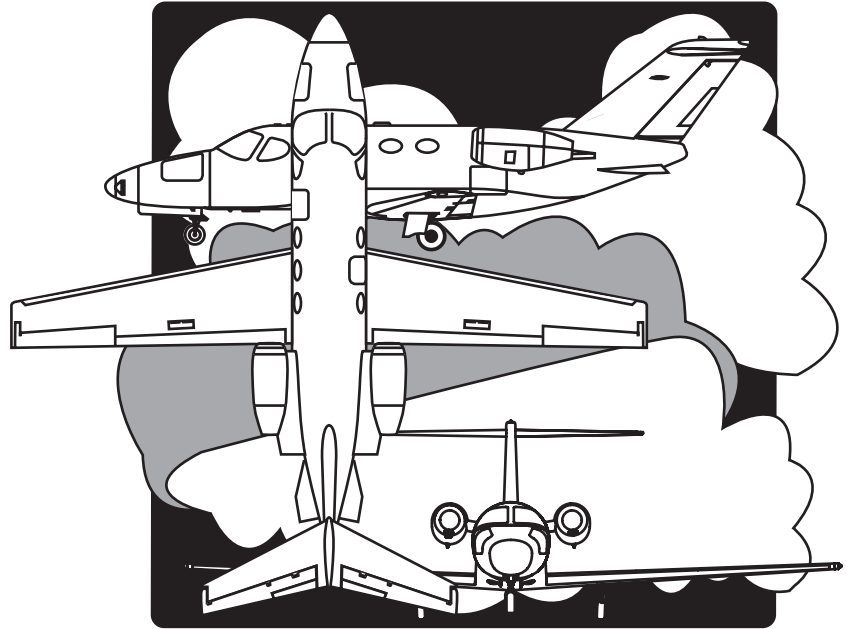




CHAPTER 1

AIRCRAFT GENERAL



INTRODUCTION

This manual provides a description of the major airframe and engine systems in the Cessna Citation Mustang (Figure 1-1). This material does not supersede, nor is it meant to substitute for, any of the manufacturer's maintenance or flight manuals. The material presented has been prepared from current design data. Chapter 1 covers the structural makeup of the airplane and gives an overview of the systems.

GENERAL

The Citation Mustang is certified in accordance with Title 14 of the Code of Federal Regulations (14CFR23) Part 23, including day, night, visual flight rules (VFR), instrument flight rules (IFR), single pilot, and flight into known icing conditions. Takeoff and landing performance and other special condition certification requirements are similar to 14CFR Part 25. The Mustang meets 14CFR

Part 36 noise standards, and meets 14CFR Part 34 fuel venting and exhaust emission standards. It combines systems simplicity with ease of access to reduce maintenance requirements. Low takeoff and landing speeds permit operation at small airports. Medium bypass turbofan engines contribute to overall operating efficiency and performance.



CITATION MUSTANG OPERATING MANUAL



Figure 1-1. Cessna Citation Mustang

The Citation Mustang is equipped with a Garmin G-1000 integrated avionics system. This three-panel display system integrates flight instruments, flight guidance, navigation, and communication systems. Also integrated into the avionics system are the master warning and master caution systems and hazard avoidance systems. The engine indication and crew alerting system (EICAS) is a two-column display on the left side of the center multifunction display (MFD). The crew alerting system (CAS) messages are displayed on the lower left of the MFD to alert the crew of system emergencies, abnormal situations, or changes in system operation. EICAS and CAS will be referred to often in the following chapters.

DIMENSIONS

Figure 1-2 shows a three-view drawing of the Citation Mustang containing the approximate exterior and cabin dimensions.

WEIGHT LIMITATIONS

- Maximum ramp weight 8,730 pounds
- Maximum takeoff weight 8,645 pounds
- Maximum landing weight 8,000 pounds

STRUCTURES

The Citation Mustang (Figure 1-1) is an all-metal, pressurized, low-wing monoplane with a swept T-tail. The interior has provisions for up to four passengers and two crewmembers. It has one cabin entry door and one emergency exit. The aircraft has baggage compartments in the nose and tail cone. Two pylon-mounted Pratt & Whitney PW615F turbofan engines are on the rear fuselage.

Figure 1-3 shows braking taxi turning distance, and Figure 1-4 is a diagram of engine hazard areas.

The aircraft has five doors:

- Entrance door
- Emergency exit (escape hatch)
- Left nose baggage compartment door
- Right nose baggage compartment door
- Aft (tail cone) compartment door

Each door (except the emergency exit) has a monitoring system, which provides a specific CAS message for that door if it is not properly closed. However, if the monitoring system for the cabin or nose baggage doors fail to pass a test on the ground, stops operating, or does not indicate normal operating condition, the amber CHECK DOORS message appears.



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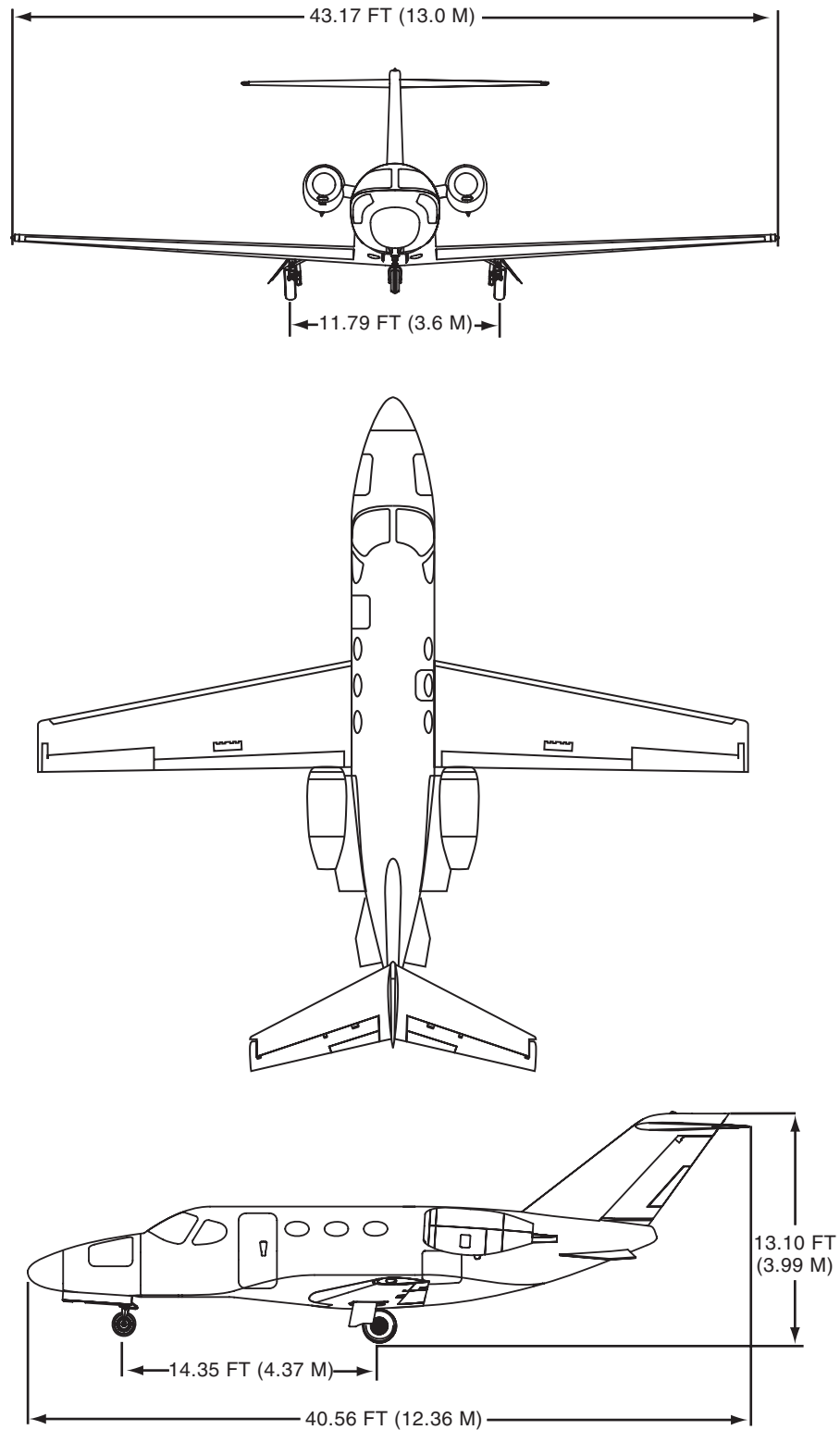


Figure 1-2. Exterior Three-View Drawing



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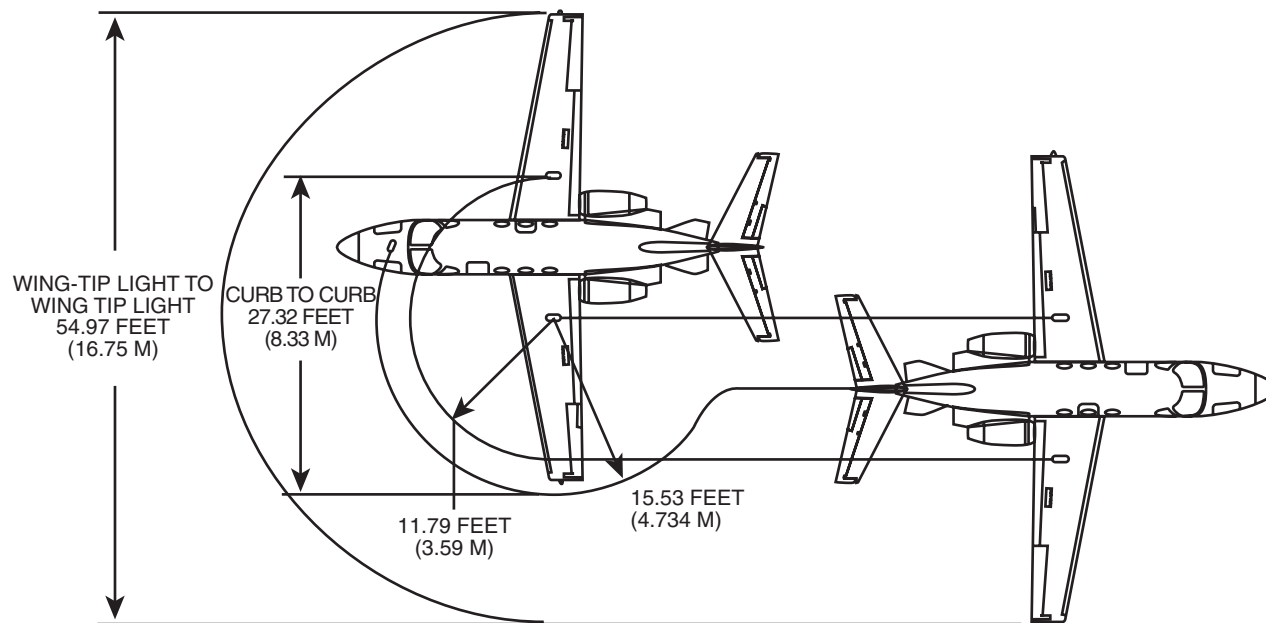


Figure 1-3. Braking Taxi Turning Distance

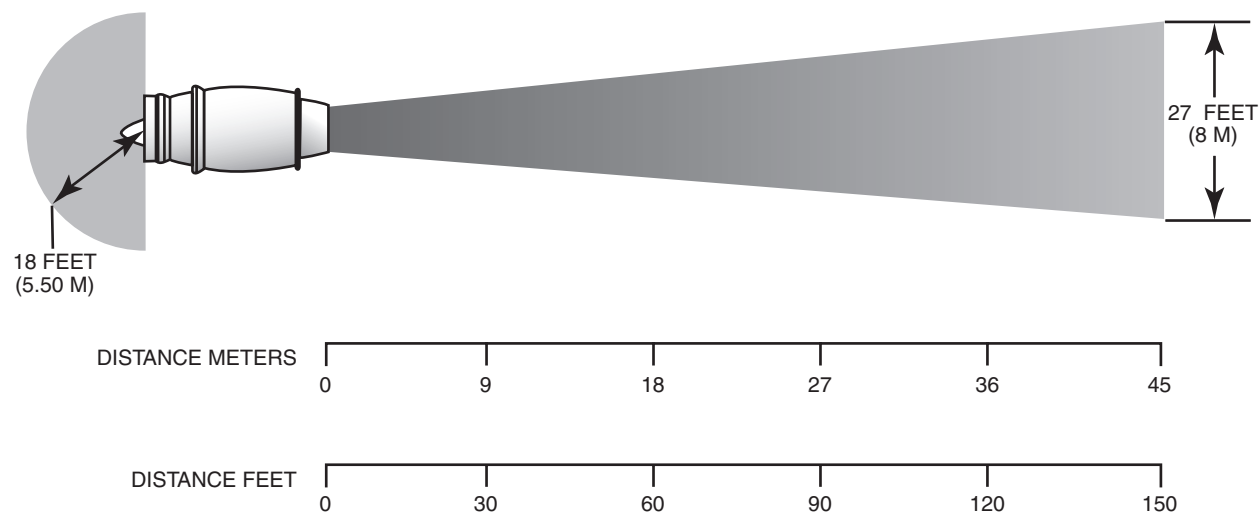


Figure 1-4. Engine Hazard Areas



ENTRANCE DOOR

The cabin entrance door is on the forward left side of the fuselage (Figure 1-5). The entrance door opens outboard and forward. It is secured in the closed position with eight locking pins attached to a handle. The door can be opened from inside or outside of the airplane. The exterior handle can be secured with a key.

Ensure that the key is removed from the entrance door prior to flight to prevent possible ingestion of the key into an engine.

An adjustable stop prevents the door from opening too far. Once the door is fully open, a hook locks the door into position. To unlatch the hook and let the door close, a release button inside the cabin (inside left of door opening) must be pushed (Figure 1-5). This lets the door move freely.

CAUTION

The locking pins will contact and damage the painted surface of the fuselage if an attempt is made to shut the door with the handle in the closed (up) position.

The seal system operates passively as the cabin is pressurized. The seal engages and disengages when the door opens and closes.

A hinged panel at the main cabin door threshold is used as a water barrier during ditching (Figure 1-6). It hinges up to prevent water from entering the aircraft, and enables the use of the entrance door as an exit during ditching.

WARNING

Water barrier must be raised and latched into position prior to ditching.

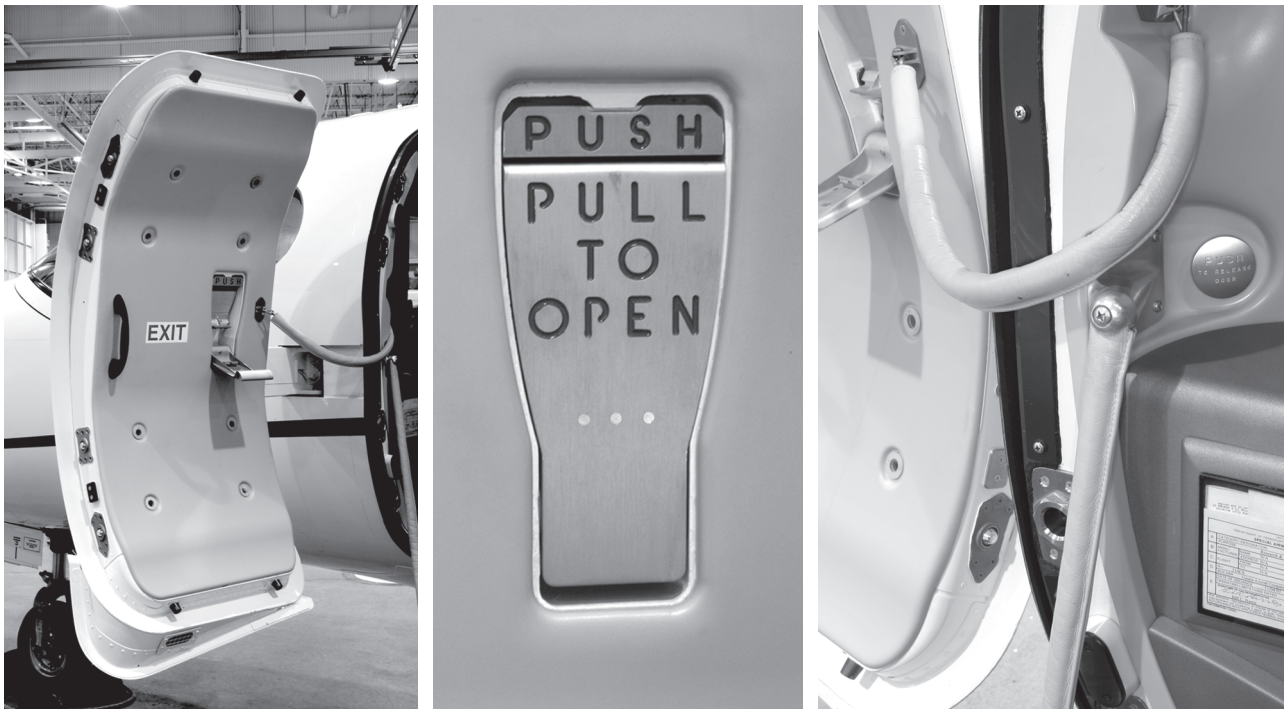


Figure 1-5. Entrance Door, Interior Handle, and Latch Release

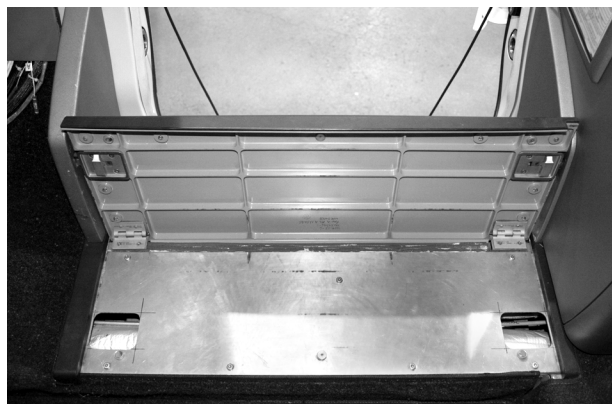


Figure 1-6. Hinged Panel

NOTE

The water barrier is installed at the main cabin door threshold. Crew members should be familiar with its location and operation; and passengers should be briefed prior to flights over water.

A monitoring system checks for safe condition of the door (closed, pins secure, door latched). There are eight view ports on the inside panel of the entry door to verify that the eight locking pins are in the closed position. With the door closed and handle latched, the pilot should be able to see the white and green indicators in each port. (Figure 1-7). Three proximity switches verify that the door is closed, latched, and locked by sensing the position of targets on the closing mechanism of the door and signals the condition to the CAS:

- The proximity switch on the doorway surround structure senses the door after it is closed.
- After the door is latched, a proximity switch senses the door pin position.
- As the handle catch is engaged, a proximity switch on the inner handle assembly senses a flag.

If one of the proximity switches does not sense its target, the CABIN DOOR message appears on the CAS.

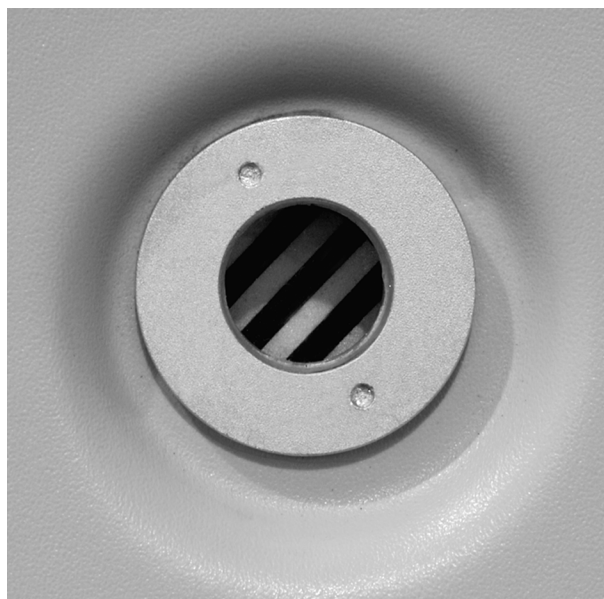


Figure 1-7. Door Pin Indicator

EMERGENCY EXIT

A plug-type emergency exit (escape hatch) is on the aft right side of the cabin, above the wing. It opens inboard. The emergency exit door can be opened from outside or inside the airplane (Figure 1-8).

The D-shaped inner door handle is recessed behind a magnetic cover. The flush-mounted outer handle is located at the top of the door. The outer handle is not directly connected to the inner handle. The outer handle has a green indicator to show when the door is latched.

Because no other provisions are provided for securing the escape hatch when the airplane is unattended, a safety pin with a REMOVE BEFORE FLIGHT streamer is placed on the inside of the hatch. The pilot must ensure this pin is removed prior to flight. The emergency exit hatch is not connected to the door warning circuit.

CABIN

The cabin extends from the forward pressure bulkhead to the aft pressure bulkhead and



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EXTERIOR



INTERIOR

Figure 1-8. Emergency Exit

measures approximately 14 feet in length, 4.7 feet in width, and 4.5 feet in height. Figure 1-9 shows the interior arrangements. Refer to Figure 1-10 for interior dimensions.

The standard interior arrangement consists of two aft-facing and two forward-facing passenger seats. There is a toilet on the right side of the fuselage, abeam the cabin entry door. The toilet is not equipped with a safety belt and cannot be occupied during taxi, takeoff, or landing.

The cabin area has dropout, constant-flow oxygen masks for emergency use.

The cabin overhead panels contain individual air vent outlets and seat lighting for passenger comfort.

FLIGHT COMPARTMENT

The airplane is equipped with dual controls, including control yokes, brakes, and rudder pedals at each crew seat. There are two adjustable seats with seat belts and shoulder harnesses.

TAIL CONE COMPARTMENT

The tail cone compartment is an unpressurized area and contains major components of the environmental, electrical distribution, flight controls, and engine fire extinguishing systems. Access is through the tail cone baggage door on the left side of the fuselage below the engine.

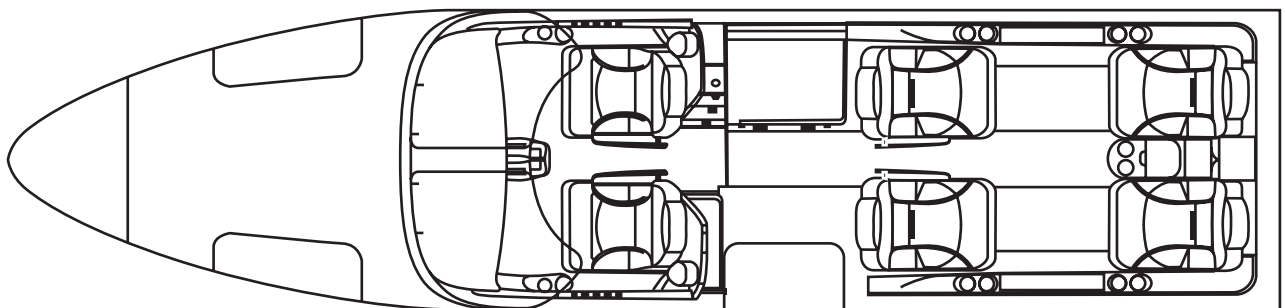
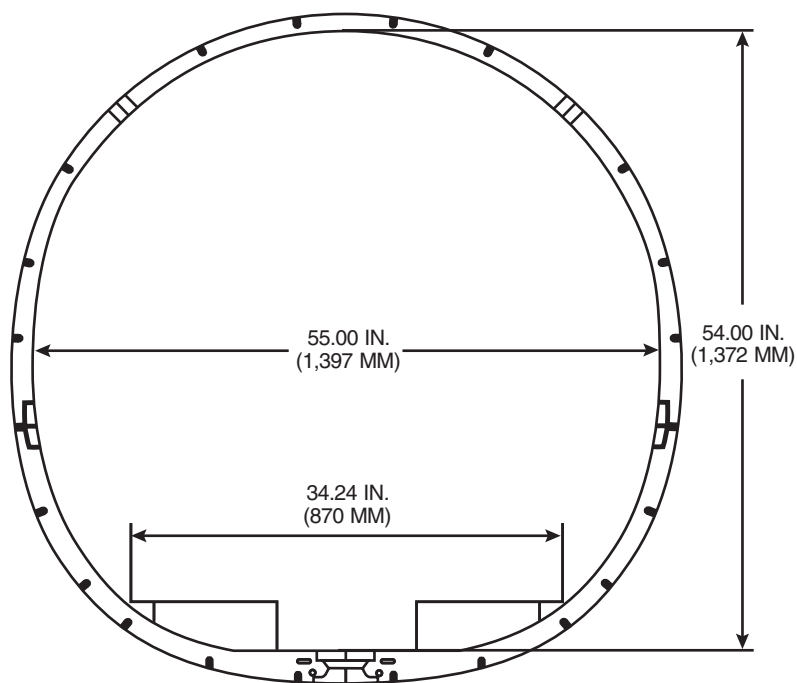
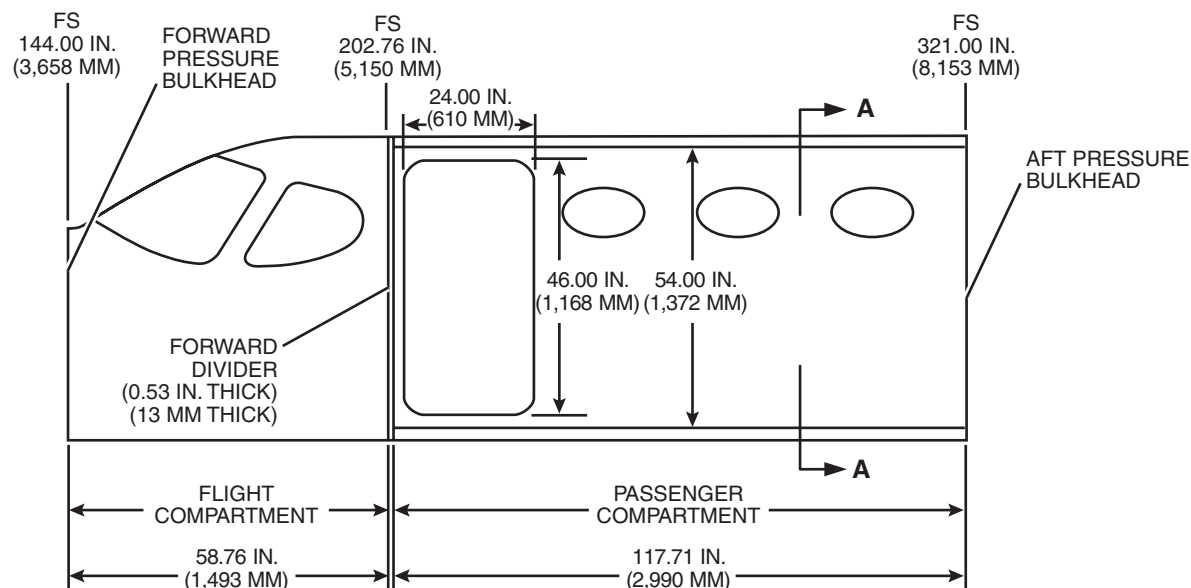


Figure 1-9. Interior Arrangements



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VIEW A-A

Figure 1-10. Interior Dimensions



This door opens the tail cone baggage compartment (Figure 1-11), which holds 300 pounds.



Figure 1-11. Tail Cone Baggage Door

The tail cone compartment door is secured at the aft side by mechanical latches and a key lock and is hinged at the left forward edge. The door is secured by a key lock, which is monitored by the CAS. An amber AFT DOOR message appears if the door is unlocked.

A light switch on the right side of the door opening is powered from the battery bus and provides illumination of the tail cone area for preflight inspection purposes. If the manual switch is left on, a microswitch in the door track extinguishes the light when the door is closed.

WING

The wing assembly attaches to the bottom of the fuselage and is constructed of aluminum. Each wing is also a fuel tank. Electromechanical speedbrakes and flaps, and hydraulically actuated main landing gear are attached to each wing (Figure 1-12).

An aileron fence is attached to the inboard side of each aileron.

The wing leading edges are deiced by inflatable deice boots, which are inflated by regulated engine bleed-air. Vortex generators and stall strips are attached to the leading edge boots (Figure 1-13).

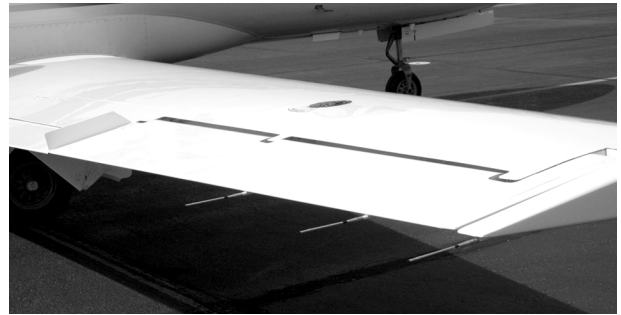


Figure 1-12. Wing Trailing Edge



Figure 1-13. Stall Strips

EMPENNAGE

The empennage consists of a vertical stabilizer with T-tail mounted horizontal stabilizers (Figure 1-14). The leading edges of the horizontal and vertical stabilizers are deiced by inflatable deice boots.



Figure 1-14. Empennage



NOSE SECTION

The nose section is an unpressurized storage area. Various hydraulics components, pneumatic bottles, oxygen bottle, fresh-air duct, and radar antenna are located in this compartment (Figure 1-15). The nose storage compartment holds up to 20-cubic feet (320-pounds) of baggage. It has two swing-up doors (left and right). Each door has a mechanical lock. Each door has a key-operated cam lock, forward pin latch, and two independent paddle latches. The pin latch shows orange when not latched. Each latch has a switch and indicates the latch position with the amber NOSE DOOR L-R CAS message.



Figure 1-15. Nose Storage Compartment

A manual light switch is in the compartment (Figure 1-16). If the manual light switch is left on, a microswitch at the left and right storage door assembly extinguishes the storage compartment light when the doors are closed.

An over-center gas spring on each door holds the door in the full open position until the door is closed manually.

Ensure that the keys are removed from both nose compartment doors prior to flight to prevent possible ingestion of a key into an engine.



Figure 1-16. Nose Baggage Light

SYSTEMS

ELECTRICAL SYSTEM

The Mustang is an all-DC aircraft. The 28-VDC electrical power is supplied by two starter-generators and one 24-volt, 28 amp-hour sealed lead acid battery. An optional battery is a 24-volt, 28 amp-hour NiCad battery. An external power receptacle is below the right engine pylon.

For convenience of pilot and passengers, two DC power outlets are provided in the cabin, powered by the DC system through a converter. One DC outlet is in the cabinet behind the copilot seat and the other is in the aft center console.

FUEL SYSTEM

The fuel system has two distinct, identical halves. Each wing tank stores and supplies the fuel to its respective engine. Fuel transfer capability is provided. Fuel is heated through an oil-to-fuel heat exchanger (PRIST is not required).

ENGINES

Two pylon-mounted Pratt & Whitney PW615F turbofan engines are on the rear fuselage, and



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each produces approximately 1,460 pounds of thrust (sea level ISA + 10°C).

To improve automation and efficiency, the engines are controlled by dual-channel full authority digital engine controls (FADECs). Engines are started with electrical starter-generators, which are powered by the onboard battery or a ground power unit (GPU).

Ice-protection, fire-detection, and fire-extinguishing systems are provided for each engine. The engine pylons have ram-air inlets and exhausts to provide cooling airflow through the cabin air heat exchangers.

ICE PROTECTION SYSTEM

Anti-ice protection is provided to the engine inlets, and deice protection is provided to the wings, and empennage by engine bleed air. Engine bleed air directly heats the engine inlets and generator cooling inlets. The wings, vertical tail, and horizontal stabilizers are deiced by boots inflated by engine bleed air regulated to 20 psig (service air). The windshields are electrically anti-iced and defogged. Electric heat also anti-ices the pitot-static systems, stall-warning vane, and engine inlet-mounted T2 sensors. Ice detection lights on the glareshield help the pilot detect icing on the windshield. A light on the outside left fuselage helps the pilot detect icing on the wings.

HYDRAULIC SYSTEM

A single electrically driven hydraulic pump supplies pressure for operation of the landing gear and wheel brakes through a closed center system. The main gear are equipped with hydraulically operated antiskid-controlled wheel brakes. Pneumatic backup is available for emergency landing gear extension and braking.

FLIGHT CONTROLS

Primary flight control is accomplished through conventional cable-operated surfaces. An aileron-rudder interconnect provides improved lateral stability. Trimming is provided by

aileron, elevator, and rudder tabs. The elevator trim is both mechanically and electrically actuated. Aileron and rudder trim are electrically activated. The flaps are electrically actuated and are on the trailing edges of the wing. Electrically powered speedbrakes are on the upper and lower wing surfaces. Nosewheel steering is mechanically controlled by the rudder pedals through steering bungees.

ENVIRONMENTAL SYSTEM

The aircraft has a two-zone automatic temperature control system that is split into cabin and cockpit. An independent vapor cycle air-conditioning system provides cooling to the cabin and cockpit.

Conditioned engine bleed air is used for cabin pressurization and temperature control. Cabin pressurization is controlled by an autoscheduling pressurization system. The crew need only to adjust destination elevation any time prior to or during flight and the controller automatically controls cabin pressure for operation at the highest practical differential pressure with minimum rates and changes.

A 22-cubic-foot oxygen bottle (40-cubic-foot optional) supplies oxygen to the quick-donning masks for the crew and automatic dropout masks for each passenger. If cabin altitude becomes excessive, passenger oxygen masks deploy automatically (by electrical release) and can be deployed manually (by oxygen pressure) upon pilot command.

AVIONICS

The Mustang uses a Garmin G1000 three-display “glass cockpit” to present most indications for flight instrumentation, navigation, avionics, and aircraft systems. The displays include two 10.4-inch primary flight displays (for pilot and copilot) and a 15-inch multifunction display.

The standard factory-installed avionics package includes the fully integrated flight instruments, flight guidance, communications,



and navigation systems. The navigation system includes GPS, ground-based navigation, and is WAAS-capable. An integrated engine indicating and crew alerting system (EICAS) is included. The Garmin G1000 system manages the instrument and engine displays, the autopilot, flight guidance systems, and the flight director. Terrain and traffic avoidance systems and color radar are standard equipment. Data link weather capability is available with subscription.

PUBLICATIONS

The following publications must be immediately available to the flight crew:

- FAA-approved *Airplane Flight Manual (AFM)* contains the limitations, data pertinent to takeoffs and landings, and weight and balance data. Information in the *AFM* always takes precedence over any other publication.
- FAA-approved *Citation Mustang Abbreviated Checklist—Normal Procedures* contains abbreviated normal operating procedures and abbreviated performance data. If any doubt exists or if the conditions are not covered by the checklist, the *AFM* must be consulted.
- FAA-approved *Citation Mustang Abbreviated Checklist—Emergency/Abnormal Procedures* contains emergency and abnormal procedures. If any doubt exists or if the conditions are not covered by the checklist, the *AFM* must be consulted.
- *Garmin G1000 Cockpit Reference Guide* for the Citation Mustang

Other publications that are not required to be in the aircraft include:

- *Operating Manual*
- *Garmin G1000 Pilot's Guide* for the Cessna Citation Mustang
- FAA-approved *Weight and Balance Manual*

SINGLE-PILOT OPERATION

The following are required when the airplane is operated with a crew of one pilot, per applicable operating rules:

1. Operable GFC-700 Autopilot
2. Headset with microphone (must be worn)
3. FAA-approved *Pilots' Abbreviated Normal Procedures Checklist* (as revised)
4. FAA-approved *Pilots' Abbreviated Emergency and Abnormal Procedures Checklist* (as revised)
5. Provisions for storage and retention of navigation charts, accessible to the pilot from the pilot station