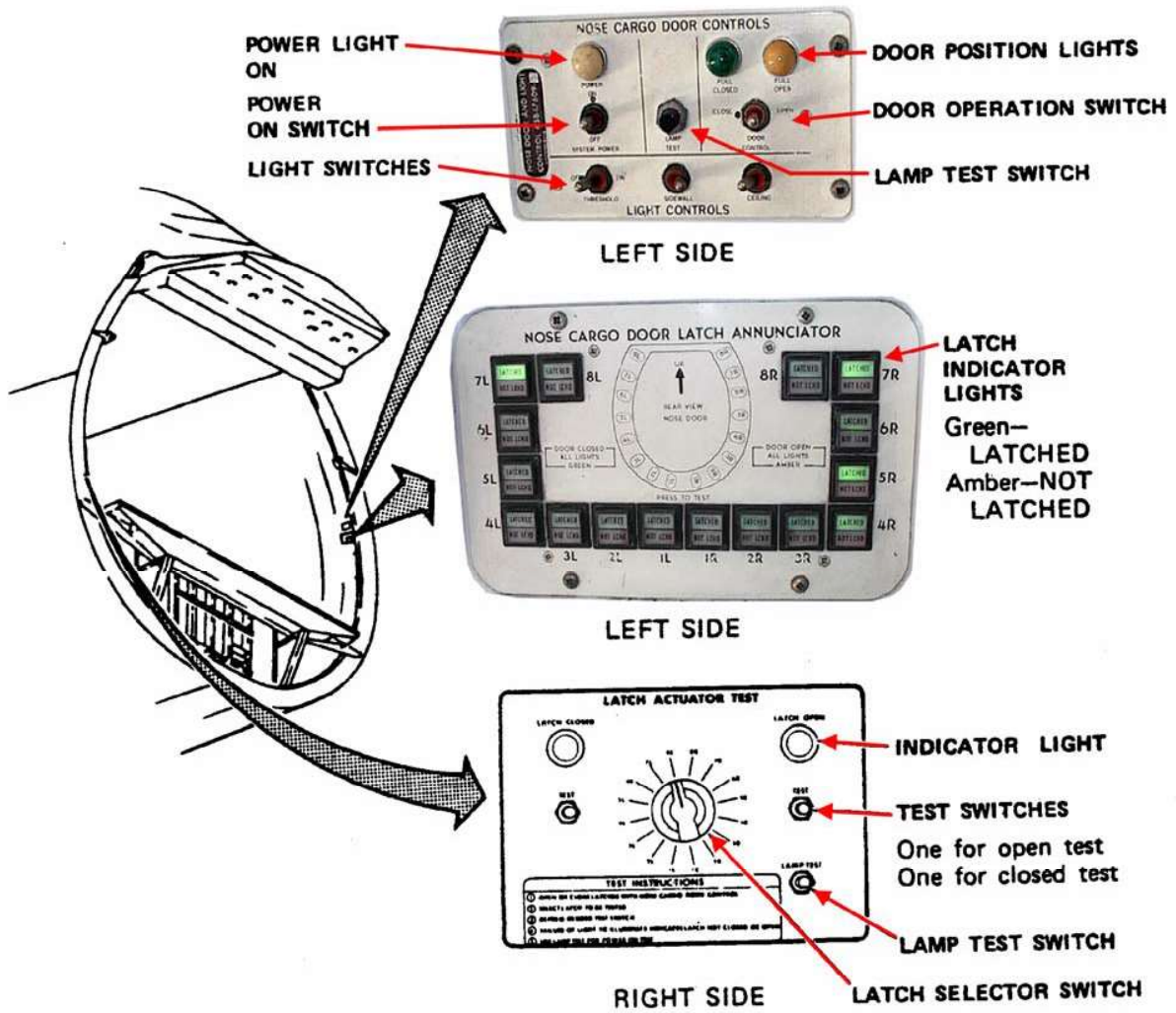
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PILOTS' LIGHT SHIELD PANEL

NOSE DR

NOSE DR LIGHT (Amber)

ILLUMINATED – Repeater light indicating one or more of the NOSE DR lights at the Flight Engineer's is illuminated.



FLIGHT ENGINEER'S PANEL

NOSE DR LIGHTS

- A—Monitors latches 8L, 5L, 2L, 2R, 5R, 8R
- B—Monitors latches 7L, 4L, 1L, 3R, 6R
- C—Monitor latches 6L, 3L, 1R, 4R, 7R

NOSE DOOR LIGHT TEST SWITCH

When pressed the circuitry of the NOSE DR lights is checked and all (4) NOSE DR lights should illuminate.

### Nose Cargo Door Controls and Indicators - Electrical Locking System

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## POWER DRIVE UNIT (PDU)

### INTRODUCTION

The Power Drive Units (PDUs) are electrically operated wheels that aid in the loading operation of the airplane. They are positioned throughout the main cargo compartment. There are eight steerable PDUs, installed near the side cargo door, and thirty non-steerable PDUs distributed throughout the remainder of the main deck.

#### NOTE:

Power is only available to the cargo handling bus when either the No. 2 APU generator is operating with the field closed and the generator breaker tripped, or with usable external power connected to the No. 2 receptacle with the No. 2 external power switch to OFF.

The PDUs receive 115 volts, 3 phase power from the P15 right main power center cargo handling bus. They are controlled by switches on the Master Control Panel, Main Drive Panel, Aft Local Drive Control, and 20 Foot Control Panels. These panels are located along the side wall of the main cargo compartment.

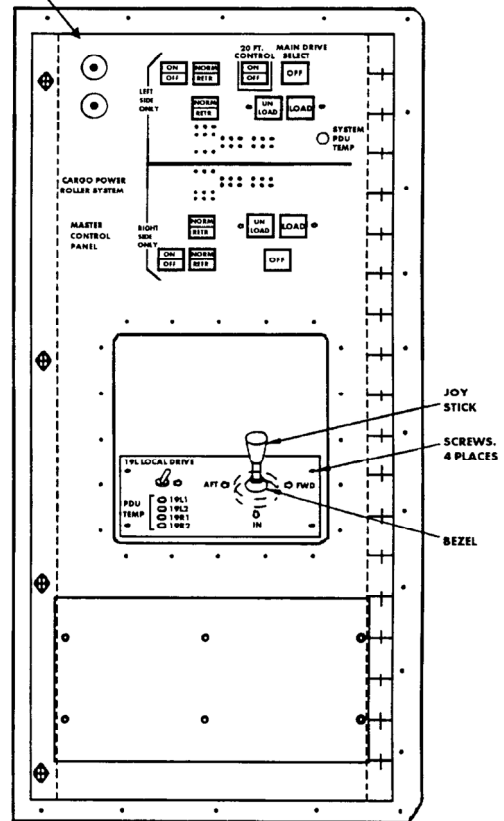
#### NOTE:

If a PDU does not drive, pulling the circuit breaker for the particular wheel releases the brake to permit free wheeling.

#### WARNING:

**For emergency stop, press the Main Power/Emergency Stop push-button on the master control panel to "OFF".**

**EMERGENCY STOP (RED) PUSH-BUTTON**  
Push for emergency stop.



### MASTER CONTROL PANEL

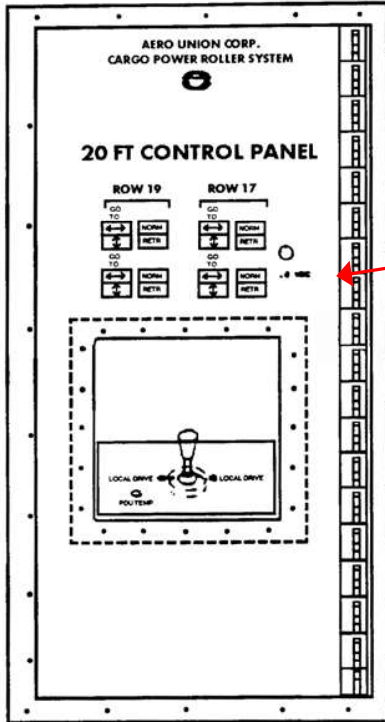
Operates all PDUs except those in the aft cargo area while in MAIN DRIVE mode. Steers wheels in row 19.

In LOCAL mode, PDUs forward of the side cargo door are driven by a LOCAL DRIVE control, after MAIN DRIVE is armed.

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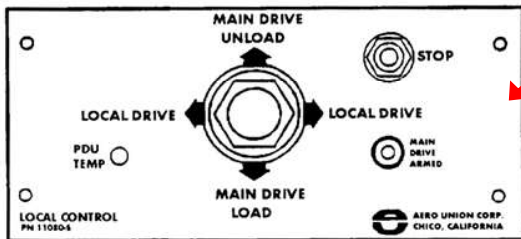
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### 20 FOOT CONTROL PANEL

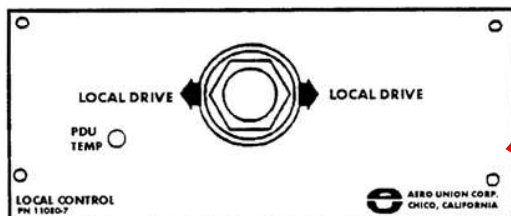
Located aft of the MASTER CONTROL panel.

- Steers and controls the PDUs in rows 17 and 18 to handle bulky or oversized cargo.



### LOCAL DRIVE CONTROL

- Controls its particular PDU and the adjacent PDU in the direction of the unit's motion (load or unload).



### AFT LOCAL DRIVE CONTROL

- Controls its particular PDU aft of the side cargo door.

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## MAIN CABIN WINDOWS

### INTRODUCTION

Windows are installed in the upper deck cabin and main entry doors. Some airplanes have a single window installed in the forward position on both sides of the main deck cabin.

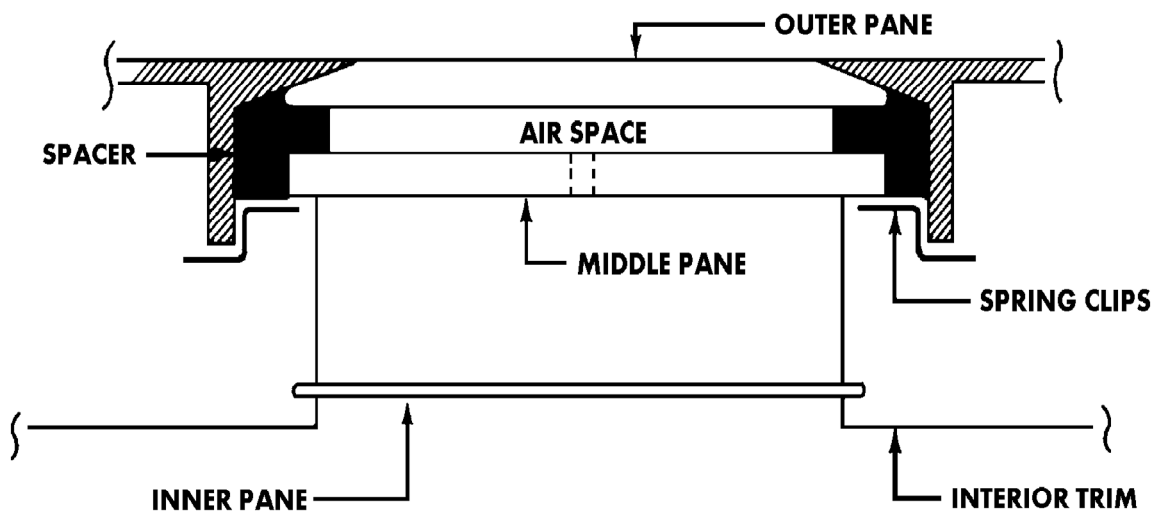
Cabin windows consist of an outer, middle and inner pane. The inner pane is nonstructural and mounted in the cabin sidewall lining. The outer and middle panes are structural and designed so that either pane can safely carry the full maximum pressure differential.

A breather hole in the middle pane permits airflow between the middle and outer pane to prevent fogging.

The windows are of the plug-type, held in place by spring clips.

### DAMAGED PANES

If either the middle or outer pane is cracked or damaged, the remaining undamaged pane can safely carry the full maximum pressure differential.



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### EXTERIOR LIGHTING

#### INTRODUCTION

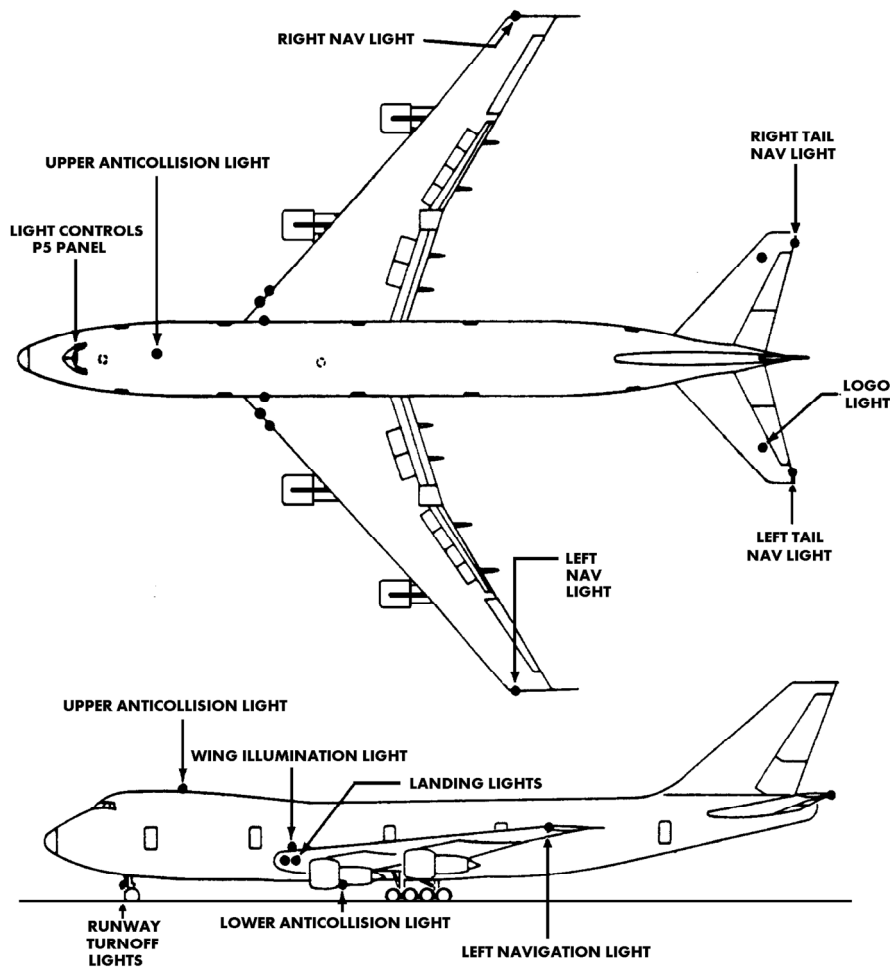
The airplane exterior lights consist of two wing illumination lights, four landing lights, two runway turnoff lights, two anti-collision lights, and navigation lights. Some airplanes are equipped with logo lights and/or white anti-collision strobe lights on the wingtips and tail.

The 115V AC ground service bus, 115V AC buses 1 and 3, and the 28V AC ground service bus supply power to the airplane exterior lights. All control switches for the exterior lights are located on the pilots' overhead panel.

#### NAVIGATION AND BEACON ANTI-COLLISION LIGHTS

The navigation lights provide a visual indication of airplane position, direction, and attitude. One light is located on each wing tip (red left, and green right). Some airplanes are equipped with dual navigation lights on the wing tips. Two white tail lights are installed, one on each trailing edge of the stabilizer, or two lights mounted on the tail cone.

Two rotating beacon (anti-collision) lights, one on the top and one on the bottom of the fuselage, provide visual position information.



EXTERIOR LIGHT LOCATIONS

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### LANDING AND RUNWAY TURNOFF LIGHTS

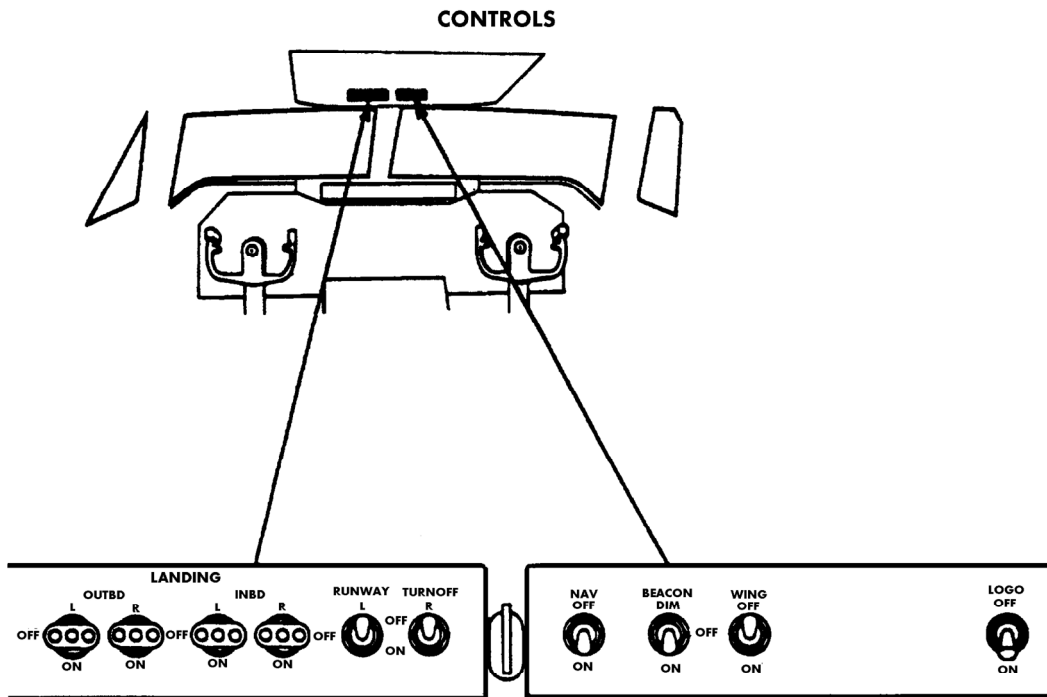
The landing lights illuminate the runway during landing and takeoff; the runway turnoff lights illuminate the edge of the runway during taxiing. If left on for takeoff, the runway turnoff lights extinguish when the airplane leaves the ground.

### WING ILLUMINATION LIGHTS

A wing illumination light located on either side of the fuselage provides illumination for the leading edge area of the wing and the engine nacelles.

### LOGO LIGHTS

The logo lights illuminate the sides of the vertical stabilizer.



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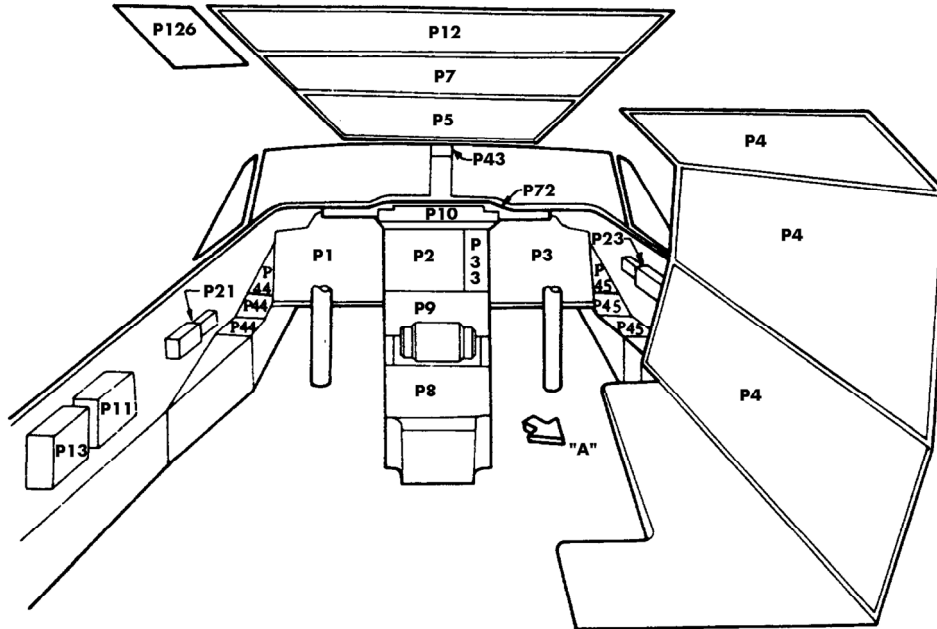
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## P PANEL LOCATIONS



Panel No.	Panel Name
P1	CAPTAIN'S INSTRUMENT
P2	PILOTS' CENTER INSTRUMENT
P3	COPILOTS' INSTRUMENT
P4	FLIGHT ENGINEER'S INSTRUMENT
P5	PILOTS' OVERHEAD
P6	MAIN POWER CIRCUIT BREAKER
P7	ELECTRIC CIRCUIT BREAKER
P8	ELECTRONIC CONTROL - AFT
P9	ELECTRONIC CONTROL - FWD
P10	PILOTS' AUTOMATIC FLIGHT CONTROL
P11	FIRST OBSERVER'S
P12	ELECTRIC CIRCUIT BREAKER
P13	SECOND OBSERVER'S
P21	CAPTAIN'S AUXILIARY - AFT
P23	COPILOT'S AUXILIARY - AFT
P33	LANDING GEAR CONTROL
P43	STANDBY COMPASS
P44	CAPTAIN'S AUXILIARY - LOWER
P45	COPILOT'S AUXILIARY - LOWER
P52	FLIGHT DECK EQUIPMENT - RIGHT
P72	MAIN INSTRUMENT
P126	ELECTRIC CIRCUIT BREAKER
	PILOTS' CONTROL STAND

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## CAPTAIN'S INSTRUMENT PANEL (P1)



## COPILOTS' INSTRUMENT PANEL (P3)



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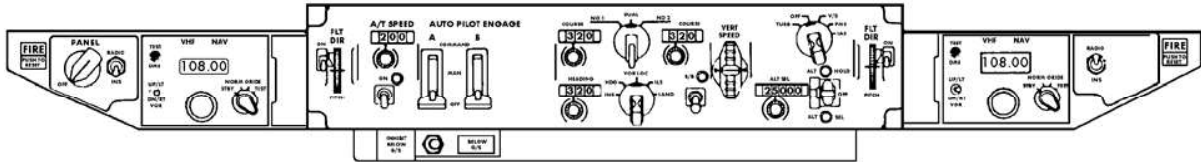
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### PILOTS' AUTOMATIC FLIGHT CONTROL PANEL (P10)



### PILOTS' CENTER INSTRUMENT PANEL (P2)



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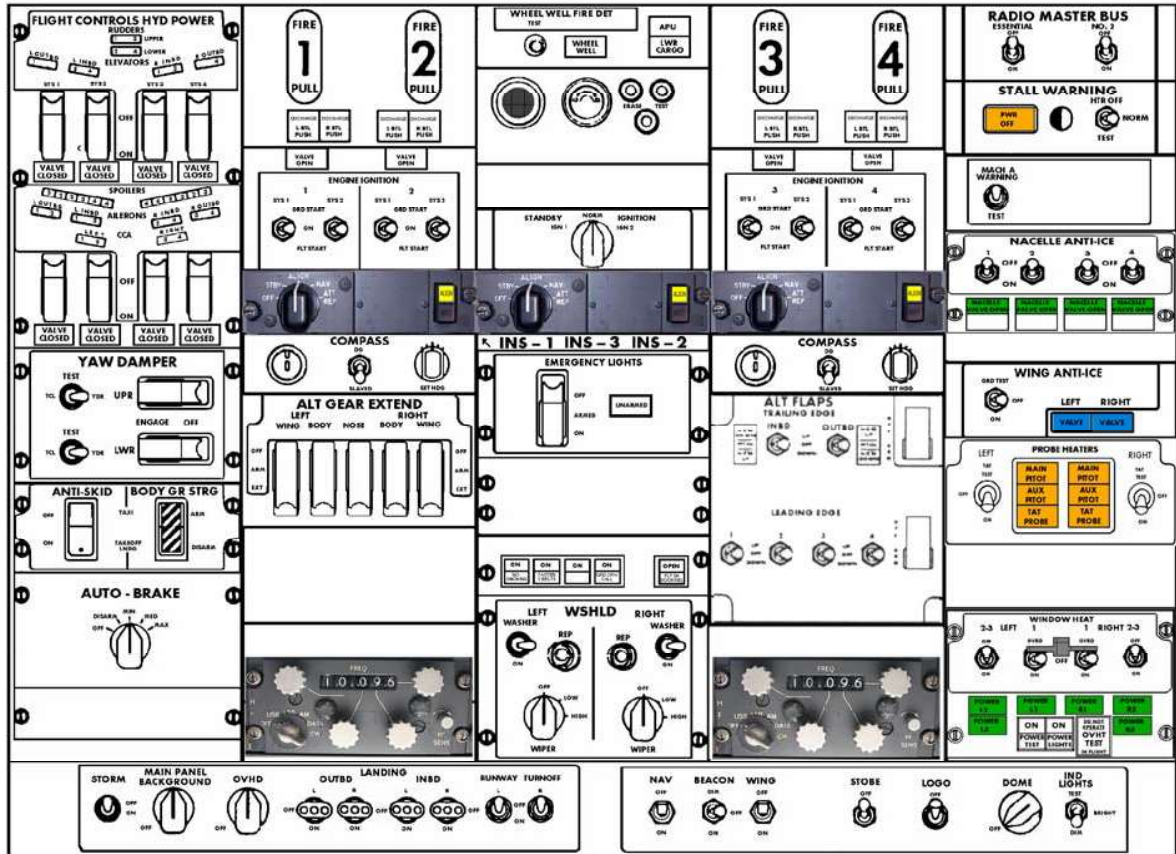
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### PILOT'S OVERHEAD PANEL (P5)



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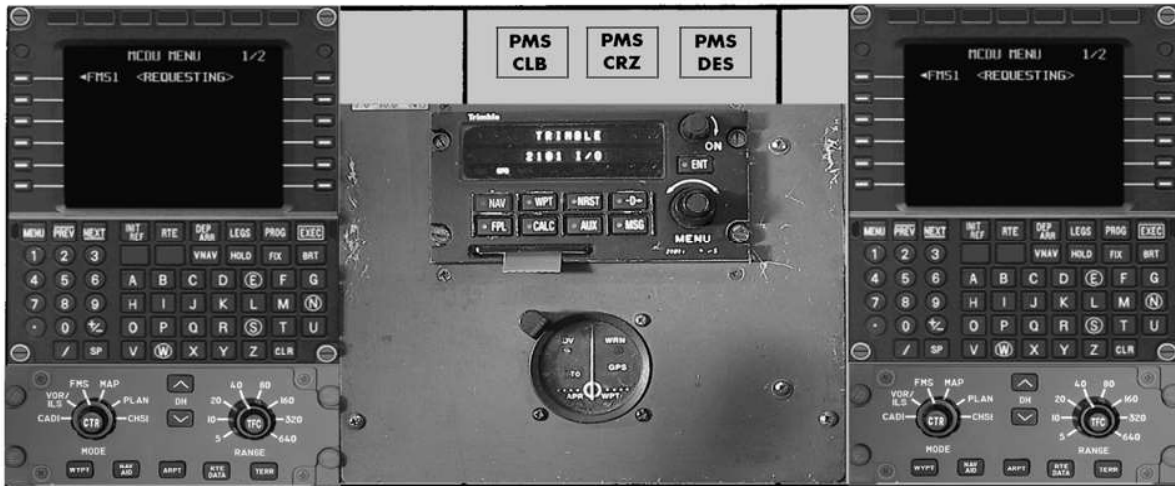
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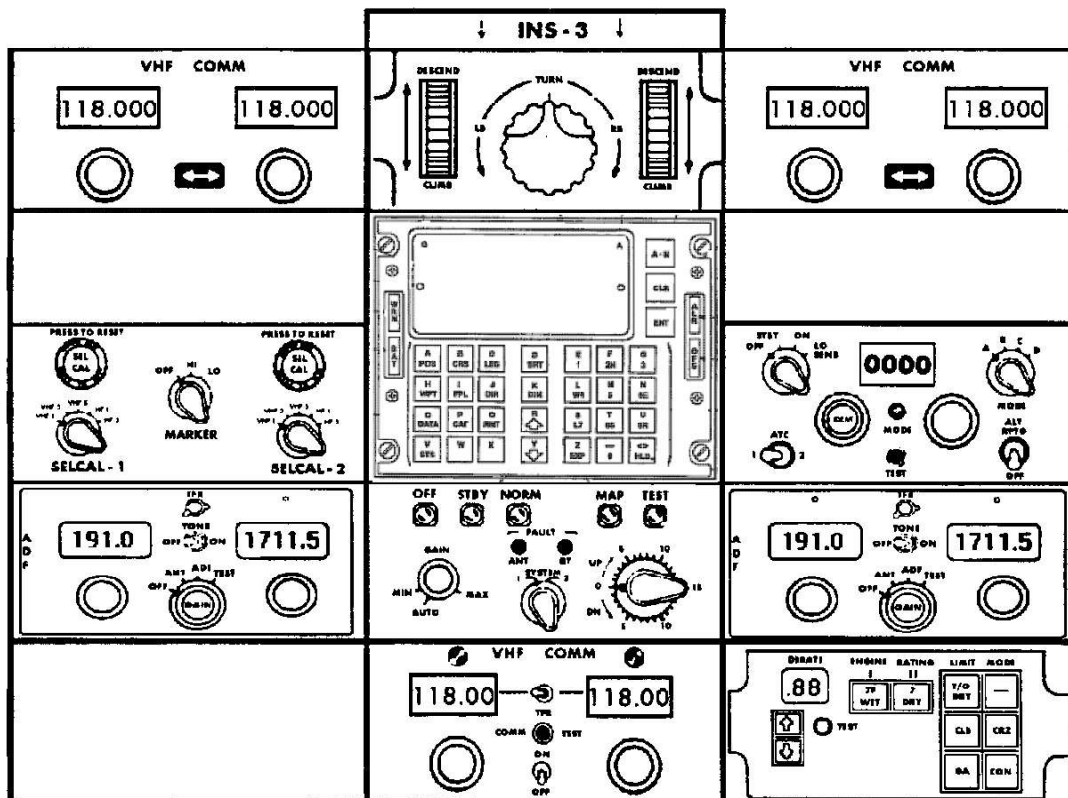
REV: 8

DATE: 08-31-07

### ELECTRONIC CONTROL PANEL - FORWARD (P9)



### ELECTRONIC CONTROL PANEL - AFT (P8)



# B-747 AIRCRAFT OPERATING MANUAL

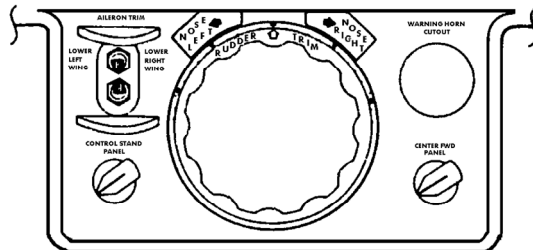
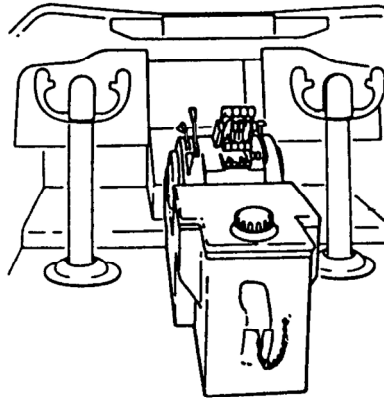
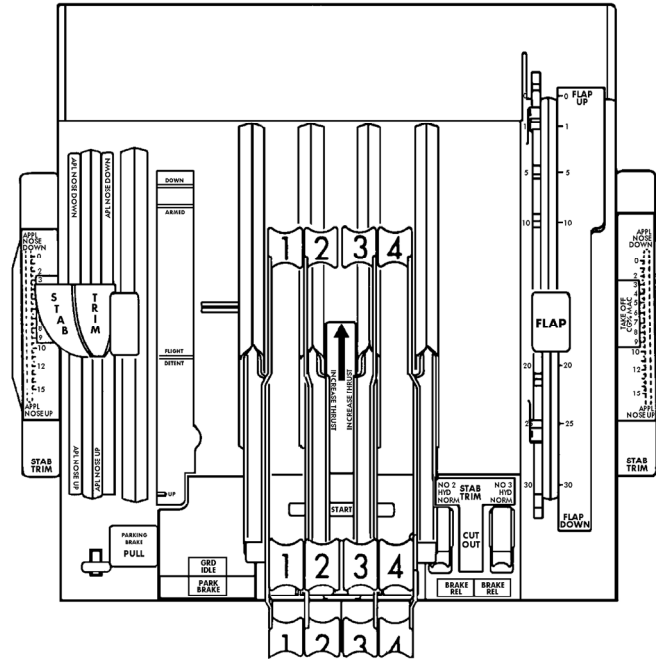
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## AIRPLANE GENERAL

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### PILOT'S CONTROL STAND



# B-747 AIRCRAFT OPERATING MANUAL

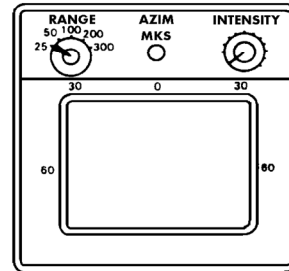
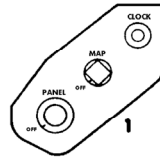
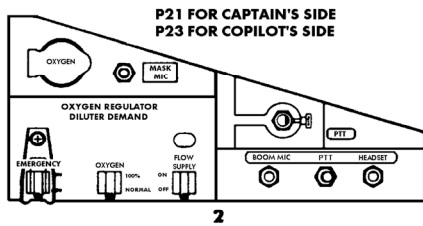
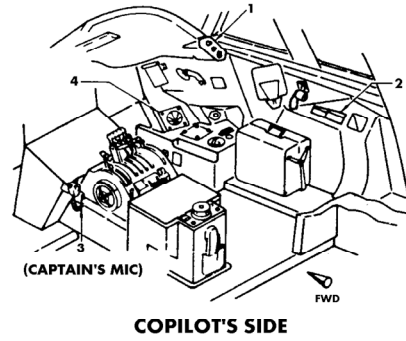
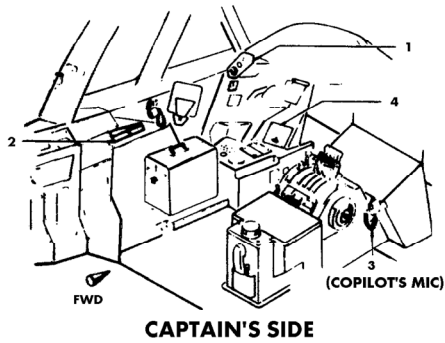
## AIRPLANE GENERAL

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### CAPTAIN'S AND COPILOTS' AUXILIARY PANELS



P44 FOR  
CAPTAIN'S SIDE

P45 FOR  
COPILOT'S SIDE

PANELS 1 AND 2 ARE SHOWN FOR CAPTAIN'S  
SIDE ONLY. COPILOT'S ARE OPPOSITE.

# B-747 AIRCRAFT OPERATING MANUAL

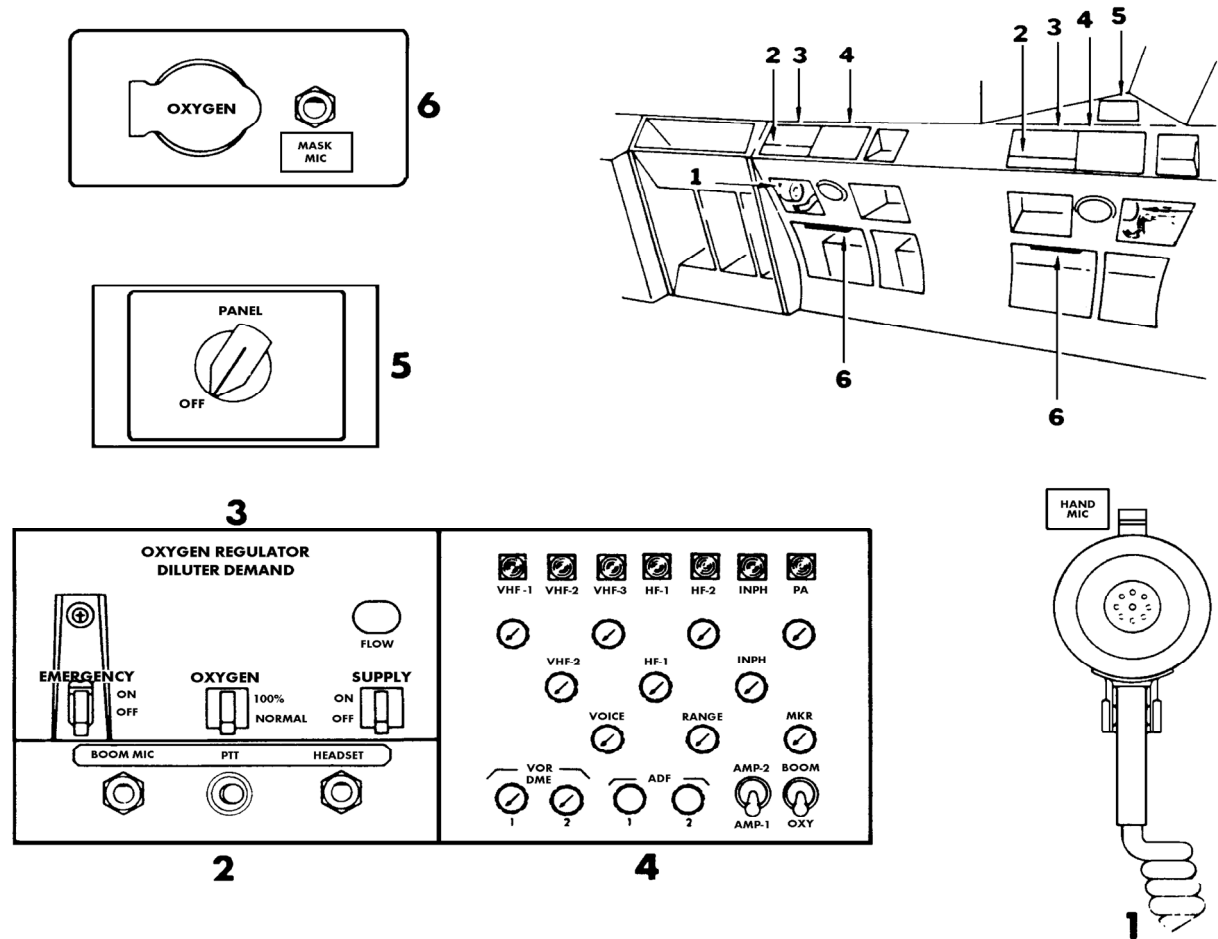
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## OBSERVERS' PANEL





# B-747 AIRCRAFT OPERATING MANUAL

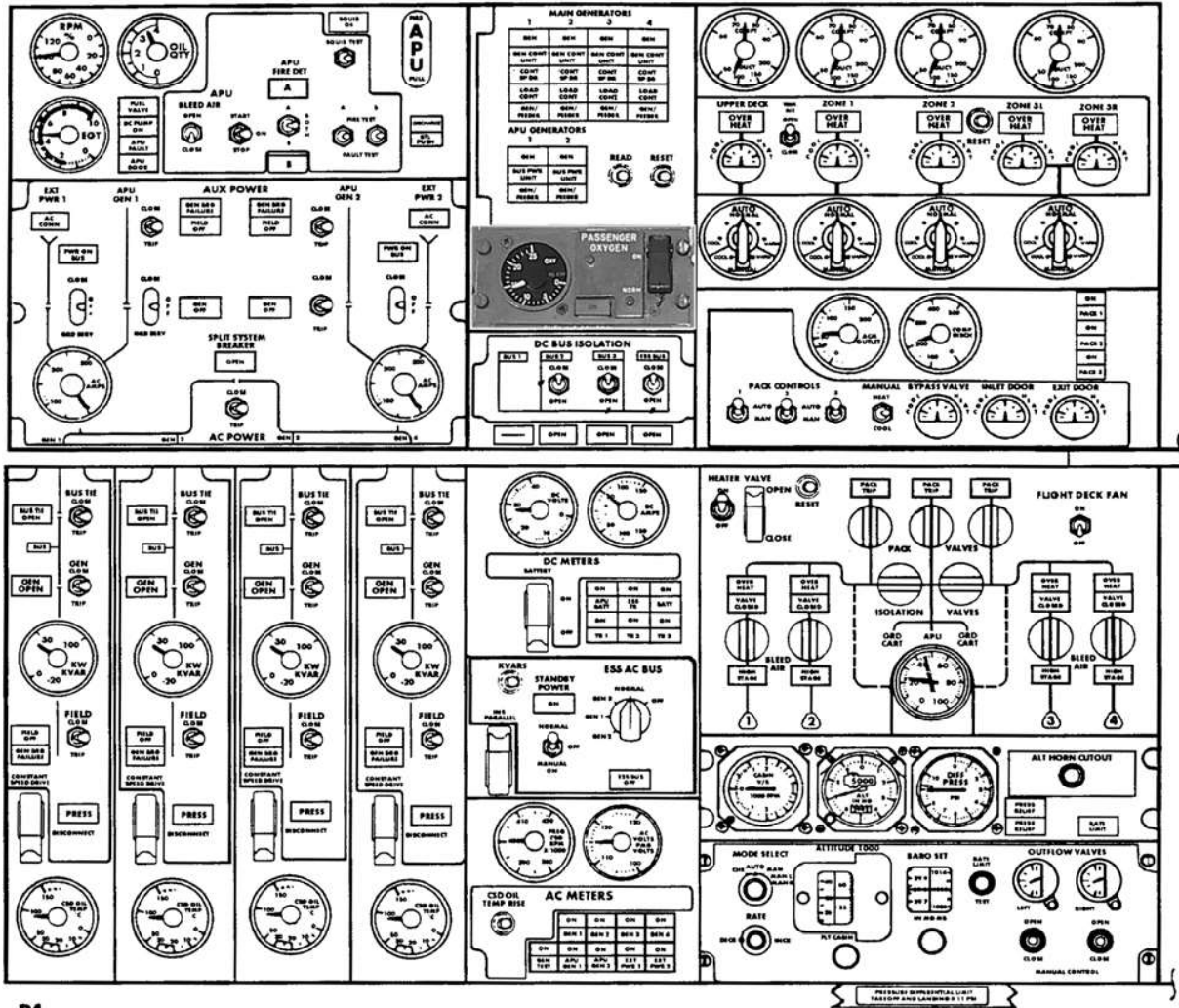
## AIRPLANE GENERAL

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### FLIGHT ENGINEER'S INSTRUMENT PANEL - UPPER PANELS - LEFT



P4

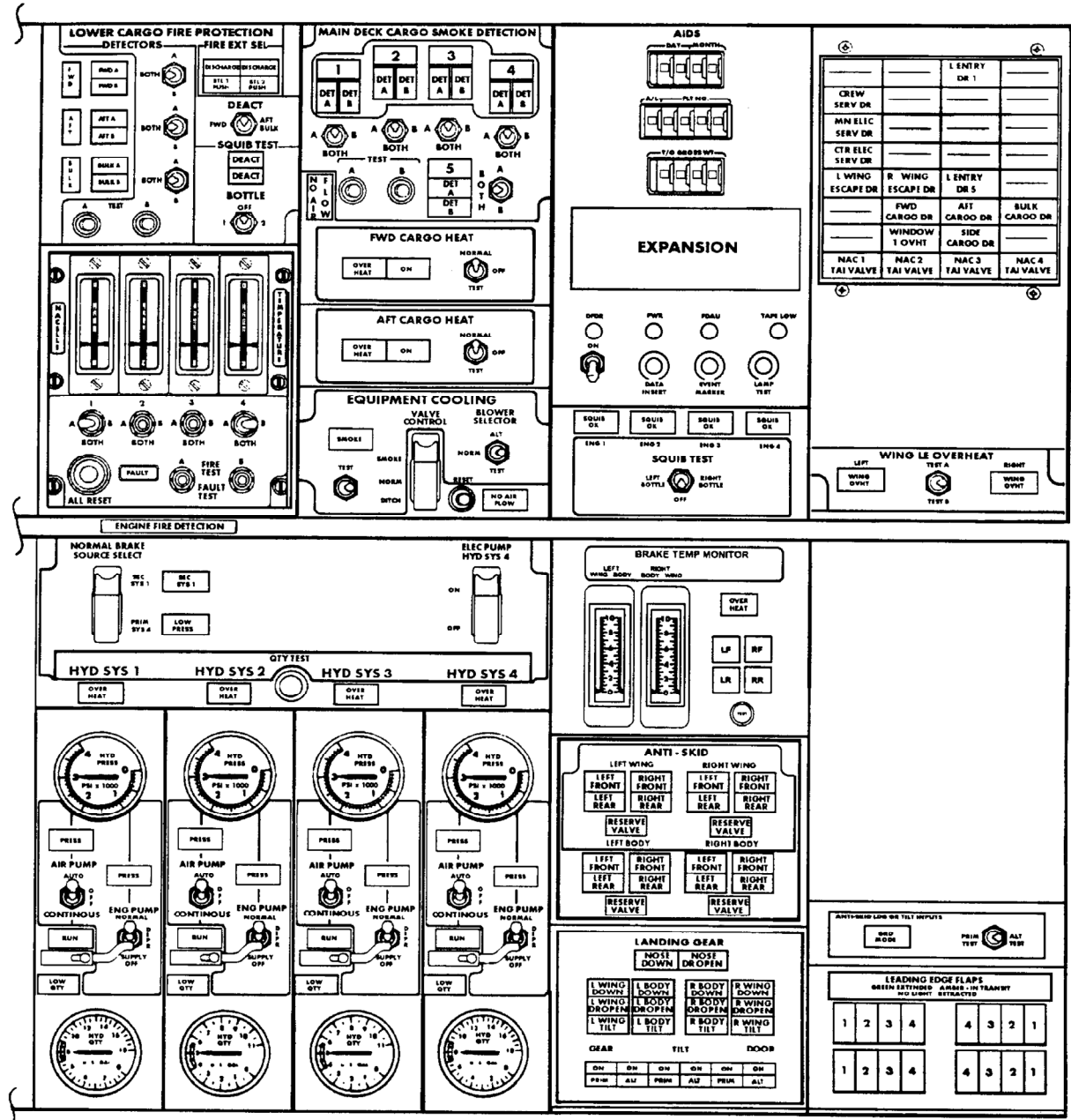
PRE-FLIGHT SUPPLEMENTAL LIGHT  
MAXIMUM ALLOWED LAMPWATTS 110W

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## AIRPLANE GENERAL

### FLIGHT ENGINEER'S INSTRUMENT PANEL - UPPER PANELS - RIGHT



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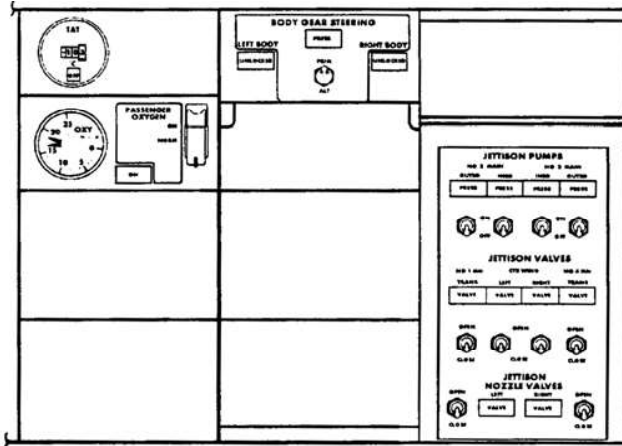
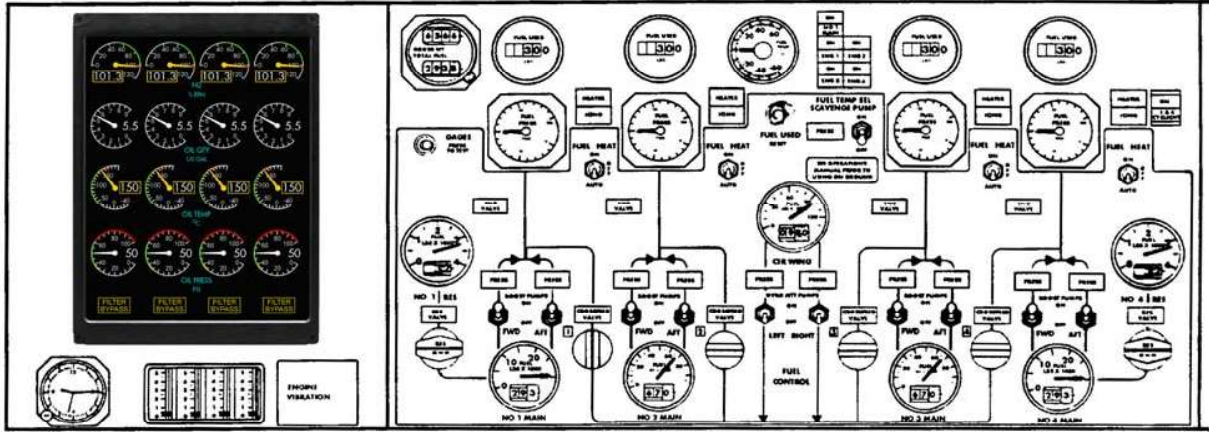
AIRPLANE GENERAL

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## FLIGHT ENGINEER'S LOWER INSTRUMENT PANELS



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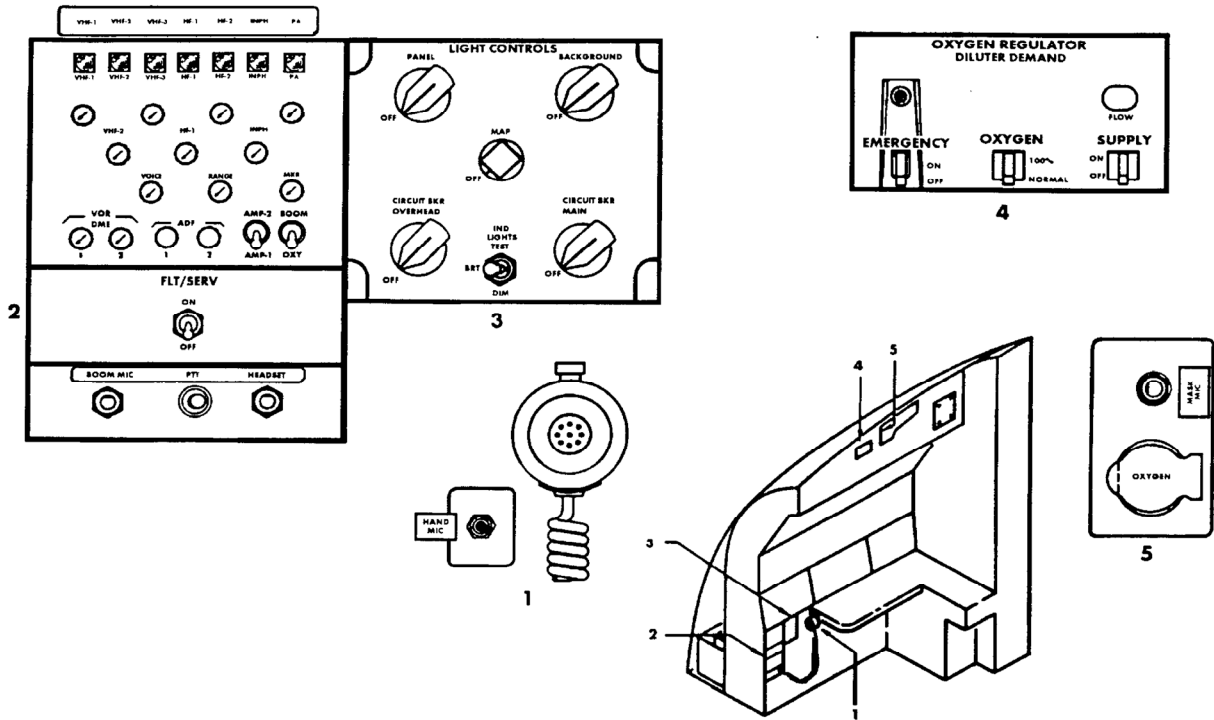
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## FLIGHT ENGINEER'S AUXILIARY PANELS



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## CAPTAIN'S SEAT

### INTRODUCTION

The Captain's seat is electrically powered in the vertical and horizontal directions, with manual overrides in the event of power failure. All other adjustments are manual. The seat is aligned with the centerline of the main flight instruments, and is horizontally adjustable forward and aft. The aft adjustments allows the Captain to reach critical controls on the Flight Engineer's panel, if the Flight Engineer is absent from the station. All adjustment controls are located on the right side of the seat pan.

#### VERTICAL

The vertical adjustment is accomplished by an electric motor and by a manual override.

##### **MOTOR SWITCH** (IF INSTALLED)

Controls up and down seat motion and is spring-loaded to off (center) position.

- When pressed up, drives seat upward.
- When pressed down, drives seat downward.

##### **MANUAL LEVER**

This lever is marked with a "V". When raised, allows seat to be moved up or down. Releasing lever locks seat in that position.

##### **TILT CONTROL LEVER**

This lever is marked with a "T".

- Raising lever allows thigh rest to be adjusted up or down.
- Releasing lever locks rest in that position.

#### HORIZONTAL

The horizontal adjustment is accomplished by an electric motor and by a manual override.

##### **MOTOR SWITCH** (IF INSTALLED)

Controls forward and aft seat motion and is spring-loaded to off (center) position.

When pressed forward, drives seat forward.

When pressed to rear, drives seat aft.

##### **MANUAL LEVER**

This lever is marked with an "H".

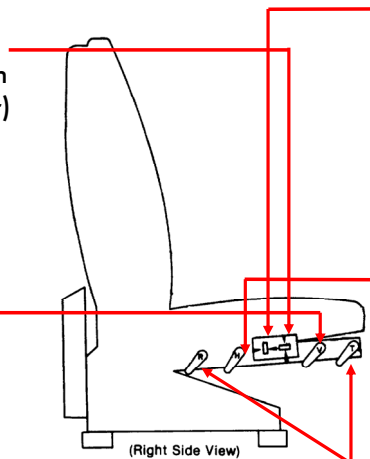
When raised, allows seat to slide forward or aft.

Releasing lever locks seat in that position.

##### **RECLINE CONTROL LEVER**

This lever is marked with an "R".

- Raising lever allows seat back to recline.
- Releasing lever locks the recline at that position.



#### ARMREST ADJUSTMENT

An armrest adjustment control button is located under the forward end of each armrest. Actuation of the button allows the armrest to pivot upward until it is parallel with the seat back. Detents are provided at five equally spaced intervals, so that five intermediate angular positions of the armrests may be selected. Release of the control button positions and locks the armrest at any of these positions.

#### SHOULDER HARNESS

Two shoulder straps are furnished at the top of the seat back. Each strap is connected to an individual inertial reel, thereby providing freedom of movement at the operating position. A sudden forward "G" motion will lock each reel.

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## AIRPLANE GENERAL

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### CO-PILOTS' SEAT

#### INTRODUCTION

The Co-Pilots' seat is electrically powered in the vertical and horizontal directions, with manual overrides in the event of power failure. All other adjustments are manual. The seat is aligned with the centerline of the main flight instruments, and has a forward and aft adjustment as well as outboard travel when full aft, for ease of seat occupancy. All adjustment controls are located on the left side of the seat pan.

#### VERTICAL

The vertical adjustment is accomplished by an electric motor and by a manual override.

##### **MOTOR SWITCH** (IF INSTALLED)

Controls up and down seat motion and is spring-loaded to off (center) position.

- When pressed up, drives seat upward.
- When pressed down, drives seat downward.

##### **MANUAL LEVER**

This lever is marked with a "V".

When raised, allows seat to be moved up or down. Releasing lever locks seat in that position

##### **TILT CONTROL LEVER**

This lever is marked with a "T".

- Raising lever allows thigh rest to be adjusted up or down.
- Releasing lever locks rest in that position.

#### HORIZONTAL

The horizontal adjustment is accomplished by an electric motor and by a manual override.

##### **MOTOR SWITCH** (IF INSTALLED)

Controls forward and aft seat motion and is spring-loaded to off (center) position.

- When pressed forward, drives seat forward.
- When pressed to rear, drives seat aft.

##### **MANUAL LEVER**

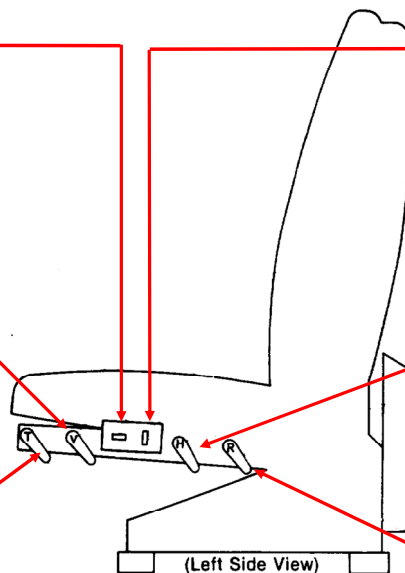
This lever is marked with an "H".

- When raised, allows seat to slide forward or aft.
- Releasing lever locks seat in that position.

##### **RECLINE CONTROL LEVER**

This lever is marked with an "R".

- Raising lever allows seat back to recline.
- Releasing lever locks the recline at that position.



#### ARMREST ADJUSTMENT

An armrest adjustment control button is located under the forward end of each armrest. Actuation of the button allows the armrest to pivot upward until it is parallel with the seat back. Detents are provided at five equally spaced intervals, so that five intermediate angular positions of the armrests may be selected. Release of the control button positions and locks the armrest at any of these positions.

#### SHOULDER HARNESS

Two shoulder straps are furnished at the top of the seat back. Each strap is connected to an individual inertial reel, thereby providing freedom of movement at the operating position. A sudden forward "G" motion will lock each reel.

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## AIRPLANE GENERAL

### FLIGHT ENGINEER'S SEAT

#### INTRODUCTION

The Flight Engineer's seat is electrically powered in the vertical and horizontal directions (if installed) with manual override in the event of power failure. All other adjustments are manual. The adjustment controls are located on each side of the seat pan. The powered vertical function may be inop or removed; use the V manual lever.

#### HORIZONTAL

The horizontal adjustment is accomplished by an electric motor and by a manual override.

#### MOTOR SWITCH (If installed)

Controls forward and aft seat motion and is spring loaded to off (center) position.

- When pressed forward, drives seat forward.
- When pressed to rear, drives seat aft.

#### MANUAL LEVER

This lever is marked with an "H",

- When raised, allows seat to slide forward or aft.
- Releasing lever locks in that position.

#### LATERAL CONTROL LEVER

This lever is marked with an "L".

- When raised, allows limited lateral adjustment from axis seat is facing.
- Releasing lever locks seat

#### ARMREST ADJUSTMENT

Same as Captain's seat.

#### SHOULDER HARNESS

Same as captain's seat.

#### VERTICAL

The vertical adjustment is accomplished by an electric motor or by a manual lever.

#### MOTOR SWITCH (If installed)

Controls up and down seat motion and is spring-loaded to off (center) position.

- When pressed up, drives seat upward.
- When pressed down, drives seat downward.

#### MANUAL LEVER

This lever is marked with an "V".

- When raised, allows seat to slide up or down.
- Releasing lever locks seat in that position.

#### RECLINE CONTROL LEVER

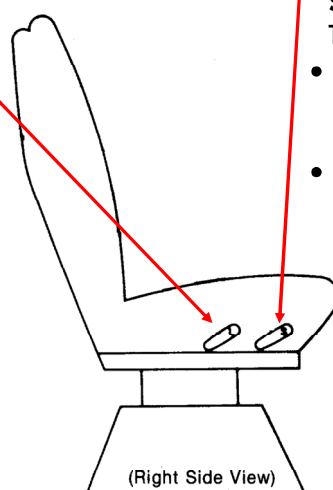
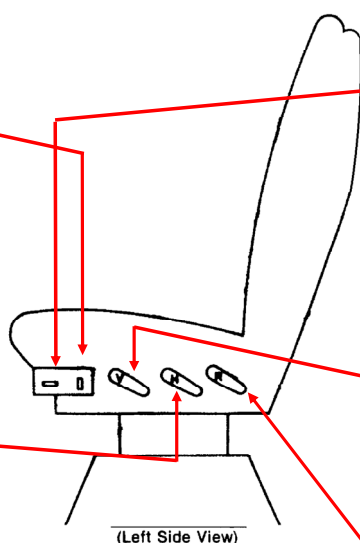
This lever is marked with an "R".

- Raising lever allows seat back to recline.
- Releasing lever locks the re-

#### SWIVEL CONTROL LEVER

This lever is marked with an "S".

- Raising lever allows seat to swivel from out-board-facing to forward facing. Stops are provided at 30-degree increments.
- Releasing lever causes seat to lock at nearest increment.





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## AIRPLANE GENERAL

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## OBSERVER SEATS

### INTRODUCTION

Two observers' seats are installed. The seat backs are adjustable and can be folded down against the seat cushions to allow folding of the seats against the observers' console. The front observer has an extension bar at floor level that can be extended manually. In the extended position it limits aft movement of the captain's seat to protect the observer.

#### BACK FOLDING LEVER

Located on the seat back.

- Lifting the lever permits the back to be folded for storage, or raised for use.

#### RECLINE CONTROL LEVER

This is a manual control.

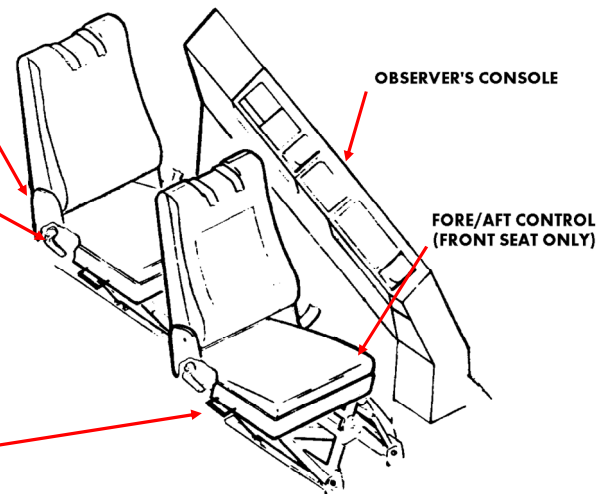
- When raised, allows seat back to be adjusted forward or aft in 5-degree increments.
- Releasing lever locks seat back at any of incremental positions.
- When lever is actuated and pressure is removed from back rest, the back rest returns to full-forward position.

#### STOWAGE HANDLE

Located just forward of recline control lever, this handle is used for erecting or stowing observer's seat.

- Seat is erected by actuating handle and pulling inboard.
- Seat is stowed by actuating handle and allowing seat to be folded completely down. The seat tilts outboard to its stowed position.

The seat automatically locks in position at the end of the stowage and erection operations. Indication that seat is properly locked is provided by disappearance of a red metal flag on the stowage handle.



#### SHOULDER HARNESS

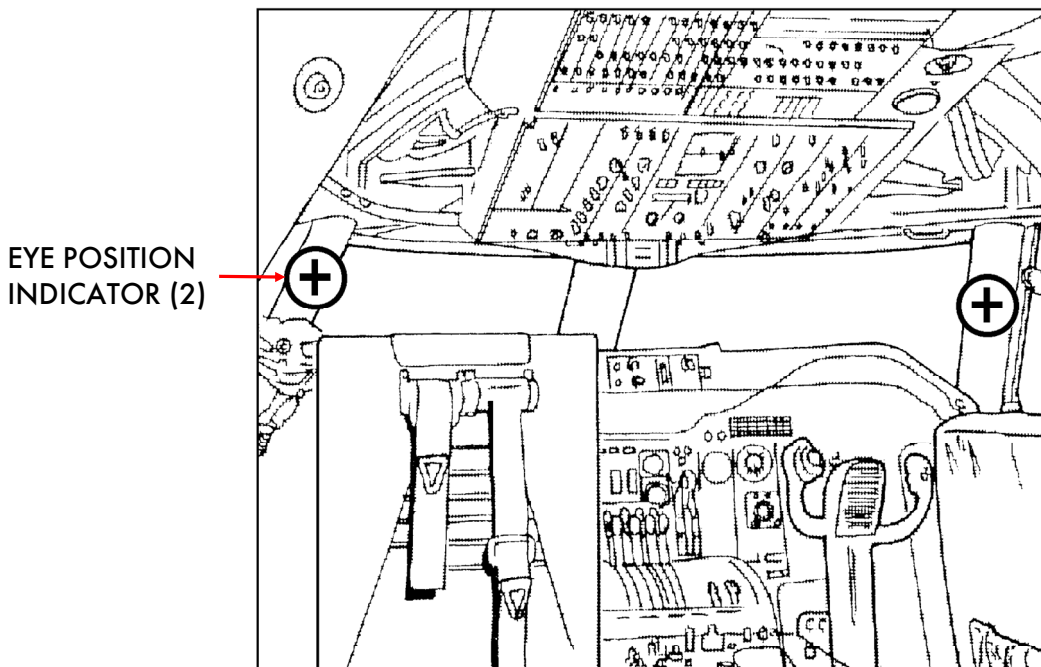
Two shoulder straps are provided at the top of the seat back. No inertial reels are used. Each strap has an adjustment for tightening the straps prior to takeoff. The straps snap into the top of the safety belt buckle, in the conventional manner, to complete the shoulder harness.

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## AIRPLANE GENERAL

### EYE POSITION INDICATOR



### PILOT'S SEAT ADJUSTMENT

First, position the seat vertically until the horizontal reference line is parallel and level with the eye. Then, adjust the seat fore and aft until the vertical line just passes out of peripheral vision when looking straight ahead through the forward window.

#### NOTE:

The recline adjustment feature of the seat will be in an optimum position near or slightly aft of the full upright position.

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## PASSENGER SIGN CONTROLS

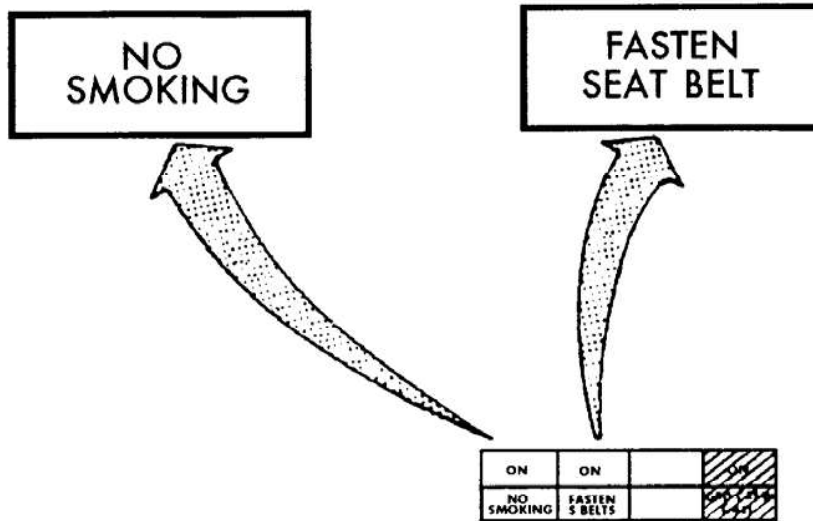
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### LAVATORY

RETURN TO SEAT

### LOUNGE

RETURN TO SEAT  
FASTEN SEAT BELT



Press to operate switch.  
Switch is on when ON light is  
illuminated.

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## FLIGHT DECK LIGHTING

### INTRODUCTION

White fluorescent and incandescent lamps are used for flight deck lighting. Primary power is 115V AC; step-up or step-down transformers and transformer rectifiers supply varying levels of AC and DC volt-ages for specific groups of lights.

### PILOTS' LIGHTING

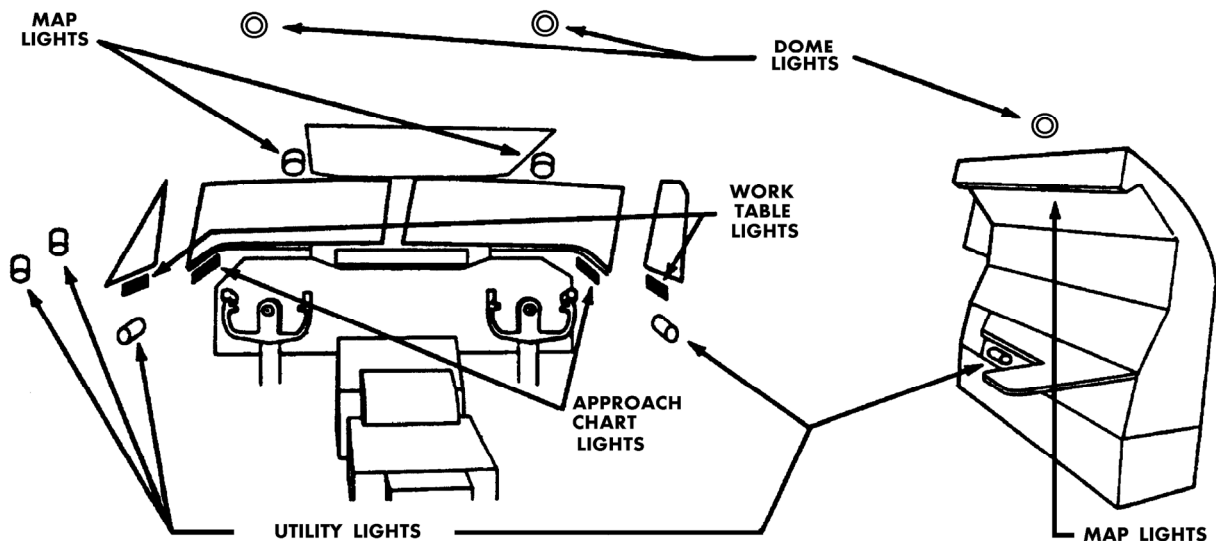
Dimmer controls vary the intensity of groups of lights to illuminate panels adequately. An IND LIGHTS switch illuminates all the indicator lights in the TEST mode, and at maximum or a lower intensity in a BRIGHT or DIM mode through individual function circuits. A STORM switch is provided to override the dimmers to illuminate the panels and instruments at maximum intensity when required.

### FLIGHT ENGINEER'S LIGHTING

Dimmer controls vary the intensity of the panel lights as required. A flight engineer's IND LIGHTS switch functions in a manner similar to that for the pilots. The pilots' STORM switch overrides the flight engineer's panel lights controls to provide maximum illumination when required.

### MISCELLANEOUS LIGHTING

Miscellaneous lights consist of the flight deck accessory and observers' lights, visual inspection lights, standby compass light, and the flight deck lavatory lights. The flight deck accessory and observers' lights are provided with individual dimmer controls. Lights mounted in the ceiling provide general illumination; their intensity is controlled by dimmer units.



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## COCKPIT LIGHTING CONTROLS

### PANEL LIGHT SWITCH

Controls intensity of edge lighting of FE's panel.

### MAP LIGHT SWITCH

Controls intensity of spotlight above FE's panel. Pull switch to turn light on and rotate to increase intensity.

### OVERHEAD CIRCUIT BREAKER PANEL LIGHT SWITCH

Controls intensity of edge lighting for P7 and P12 circuit breaker panels.

### OBSERVERS' PANEL LIGHT SWITCH

Controls intensity of edge lighting on both observers' panels.

### BACKGROUND LIGHTS SWITCH

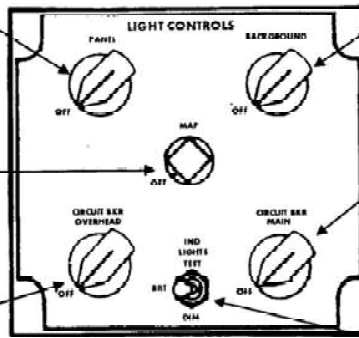
Controls intensity of FE panel background lights.

### MAIN CIRCUIT BREAKER PANEL LIGHT SWITCH

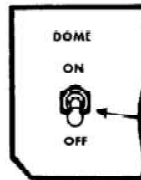
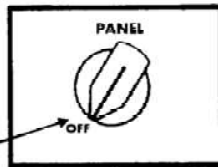
Controls intensity of edge lighting for P6 circuit breaker panel.

### MASTER INDICATOR LIGHTS DIM AND TEST SWITCH

TEST - Tests all indicator lights on FE's panel. Intensity set as desired by DIM or BRIGHT.



F/E'S AUXILIARY PANEL



### FLIGHT ENGINEER'S DOME LIGHT SWITCH

### EXTERIOR MAIN EQUIPMENT CENTER HATCH & CREW SERVICE DOOR

### FLIGHT DECK ENTRY LIGHTS SWITCHES

With external power established any switch illuminates/extinguishes entry lights consisting of spiral stairwell lights and E/E compartment light.

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### COCKPIT LIGHTING CONTROLS (Cont'd)

#### MAIN PANEL BACKGROUND LIGHT SWITCH

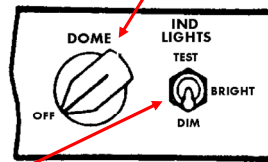
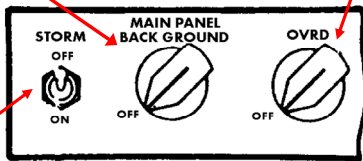
Controls intensity of Captain, FO and center panel background.

#### OVERHEAD LIGHT SWITCH

Controls intensity of Pilots' overhead panel edge lighting.

#### DOME LIGHT SWITCH

Controls intensity of Captain and FO dome lights.



PILOTS' OVERHEAD PANEL

#### STORM LIGHT SWITCH

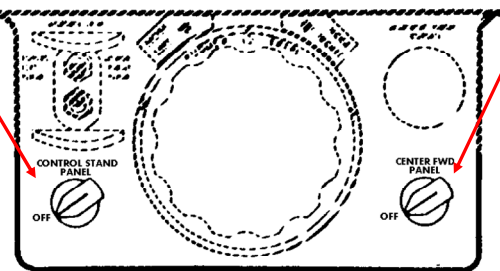
ON: Overrides background lighting switches to provide full intensity and turns on the dome lights.

#### MASTER INDICATOR LIGHTS DIM AND TEST SWITCH

TEST - Tests all indicator lights on pilots' panels except approach progress display, marker beacon and

#### CONTROLS STAND PANEL LIGHT SWITCH

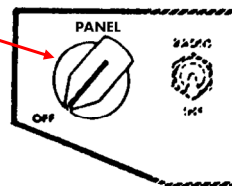
Controls intensity of lights on pilots' control stand, forward and aft electronic panels.



#### CENTER FORWARD PANEL LIGHT SWITCH

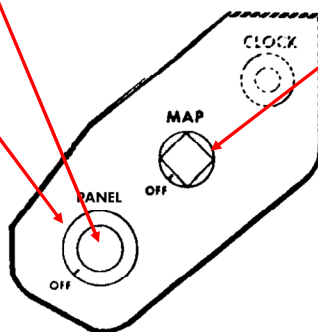
Controls intensity of edge lighting on pilots' center panel.

**PILOTS' LIGHTSHIELD LIGHT SWITCH** Controls intensity of edge lighting on lightshield.



**DIGITAL LIGHT SWITCH** Controls intensity of digital displays on Captain's and FO instrument panels respectively.

**PANEL LIGHT SWITCH** Controls intensity of edge lighting on Captain's and FO's instrument panels respectively.



#### MAP LIGHT SWITCH

Pull out and rotate for variable intensity. Light located in ceiling.

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## ELECTRONIC FLIGHT BAG

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### INTRODUCTION

The navAero electronic flight bag equipment is configured with Jeppesen EFB software that replaces the paper charts and manuals used by flight crews.

The basic components are the:

- Captain's and First Officer's Central Processor Unit. (CPU)
- Captain's and First Officer's Connectivity Unit. (CU)
- Captain's and First Officer's Display Panel.

The Captain's EFB is powered by the 28V Standby DC Bus and the First Officer's EFB is powered by the 28V DC Radio Bus 2.

The CPUs contain updatable terminal area navigation chart data, text publications and manuals, grouped by aircraft type, e.g., B-747-200 or B-747-400.

The CUs connect the display panel to the CPU. The connectivity unit contains a start stop switch with built in green indicating light, and an amber power fault light.

The display panels are LCD touch screen type of display, and contain a virtual keyboard and numerous icons for entering data, retrieving and displaying various charts, text and manuals. Charts and text may be displayed in day or night time format.

### CPU

The CPU is a removable, commercial off the shelf unit. The CPU is attached to a mounting bracket that is fixed to the aircraft sidewall aft of each pilot's position.

### CONNECTIVITY UNIT

The Connectivity Unit contains a guarded, green START/STOP button that is used to power and de-power the EFB. The CU also contains an amber press to test lamp that illuminates if the EFB is operating on its battery back up power source. Connectors on the CU allow for updating the software and attaching the Display Panel.

### DISPLAY PANEL

The Display Panels are mounted to each pilot's window frame below the L2 and R2 windows. The Display Panel frame contains a STANDBY button which, when pressed, alternately causes the screen to display or blank. The STANDBY button must be pressed once each time the EFB is started to view the display. There are "+" and "-" buttons on the Display Panel frame that control the intensity of the display.

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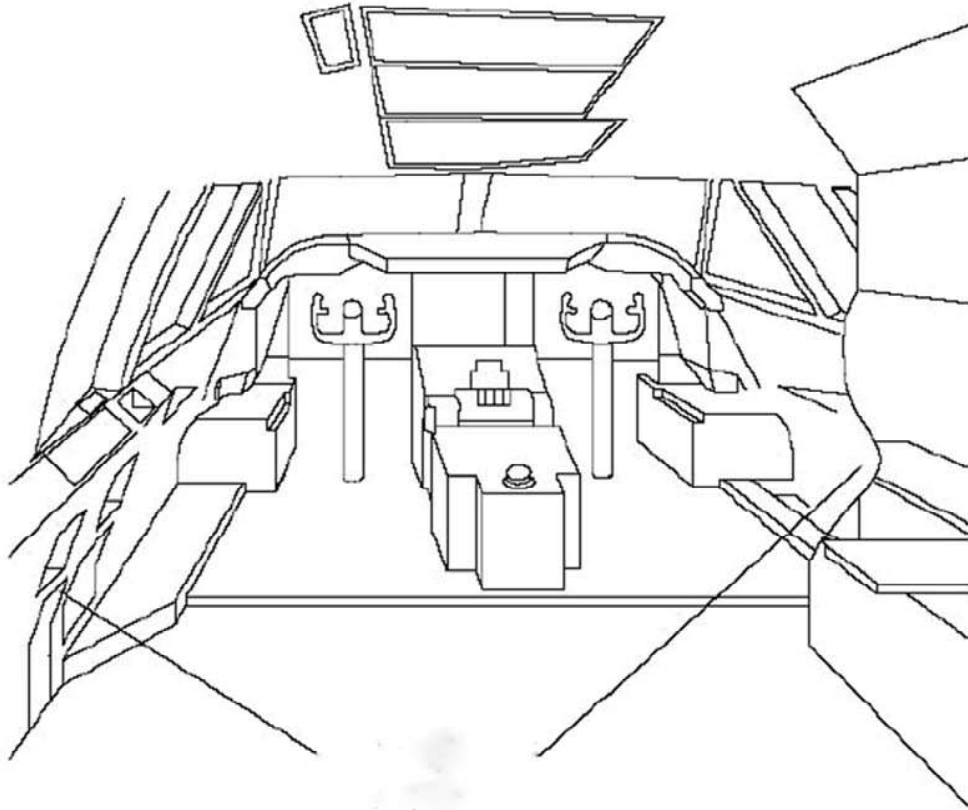
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## CPU LOCATION



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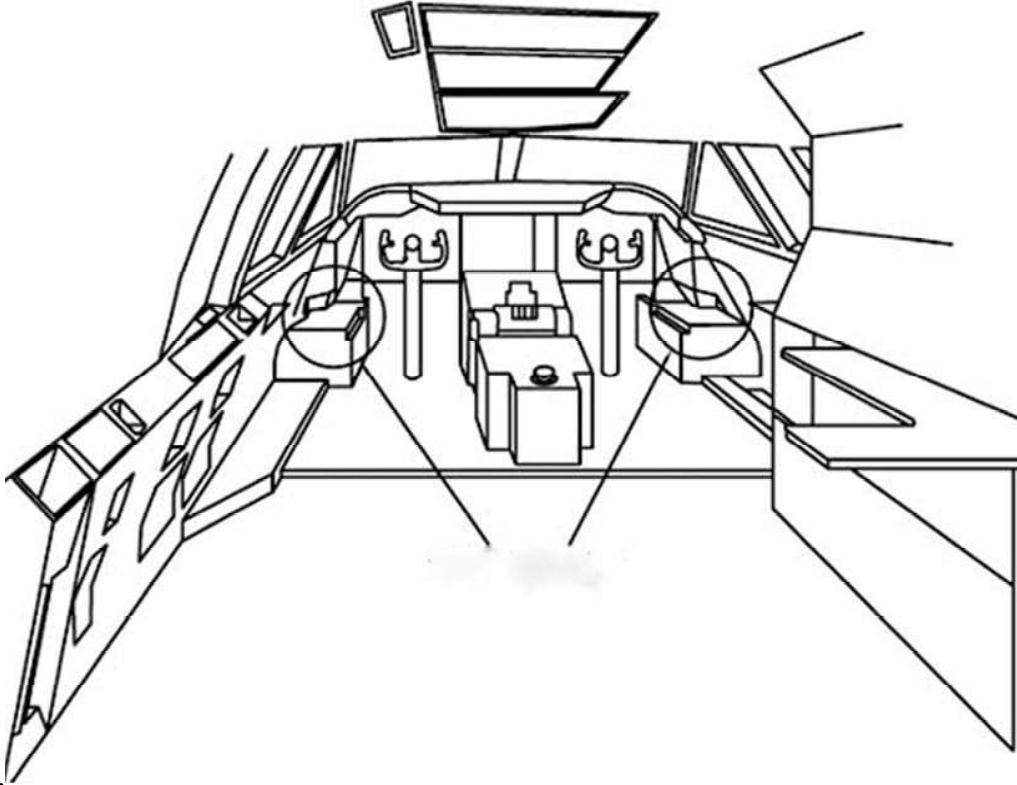
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## CONNECTIVITY UNIT LOCATION



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## DISPLAY PANEL LOCATION

The Captain's Display Panel is shown. First Officers is similar and opposite.

