CHAPTER 12
PRESSURIZATION

INTRODUCTION

The pressurization system on the Citation Mustang maintains cabin altitude lower than the actual aircraft altitude to provide a suitable environment for the crew and passengers. To accomplish this, the pilot directs a constant supply of conditioned bleed air into the cabin (pressure vessel), then controls the amount of air allowed to escape overboard by automatic controls (with manual override).

GENERAL

Two elements provide cabin pressurization. One is a constant source of pressurized bleed air to the cabin (Figure 12-1). The other is a method of controlling outflow of the pressurized air from the cabin to achieve the desired differential pressure (between cabin and outside air pressure) and resultant cabin pressure ("cabin altitude"). The maximum cabin pressure differential is 8.6 psid. Normal cabin pressure differential is 8.3 psid. This permits an 8,000-foot cabin altitude at a 41,000-foot actual altitude (FL 410).

On the Citation Mustang, pressurization is provided by the combined action of two cabin air systems: inflow and outflow. Inflow is supplied by temperature-controlled pressurized bleed air and regulated cabin air outflow.

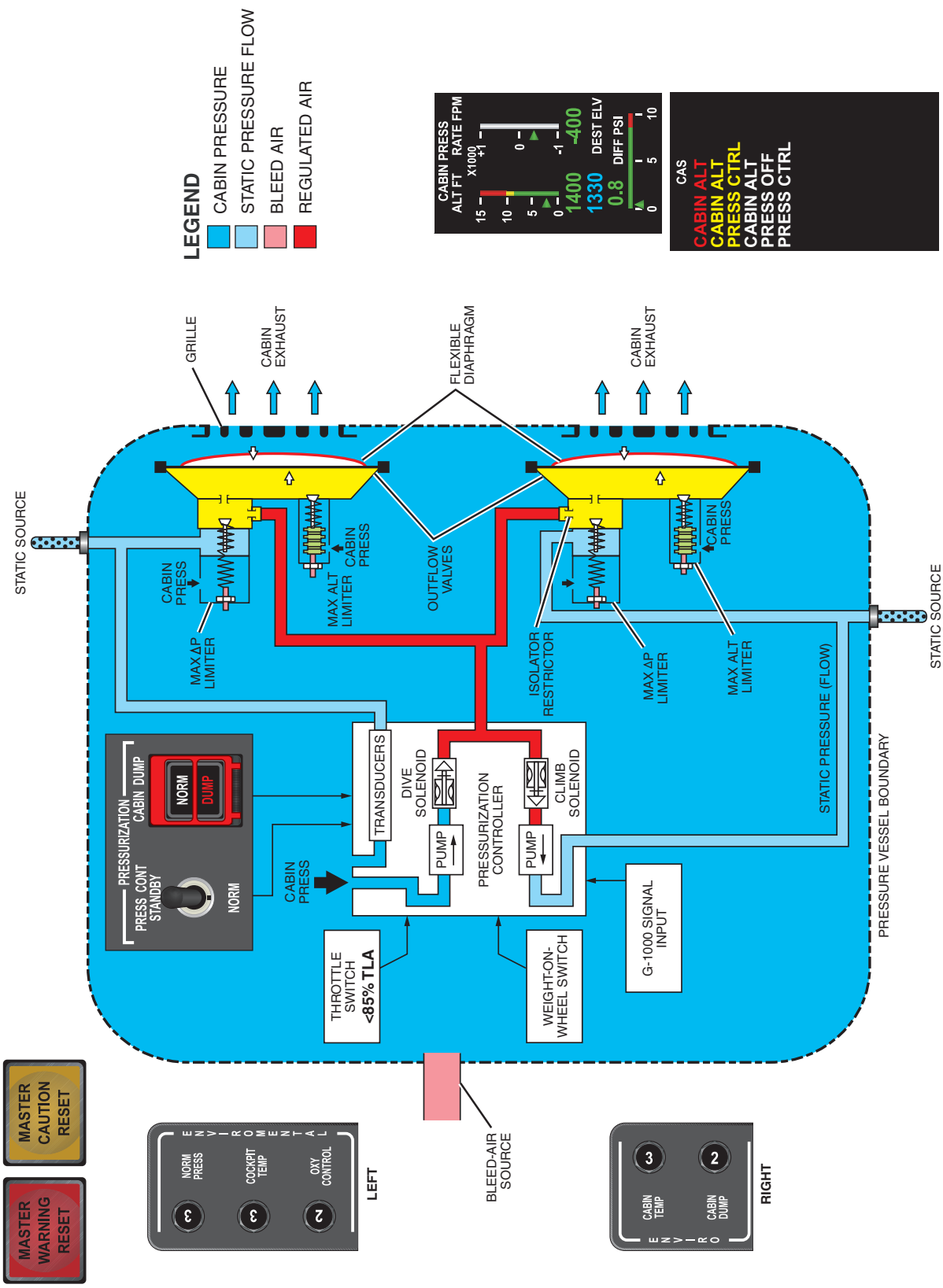

Figure 12-1. Pressurization System Schematic

The conditioned air system continuously supplies pressurized, conditioned air to the cabin. This provides positive inflow. Bleed-air inflow to the cabin is fairly constant through a wide range of engine power settings. (Refer to Chapter 11—"Air Conditioning")

The pressurized cabin air then escapes through normal leakage in the cabin pressure vessel and through the two outflow valves in the aft pressure bulkhead.

The outflow valves exhaust cabin air into the tail cone (which is vented to the outside) much faster than normal cabin leakage. This provides regulated cabin air outflow. The balance between inflow and outflow establishes cabin pressure.

Two outflow valves on the aft pressure bulkhead control the outflow of cabin air. The outflow valves vary between open and closed to increase or reduce outflow.

When the outflow valves are more *open*, inflow air escapes the cabin rapidly, reducing cabin pressure. This *increases* cabin altitude (the cabin "climbs").

When the outflow valves are more *closed*, inflow air remains in the cabin longer, increasing cabin pressure. This *decreases* cabin altitude (the cabin "dives").

On the ground, the outflow valves open fully, putting the cabin at ambient pressure. This ensures that doors open easily and prevents sudden pressure changes when they are opened.

The outflow valves are controlled pneumatically. Automatic control requires normal DC power and is not available during emergency electrical power operations. Additionally, safety valves operate regardless of the availability of other systems.

Selecting AUTO mode generates an automatic cabin altitude schedule (autoschedule) based on:

- Departure field elevation
- Maximum altitude reached
- Pilot input of destination elevation (DEST ELV)

After takeoff, the pressurization system attempts to maintain a cabin altitude equal to departure elevation until cabin differential pressure reaches 8.3 psid. Then the pressurization system reverts to the autoschedule.

The pressurization controller has two modes of operation, normal and high altitude. High-altitude mode is discussed later in this chapter.

DESCRIPTION

The pressurization system includes controlling pressurized cabin air outflow and the associated valves, controls, indications, pneumatic lines, and electrical circuits (see Figure 12-1).

The pressurization outflow system includes the following components:

- Outflow valves (with associated control and safety valves)
- Pressurization controller
- Pressurization system controls and display

To provide system redundancy, each outflow valve contains a maximum differential pressure limiter valve and a maximum cabin altitude limiter valve. These valves ensure the cabin pressure remains within safe limits. Outflow valves, operated manually by the CABIN DUMP switch and automatically by the pressurization controller, provide control of the pressurization system. The system authority in descending order of control is as follows:

- Maximum cabin altitude limiter
- Maximum differential pressure limiter
- CABIN DUMP switch
- Pressurization controller

COMPONENTS

OUTFLOW VALVES

The outflow valves release air from the cabin at a regulated rate. This establishes the pressure balance between inflow and outflow, and resulting cabin pressure ("cabin altitude"). The outflow valves are controlled by various regulating valves that connect to (or are built into) the outflow valves (see Figure 12-1).

Outflow Valve Basics

Two outflow valves regulate the outflow of pressurized cabin air through two openings in the aft cabin pressure bulkhead. This regulated outflow controls cabin pressure differential (Delta-P) and resulting "cabin altitude." Each outflow valve opens or closes its respective cabin opening with a flexible diaphragm. The diaphragm is on the back of a hollow control chamber (Figure 12-2). When the outflow valve control chamber inflates, the diaphragm on the back side of the valve expands, reducing the cabin opening. This restricts airflow between the cabin and outside air.

When the outflow valve control chamber deflates, the diaphragm pulls back from the cabin opening and exposes more of it, allowing more air to move through the opening between the cabin and the outside (tail cone). Outflow valves normally are partially open, providing a limited outflow of cabin air, and a controlled cabin pressure differential, resulting in a controlled cabin altitude.

The outflow valves synchronize with each other through a pneumatic link. The control chambers of the two outflow valves always have the same pressure because they are pneumatically connected. Consequently, each outflow valve duplicates the action of the other. This feature balances the cabin air outflow of the two valves (see Figure 12-1).

Outflow Valve Regulation

Multiple regulating valves are built into each outflow valve. These valves regulate the air pressure in the outflow valve control chamber and thereby control the diaphragm position. This regulates cabin pressure outflow (see Figure 12-1). The regulating valves include:

- Dive solenoid valve (with dive pump)
- Climb solenoid valve (with climb pump)
- Maximum differential pressure limiter (maximum Delta-P) valve on each outflow valve
- Maximum cabin altitude safety limiter valve on each outflow valve

Climb and Dive Solenoid Valves

The two solenoid valves (dive solenoid valve and climb solenoid valve) open or close on command of the pressurization controller. This regulates the control-chamber pressure and diaphragm position on the outflow valves, which control cabin air outflow.

Dive Solenoid Valve

When the pressurization controller energizes the dive solenoid valve open, it allows cabin air to enter the outflow valve control chamber, inflating the chamber and causing the diaphragm to expand, which restricts the cabin opening (see Figure 12-2). If bleed air entering the cabin cannot escape as fast as it enters, then the cabin pressurizes (dives).

Climb Solenoid Valve

When the pressurization controller opens the climb solenoid, air escapes from the outflow valve control chamber to an ambient static pressure line. As air is drawn out of the control chamber, the outflow valve diaphragm contracts. This exposes the cabin opening, allowing increased airflow between the cabin and the outside, which reduces cabin pressure (cabin altitude climbs).

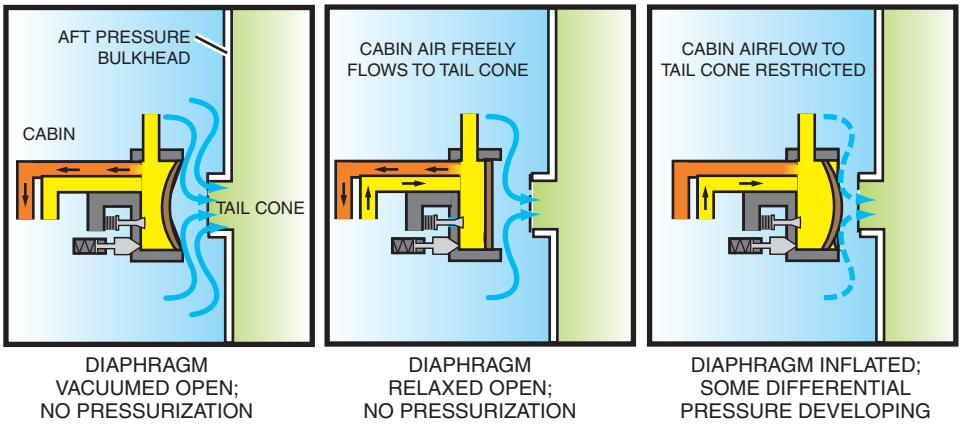

Figure 12-2. Outflow Valve Positions

Electrical Failure Mode

If all DC power is lost, the dive and climb solenoid valves fail in a closed position. Pressurization is then limited automatically by the maximum Delta-P valve and maximum cabin altitude limit valve (which are not affected by electrical power). Under these conditions, if the aircraft descends to an actual altitude equal to cabin pressure altitude, the outflow valves are forced open by outside air, which enters the cabin, equalizing the pressure and maintaining the cabin at actual aircraft altitude.

If normal DC power is lost and emergency power is available, both solenoids fail closed; however, the climb solenoid can still be operated manually with the CABIN DUMP switch.

Maximum Cabin Altitude Limit Valves

The maximum cabin altitude limit valves (one in each outflow valve) automatically prevent cabin pressure altitude from exceeding 14,300 ± 300 feet.

Inside the valve, a sealed bellows, similar to the aneroid chamber in an altimeter, maintains a constant reference pressure, related to the cabin altitude ceiling of approximately 14,300 feet. The bellows puts pressure on the valve to open it. A spring pushes in the opposite direction to hold the valve shut with help from cabin air pressure.

However, if cabin altitude rises above 14,300 feet, cabin pressure drops, and is not enough to hold the valve closed. The sealed bellows expands and pushes the maximum cabin limit valve open. This allows cabin pressure into the outflow valve control chamber, increasing pressure in the control chamber, which causes its diaphragm to expand and restrict the outflow valve cabin opening. Restricting the cabin opening limits outflow. If adequate pressurization source air is still available (as selected by AIR SOURCE SELECT knob set to BOTH, L or R), cabin inflow is greater than cabin outflow, and cabin pressure altitude drops to 14,300 ± 300 feet or lower, and stays below that limit.

This valve is not dependent upon electrical power, and overrides all other pressurization system controls.

Maximum Differential Pressure (Maximum Delta-P) Limiter Valves

If cabin pressure exceeds 8.6 psid, the maximum differential pressure valves (one on each outflow valve) open automatically, which releases pressure from each outflow valve control chamber. The diaphragm contracts, which releases pressure from the cabin. As a result, cabin altitude climbs, reducing cabin pressure differential until reaching a differential pressure of 8.6 psid.

The maximum differential pressure limiter valves override all other pressurization system

controls, except the maximum cabin altitude limit valves, and are not dependent upon any other system, nor any control.

CONTROLS AND INDICATIONS

All pressurization system controls are on the ENVIRONMENTAL panel immediately to the right of the throttle quadrant (Figure 12-3), except for DEST ELV settings (which are selected through the PFD softkeys). Indications on the EICAS in the CABIN PRESS display (Figure 12-4) and CAS messages indicate the conditions and performance of the pressurization system. CAS messages warn the pilot of abnormal and emergency situations.

PRESSURIZATION CONTROLLER

The pressurization controller has two modes of operation, normal and high altitude. Depending on aircraft altitude and various factors, the controller commands appropriate auto schedules as needed. In response to ambient air data from the aircraft avionics system, and settings by the pilot, the controller regulates cabin pressure by electrical signals to the climb and dive solenoid valves (see Figure 12-1). The pressurization controller maintains an 8,000-foot cabin altitude up to 41,000 feet with a cabin pressure differential of 8.3 psid (± 0.1).

The pressurization controller has a built-in schedule that automatically

- Controls cabin altitude based on aircraft altitude
- Adjusts cabin rate of climb/descent versus aircraft rate of climb/descent
- Adjusts for destination elevation as selected by the pilot

Figure 12-3. Pressurization Controls

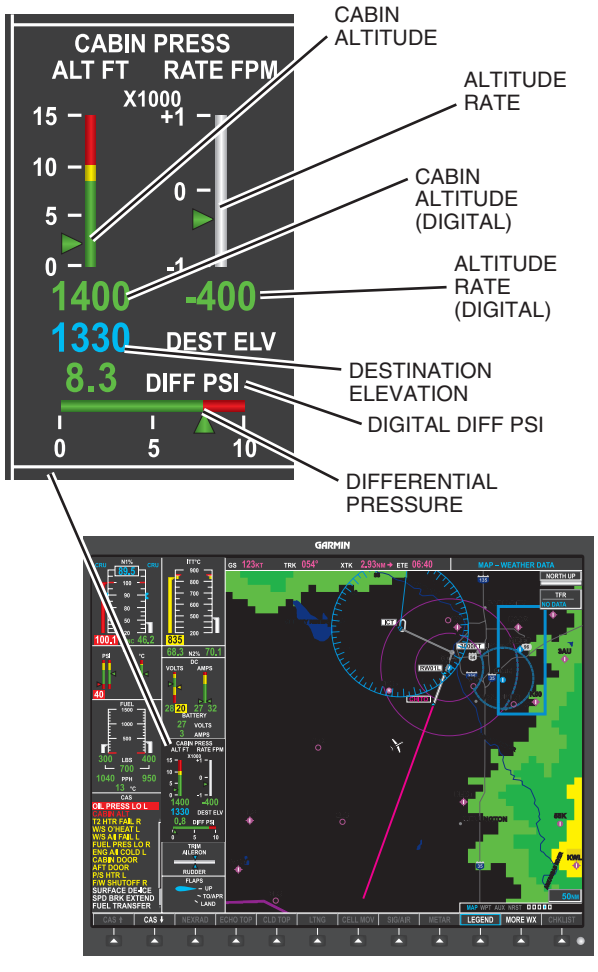

Figure 12-4. Standard (MFD) Pressurization Display

The controller receives air data information from air data computers through the G1000 Garmin Interface Adapter (GIA) No. 1.

DESTINATION ELEVATION SETTING

The pilot sets the destination elevation through controls on either G1000 PFD, using the TMR/REF softkey, FMS knobs, and ENT button. The procedure is described in the Operation section.

PRESS CONT (STANDBY—NORM) SWITCH

The PRESS CONT switch on the PRESSURIZATION subpanel of the ENVIRONMENTAL control panel (see Figure 12-3) selects the mode of operation in flight. When NORM is selected, the pressurization controller automatically functions to control cabin altitude in flight mode. When the pilot selects STANDBY, pressurization operates in a pneumatic backup mode in flight. With the PRESS CONT switch in either position, the CABIN DUMP switch remains functional.

MANUAL CABIN DUMP SWITCH

The CABIN DUMP switch on the PRESSURIZATION subpanel (see Figure 12-3) can be manually actuated at any time DC or EMER power is available to reduce cabin pressure. The switch relieves cabin pressure by energizing the climb solenoid valve open, which releases regulated air from the outflow valve control chambers. This retracts the outflow valve diaphragms, opening the outflow valves, and releases pressure from the cabin.

The maximum cabin altitude limit valves override the climb solenoid valves to prevent cabin depressurization above 14,300 ± 300 feet altitude. The cabin dump system requires DC power. The switch and associated climb solenoid are powered by the emergency bus. Circuit protection for the CABIN DUMP is on the right CB panel in the ENVIRO grouping labeled “CABIN DUMP” (see Figure 12-1).

The CABIN DUMP switch is protected from accidental operation by a red guard. To operate the switch, lift the red guard and press and release. The switch is a latching switch. When pressed, the lighted switch indication changes from NORM to DUMP. Pressing again restores the switch back to NORM.

PRESSURIZATION DISPLAY

The pressurization display is labeled CABIN PRESS, and normally appears on the lower second column of the EICAS on the MFD (see Figure 12-4). It indicates:

- The label “CABIN PRESS”
- Cabin altitude (ALT FT)
- Cabin altitude rate-of-change (RATE FPM)
- Destination elevation (DEST ELV)
- Cabin differential pressure (DIFF PSI)

If any indication is disabled by invalid data, a red “X” replaces that specific indication. If the data is out of range of a digital readout, the digits are dashed out.

In reversionary mode or emergency power mode, the pressurization display (Figure 12-5) is limited to three lines showing:

- The label CABIN PRESS,
- Cabin altitude (ALT FT with digital readout), and
- Cabin differential pressure (DIFF PSI with a digital readout).

Cabin Altitude: ALT FT

Cabin pressure altitude (in feet) is indicated under the label “ALT FT,” on a vertical analog display and a digital readout. In reversionary mode or emergency power mode, only the digital readout appears. When the aircraft

Figure 12-5. Pressurization Display (Reversionary Mode)

is on the ground, the digital readout does not appear and the analog display bar is all green.

The analog display scale pointer when the controller is in normal mode is:

- Red above 10,000-foot cabin altitude
- Amber between 8,500- and 10,000-foot cabin altitude
- Green below 8,500-foot cabin altitude

The analog scale labels are white and the pointer changes color depending on the color range to which it is pointing.

If the system detects cabin altitude beyond the limits of the display (0–15,000 feet cabin altitude), the pointer goes to the appropriate end of the scale and points away from the center. If the system has invalid data, a red "X" replaces the digital readout. If both squat switches indicate the aircraft is on the ground, the digits disappear.

Cabin Altitude Rate-of-Change: RATE FPM

Cabin pressure altitude rate-of-change (in feet per minute) is normally indicated under the label "RATE FPM" on a vertical analog display and a green pointer and digital readout. This indication reports the rate of change of cabin altitude, not actual aircraft vertical speed. In reversionary mode or emergency power mode, this indication does not appear on the pressurization display,

The analog scale and its markings are white, and the pointer is green. The scale is marked at:

- +1 (1,000 fpm cabin climb rate)
- 0 (cabin altitude not changing)
- –1 (1,000 fpm cabin descent rate)

If cabin rate exceeds the range of the analog scale, the pointer goes to the appropriate end of the scale and points away from center. If the system has invalid data, a red "X" is displayed. The cabin rate on the ground is zero (0), except during prepressurization.

Destination Elevation: DEST ELV

In normal display mode, the altitude of the destination airport (in feet), as selected by the pilot, is indicated by a digital readout in front of the white label "DEST ELV." In reversionary mode or emergency power mode, this data is not displayed on the pressurization display, but can always be accessed through the TMR/REF menu on the PFD.

The DEST ELV digits are cyan and may be set to any altitude between –1,000 and 14,000 feet.

This setting is retained by the G1000 system when the aircraft is powered off. When the aircraft is powered on again, the value from the previous flight remains set in the system until changed by the pilot.

Cabin Differential Pressure: DIFF PSI

The cabin differential pressure indication is at the bottom of the pressurization display, labeled "DIFF PSI." It indicates the difference (in psid) between cabin pressure and outside air pressure. Normally, it is displayed as a horizontal analog display and digital readout. In reversionary mode, only the digital readout appears with the DIFF PSI label. (If all air data is lost, a red "X" replaces the digital readout.)

The scale and pointer are green below 8.6 psid and red at 8.6 psid or higher. If pressure reaches 8.6 psid or higher, the digital readout and pointer turn red. Maximum cabin pressure differential (maximum Delta-P) valves automatically prevent this from happening.

If cabin differential pressure is less than 0.2 psid, 0.0 psid is displayed.

CAS MESSAGES

Three CAS messages (in different colors, depending on conditions) provide information on the pressurization system:

- CABIN ALT (unsafe cabin altitude)
- PRESS OFF (pressurization air inflow is shut off)
- PRESS CTRL (pressurization controller is disabled)

CABIN ALT

The CABIN ALT message indicates an unsafe cabin altitude. The message is controlled by inputs from two cabin pressure sensors. Either sensor can activate the message. The CABIN ALT message is either red, amber, or white depending on specific conditions.

In flight, the *red* CABIN ALT message appears when the cabin altitude is above a maximum of 10,000 feet, except when the pressurization system is set for high-altitude mode.

NOTE

High altitude mode changes these indications. (Refer to High Altitude Mode later in this chapter.)

However, *any* time the aircraft is in flight above an actual altitude of 25,000 feet, if the cabin altitude rises above 10,000 feet, the *red* CABIN ALT message appears. The message disappears when cabin altitude descends below 8,300 feet.

In flight, the *red* CABIN ALT message also appears *any* time the cabin altitude is above approximately 15,000 feet. The message disappears when cabin altitude descends below 11,000 feet.

If the aircraft is on the ground, as indicated by a squat switch, the CABIN ALT message is not displayed, regardless of cabin altitude (except during the rotary test procedure). During rotary test, when the rotary TEST knob is rotated to the CABIN ALT position, the *amber* and *red* CABIN ALT messages *both* appear in the CAS display.

PRESS OFF

The white PRESS OFF message indicates that the AIR SOURCE SELECT knob is set to OFF or FRESH AIR, either of which stops pressurized air inflow to the cabin. The cabin slowly depressurizes (due to normal cabin leakage) until pressure is equalized between cabin and outside air. At this point, if FRESH AIR is selected, the fresh-air duct opens and a fan injects unpressurized outside (fresh) air into the aircraft.

PRESS CTRL

The *white* PRESS CTRL message indicates failure of the ARINC 429 data link from the G1000 system, indicating that the controller may no longer have valid data on outside air pressure, actual aircraft altitude, or selected destination elevation.

The *amber* PRESS CTRL message indicates failure of the pressurization controller or that the pilot has selected the PRES CONT switch to STANDBY, disabling the pressurization controller.

If the message is *amber*, the pressurization controller no longer has valid control of the outflow valves, and the climb and dive solenoid valves close. The system begins to operate in pneumatic mode. The outflow valves cause the cabin altitude to move *opposite* the direction of aircraft movement. If the aircraft climbs, the cabin dives (and vice versa).

If aircraft actual altitude rises high enough to exceed 8.6 psid, the maximum cabin differential valves open and the cabin altitude increases as needed to maintain 8.6 psid. If aircraft actual altitude descends to the cabin altitude, the outflow valves open allowing outside air to enter the cabin, which equalizes cabin altitude with actual altitude.

OPERATION

The AIR SOURCE SELECT knob provides limited control of incoming air pressure from the engine bleed-air system. For pressurization, the control must be set to receive bleed air from an operating engine (L, R, or BOTH). All functions of this control are detailed in Chapter 11—"Air Conditioning."

Pressurization also may be controlled manually with the CABIN DUMP switch if DC or EMER power is available.

GROUND/FLIGHT MODES

Cabin pressure is maintained by controlling the outflow of air from the pressure vessel. A maximum cabin differential pressure of 8.6 psid is permitted for the pressure vessel. The maximum cabin pressure differential allowed by limiters on the outflow valves is 8.5 ± 0.1 psid. Squat switches and engine throttle lever settings are used to define four operating modes:

- Ground/taxi mode
- Prepressurization mode
- Flight mode (including high altitude mode)
- Pneumatic mode

Ground/Taxi Mode

On the ground (as detected by a squat switch) with both engines operating below CRU throttle settings (approximately 85% N_2), both outflow valves are kept fully open. This equalizes the pressure between cabin and ambient air, makes opening doors easier, and avoids pressure bumps when doors are opened.

Prepressurization Mode

When either engine is set to the CRU throttle setting or higher (greater than approximately 85% N_2) on the ground, both outflow valves slowly restrict to bring cabin pressure difference to a maximum of 200 feet below field altitude. This is normal operation during takeoff roll. (At liftoff, the squat switches put the system into flight mode.)

Flight Mode

During flight (as detected by the squat switches), the pressurization controller operates the climb and dive solenoids to maintain cabin altitude and to provide a gradual cabin climb to cruising cabin altitude. During aircraft descent, the controller manages a gradual cabin descent toward aircraft destination airport elevation.

When the PRESS CONT switch (see Figure 12-3) is in the NORM position, the pilot normally selects destination field elevation using the Setting Destination Elevation procedure, noted below (accomplish during the "Before Taxi" checklist).

In flight, the pressurization controller continuously generates an autoschedule based on:

- Departure field elevation
- Maximum altitude reached in the current flight (per the air data computer (ADC))
- Pilot-input destination elevation

The pressurization controller determines pressure rate of change and cabin pressure altitude based on autoschedule and the ADC pressure altitude. The pressurization controller sends DC pulses to the climb and dive solenoids to adjust the outflow valves (to obtain a specific cabin pressure). Before touchdown, the autoschedule completely depressurizes the cabin.

During climb, the automatic mode limits the cabin pressurization rate from exceeding approximately 600 fpm regardless of the aircraft climb rate.

NOTE

It is possible for the aircraft to climb fast enough to "out climb" the automatic cabin pressure controller can reach an altitude where the maximum cabin differential pressure (maximum Delta-P) of 8.6 psid is reached before the aircraft reaches its cruising altitude. In this case, the maximum cabin differential pressure limiter (maximum Delta-P) valves are forced open by the cabin differential air pressure partially opening the cabin outflow valves. This releases cabin pressure and causes the cabin to climb at the same rate as the aircraft until reaching cruising altitude.

Likewise, during normal descents, the automatic mode limits cabin depressurization rates to less than 500 fpm regardless of the aircraft descent rate. The system corrects rapidly to small cabin pressure variations to prevent pilot and passenger discomfort.

NOTE

Because the aircraft can descend faster than 500 fpm, it is possible to "catch the cabin" on the way down during a rapid descent, thus forcing a cabin descent rate greater than 500 fpm. In this event, when the aircraft descends to the current cabin altitude (somewhere below 8,000 feet) momentarily resulting in zero pressure differential, it reverts to functioning as an unpressurized aircraft. For the rest of the descent, the cabin altitude decreases at the same rate as the actual aircraft altitude.

During descent, as the aircraft descends 500 feet below cruise altitude, the cabin begins to rate down toward DEST ELV. The cabin should reach DEST ELV when the aircraft is 1,500 feet above landing field elevation and maintain this altitude until landing.

Prior to landing, the cabin is completely depressurized if the proper landing field elevation has been set by the pilot and is indicated in the DEST ELV display (see Figure 12-4). If the cabin is pressurized at landing, when the aircraft lands (causing squat switch input) and throttles are reduced to below approximately 85% N_2, the cabin begins to depressurize at a rate of 1,000 fpm for 30 seconds. After 30 seconds, any residual cabin pressure is dumped by the controller, which drives the outflow valves fully open.

The pressurization controller uses aircraft altitude and the altimeter barometric correction from the Garmin G1000 to determine the cabin altitude. If the communication between the G1000 and the controller is interrupted, changes to DEST ELV may not be received by the pressurization controller. The controller uses the last entered destination elevation, and the pressurization static pressure source to control cabin altitude. The autoschedule is not interrupted, but a white PRESS CTRL message appears, indicating the data may not be available to the pressurization controller.

If landing at a different airfield altitude is desired, the cabin must be dumped using the CABIN DUMP switch before landing. If the data link is restored, the CAS message disappears, and the controller recognizes the currently entered DEST ELV as indicated on the EICAS display.

Pneumatic Mode

The pressurization controller goes into standby mode if the controller detects an internal fault or the PRESS CONT switch is set to STANDBY. An amber PRESS CTRL message appears on the MFD to advise the pilot the pressurization system is in standby mode. In level flight the outflow valves maintain the cabin altitude. The outflow valves cause the cabin altitude to move *opposite* the direction of aircraft movement; if the aircraft climbs, the cabin dives and vice versa. As the aircraft climbs, the cabin altitude decreases until stopped by maximum differential pressure limiter valves. As the aircraft descends, cabin altitude increases until stopped by the maximum altitude limit valve (14,300 ± 300 feet). The pilot cannot control cabin altitude except by dumping the cabin with the CABIN DUMP switch.

In pneumatic mode, pressure is trapped in the mixing section of the outflow valves. As the aircraft climbs, the diaphragm expands and closes off a larger portion of the outflow area, causing the cabin altitude to descend. As the aircraft descends, the diaphragm contracts and opens a larger portion of the outflow area, causing the cabin altitude to climb. In either case, the maximum altitude limiters and the maximum cabin differential limiters prevent the aircraft from passing through cabin pressure safety limits when the aircraft is operated within the aircraft operating limitations as defined in the *AFM*.

SETTING DESTINATION ELEVATION

The pilot sets the destination elevation through the TMR/REF softkey on the pilot PFD by using the following procedure:

1. Push TMR/REF softkey on the PFD.
2. The reference window appears on the PFD screen.
3. Use the large FMS knob to select DEST ELV.
4. Use small FMS knob to change number.
5. Press ENT button to accept the entered destination elevation.

HIGH-ALTITUDE AIRPORT OPERATION (AUTOSCHEDULE)

High-Altitude Landings

When the aircraft is to land at an airfield between 8,000 and 14,000 feet, certain conditions must be met before the controller automatically switches into the high-altitude mode. The required conditions are as follows:

- Selected landing altitude is greater than 8,000 feet.
- G1000 data indicates aircraft altitude is between 8,000 and 25,000 feet.
- Aircraft descends 500 feet from maximum altitude (as determined by controller static sensor and GIA).

If the above conditions are true, then high altitude airport mode is initiated. When landing at a high altitude airport, cabin pressure altitude does not exceed 8,000 feet before the aircraft altitude descends below FL 245. Upon descending past FL 245, the cabin altitude *climbs* at the increased climb rate, until the selected landing altitude is reached.

High-Altitude Departures

When the aircraft departs from an airfield between 8,000 and 14,000 feet, a different set of conditions must be met before the controller can switch into the high-altitude mode. The required conditions are as follows:

- Weight on wheels
- G1000 data indicates aircraft altitude is greater than 8,000 feet
- Cabin altitude is greater than 8,000 feet

High-Altitude CABIN ALT Message

When the conditions for high-altitude departures or landings are met, the color of the CABIN ALT message changes to:

- *White*, with a cabin altitude between 10,000 feet and 15,000 feet for not more than 30 minutes.
- *Amber*, with a cabin altitude between 10,000 feet and 15,000 feet for more than 30 minutes.
- *Red*, if cabin altitude is at or above 14,800 ± 200 feet.
- *Red*, if cabin altitude is at or above 10,000 feet and the aircraft altitude is above 25,000 feet.

Annunciation is inhibited on the ground and during takeoff and landing.

High-Altitude Ranges for Pressurization Display

When in high-altitude mode, the color bands on the pressurization analog display change from their normal ranges to ranges appropriate for high-altitude operations (Figure 12-6).

The analog display scale when the controller is in high altitude mode are:

- Red above 14,600-foot cabin altitude
- Amber between 14,000- and 14,600-foot cabin altitude
- Green below 14,000-foot cabin altitude

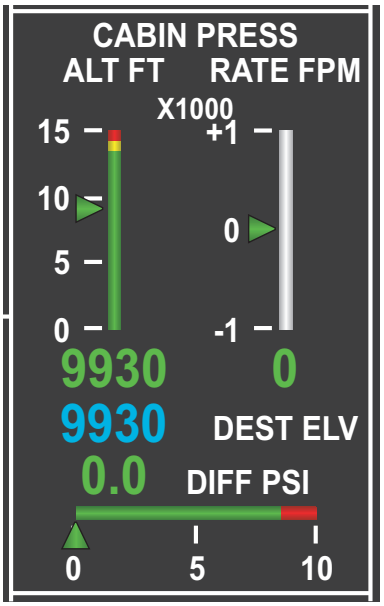

Figure 12-6. Cabin Pressure Display

MANUAL CABIN PRESSURE DUMP

Manually actuate the CABIN DUMP switch (see Figure 12-3) at any time DC or EMER power is available to reduce cabin pressure and rapidly ventilate the cabin. The maximum altitude limit valves override the climb solenoid valves to prevent complete cabin depressurization above 14,300 ± 300 feet altitude.

EMERGENCY/ ABNORMAL

For specific information on emergency/abnormal procedures, refer to the appropriate abbreviated checklists or the FAA-approved *Airplane Flight Manual (AFM)*.