AIRFRAME AND SYSTEMS

Introduction

The Fokker 50 is a twin-engined, pressurized, high-wing aircraft, designed for short or medium-haul operations. Principal dimensions and limitations are given in the applicable sections.

Fuselage

Pressurization

The fuselage is pressurized in all compartments between fore and aft pressure bulkheads. An automatic pressurization system controls the outflow of conditioned air. The maximum pressure differential of approximately 5.45 PSI allows a cabin altitude of 8,000 feet at a flight altitude of 25,000 feet. The airconditioning packs are located in the non-pressurized aft section.

Doors

Four outward-opening cabin doors are provided, two on each side of the fuselage. For use and operation see subsection DOORS.

Windows

The flight deck windows are identified as front windows, direct-vision windows and sliding windows. The front windows are electrically heated. Rain is removed by two wipers. Direct-vision and sliding windows can be opened when the aircraft is not pressurized. Front and direct-vision windows are demisted by conditioned airflow. Sun visors are provided. Twenty-one windows are installed on the RH side of the cabin and twenty on the LH side. The double pane construction allows a conditioned airflow for de-icing. Each cabin window is equipped with an adjustable sunblind.

Probes

Four pitot heads and an angle-of-attack vane are installed near the nose of the aircraft. To prevent ice build-up, they are electrically heated.

Antennas and lights

See the illustration for the location of antennas and external lights.
Wings and tail section

Flight controls and flaps
Each aileron has a spring tab, a balance tab, and an integral horn balance which forms part of the wing tip. The balance tab at the RH aileron can be operated as a trim tab. The vertical stabilizer is equipped with a horn-balanced rudder. The rudder is equipped with a balance tab and a trim tab. The horizontal stabilizer has two elevator surfaces and one trim tab. The flaps, which comprise two trailing edge sections of each wing, are operated hydraulically.

Ice and rain protection
Inflatable rubber boots are recessed into the leading edges of the wings and the tail section. De-icing is obtained by alternately inflating and deflating the air ducts in the boots.

Antennas and lights
See the illustrations for location of antennas and external lights.

Fuel tanks
Fuel is stored in two integral tanks, one in each wing, and in two collector tanks, one in each nacelle. Electrical pumps in the collector tanks ensure a continuous supply to the engines. Cross-feeding, to supply both engines from one tank, or one engine from both tanks, is possible. A pressure fuelling connector is located on the underside of the RH wing. The fuel service panel is installed in the RH nacelle.

Nacelles
The front section houses the power plant and its mounting. The forward bulkhead of the center section forms a firewall. The exhaust gases, led through the firewall and then outwards, exit below and slightly aft of the wing leading edge. The center section is used for housing the main landing gear and the collector tank. The rear section of the LH nacelle houses the hydraulic tank.

For aircraft equipped with APU
The rear section of the RH nacelle might house the Auxiliary Power Unit (APU).
Power plant

Engines and propellers
The aircraft is equipped with two wing mounted Pratt and Whitney PW 125B turboprop engines. Each engine is essentially a twin spool turbojet combined with a free power turbine assembly, which drives a reduction gearbox, and a six bladed constant speed propeller via a third concentric shaft. The propellers have reverse thrust capability for braking and ground maneuvering. Propeller pitch is controlled by high-pressure engine oil and counterweights. Feathering can be initiated automatically or manually. Engines and propellers are protected against ice by electrical heating. Both engines are equipped with fire detection and extinguishing systems.

Electric, hydraulic and pneumatic power
Each engine drives an Integrated Drive Generator (IDG). The IDG’s generate 115V/400 Hz three phase AC power. 28 V DC power is obtained through two Transformer Rectifier Units (TRU’s). Emergency power is supplied by two batteries. Electrical power for starting is supplied by the batteries and/or by an external source. Two engine driven pumps provide hydraulic power through a single system, for operation of landing gear, flaps, nose wheel steering and brakes. Bleed-air, tapped from the compressors of both engines, is used for air conditioning and pressurization, airframe de-icing and hydraulic tank pressurization.

Landing gear
The landing gear consists of a forward retracting nose gear and two rearward retracting main gears. Doors enclose the landing gear bays in the unpressurized fuselage nose and in each nacelle when the gear is retracted. Each gear is equipped with a shock absorber and two wheels. The main gear wheels are equipped with brake units. A skid-control system provides optimum braking for all runway conditions. The nose gear is provided with nose wheel steering and a centering system. The minimum turning radius is shown in the illustrations. The nose gear is equipped for pull out or push back operations with a tow bar. During towing, nose wheel swivel through a maximum angle of 115 degrees on either side of the center is possible. This angle is indicated by red lines painted on the underside of the fuselage. A tailskid is provided to prevent or limit structural damage to the aft aircraft structure in case of excessive nose up attitudes during take-off or landing. A taxi light is installed on the nose gear.
ILLUSTRATIONS

Dimensions
Window and doors

- AFT CARGO DOOR
- FORWARD CARGO DOOR
- GALLEY SERVICE DOOR
- PASSENGER ENTANCE DOOR
- PASSENGER COMPARTMENT WINDOWS
- FRONT WINDOW
- SLIDING WINDOW
- DIRECT-VISION WINDOW
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<td>18</td>
<td>HF Com (for aircraft equipped with HF)</td>
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**Exterior lights**

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<th>2 Wing inspection light</th>
<th>3 Landing light</th>
<th>4 Anti-collision light</th>
<th>5 Navigation and strobe light</th>
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</table>
Flight controls and flaps
De-icing boots
Landing gear

TOWING ARRANGEMENT
Turning radius

R1 = 7.16 m (23.5 ft)
R2 = 10.41 m (34.1 ft)
R3 = 12.17 m (39.9 ft)
R4 = 14.25 m (46.8 ft)
R5 = 18.07 m (59.3 ft)

STEERING ANGLE: 73°

MINIMUM PAVEMENT WIDTH
FOR 180° TURN: 18 m (59 ft)
EQUIPMENT

Flight deck

Seats
The flight deck is arranged for two-pilot operation. The pilot seats are adjustable horizontally (forward and backward) and vertically. Thigh support, lumbar support and recline position are individually adjustable. To facilitate entry the armrests can be folded upwards. Each seat is provided with a shoulder harness and a lap belt. A foldable seat for an observer is stowed in the flight deck entrance. The seat is provided with a shoulder harness and a lap belt.

Reference eye position
A horizontal line in the top corner of each pilot’s instrument panel is an aid for the adjustment of the pilot’s seats. For an optimum combination of outside visibility and instrument scan, the line should be seen just below the glare shield.

Control column and pedals
Each control wheel includes a microphone IC/RT selector, a touch-control steering button, an AP cut-out button, a chronometer button and a chart holder. The captain’s control column is equipped with a stick shaker. Adjustable pedals provide for brake and rudder operation. Some aircrafts are equipped with spring-loaded footrests.

Control and instrument panels
Controls that are part of operational procedures are within easy reach of either pilot; instruments and annunciators are within the field of vision of both pilots. Controls and indicators for use by the pilots can be found on the following panels.

• The main instrument panel, which is tilted for better readability, is divided into a captain’s, a first officer’s (F/O), and a center panel. A Primary Flight Display (PFD) and a Navigation Display (ND) are installed, one above the other, at each pilot’s panel. These panels also house controls and indicators for secondary flight and navigation data and standby instruments. The center panel contains power plant instruments, the Central Annunciator Panel (CAP), the landing gear selector, a fuel quantity totalizer, and the brake pressure and flap position indicators.
• A glare shield, located directly above the main instrument panel, contains EFIS, AFCS, VHF NAV control panels and the master warning and caution lights.
• The overhead panel consists of control and monitoring panels for aircraft systems. A standby compass is installed at the lower end. Loudspeakers and jack panels are installed in the flight deck ceiling next to the overhead panel.
• The pedestal contains controls for engine power, flap position; trim setting, flight control lock, and alternate landing gear operation. Panels are installed for communication, navigation, weather radar, flight deck lighting, autopilot control, and system tests.
• The side panels contain tillers for nose wheel steering and various controls for ventilation. An alternate brake handle, a parking brake handle, and a towing switch/pushbutton are installed at the captain’s side only.
Panels located at the flight deck but mainly for the use by maintenance crew are:

- The maintenance and test panel, located at the avionics rack on the RH side of the flight deck entrance.
- The circuit breaker panel, located behind the F/O’s seat.
- The AC/DC circuit breaker panel, located at the electrical power center on the LH side of the flight deck entrance.
- The electrostatic groundjack panel, located on the overhead panel.

For aircraft equipped with APU
If installed, the APU maintenance and test panel, located on the overhead panel.

The layout of the maintenance and test panels and of the circuit breaker panels is shown in OM Part B section MISCELLANEOUS.

Annunciator lights
Annunciator lights are located at the overhead panel, the main instrument panel, the glare shield panel, and the pedestal. The general concept of the use of annunciator lights is that during normal continuous operation all lights are out (blank). Correct operation of red and amber lights can be tested by the pilots. See OM Part B section INTEGRATED ALERTING SYSTEM. All other annunciators are tested from the maintenance and test panel.

Switches
Lighted push buttons are installed primarily at the overhead panel. In addition to the switch function, most push buttons annunciate system status in accordance with the general annunciator concept. If an amber light illuminates (FAULT, INOP), the push button must be depressed for corrective action. If a push button is not correctly set or is operated due to a normal or abnormal procedure, a white (OFF, MAN, ALTN, BACKUP, FLDK, CANCEL, ON), or blue (ON) light illuminates. Exceptions are described in the relevant section. Some push buttons are equipped with a transparent guard to prevent inadvertent operation. Some guards are sealed. Toggle switches are selected ON when swept to the inadvertent operation. Rotary selectors are used when three or more detented positions are required. The selector knob serves as a pointer on a scale. Normally, the knob is in the upright position.

Flight deck lighting
All flight deck lights are described in sub section LIGHTS.

Ventilation and heating
Conditioned air is routed to ceiling outlets, window demisters, floor outlets, side wall outlets, and adjustable louvers, which are located next to each pilot’s main instrument panel. A fresh-air scoop is installed at each side panel for ventilation during non-pressurized flight.

Windows
When the aircraft is not pressurized, the direct-vision windows can be opened by raising the lock handles and pulling the windows inward. The sliding windows can be opened by rotating the lock handles rearward, and then sliding the windows rearward with the operation handles. The sliding windows lock handles are located below the windows.
**Flight deck door**

The door opens into the cabin. The cockpit door can be locked from the cabin side by means of a key. The door lock can be operated from the flight deck by a thumb turn. It is possible to latch the door in the open position.

**Stowage**

Each side console provides space for a manual and/or a handbook, and a flight kit. Sun visors are stowed behind the pilot’s seats. A cup holder and an ashtray are installed for each pilot and an observer. Spare bulbs are stowed in the captain’s side console. The gear pins are stowed in a box behind the F/O’s seat.

**Emergency equipment**

For location and use of emergency equipment in the flight deck see OM Part B section EMERGENCY EQUIPMENT.
Cabin

Lay-out
The layout of the cabin provides for 50 seats. Hand baggage stowage bins, equipped with handrails, are installed above the passenger seats. Service panels and loudspeakers are located at the lower side of the stowage bins. Each service panel composes reading lights, adjustable louvers, an attendant-call button, and ‘no smoking’ and ‘fasten seatbelt’ signs. A stowage unit and a toilet compartment are installed at the forward LH side of the cabin. The toilet flushing liquid is re-circulated. Additional equipment comprises a fresh-air outlet, a washbasin, a loudspeaker, an attendant-call button, a ‘return to cabin’ sign, a smoke detection system, and a waste bin with an automatic fire extinguisher. Two lockable cargo compartments are provided, one in the front of the cabin, the other at the rear. They are equipped with smoke detection systems.

For galley and trolley stowage refer to illustrations.

Attendant’s provisions
Accommodation is provided for two attendants. Two foldable seats are installed, one in the rear of the cabin facing forward, and one in the front facing aft. An attendant’s panel is located on the end of the RH luggage bin, facing the rear attendant’s seat. Attendant-call lights and cabin signs are installed on the panel: layout is shown in OM Part B section MISCELLANEOUS. Handsets for communication with the pilots or the other attendant’s station and microphones for passenger address are located in the front and the rear of the cabin. Loudspeakers are installed at each attendant’s position.

Lights
Cabin lights, and the rear attendant’s reading light, are controlled from the attendant’s panel. An additional cabin lights switch is installed near the passenger entrance. A forward-cargo compartment light switch is installed in the ceiling near the entrance of the compartment. The forward attendant’s reading light and the switch are installed in the cabin ceiling.

Emergency equipment
For location and use of emergency equipment in the cabin see OM Part B section EMERGENCY EQUIPMENT.

Water system
Type I
A potable water tank supplies the galley equipment, and a wash water tank supplies the basin in the toilet compartment. Both are gravity-fed. Wastewater from the washbasin and the galley is drained overboard through electrically heated drain masts.

Type II
A pressurized potable water tank supplies the galley equipment. The water supply for the washbasin in the toilet compartment is gravity-fed. Wastewater from the washbasin and the galley is drained overboard.
Illustrations

Pilot seats

INBOARD SIDE CAPTAIN'S SEAT

OUTBOARD SIDE CAPTAIN'S SEAT
Observer seat
NOTE:  Generic illustration, for specific position of equipment and instruments refer to applicable section of OM part B.
Glare shield and main instrument panel

NOTE: Generic illustration, for specific position of equipment and instruments refer to applicable section of OM Part B.
Overhead panel and flight deck ceiling

NOTE: Generic illustration, for specific position of equipment and instruments refer to applicable section of OM Part B.
Cross section

- Ø 2.0 m (6.6 ft)
- 0.62 m (2.0 ft)
- 1.02 m (3.3 ft)
- 0.43 m (1.4 ft)
- 0.46 m (1.5 ft)
- 1.96 m (6.4 ft)
Windows

RH DIRECT-VISION WINDOW

RH SLIDING WINDOW

DIRECT-VISION WINDOW LOCK HANDLE (DOWN IS LOCKED)

SLIDING WINDOW OPERATING HANDLE

SLIDING WINDOW LOCK HANDLE
DOORS

Cabin doors

The entries and exits to the aircraft comprise four doors:

• A passenger door on the forward LH side
• A cargo door on the forward RH side
• A cargo door on the aft RH side
• A galley service door on the aft LH side

Locking and unlocking

All doors can be opened and closed from the inside or from the outside.
From inside, the doors can be locked and unlocked with door handles, which must be turned 180 degrees. A closed door is locked when the door handle points in direction of flight. Black-and-yellow marks at the latches provide for verification.
From outside, each door can be locked and unlocked with a door handle, which must be turned approximately 150 degrees. The handle, flush with the skin of the door, pops out when an integrated PUSH button is depressed. Instructions to lock or unlock the doors are printed on the outside and on the inside of the doors. Normal and emergency instructions are identical.

Indications

Indications of open fuselage doors are presented at the Central Annunciator Panel (CAP) for:

• The passenger door.
• The forward cargo door.
• Any of the aft doors.

The lights are white and operate independent of the integrated alerting system.
An alert will be presented when any of the doors is not locked, either engine is running and the parking brake is released.

Passenger door stairway

The passenger door, which is equipped with an integral stairway and two folding handrails, opens downwards. When unlocked, the door opens under its own mass. The door is retracted electrically. Controls to close the door, to stop the downward movement and to resume the downward movement, are located at two panels near the door, one inside the cabin and the other outside, flush with the fuselage, to the left of the door. If external power is not available the door can be operated by battery power. It is possible to raise the door manually if no electric power is available.
Controls and indicators

LOCATION:
NEXT TO THE PASSENGER DOOR ON THE OUTSIDE
OF THE FUSELAGE

- DOOR UP BUTTON
  - Depressed
  - Door closes.
  - Released
  - Upward movement stops.
  
  NOTE: when closed, door must be locked with door handle.

- DOOR DOWN BUTTON
  - Depressed momentarily
  - Downward movement resumes.

- DOOR STOP BUTTON
  - Depressed
  - Downward movement stops.
  - Released
  - Downward movement resumes.

NOTE: When closed, door must be locked with door handle to enable
door opening.

Controls and indicators - External passenger door control panel
LOCATION: PASSENGER ENTRANCE

LIGHTING
- CABIN
- STAIR

DOOR CONTROL
- UP
- DOWN
- STOP

DOOR UP BUTTON
Depressed
- Door closes.
Released
- Upward movement stops.

NOTE: when closed, door must be locked with door handle.

DOOR DOWN BUTTON
Depressed momentarily
- Downward movement resumes.

DOOR STOP BUTTON
Depressed
- Downward movement stops.
Released
- Downward movement resumes.

NOTE: When closed, door must be locked with door handle to enable door opening.

Controls and indicators - Internal passenger door control panel
Controls and indicators - Door annunciators on the cap

A CENTRAL ANNUNCIATOR PANEL

DOORS CAUTION LIGHT
DOORS (amber)
- Pax door, aft doors, or forward cargo door not locked when parking brake is released and either engine is running.

DOOR INDICATION LIGHTS
PAX DOOR (white)
- Passenger door open.
AFT DOORS (white)
- Either aft door open.
FWD CARGO DOOR (white)
- Forward cargo door open.
<table>
<thead>
<tr>
<th>CONDITION(S) / LEVEL</th>
<th>AURAL</th>
<th>MWL/MCL</th>
<th>CAP</th>
<th>LOCAL</th>
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<td>2</td>
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Door alerts

CAUTION

DOORS
LIGHTS

General

Aircraft lighting systems controlled from the flight deck are:

- Exterior lighting
- Flight deck lighting
- Emergency lighting
- Standby lighting

Exterior lighting

Exterior lighting systems are controlled from the LIGHTS panel, located at the overhead panel.

A fixed landing light is installed in each wing leading edge; each contains a grille to shield the flight deck from glare.

A taxi light is mounted on the nose landing gear strut. The light is inoperative when the nose gear is retracted.

A wing-inspection light is installed on the outboard side of each cowl to illuminate the outer wing leading edges.

Navigation lights are installed in the LH wing tip (red), in the RH wing tip (green) and in the tail cone (white). During ground operations with the towing switch on, these lights will illuminate irrespective of the position of the NAV lights switch.

Strobe lights are installed next to the navigation lights in the wing tips. Logo light have been deactivated on all aircraft.

Type I

Two anti-collision lights are installed, one on top and one at the bottom of the fuselage (both red). These lights are operated via the ANTI COLL light switch.

Logo lights are installed in the top surface of the horizontal stabilizers.

Type II

Three anti-collision lights are installed, one on top and one at the bottom of the fuselage (both red), and one in the tail cone (white, with dual bulbs). These lights are operated via the ANTI COLL light switch.

Logo lights are installed in the top surface of the horizontal stabilizers.

Type III

Three anti-collision lights are installed, one on top and one at the bottom of the fuselage (both red) and one in the tail cone (white, with dual bulbs). The top anti-collision light is operated via the ANTI COLL light switch on the overhead panel. The bottom anti-collision light is operated via the BEACON light switch. The lower anti-collision light operates on ground on battery only conditions as well.
Flight deck lighting

Flight deck lighting systems, which are controlled from the FLIGHT DECK lighting panel at the pedestal, include dome, flight deck flood, panel, instrument, and annunciator lights. Chart holder, reading, and side panel lights are also installed.

A dome light for general flight deck illumination is located aft of the overhead panel. Flight deck flood lighting is provided to illuminate all flight deck panels, and can be controlled between off and fully bright.

The floodlight is integrated in the dome light assembly, but control is independent of dome light switching. Overhead panel, glare shield, pedestal, and the instruments at the main instrument panel are provided with integral lighting. The main instrument panel is illuminated by a dimmable floodlight. Each panel can be controlled independently.

Annunciator light brightness is controlled by one dim/bright selector. Those lights, which are normally blank, have two brightness levels: dim and bright. See also INTEGRATED ALERTING SYSTEM.

All other lights have six brightness levels: three dim and three bright. The maximum brightness level is the reset position (RST). When electrical power is applied to the aircraft, the lights illuminate fully bright, irrespective of selector position. RST resets the selector for brightness control.

NOTE: A STORM pushbutton, located on the LIGHTS panel, is provided to override the individual controls. When depressed, flight deck flood, main instrument panel flood, and the lighted annunciator lights, will illuminate fully bright.

Two chart holder lights, one at each control wheel, can be controlled individually by a knob on top of each chart holder. Three reading lights, which are installed next to the overhead panel, provide captain, first officer, and observer with local illumination. The lights have integrated controls. Each side panel light is controlled by a selector located at the side panel.
**Emergency and stand-by lights**

**Emergency lights**
An emergency lights selector, with OFF, ARMED, and ON positions, is located on the overhead panel.

Emergency lights, powered by emergency battery packs, are installed in the flight deck, toilet compartment, passenger compartment; exit signs, floor proximity escape path markings, and externally near the exits.

Automatic activation occurs if AC power is not available and the emergency lights selector is in the armed position. The emergency lights can be switched on manually at the flight deck via the emergency-lights selector on the overhead panel, or via the guarded emergency-lights switch at the attendant’s panel.

**Standby lights**
Standby lights are installed in the toilet compartment, exit signs, and the passenger compartment.
As soon as DC power is available the standby lights in the toilet compartment and the exit signs illuminate. The standby lights in the passenger compartment illuminate automatically, when DC power is available and AC power is not available.
NOTE FOR TYPE III: The LOGO light switch is changed into BEACON light switch, which operates the lower anti-collision light.
OVERHEAD PANEL BRIGHTNESS CONTROL
 Rotate to adjust brightness of integral overhead panel lights.

GLARE SHIELD BRIGHTNESS CONTROL
 Rotate to adjust brightness of integral glare shield lights.

MAIN INSTRUMENT PANEL BRIGHTNESS CONTROL (F/O)
 Rotate:
 - Inner knob to adjust brightness of integral instrument lights.
 - Outer knob to adjust brightness of flood light.

PEDESTAL BRIGHTNESS CONTROL
 Rotate to adjust brightness of integral pedestal lights.

ANNUNCIATOR BRIGHTNESS CONTROL
 DIM
 - One dim level for annunciators normally blank.
 - Three dim levels for all other annunciators.

BRT
 - One bright level for annunciators normally blank.
 - Three bright levels for all other annunciators.

RST
 - Maximum bright level.
 - Resets connection between control position and brightness level.

DOME LIGHT BUTTON
 Push to switch DOME light on or off.

FLIGHT DECK FLOOD CONTROL
 Rotate to adjust brightness of flight deck flood light.
SIDE PANEL LIGHTING SELECTOR

OFF
- Side panel lights off.

DIM
- Side panel lights on, dimmed.

BRIGHT
- Side panel lights on, bright.
A EMERGENCY LIGHTS PANEL

EMERGENCY LIGHTS SELECTOR

OFF
- Emergency lighting system off.

ARMED
- Emergency lighting system armed.

NOTE: Pull to select ON or OFF.

ON
- Emergency lights on.

EMERGENCY LIGHTS NOT ARMED LIGHT

Normal (blank)
- Emergency lighting system armed.

NOT ARMED (amber)
- EMER LIGHT selector ON or OFF.
SYSTEM OPERATION

Passenger door

Operation to open door
From outside:
• Lift door handle at PUSH.
• Turn handle to OPEN and stand clear.

The down movement can be interrupted by pushing and holding the STOP button. After release of the STOP button the down movement will be resumed at a slower speed.

NOTE: If door fails to open: push door outwards.

Operation to close door
Push UP button and hold until door is closed. Turn handle to LOCK.

If it is required to interrupt the up movement and open the door again, release the UP button and push the DOWN button. The resulting down movement can again be interrupted by pushing and holding the STOP button. After release of the STOP button the down movement will be resumed. Do not push the UP button before the down movement has been completed.

CAUTION: Be aware of possible unpredicted door movements in case of door operation in strong wind conditions.

Other doors

Operation to open doors
From outside:
• Lift handle at PUSH.
• Turn handle to OPEN.
• Pull door out.

From inside:
• Turn handle to OPEN.
• Push door outward.

Operation to close doors
• Pull retract handle to unlock door.
• Pull door to close.
• Turn handle to LOCK.

CAUTION: Be aware of possible unpredicted door movements in case of door operation in strong wind conditions.