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Introduction

The Challenger 604 is a sweptwing, twin-engine monoplane, certified in accordance with FAR 25, FAR 36 and their amendments. Maximum ramp and takeoff weights are 48,300 and 48,200 lb respectively. The airplane is designed for two crew members with accommodation for up to 19 passengers, and is powered by two General Electric CF34-3B engines.

The following sections will be addressed:

- wings
- fuselage
- doors and emergency exits
- service panels and accesses
- antennas
- cockpit controls and indicators
- crew seats and eye locator
- taxiing and turning radii
- hazard areas

Wing

Description

The wing is an all-metal, advanced-technology airfoil manufactured as a single unit and bolted to the bottom of the fuselage. The wing incorporates ailerons, flaps, flight and ground spoilers, internal fuel tanks and the support structure for the main landing gear. Thermal anti-icing is incorporated into the polished aluminum wing leading edges. The attached winglets are made of Kevlar and significantly reduce drag.

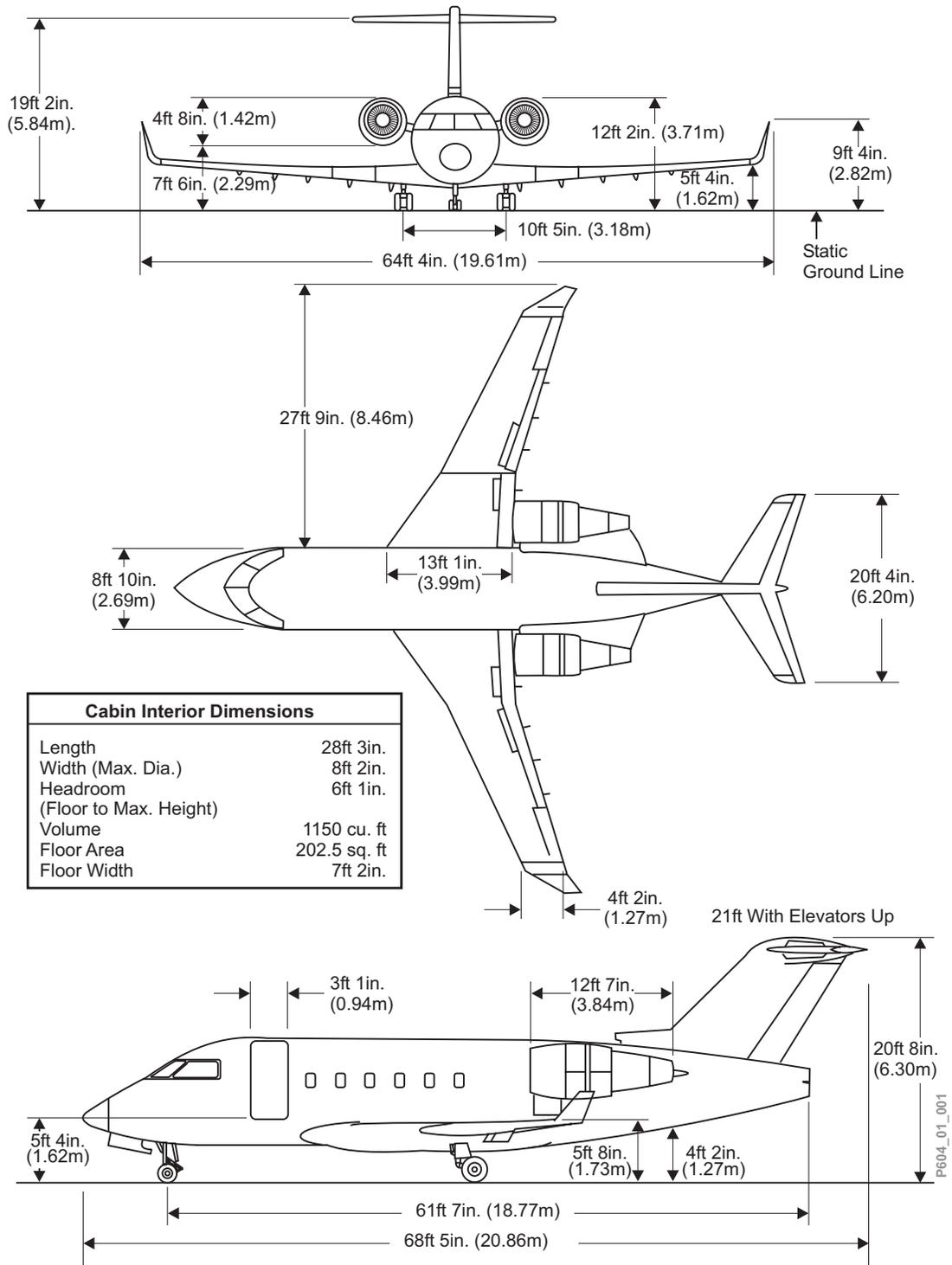
Components

Fuel Tanks

The wing contains fuel in three areas. The right and left wings contain the main tanks (between the spars) and the wing center section forms the auxiliary tank. A bulkhead on either side of the wing center section separates the auxiliary and wing tanks.

Main Landing Gear

The main landing gear, mounted in the wings, are conventional oleopneumatic, shock-absorbing struts fitted with two wheels on each strut.



Airplane Basic Dimensions
Figure 1-1

Fuselage

Description

The CL-604 fuselage is a semimonocoque structure and is made up of three sections: the nose, center and tail sections. The nose section includes the nose landing gear and flight compartment, while the center section includes the avionics area and cabin. The wing, which contains the main landing gear, is bolted to the fuselage behind the avionics bay. The tail section encloses an equipment bay, and supports the engines and empennage.

Components

Nose Section

The nose section contains:

- the flight compartment, comprising instrument panels, airplane controls, and crew stations
- the underfloor area, with compartments for brake accumulators and controls, an air-driven generator, the forward avionics bay, flight control mechanisms and the nosewheel well
- a weather radar antenna pedestal which is located on the front bulkhead and is covered by a Kevlar radome incorporating conductive paths to reduce the risk of damage from lightning strikes. The airplane has dual landing lights in the radome

Center Section

The center section is divided by the cabin floor into a pressurized passenger compartment and underfloor area. The passenger compartment comprises a passenger door, an emergency exit and a cargo/baggage compartment door. The underfloor area is divided into three areas:

- pressurized avionics bay
- unpressurized main landing gear bay
- aft underfloor pressurized area

Tail Section

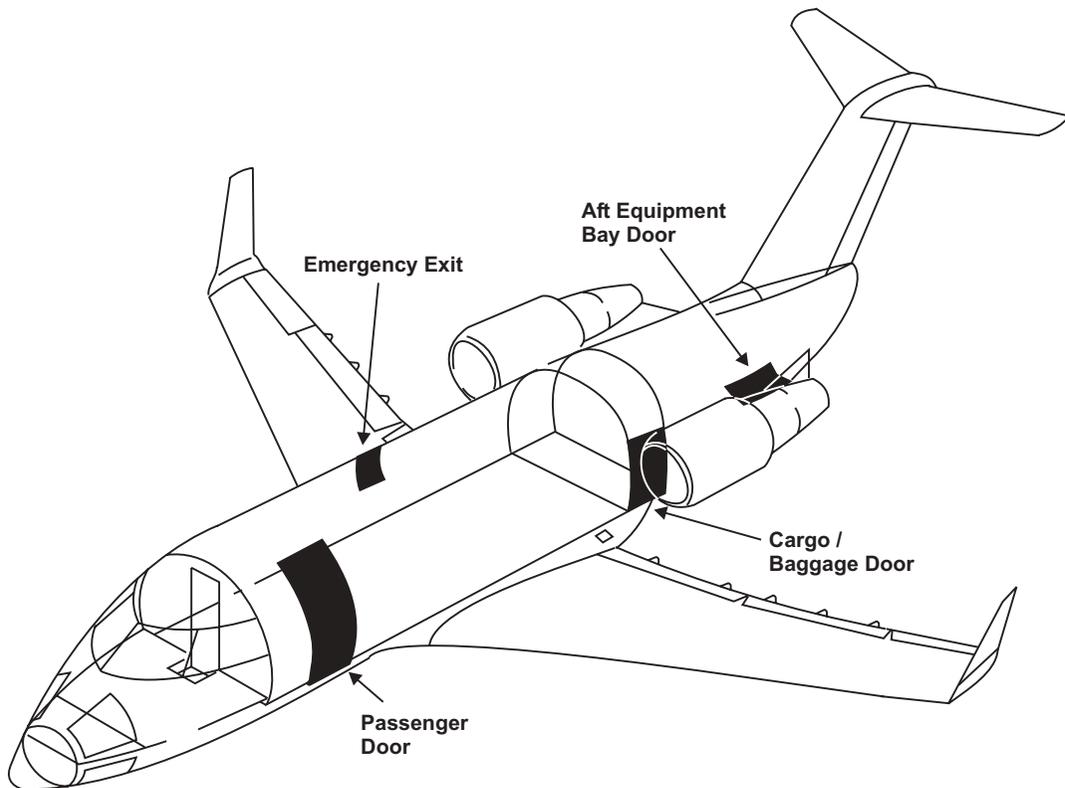
The tail section is unpressurized and includes the following three main areas:

- an aft equipment bay which contains:
 - two batteries
 - two battery chargers
 - electric junction box 5 (JB-5)
 - Auxiliary Power Unit (APU)
 - two air conditioning packs
 - two hydraulic systems
 - three fire extinguisher bottles
 - saddle fuel tanks and
 - empennage and engine support structures
- a tail cone consisting of:
 - Emergency Locator Transmitter (ELT) and
 - tail fuel tank
- vertical stabilizer, horizontal stabilizer, rudder and elevator assemblies and components

Doors and Emergency Exit

Description

The airplane is equipped with a passenger door, a cargo/baggage door, an aft equipment bay door and an emergency exit.



Passenger Door	91 x 178 cm	36 x 70 inch	Type I Exit
Overwing Emergency Exit	51 x 91 cm	20 x 36 inch	Type III Exit
Cargo/baggage Door	109 x 84 cm	43 x 33 inch	

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Doors and Emergency Exit - Location

Figure 1-2

Components and Operation

Passenger Door

The passenger door is a manually-operated, downward-opening door with stairs integral to the door structure. The weight of the door is counterbalanced by gas springs and a spring-loaded cable drum. An electric door-closing mechanism is fitted to raise the door.

Passenger Door Operation

The door is closed from the inside by an electrically-powered assist mechanism. The mechanism is activated by a two-position switch located on the interior of the fuselage, forward of the top corner of the door.

To close the passenger door from the inside:

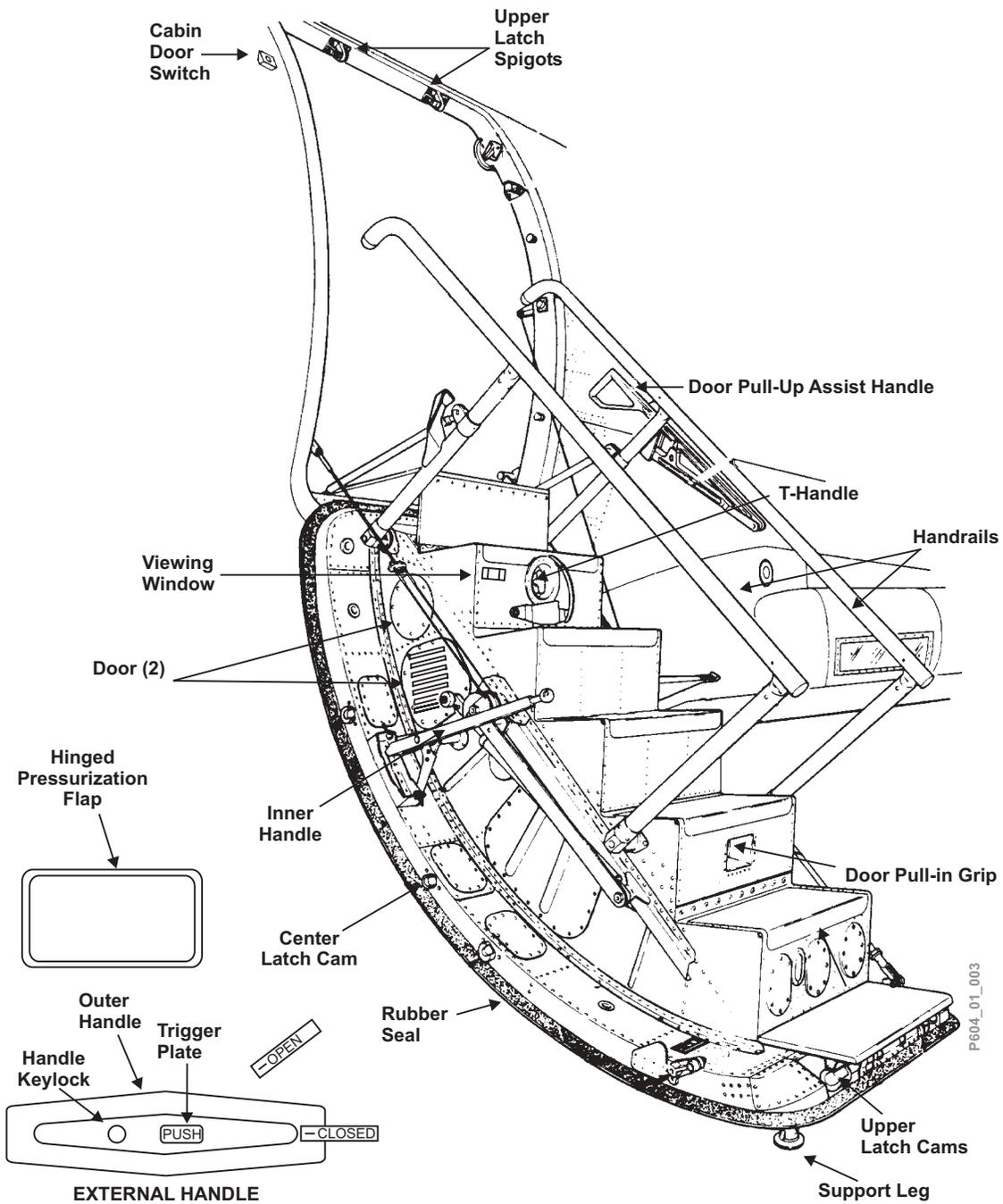
- operate the cabin door switch to raise the door (use the DOOR PULL-UP ASSIST HANDLE if required)
- fully seat the door using the DOOR PULL-IN GRIP
- latch the door by moving the INNER HANDLE downward to its stop (confirm all four rotary latch green marks are aligned)
- pull the internal T-HANDLE to stow the EXTERNAL HANDLE (external handle stow is confirmed by an audible click and a green locked indicator showing in the viewing window)
- stow the internal T-HANDLE by pushing it back into its recessed position

The door is closed from the outside by lifting and pushing it to the vertical closed position flush with the fuselage. The EXTERNAL HANDLE is rotated clockwise to latch the cams, and is then stowed by pushing it into its recessed position.

The door is opened from the inside by lifting the INNER HANDLE, which releases the EXTERNAL HANDLE from its recess. The continued upward travel of the INNER HANDLE unlatches the door-locking mechanism. As the door opens, the handrails unfold upward. A PULL-UP ASSIST HANDLE is attached to the rear of the door to assist in controlling the fall of the door as it opens.

The door is opened from outside by pressing the TRIGGER PLATE on the EXTERNAL HANDLE, which releases the handle from its recess. Rotating the EXTERNAL HANDLE counterclockwise unlatches the door.

A hinged pressurization flap is installed in the door to release excess cabin pressure before the door locks are released. When the door is fully opened, a support leg extends to the ground to stabilize the door. The EXTERNAL HANDLE incorporates a keylock mechanism.



Passenger Door

Figure 1-3

Cargo/Baggage Door

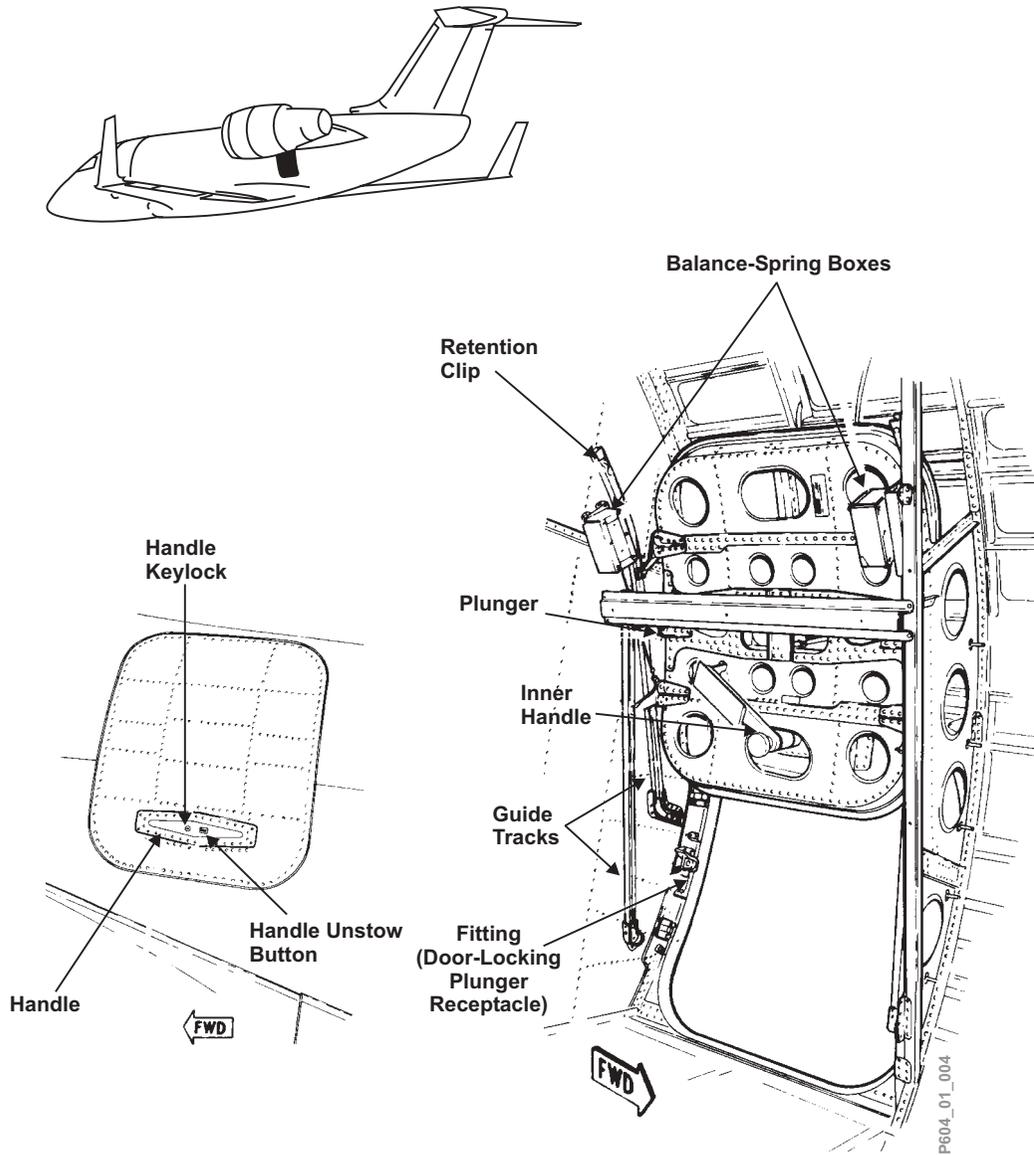
The cargo/baggage compartment door is located on the left side of the airplane immediately behind the passenger compartment.

Cargo/Baggage Door Operation

The door may be opened from inside or outside. The door opens inward and upward on two tracks attached to the structure. Balance springs and cables are attached to assist in opening. The door is held closed by two plungers which are operated by an external HANDLE. Two plunger-activated proximity switches provide an indication in the flight compartment if the door is not properly closed. The external handle provides a keyed security lock. This handle is kept flush with the door by a catch which operates automatically when the handle is aligned with its recess and pushed in.

To open the door from the inside, rotate the inner handle clockwise and lift the door upward. To close the door from the inside, position the door in place and rotate the handle counterclockwise to lock the door in position, then pull the knob inwards to stow the external handle.

To open the door from the outside, push in the handle unstow button. This will unstow the handle which can be rotated counterclockwise to unlock the door. Push the door upward to open. To close the door, position the door in its opening and rotate the handle clockwise to align with its recess. Push the handle into its recess to complete the process.



Cargo/Baggage Door

Figure 1-4

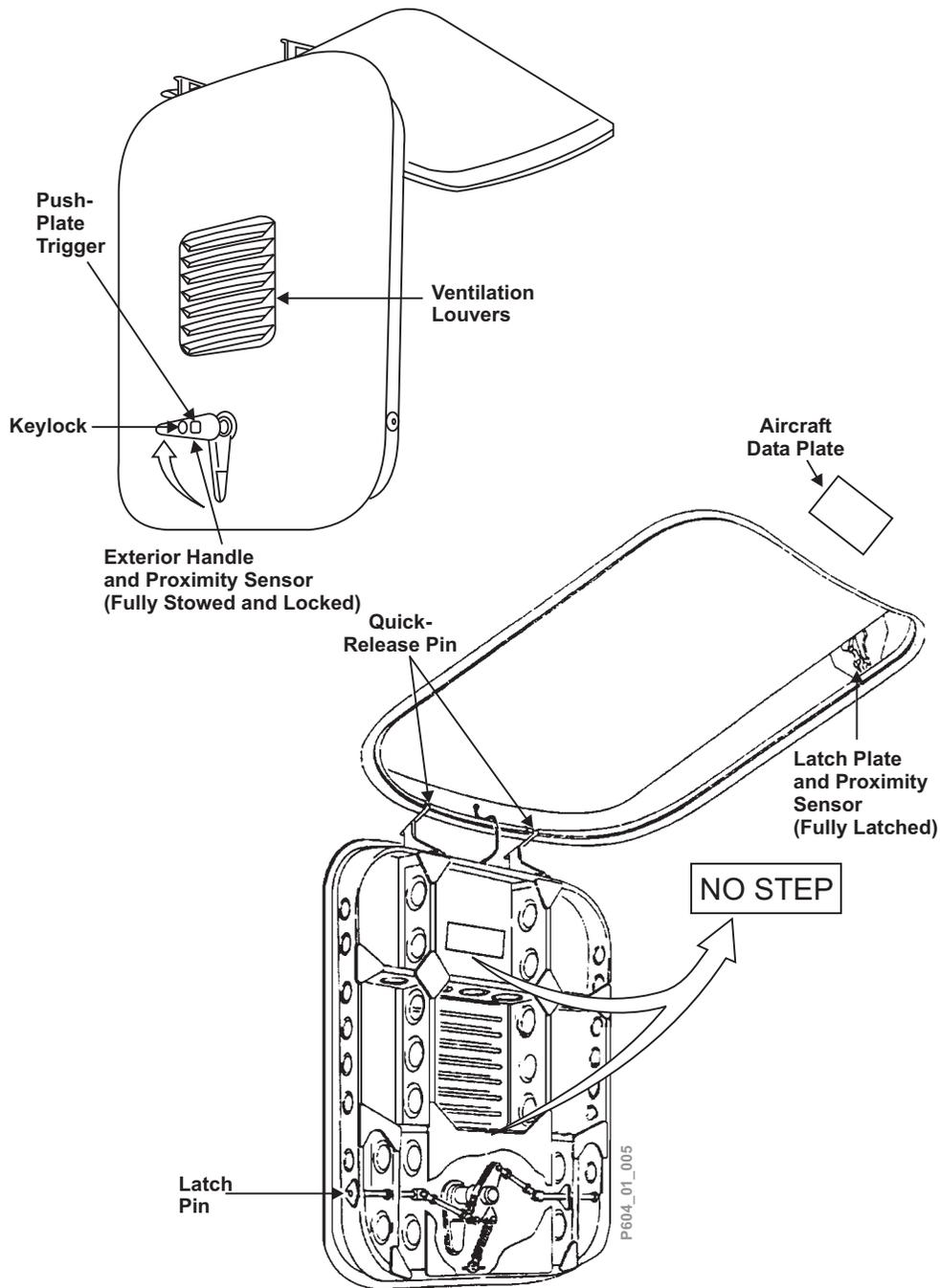
Aft Equipment Bay Door

The aft equipment bay can be accessed via a downward-opening door on the underside of the rear fuselage.

Aft Equipment Bay Door Operation

The aft equipment bay door is opened from outside by pressing in a latching button on the external handle. This releases the external handle from its recess. Rotating the external handle clockwise unlatches the door, allowing it to fall open.

In order to close the door, it must be raised into the closed position and the handle rotated counterclockwise to align with its recess. The handle is then pushed upward into its recess until it clicks into place. The external handle incorporates a keylock mechanism.



Aft Equipment Bay Door

Figure 1-5

Emergency Exit

An emergency exit is located on the right side of the cabin over the wing. The emergency exit is a plug-type window exit which opens inward. The exit can be opened from inside or outside of the airplane.

Emergency Exit Operation

The inside unlatching handle has “EXIT PULL” marked on the handle. The marking is easily readable during daylight or darkness. A hand grip is located just below the window to support the weight of the door when opening from the inside.

To open the emergency exit from the inside, grasp the upper quick-release handle and the lower hand grip. Pull the quick-release handle inward and lift the weight of the door with the lower hand. Place the door aside to allow easy egress from the airplane.

The outer push plate is labeled “PUSH IN FLAP”, “PUSH DOOR INWARD”.

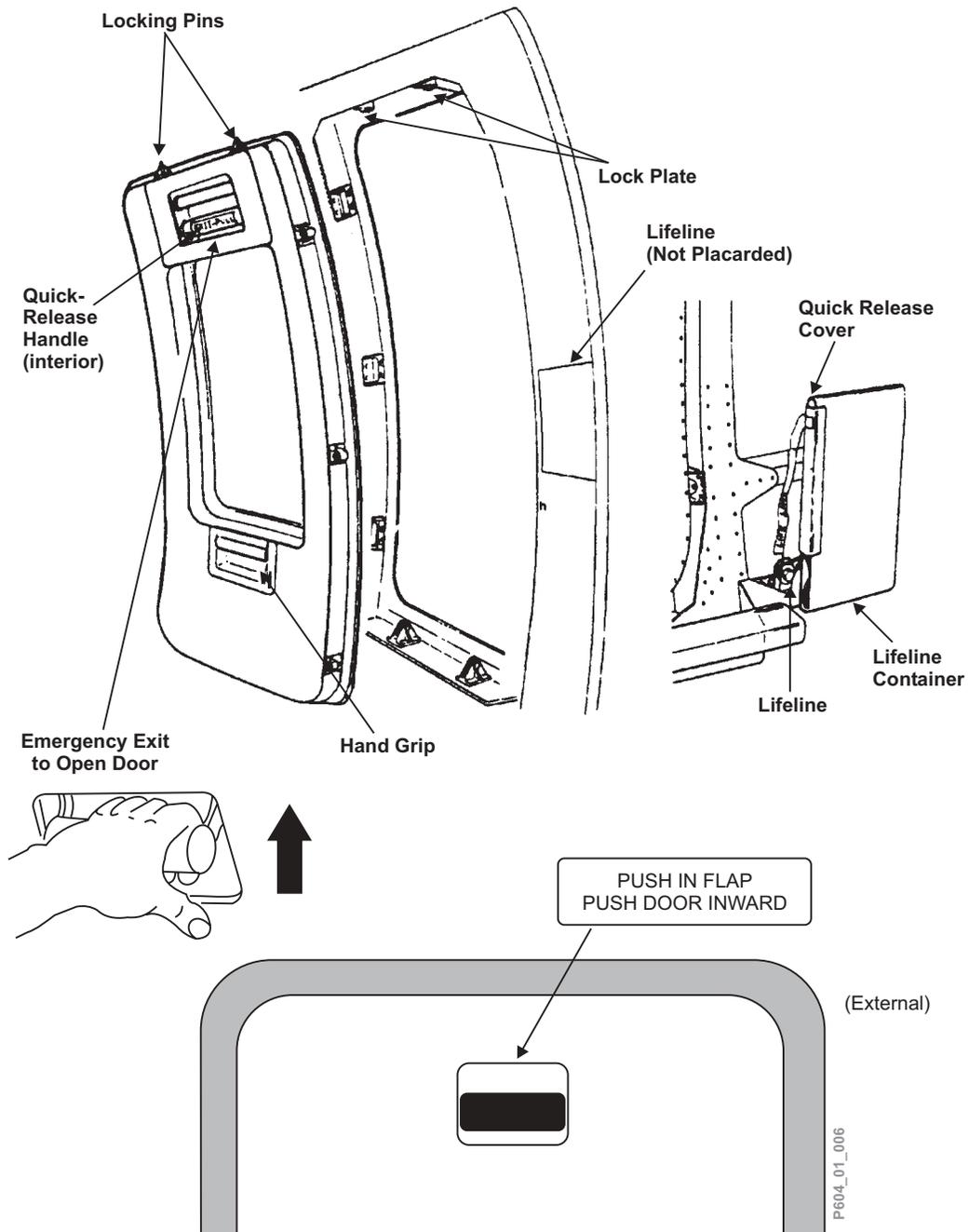
To open the door from the outside, simply follow the labeled directions and then move the door to a convenient position. See Chapter 8 Emergency Equipment for more information.

EICAS Messages

MESSAGE	MEANING	AURAL WARNING (IF ANY)
PASSENGER DOOR	Two or more of the four latch, outer handle or inner handle sensors indicate the door is not locked and safe. Voice warning occurs only when left or right engine is running.	“DOOR”
BAGGAGE DOOR	Cargo door is not properly latched.	
PAX DOOR LATCH	One of the passenger door latches is unlocked.	
PAX DOOR OUT HNDL	The passenger door outer handle is not stowed.	
PAX DOOR STOW	The passenger door inner handle is not stowed.	
DOOR CLOSED	All passenger door handles and latches are locked.	
EXTERNAL DOOR OPEN	AC ground power door, oxygen refill door, refuel door, external DC ground power door, toilet service door, water-fill door, aft equipment bay door.	

EICAS Messages

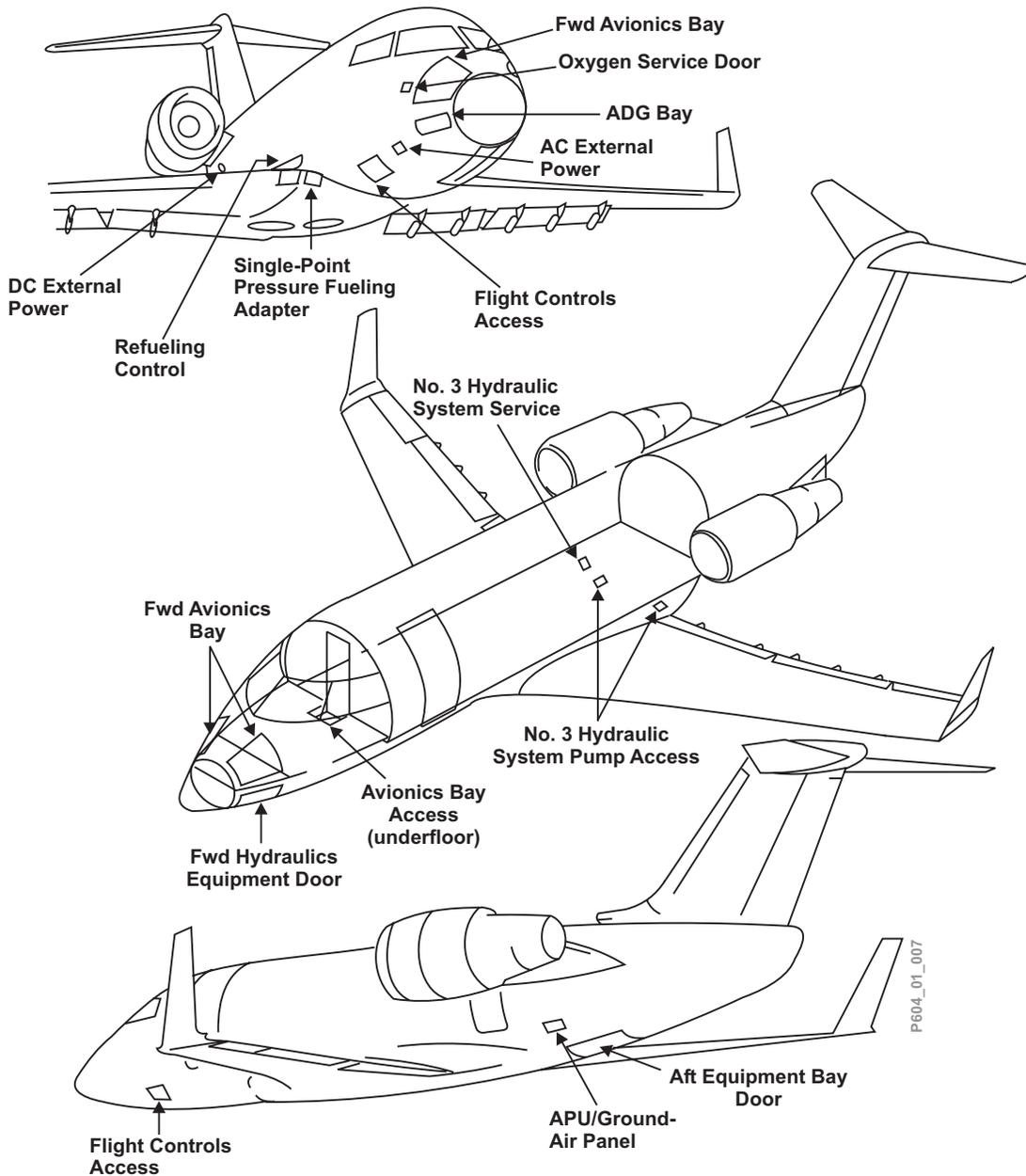
Table 1-1



Emergency Exit
Figure 1-6

Service Panels and Accesses

Access to the interior of the airplane for servicing various systems is achieved through the many service doors and panels.

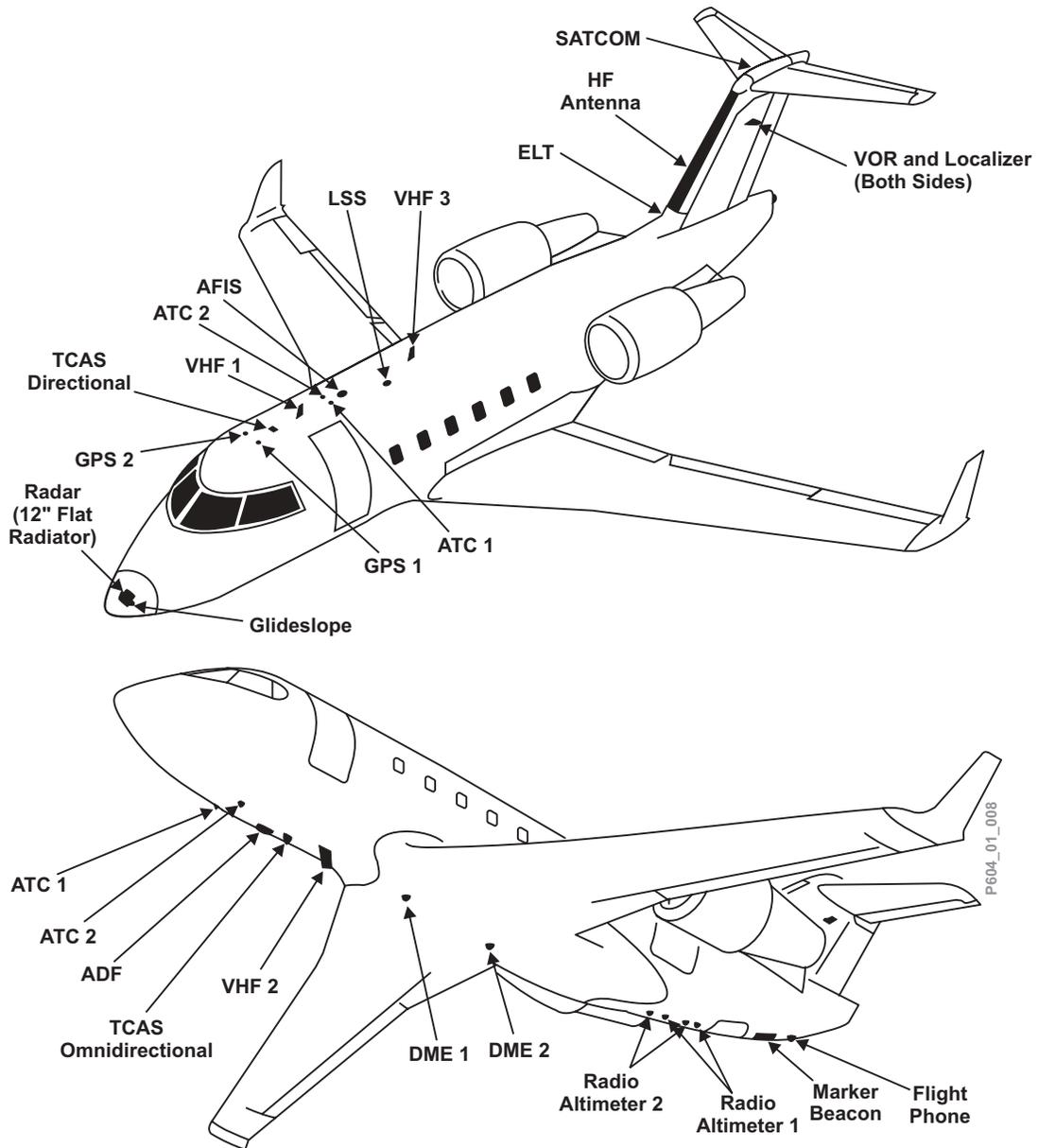


Service Doors and Panels - Location

Figure 1-7

Airplane Antennas

The airplane antennas are located as depicted below.



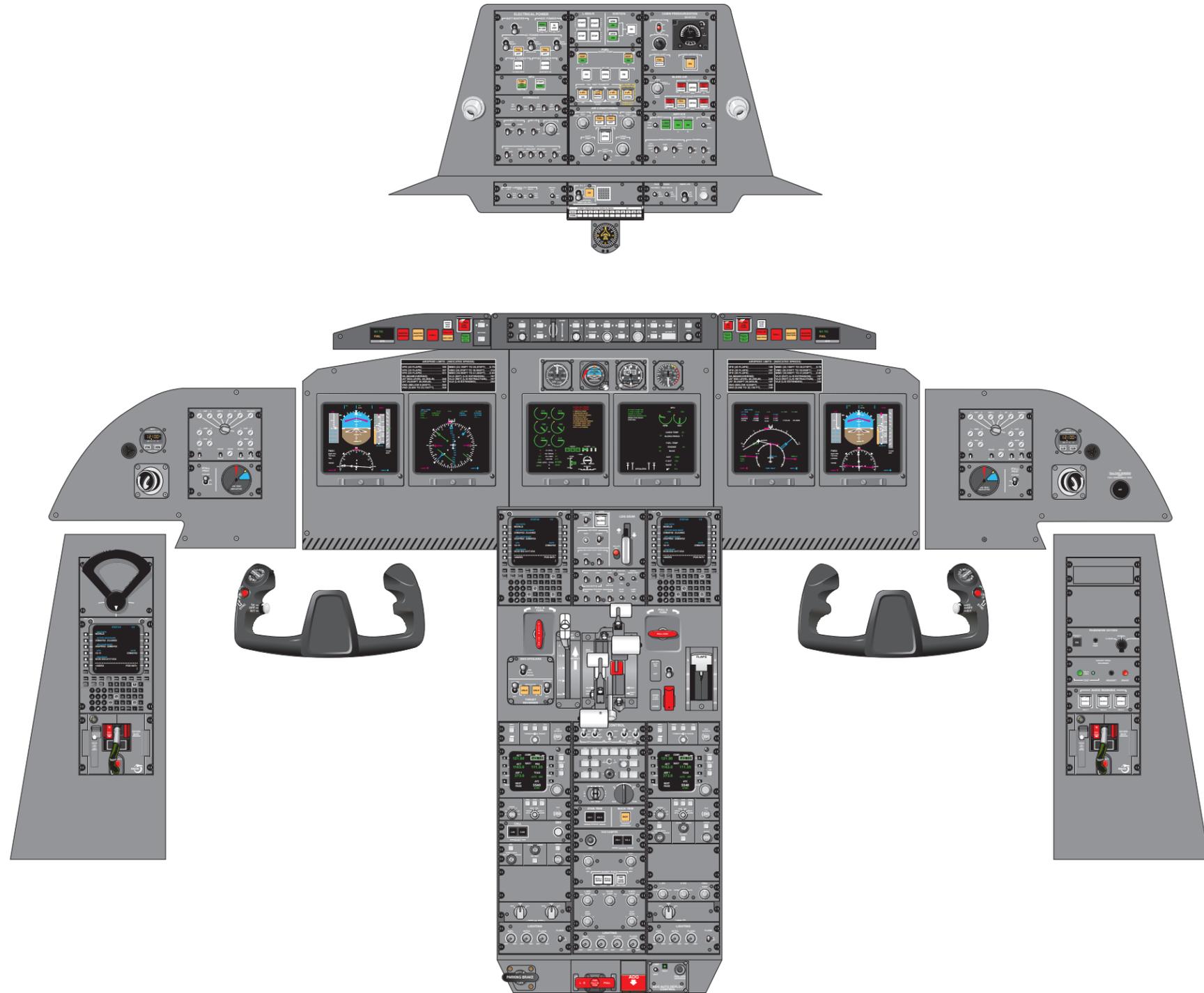
Airplane Antennas

Figure 1-8

Controls and Indicators

Flight compartment illustrations are presented in this section to display the following:

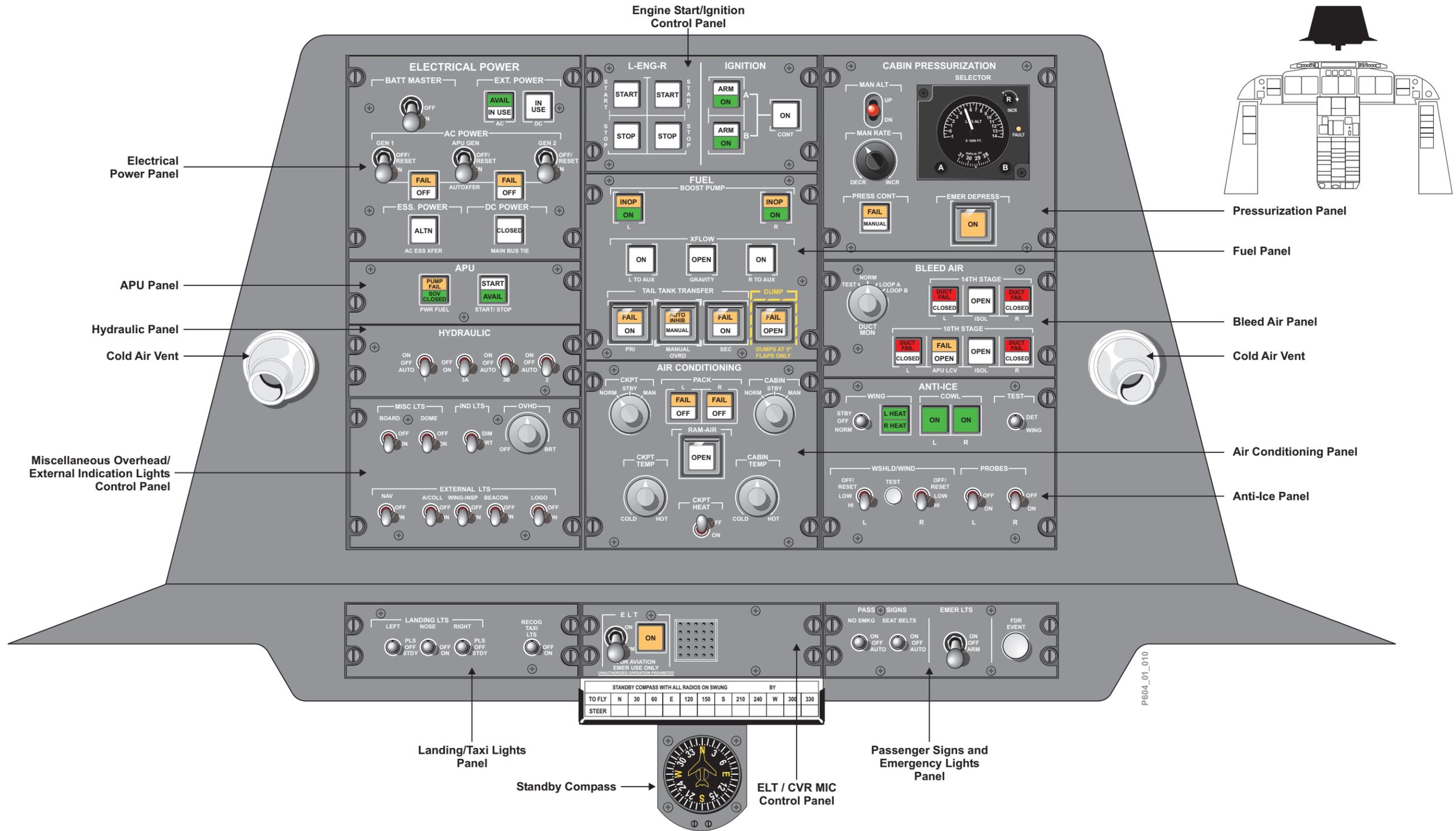
- General Arrangement
- Overhead Panel
- Center Pedestal
- Glareshield and Side Panels
- Instrument Panels
- Side Consoles
- EICAS Messages
- Seat Assembly
- Harness Assembly



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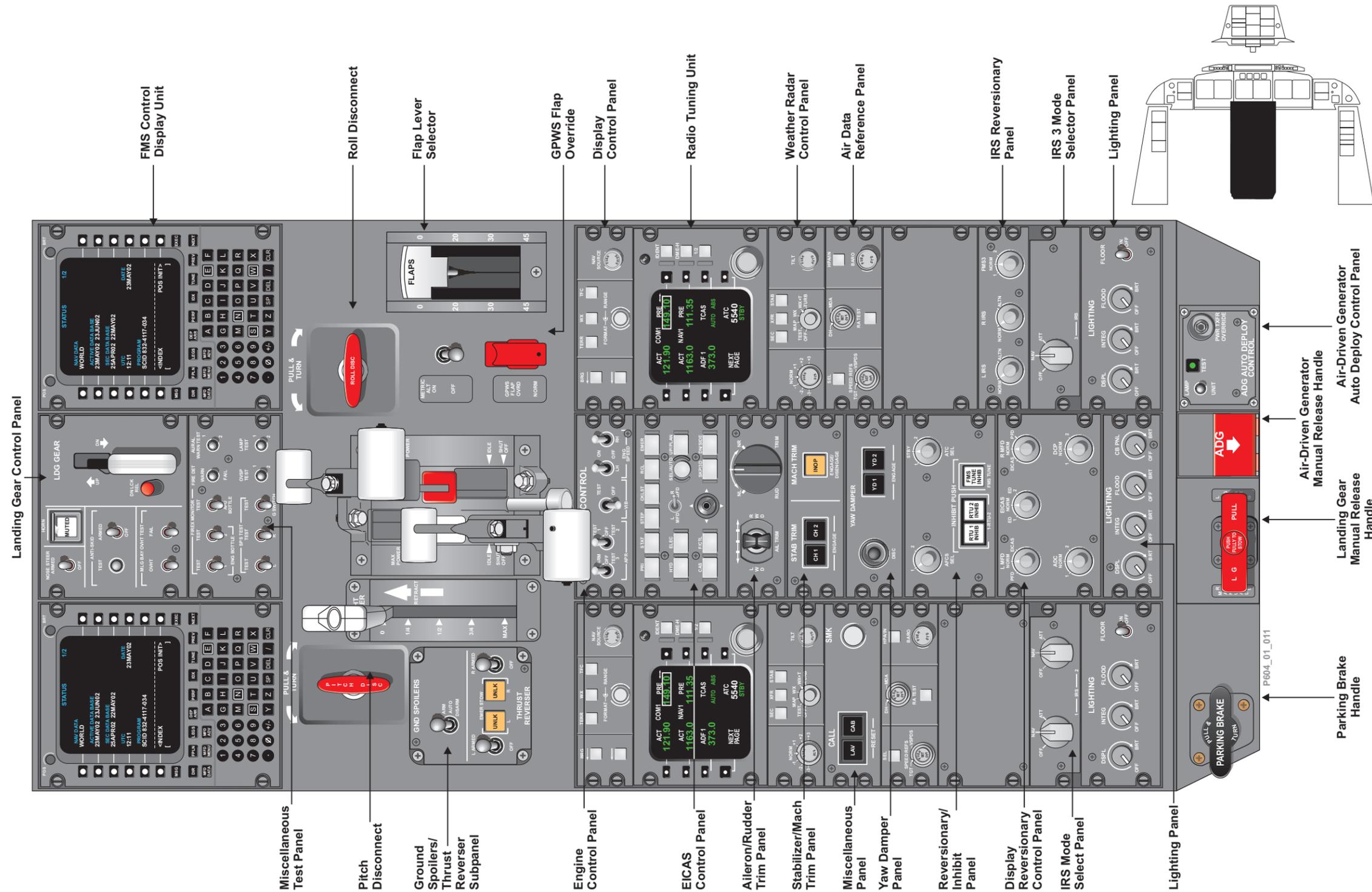
General Arrangement
Figure 1-9



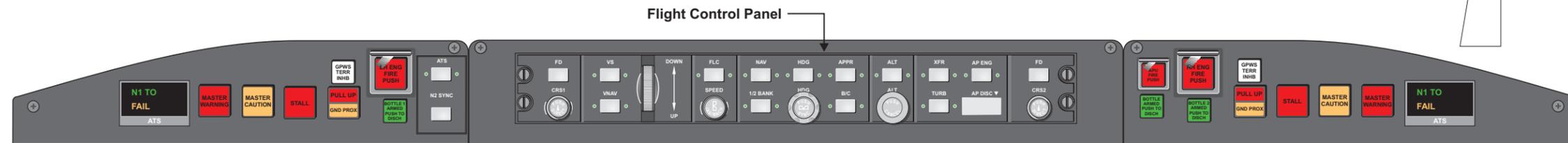
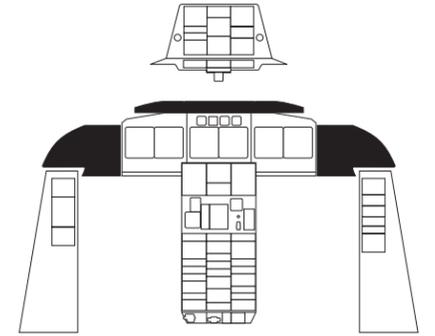


Overhead Panel

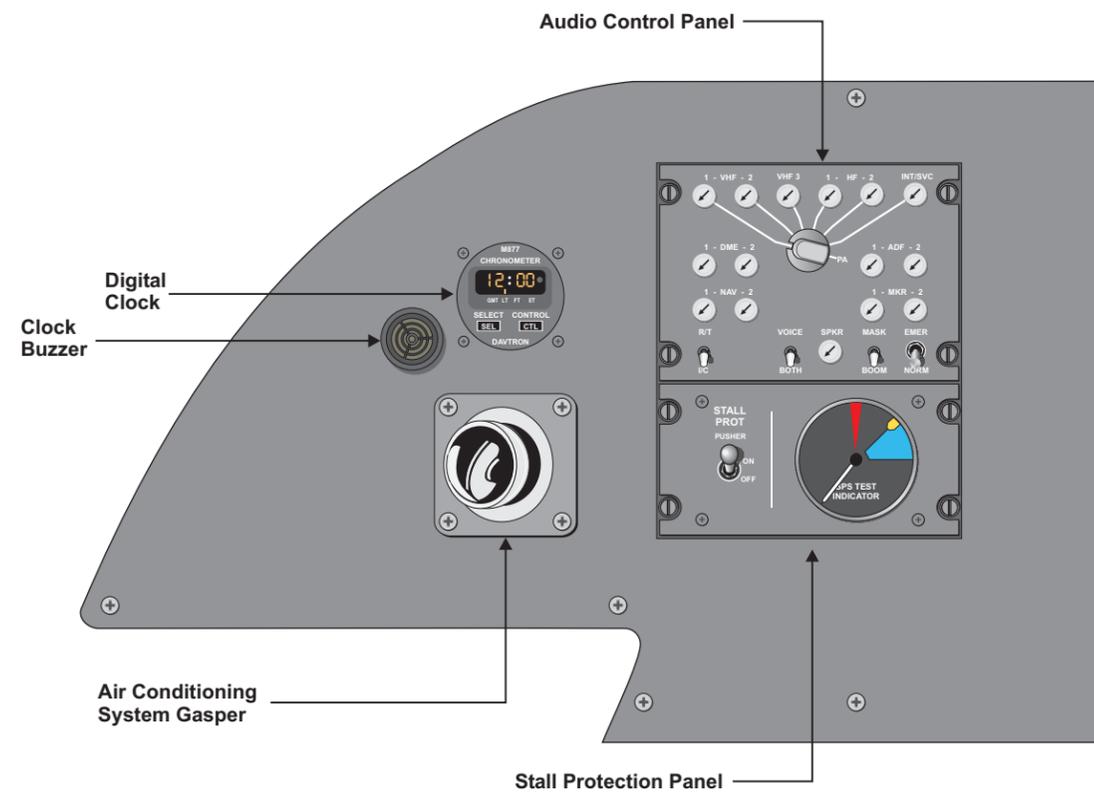
Figure 1-10



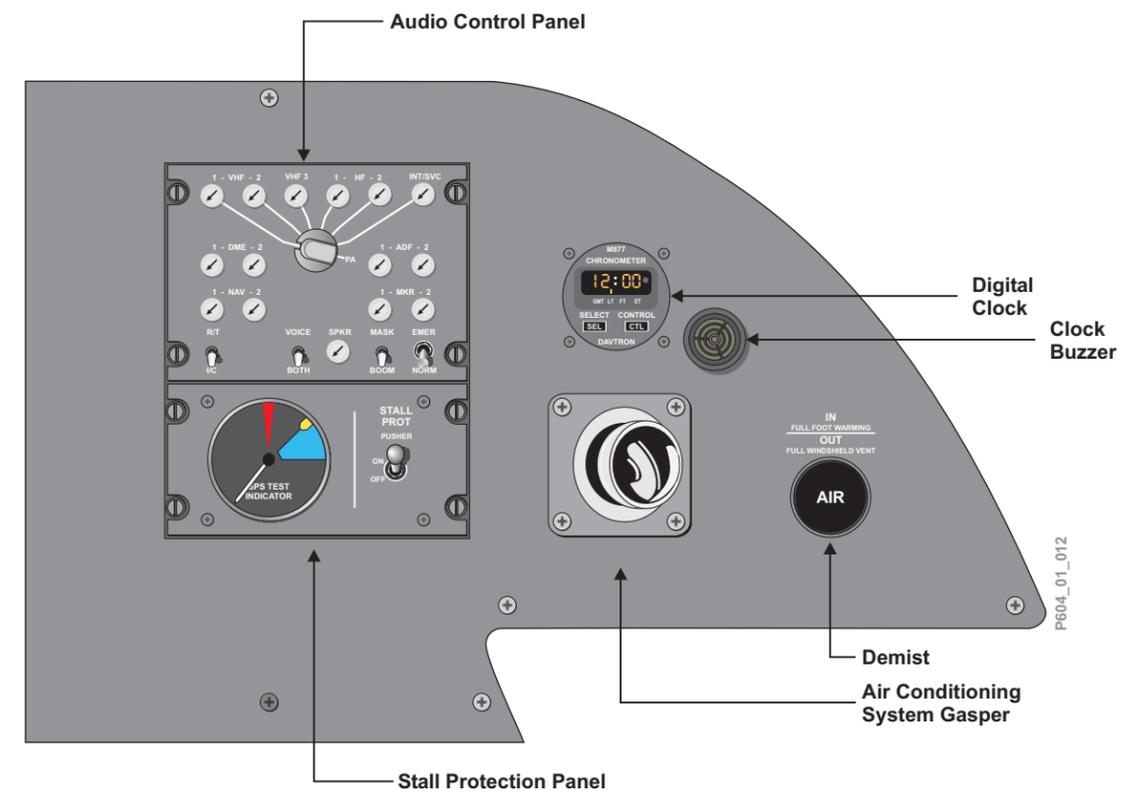
Center Pedestal
Figure 1-11



GLARESHIELD



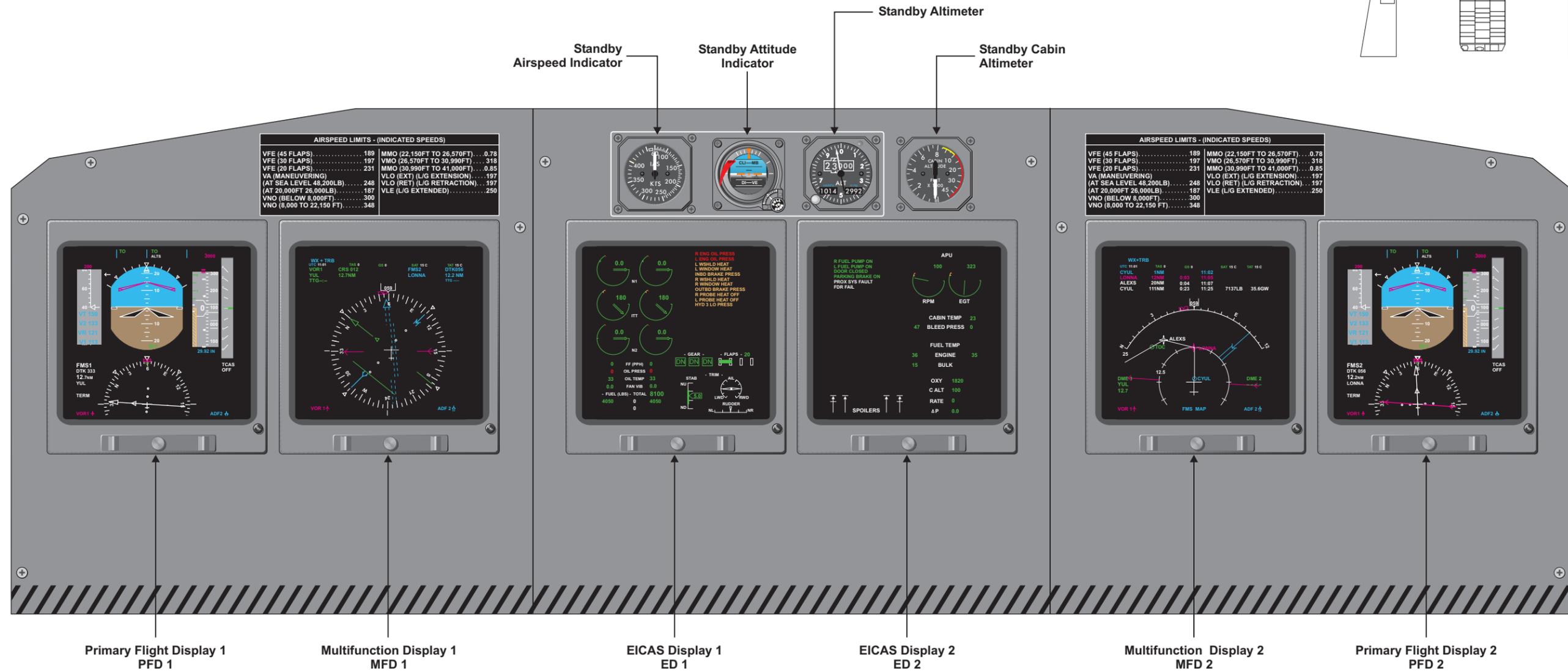
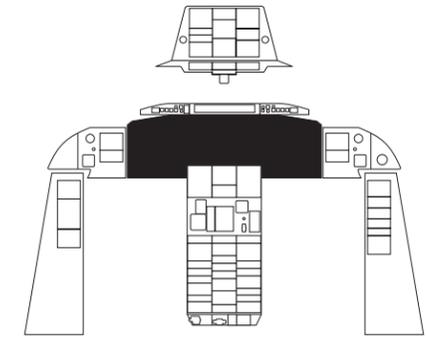
LEFT FACIA AND SIDE PANEL



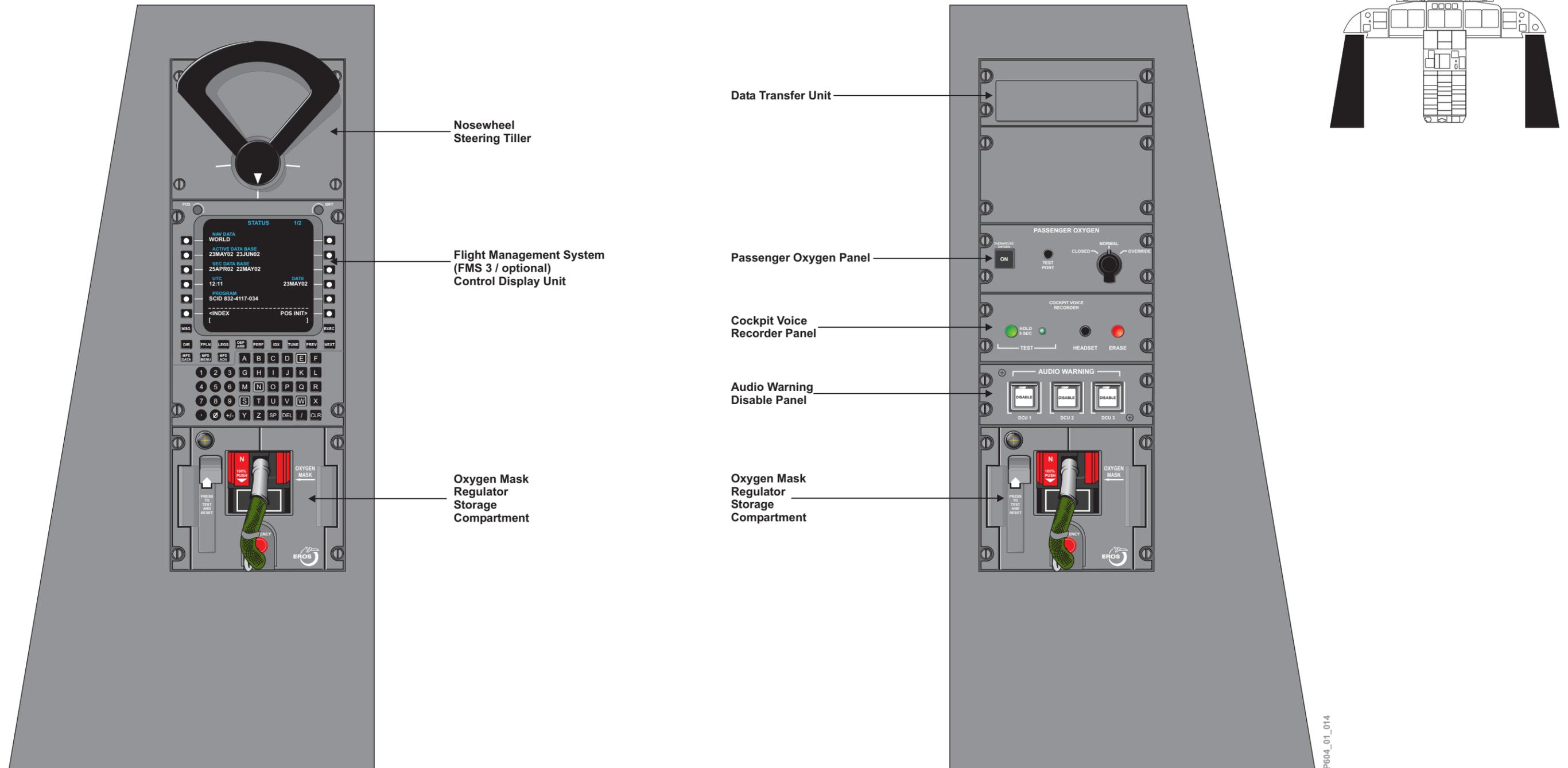
RIGHT FACIA AND SIDE PANEL

Glareshield and Side Panels
Figure 1-12





Instrument Panels
Figure 1-13



Side Consoles
Figure 1-14

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Crew Seats

Description

The Challenger 604 is equipped with two fully adjustable flight deck crew seats.

Crew Seat Adjustment

The crew seats provide adjustment fore and aft, as well as for height, recline and armrest position.

The fore and aft adjustment lever is located on the seat base at the rear inboard position approximately below the pilot's inboard elbow. Moving this lever rearward allows the seat to be rolled fore and aft along its tracks.

The height adjustment lever is located on the seat base at the forward outboard position approximately below the pilot's outboard knee. Moving this lever downward allows the seat to be raised or lowered, using the pilot's legs to move the seat.

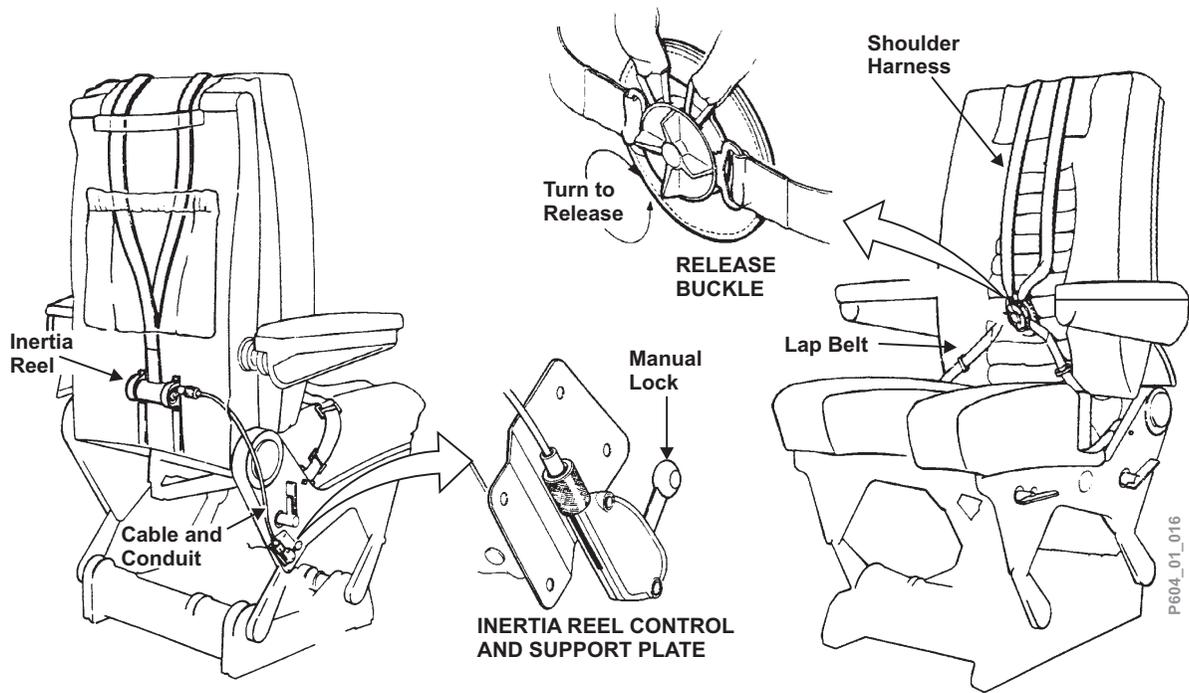
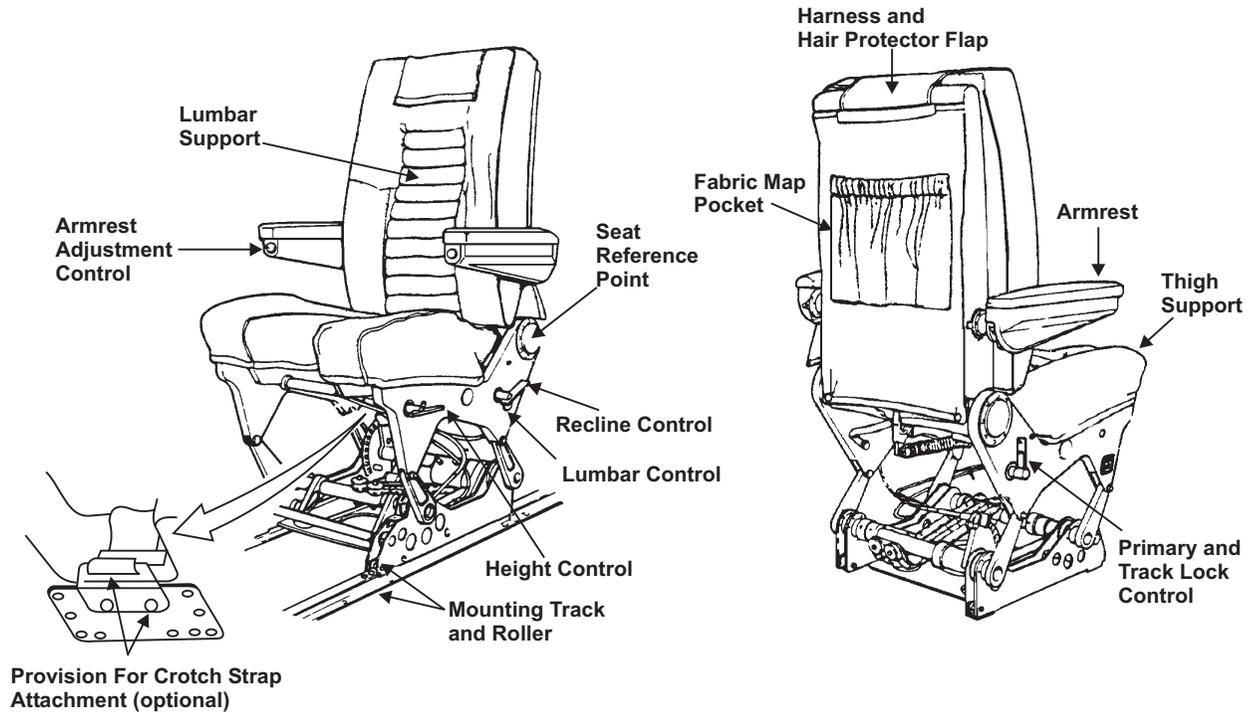
A handhold is located above the pilot's head on the overhead panel, to further assist in the adjustment.

CAUTION

Use caution when operating the adjustment lever for seat height. Be careful not to pinch fingers in the scissor movement of the seat adjustment mechanism.

The recline adjustment lever is located on the seat base at the rear outboard position, approximately below the pilot's outboard elbow. Moving this lever rearward allows the recline to be adjusted.

Armrest adjustment is accomplished by pushing in the adjustment button located on the front end of each armrest and positioning the armrest as desired. Release the button to lock the armrest in its new position.



Seat/Harness Assembly
Figure 1-15

Eye Locator - Seat Adjustment

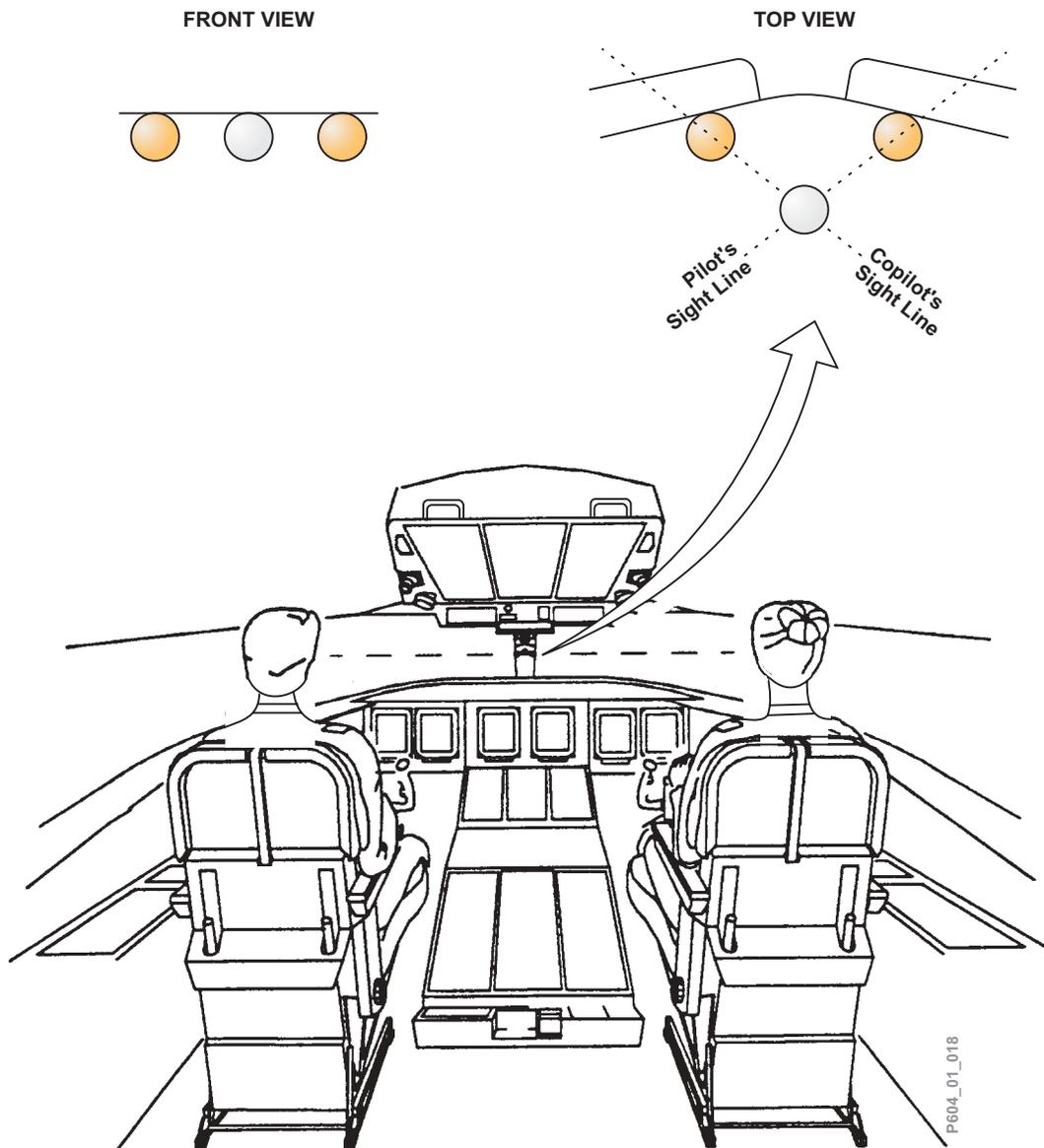
An eye locator is mounted on the center windshield post to enable seat adjustment for proper eye-to-wheel height.

Crew Seat Adjustment Using Eye Locator

The seat position is adjusted with the appropriate control levers to obtain the optimum eye-reference position relative to the eye-reference position datum located on the forward center window post. The handhold in the overhead panel is used to assist in positioning the seat. Without rotating his/her head away from the forward-facing position, the pilot looks toward the ball indicators and adjusts the seat as necessary.

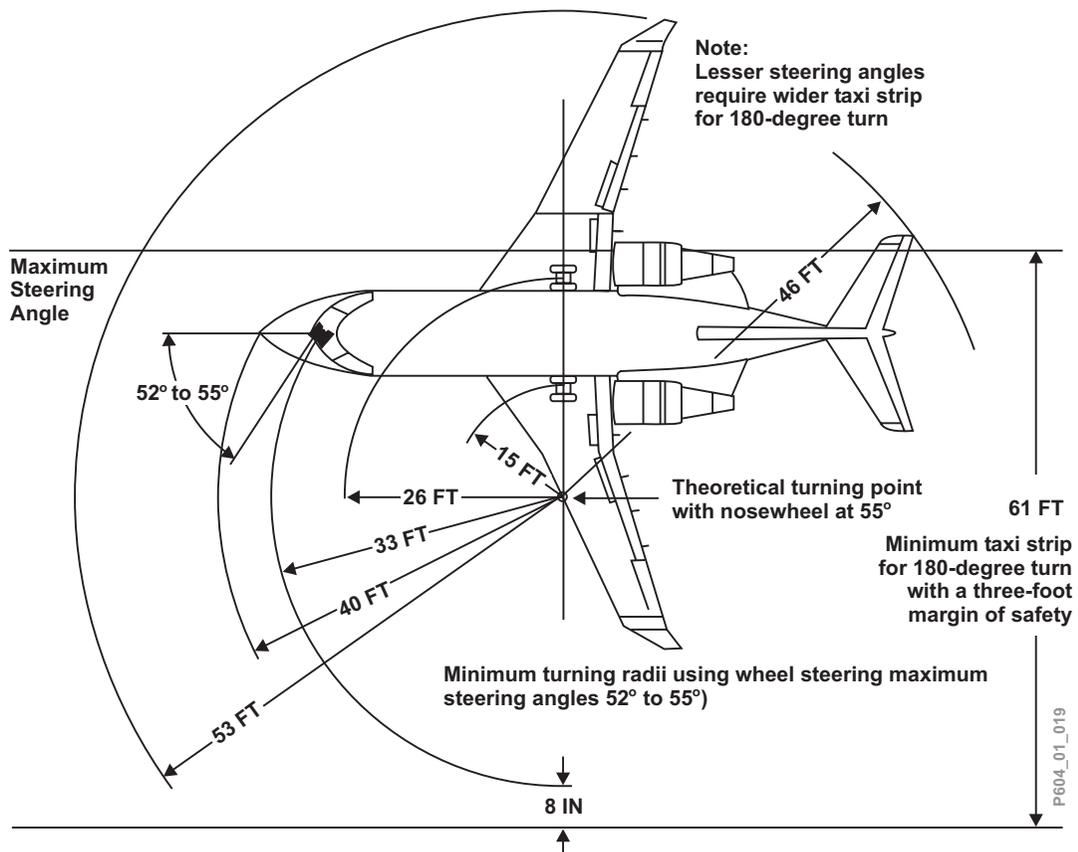
NOTE

The correct eye-reference position is established when the white indicator ball appears in the center of the orange ball. The resulting eye level should be approximately in the center of the forward window.



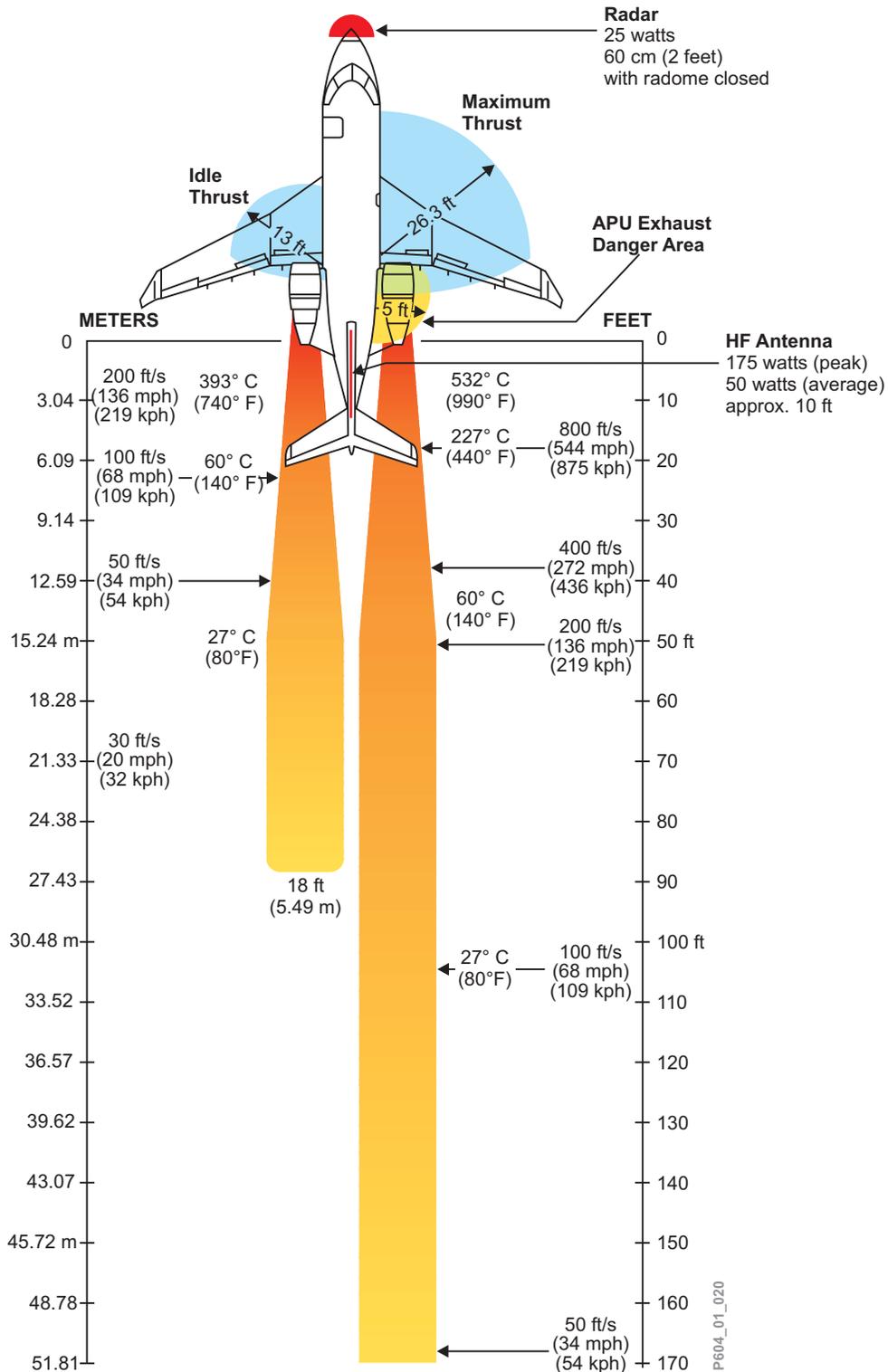
Eye Locator - Seat Adjustment

Figure 1-16



Taxiing and Turning Radii

Figure 1-17



Hazard Areas - Engines and APU

Figure 1-18

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