

The heater is protected from overheating by a heat limit switch. If the heater temperature reaches a predetermined setting, the limit switch opens and the heater becomes inoperative. This is indicated by the illumination of the HTR FAIL warning light in the annunciator panel. The heat limit switch will automatically reset when sufficient time is allowed for the heater to cool. By depressing the START/RESET switch momentarily, the heater can be restarted. Heater restart is indicated by the HTR FAIL warning light extinguishing after the START/RESET switch is released. Prior to restarting the heater, ensure the following precautions are followed:

- (a) The heater air inlet lever must be full open prior to and during heater operation.
- (b) Open all heater outlets to the full open position.
- (c) The TEMP HEAT lever should only be half open.
- (d) Immediately shut off heater if annunciator comes on again after attempting to restart. Do not operate heater again until it has been serviced by a qualified repair station.

### ***WARNING***

Operating a defective heater may be a serious fire hazard.

- (e) After heater has restarted, wait approximately 5 minutes and then, if desired, the temperature lever may be moved to a higher selection.

The ventilating system is designed to operate both on the ground and during flight. The system employs a retractable air scoop, ventilating fans, air distribution ducts and fresh air outlets for up to eight occupants.

The air is picked up by the air scoop on the bottom of the fuselage forward of the main spar, then ducted to circulation fans enclosed in air boxes located forward of the spar cover and on each side of the aisle. The air then flows through air ducts along each side of the fuselage to the fresh air outlets. For individual comfort, the amount of air to the outlets is regulated by rotating the rim of the outlet clockwise to decrease the amount of flow and counterclockwise to increase. The direction of the airflow can be changed by moving the outlet in the desired direction of flow.



Cabin air is recirculated through an aisle grill located in each air box. The aisle in the grill area should be clear of obstacles to allow free movement of air. The air boxes contain ventilating fans which are controlled by a switch placarded AIR CONTROL located in the overhead switch panel. The air scoop is operated by the OUTSIDE AIR control located to the right of the HEATER AIR INLET control.

A cabin exhaust is located in the raised floor panel in the aft cabin area. It is provided to aid air distribution within the cabin. A retractable exhaust outlet is located in the lower aft section of the fuselage just aft of the main cabin door. It is controlled by a push-pull control located below and to the right of the copilot control wheel. The outlet should be open when the heater is operating or, if desired, to aid ventilation.

To aid in cabin ventilation during ground operation, a ground ventilation fan is installed aft of the cabin exhaust in the raised floor panel in the aft cabin area. An on-off control switch labeled GROUND VENT FAN is mounted in the overhead switch panel. The fan extracts cabin air from beneath the floorboards and expels it into the cabin through the ventilating grill.

### **7.35 CABIN FEATURES**

The interior has been designed for multi-purpose use. Pilot and copilot seats are standard. The cabin area will accommodate up to eight commuter passengers, five to six passengers in executive style or it can be quickly changed into a cargo area.

All passenger seats have folding armrests.

Shoulder harnesses are available. To use, the shoulder harness should be routed over the shoulder nearest the window and latched when the seat belt is latched. An inertia reel is available with the shoulder harness. The inertia reel operation can be checked by pulling sharply on the shoulder strap. The reel will lock in place when a 3g force is applied to the strap. The locking feature prevents the strap from extending and holds the user in place. Under normal movement the strap will extend and retract as required. Shoulder harnesses should be routinely worn during takeoffs, landings and emergency situations.



The pilot and copilot seats adjust fore, aft and vertically and also recline. The seat controls are on the aisle side of each seat. The lower handle adjusts the fore and aft position. Pull the handle up and move the seat to the desired position; then release the handle. Move the seat until the locking pin engages the seat track.

The middle handle adjusts the vertical position. To raise, relieve some of the weight on the seat, pull the handle and the seat will rise. To lower, raise the handle and apply weight to the seat until the desired position is reached. Make sure the locking pin engages the vertical track when the handle is released after adjustment.

The upper handle controls the reclining position of the seat back. Pull the handle, lie back in the seat and release the handle. To erect, pull forward on the seat back.

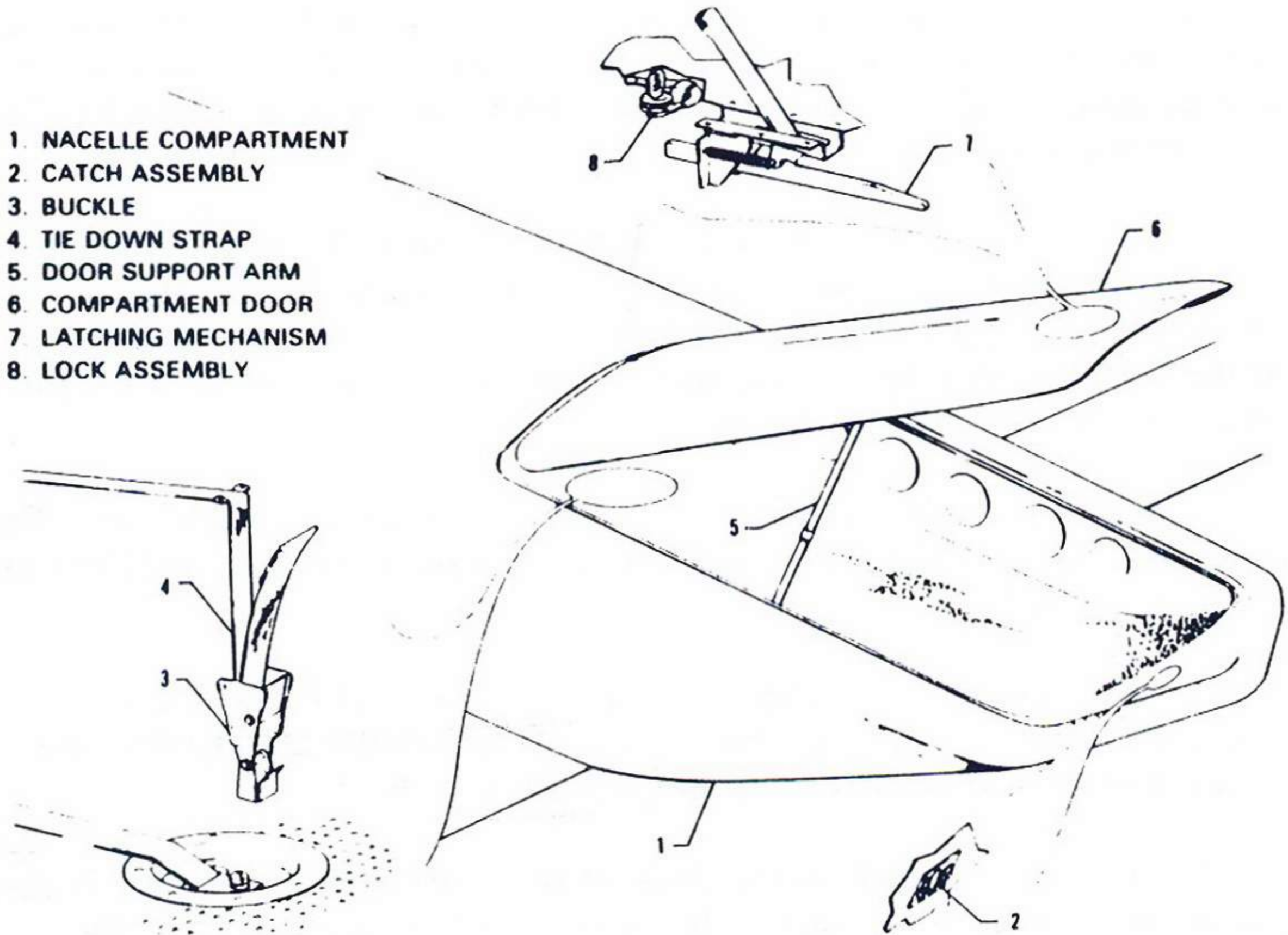
The passenger seats adjust fore and aft and recline except when the seats are facing aft. The seat located aft of the cabin door and the one located forward of the cabin divider do not adjust or recline.

Pockets are located on the back of the passenger seat backs. A map pocket is located on the right side panel under the instrument panel.

Additional features include storm windows, sun visors and ash trays for the pilot and copilot, and a pull curtain cockpit divider between the passenger and crew areas. **NO SMOKING** and **FASTEN SEAT BELT** lighted signs, installed overhead in the cabin, are controlled by switches in the overhead panel. An optional chime will sound when these switches are activated.

Optional equipment includes choice of interior, front and rear cabin dividers, toilet, forward and aft refreshment center, bar, ash trays, folding tables, tinted windows and cargo net. The interior comes in a choice of fabric, vinyls and leather. Scotchguard fabrics are used throughout. The blend of fabric, vinyls and leather gives long wear and comfort.





**NACELLE BAGGAGE COMPARTMENT**  
Figure 7-35

### **7.37 BAGGAGE AREA**

There are four baggage compartments. One is located in the nose, one in the aft portion of each engine nacelle and a walk-in baggage area is aft of the main cabin door. The cabin can be converted into a cargo area. (See Section 6 - Weight and Balance.)

The forward baggage compartment measures 25 x 20 inches and has a loading capacity of 200 lbs and a volume of 14 cubic feet. Access to the compartment is gained through a hinged door on the left side of the nose. A placard on the inner side of the door indicates the maximum allowable baggage weight. To open, unlock, push in on the forward end of the door handle, pull out on the aft end and raise the door until it latches in the up position. To lower, the latch (placarded **PUSH TO RELEASE**) must be pushed in, the door lowered and the handle pushed in and locked. The nose compartment is equipped with a courtesy light for night loading. This light will illuminate even if the master switch is off, consequently, leaving the door open for extended periods is not recommended.



Each nacelle compartment has a load capacity of 150 pounds and a volume of 13.25 cubic feet. Access to the compartment is gained through a door atop the nacelle. The interior floors of the compartments, which measure approximately 90 inches long, 23.5 inches wide and 11 inches high, are carpeted to prevent baggage items from being damaged. To open, unlock, push on the aft end of the handle and raise the forward end of the handle. The door will now open and remain in the up position, held by a self-contained gas cylinder in the baggage door rod. The door can be closed with one hand. A placard on the underside of each door details the loading capacity and restrictions for the nacelle baggage compartment.

Access to the aft baggage compartment is gained through the main cabin entrance door and, if installed, an optional cargo door mounted aft of the main cabin door. The compartment has a volume of 22 cubic feet and will accommodate up to 200 lbs of cargo (including 50 lbs on the shelf). A placard attached to the interior panel in the rear of the compartment indicates the maximum loading capacity of the aft compartment. The compartment is accessible from the cabin even in flight.

Baggage tie down straps should be used in all baggage areas for safe and secure stowage of baggage.

#### **NOTE**

It is the pilot's responsibility to be sure that the aircraft is properly loaded and that the aircraft C.G. falls within the allowable C.G. range. (See Section 6 - Weight and Balance.)

### **7.39 FINISH**

All aluminum sheet components of the PA-31-350 Chieftain are carefully finished inside and out to insure maximum service life. Both sides of all pieces are alodine treated and sprayed with zinc chromate primer to prevent corrosion of all structural and non-structural parts. The exterior surface of the airplane is coated with durable polyurethane in a variety of colors and color combinations to fulfill the desires of each individual owner.



### **7.41 NUMBER PLATES**

The manufacturer's name plate is located on the fuselage underside even with the forward edge of the cabin door. A second plate containing only the serial number is located to the left of the tail skid. The serial number should always be used in referring to the airplane in service or warranty matters.

### **7.43 STALL WARNING**

An approaching stall is indicated by the sounding of a stall warning horn. This warning is activated by a sensing vane on the leading edge of the right wing. Stall warning is given at about 4 to 10 knots before an actual stall would occur. The stall warning system may be checked during preflight by lifting the sensing vane while the airplane master switch is ON. The horn should activate.

Stall speed information is presented in graphs in Section 5 - Performance.

### **7.45 OXYGEN SYSTEM\***

The Scott oxygen system (Figure 7-39) is designed to provide supplementary oxygen for the crew and passengers for flight at altitudes above 10,000 feet.

Eight oxygen plug-in receptacles are in the cabin side panels and each one is an ON-OFF valve. An oxygen supply gauge and flow control knob are mounted on the lower right instrument panel. A pressure regulator is mounted directly on the oxygen cylinder.

The 115 cubic foot oxygen cylinder is mounted either aft of the forward baggage compartment or aft of the rear baggage compartment and, when fully charged, contains oxygen at a pressure of 1850 pounds per square inch.

Before taking off for high altitude flying, be sure that the oxygen supply is adequate for the proposed flight (see Figure 7-37) and that passengers are briefed on oxygen use. When oxygen is required, pull the control knob to ON and oxygen will flow from the cylinder through the connecting tubing and into the receptacles.

\*Optional equipment



Crew	Passengers	Oxygen Supply Range in Hours
1		25.76
1	1	12.88
1	2	8.58
1	3	6.44
1	4	5.15
1	5	4.29
1	6	3.68
1	7	3.22
	8	2.86
	9	2.57

With 2 Pilot's Masks		Oxygen Supply Range in Hours
2		12.88
2	1	8.58
2	2	6.44
2	3	5.15
2	4	4.29
2	5	3.68
2	6	3.22
	7	2.86
	8	2.57

**OXYGEN DURATION TABLE**

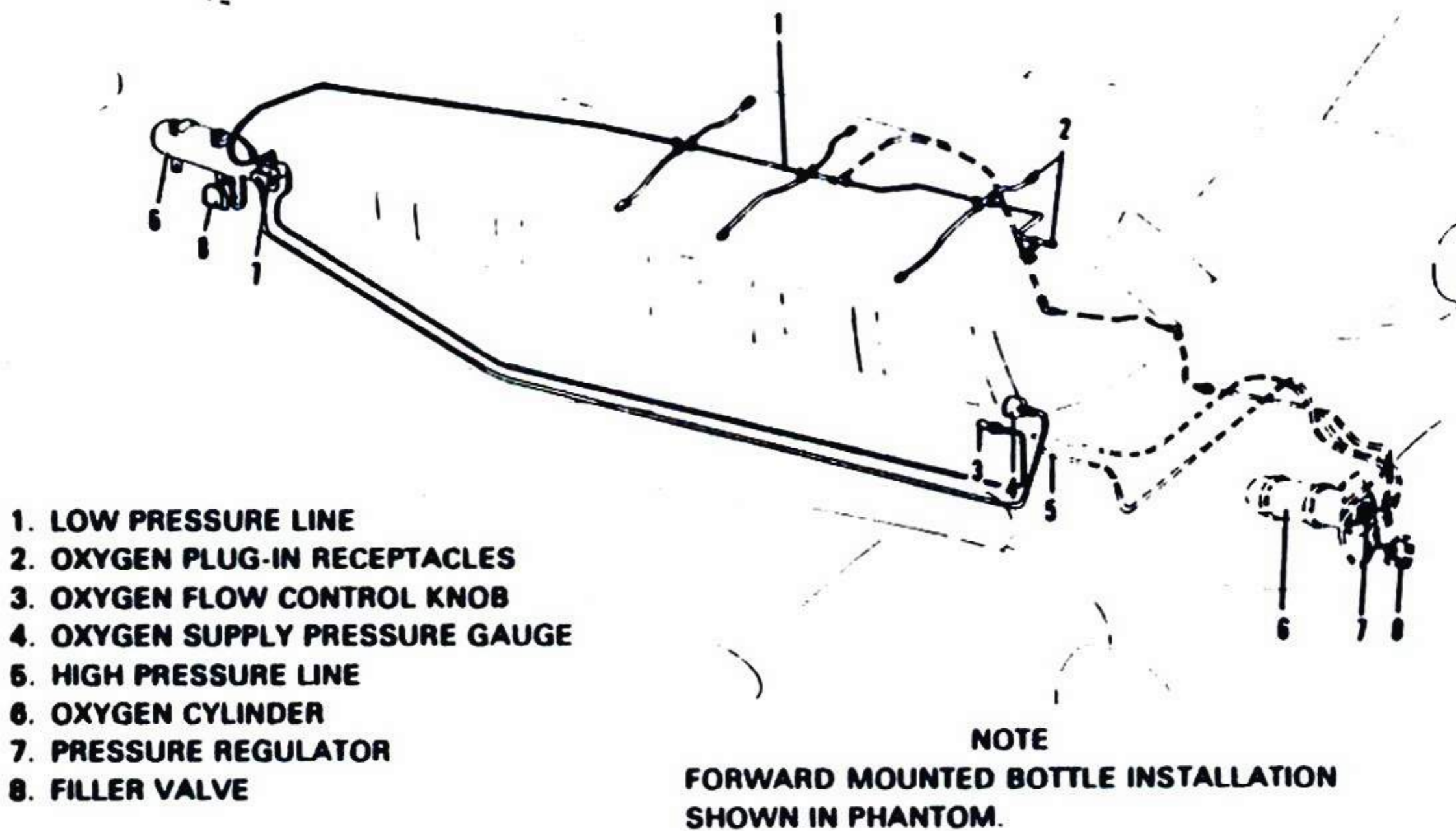
Figure 7-37

To use oxygen, connect a constant flow mask fitting into a receptacle and don the mask. A flow indicator shows oxygen pressure to the mask by the absence of the red pellet, which is forced toward the mask.

The oxygen masks are stowed beneath the seats.

The pilot's mask (identified with a red band on the supply hose) supplies 120 liters per hour. The passenger masks are identified with a gold or red band on the supply hose and supply 90 liters per hour or 120 liters per hour, respectively.





**OXYGEN SYSTEM**  
Figure 7-39

Always remove the fitting from receptacle and stow mask when not in use. Oxygen will flow through the mask whenever the fitting is in the receptacle and the control knob is ON. The mask may be damaged if not stowed.

To prevent fire, oil, grease, hydraulic fluid, paint or other inflammable material should be kept away from oxygen equipment.

**CAUTION**

Positively **NO SMOKING** while oxygen is being used by anyone in the airplane.



### **7.47 EMERGENCY LOCATOR TRANSMITTER\***

The Emergency Locator Transmitter (ELT), when installed, is enclosed under the removable dorsal fin forward of the vertical tail attachment to the fuselage. The unit meets the requirements of FAR 91.52. The transmitter operates on a self-contained battery.

A battery replacement date is marked on the transmitter label. To comply with FAA regulations, the battery must be replaced on or before this date. The battery must also be replaced if the transmitter had been used in an emergency situation or if the accumulated test time exceeds one hour, or if the unit has been inadvertently activated for an undetermined time period.

When installed in the airplane, the ELT transmits through the antenna mounted on the fuselage. The unit is also equipped with an integral portable antenna to allow the locator to be removed from the airplane in an emergency and used as a portable signal transmitter. Should it become necessary to remove the ELT from the airplane, be sure that the switch on the unit is in the OFF position before the transmitter is disconnected from the fuselage antenna. After the portable antenna is attached the unit may be turned ON as desired.

The locator should be checked during the preflight ground check to make sure that it has not been accidentally activated. Check by turning a radio receiver to 121.5 MHz. If there is an oscillating sound, the locator may have been activated and should be turned off immediately. Rearm the unit and then recheck.

#### **NOTE**

If for any reason a test transmission is necessary, the test transmission should be conducted only in the first five minutes of any hour and limited to three audio sweeps. If tests must be made at any other time the tests should be coordinated with the nearest FAA tower or flight service station.

\*Optional equipment



## **CC CIR 11 OPERATION**

On the unit itself is a three position selector switch placarded OFF, ARM and ON. The ARM position is provided to set the unit to the automatic position so that it will transmit only after impact and will continue to transmit until the battery is drained to depletion or until the switch is manually moved to the OFF position. The ARM position should be selected whenever the unit is in the airplane. The ON position is provided so the unit can be used as a portable transmitter or in the event the automatic feature was not triggered by impact or to periodically test the function of the transmitter.

Select the OFF position when changing the battery, when rearming the unit if it has been activated for any reason, or to discontinue transmission.

### **NOTE**

If the switch has been placed in the ON position for any reason, the OFF position has to be selected before selecting ARM. If ARM is selected directly from the ON position, the unit will continue to transmit in the ARM position.

A pilot's remote switch, located on the lower left instrument panel allows the transmitter to be controlled from inside the cabin. The pilot's remote switch is placarded ON, ARM (Normal Flight Position), RESET. If the pilot's remote switch has been placed in the ON position for any reason, the momentary RESET position must be selected for 3 seconds before allowing it to return to the ARM position. If for any reason the impact switch becomes inadvertently activated, it may be reset by selecting the momentary RESET position for 3 seconds before allowing it to return to the ARM position.



## **NARCO ELT 10 OPERATION**

On the unit is a switch placarded ON, OFF, and ARM. The ARM position allows the unit to be set to the automatic mode so that it will transmit only after activation by impact and will continue to transmit until the battery is drained to depletion or until the switch is manually moved to the OFF position. The ARM position should be selected whenever the unit is in the airplane. The ON position is provided so that the unit can be used as a portable transmitter or in the event the automatic feature was not triggered by impact or to periodically test the function of the transmitter. The OFF position should be selected while changing the battery or to discontinue transmission after the unit has been activated.

A pilot's remote switch, located on the lower left instrument panel allows the transmitter to be controlled from inside the cabin. The pilot's remote switch is placarded ON, ARM. The ARM position should be selected for all normal flight operations. If activation occurs with the remote switch in the ARM position, the transmitter must be reset. A button labeled RESET is located above the selector switch. To rearm the unit after it has been turned off or after it has been activated, the RESET button should be pressed in after the selector switch has been placed in the ARM position. This will end transmission and rearm the unit.



### **7.49 PROPELLER SYNCHROPHASER\* (HARTZELL)**

The propeller synchrophaser eliminates slight manual propeller adjustments to reduce the "beat" effect of the propellers and minimizes vibration.

A two position PROP SYNC control switch is mounted on the lower portion of the instrument panel to the left of the control pedestal. The switch positions are MANUAL and SYNC.

With the switch in the MANUAL position, the engines and propellers are operated and controlled in the conventional manner. The synchrophaser automatically maintains selected rpm after the pilot manually sets the desired propeller speed and selects the SYNC position of the control switch. This rpm will be maintained by the synchrophaser until the pilot readjusts the propeller speed.

The major components of the system are two pulse generators, a computer, and an electrically slaved, mechanically operated propeller governor. With this system, the right engine is utilized as the slave engine and the left engine as the master. The pulse generators are driven from the adapted tach drive output and are interconnected electrically to the computer which senses the speed of the engines through the magnetic pickups in the pulse generators. The computer synchronizes the right engine to the left, through a solenoid in the right propeller governor.

Circuit protection is provided by a push-to-reset type circuit breaker in the circuit breaker control panel to the left of the pilot's seat on the sidewall. The breaker is labeled PROP SYNC.

**For Taxiing:**

Set the synchrophaser switch to MANUAL.

**For Takeoff and Landing:**

Set the synchrophaser switch to MANUAL.

**For Cruise:**

Synchronize the propellers as close as possible manually; then set the synchrophaser switch in the Prop Sync. position.

\*Optional equipment



### **NOTE**

Normally, propeller synchrophasing is achieved in a few seconds but occasionally it may take a full minute to achieve full propeller synchrophasing.

If a change in power setting is desired, set the synchrophaser switch to **MANUAL** position; wait 30 seconds. Adjust the power setting; then set the synchrophaser switch in the **Prop Sync.** position.

Propeller "Phase" is preset at the factory. For further information on Phase control and the Propeller Synchrophasing System, consult the aircraft service manual.

### **NOTES**

Should it be necessary to completely deactivate the **Prop Sync.** system the circuit breaker must be pulled.

Each time a propeller RPM differential greater than 50 RPM occurs, it will be necessary to recycle the system to **MANUAL** for 30 to 40 seconds. Manually resynchronize propellers; then turn switch to **Prop Sync.** position.

In the event of an electrical system failure or if the master switch is off, the slave engine will return to the controlled selected RPM plus approximately 25 RPM regardless of the position of the synchrophaser switch (out of synchronization).

For all single engine operations set the synchrophaser switch to the manual position.



### **7.51 ELECTRIC PROPELLER DEICER\***

An electrical propeller deicer system can be installed as optional equipment. The installation consists of: propeller deicer pads bonded to the leading edges of the propeller blades; modified starter ring gears incorporating slip rings to distribute power to the propeller deicers; brush assemblies for power distribution to the slip ring; a timer which cycles power to the propeller deicers; an ammeter, mounted in the circuit protector panel, indicating current through the deicing system; and a propeller deice switch located in the overhead switch panel.

When the propeller deicer switch is placed in the ON position, electrical power is supplied to the propeller deicers from the airplane's electrical power supply. The propeller deicer ammeter will indicate a reading of from 8 to 12 amps.

Deicing is accomplished by heating portions of the deicer pads in a sequence which is controlled by the timer. The heat reduces the adhesion between the ice and the propeller so that centrifugal force and the blast of the airstream causes the ice to be thrown off the propeller blades. Heating of the deicer pads is according to the following cycle:

- (a) Outboard halves of propeller deicer pads, right engine (30 seconds).
- (b) Inboard halves of propeller deicer pads, right engine (30 seconds).
- (c) Outboard halves of propeller deicer pads, left engine (30 seconds).
- (d) Inboard halves of propeller deicer pads, left engine (30 seconds).

When the system is turned on heating may begin on any one of the cycles depending upon the initial positioning of the timing switch. Once begun, cycling will proceed in the order of (a), (b), (c) and (d) as indicated above until the system is turned off.

A preflight check of the propeller deicers can be performed by turning the PROP DE-ICE switch on and feeling the deicer pads for proper heating sequence. The deicer pads should be warm to the touch.

A less vigorous test may be accomplished by turning the PROP DE-ICE switch on with the engine's operating at idle and noting that the ammeter needle remains in the green arc for one complete cycle. (2 minutes)

\*Optional equipment



The heat provided by the deicer pads reduces the adhesion between the ice and the propeller so that centrifugal force and the blast of airstream cause the ice to be thrown off the propeller blades in very small pieces. This ice can produce minor damage to the fuselage if ice shields\* have not been installed.

### **CAUTIONS**

When conducting the above described ground test, do not operate system longer than two complete cycles.

If the ammeter reading is less than in the green arc this indicates that one or more of the pads is not functioning. If propeller deice is used under this condition the pilot can expect an uneven build up of ice with consequent undesirable vibration.

Propeller imbalance may be relieved by varying the RPM; increase RPM briefly and return to desired setting, repeating if necessary.

### **7.53 ICE DETECTION LIGHT\***

An ice detection light can be installed on the outboard side of the left engine nacelle for checking icing conditions during night flight. This light is controlled by a switch mounted in the overhead switch panel.

### **7.55 24 VOLT - 25 AMPERE HOUR BATTERY\***

A 24 volt - 25 ampere hour battery is available for longer engine cranking time and prolonged electrical life in case the alternators become inoperative.

\*Optional equipment



### **7.57 AIR CONDITIONER\***

A 16,000 B.T.U. recirculating air conditioning system (Figure 7-41) is available for cooling the interior of the aircraft. This rated capacity is for ground operation and increases to a higher rating in flight. Major components of the system are: compressor, condenser, evaporators, cooling fans, movable scoop and operating controls. The air conditioner utilizes the normal ventilating air ducts for air distribution.

Two evaporator modules are installed in the ventilating air boxes. Enclosed in each box is an evaporator and fan. Also, a temperature control switch is located in the right air box. Water that is extracted when the air passes through the evaporators is dumped overboard through drain tubes in the bottom of the fuselage.

The air conditioner temperature control is located to the right of the power quadrant. It is a rheostat control and once a desired setting is selected it will normally be left in that position. If the control is rotated counterclockwise to the stop position the air conditioner will not operate nor will it operate if the ambient cabin temperature is at or below 65° F. The control is rotated clockwise to increase cooling. This rheostat controls the cabin temperature through a range of 65° F to 85° F.

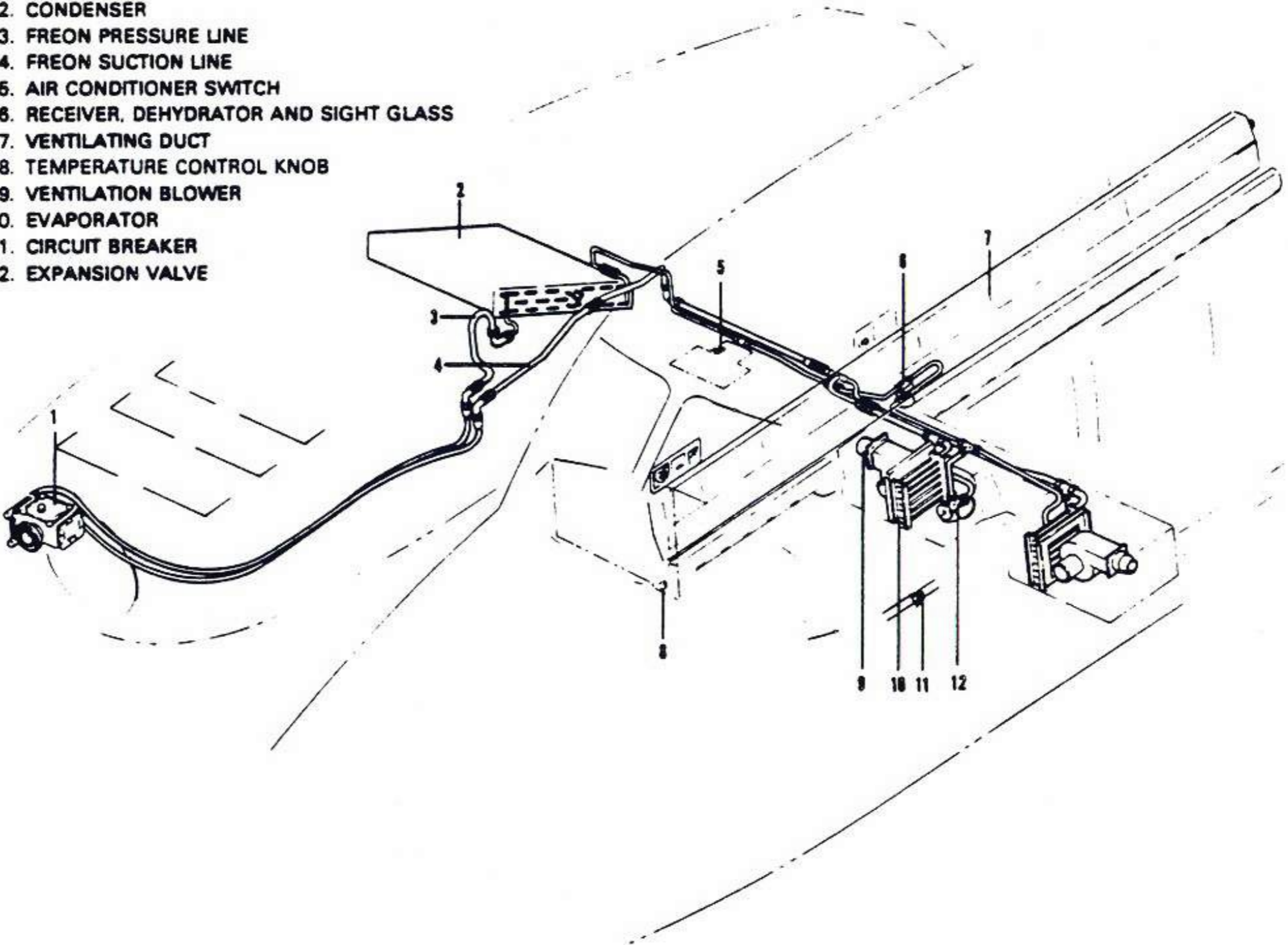
The air conditioner switch is located in the overhead switch panel. This switch is used normally for turning the air conditioner on or off. It is a three position switch and is marked OFF, FAN and AIR COND. The fan position circulates the cabin and cockpit air. This position can also be used to aid heated air circulation when the heater is being operated. The AIR COND position turns the air conditioning system on. An adjacent switch controls the fan speed at either high or low.

For cooling the interior of the aircraft on the ground, operate the right engine at 1000 RPM (compressor is mounted on right engine) and select AIR COND on the air conditioner switch. Select desired temperature with the air conditioner rheostat control. To allow recirculation of the cabin air, make sure the fresh air scoop is closed, (fresh air control off) and the cabin exhaust vent is closed.

\*Optional equipment



1. COMPRESSOR
2. CONDENSER
3. FREON PRESSURE LINE
4. FREON SUCTION LINE
5. AIR CONDITIONER SWITCH
6. RECEIVER, DEHYDRATOR AND SIGHT GLASS
7. VENTILATING DUCT
8. TEMPERATURE CONTROL KNOB
9. VENTILATION BLOWER
10. EVAPORATOR
11. CIRCUIT BREAKER
12. EXPANSION VALVE



AIR CONDITIONING SYSTEM  
Figure 7-41



Whenever the compressor is operating while the aircraft is on the ground, the condenser scoop located on the top of the right nacelle will open. In flight, the door will remain closed. This scoop is operated by an electric motor and is actuated automatically. Whenever the compressor cycles off the scoop will close. So if the system is operating for an extended period on the ground the scoop may close and open. Because the air is being recirculated, the cabin will be cooled to a comfortable temperature within a few minutes. If the scoop doesn't open, the cooling capacity will be reduced considerably.

**NOTE**

If no cooling effect is noted within two minutes after the system is turned on, turn the system off. With a low or zero refrigerant charge, continuous operation may result in oil starvation of the compressor and subsequent failure of the compressor. If this happens, the system should be checked before further use.

Because the compressor is mounted on the right engine the system may be operated while loading and unloading passengers, if desired. This also allows precooling of the interior of the aircraft before loading passengers.

During ground operation at temperatures of 70° F and above and with a crosswind component of ten knots or greater, the right engine should be operated at 1500 RPM to ensure full cooling capacity.

For cooling during flight, close the fresh air scoop and exhaust vent if open. Select **AIR COND** on the air conditioner switch; then select the desired temperature. Fresh air input to the cabin, after the cabin has been cooled, can be obtained by utilizing the normal cabin ventilating system, if desired.

**NOTE**

For single engine operation the air conditioner system should be turned off or the fan position selected.

A pressure switch is provided in the freon system to prevent the compressor from operating during low ambient temperatures or to prevent the compressor from operating with a low refrigerant charge.



### **7.59 RADAR\***

A weather radar system can be installed in this airplane. The basic components of this installation are an antenna, a transmitter/ receiver, and a cockpit indicator. The function of the weather radar system is to detect weather conditions along the flight path and to visually display a continuous weather outline on the cockpit indicator. Through interpretation of the advance warning given on the display, the pilot can make an early decision on the most desirable weather avoidance course.

In addition to its primary purpose, weather mapping, the system can be used for navigation. A ground mapping feature allows the pilot to identify coastlines, water masses, islands, high ground, etc. This provides the pilot with a guidance feature which may be useful in adverse weather conditions or over areas where ground-based navigational aids are limited.

For detailed information on the weather radar system and for procedures to follow in operating and adjusting the system to its optimum efficiency, refer to the appropriate operating and service manuals provided by the radar system manufacturer.

#### **NOTE**

When operating weather avoidance radar systems inside moderate to heavy precipitation, it is advisable to set the range scale of the radar to its lowest setting.

\*Optional equipment



***WARNING***

Heating and radiation effects of radar can cause serious damage to the eyes and tender organs of the body. Personnel should not be allowed within fifteen feet of the area being scanned by the antenna while the system is transmitting. Do not operate the radar during refueling or in the vicinity of trucks or containers accomodating explosives or flammables. Flashbulbs can be exploded by radar energy. Before operating the radar in any mode other than STANDBY, direct the nose of the airplane so that the forward 120 degree sector is free of any metal objects such as other aircraft or hangars for a distance of at least 100 yards, and tilt the antenna upward 15 degrees. Do not operate the radar while the airplane is in a hangar or other enclosure.

**7.61 ELECTRICALLY HEATED WINDSHIELD\***

An electrically heated pilot's windshield can be installed on the PA-31-350, Chieftain as optional equipment.

The electrically heated windshield, used to prevent and/ or remove icing and fogging, is controlled by a WINDSHIELD HEAT switch mounted in the overhead switch panel. With the engines running, a preflight check can be made by activating the control switch. The windshield is operating properly if it feels warm to the touch.

Ground operation should be kept to a minimum to prevent overheating of the windshield. Distorted vision or small bubbles in the plastic of the windshield may indicate an overheat condition.

The exterior surface of the windshield has a Nesa coating to prevent static discharge. Use care when cleaning (refer to Section 8 - Airplane Handling, Servicing and Maintenance).

\*Optional equipment



### **7.63 ELECTRIC WINDSHIELD WIPER\***

An electrically operated windshield wiper can be installed in conjunction with the electrically heated windshield on the pilot's side.

The system is protected by a circuit breaker located in the circuit breaker control panel and controlled by a speed adjustment knob mounted on the left side of the instrument panel. The speed adjustment knob has four positions: PARK, OFF, LOW and HIGH. To operate the wiper, select the desired speed position.

#### ***CAUTION***

Do not operate the windshield wiper at airplane speeds above 127 KIAS or on a dry windshield.

When operation of the wiper is no longer required, turn the speed adjustment knob to OFF and to PARK. The PARK position resets the wiper blade and will automatically return the knob to the OFF position when released.

### **7.65 RIGHT INSTRUMENT PANEL LIGHTING\***

Instrument lighting for the right instrument panel is provided by individual post lamps mounted adjacent to each instrument. These lights are controlled by a rheostat switch located on the overhead panel. The lights are turned on with the first movement of the rheostat knob and the light intensity is increased by further rotation of the knob.

### **7.67 FIRE EXTINGUISHER (PORTABLE)\***

A portable fire extinguisher is mounted to the seat frame beneath the pilot's seat. The extinguisher is suitable for use on liquid or electrical fires. It is operated by aiming the nozzle at the base of the fire and squeezing the trigger grip. Releasing the trigger automatically stops further discharge of the extinguishing agent. Read the instructions on the nameplate and become familiar with the unit before an emergency situation. The dry powder type extinguisher is fully discharged in about 10 seconds, while the Halon 1211 type is discharged in 15 to 20 seconds.

\*Optional equipment



***WARNING***

The concentrated agent from extinguishers using Halon 1211 or the by-products when applied to a fire are toxic when inhaled. Ventilate the cabin as soon as possible after fire is extinguished to remove smoke or fumes. Use oxygen, if necessary.

**7.69 ANTI-STATIC WICKS\*\***

Anti-static wicks can be installed on the trailing edges of the wing panels and the tail surfaces to aid in clearing the airplane of surface static electricity, which may disrupt LF reception, cause a loss of ADF indication or cause VHF interference. A total of eighteen wicks are attached to the airplane: three on each aileron; three outboard and one inboard on each elevator; and three on the upper part and one on the lower part of the rudder.

**7.71 RAMP HAILER\***

The ramp hailer is used to give instructions to ground personnel outside the aircraft. A speaker is located in the nose section forward of the nose wheel area. To operate, turn on the master switch, select EXT on the transmitter selector switch on the radio control panel, key the microphone and give your instructions. The ramp hailer works best with the engines idling or shut down.

**7.73 CARGO DOOR\***

A large cargo door can be installed adjacent to the main cabin entrance door to facilitate loading of the aft baggage compartment (refer to Figure 7-43). The door latch handle, mounted in the forward side of the door, is revealed by opening the cabin entrance door. To open the cargo door on earlier models, pull down on the top of the handle and raise the door until it latches in the up position. On later models, pull outward on the door until the gas spring support goes "over center" and begins to push up on the door. Release the door and allow the gas spring support to raise it to the full open position. The additional width and height of the fuselage opening will allow

\*Optional equipment

\*\*Optional on early models, standard on later models.



convenient, unhindered loading of bulky items. To lower the door on earlier models, push up on the knurled knob on the door support arm, lower the door and push in on the bottom of the door handle until it latches securely to the fuselage. To close the door on later models, pull it down to the closed position. (As the door approaches the closed position, the gas spring support will assist in closing the door.) While pushing inward on the bottom of the door, move the top of the latch handle aft to latch the door securely to the fuselage.

The aft main cabin entrance door support cable is provided with a fitting that enables it to be detached in the center. After the cable is separated, the lower portion of the cable can be attached to the eye bolt fitting on the fuselage. This feature provides an unobstructed fuselage opening for loading cargo.

When the optional cargo door is installed, the standard, triangular shaped aft window in the left side of the fuselage is deleted and a cargo loading placard is installed in the aft baggage compartment. The interior of the cargo door is deeply upholstered to match the interior styling of the cabin.

### **7.75 PILOT'S DOOR\***

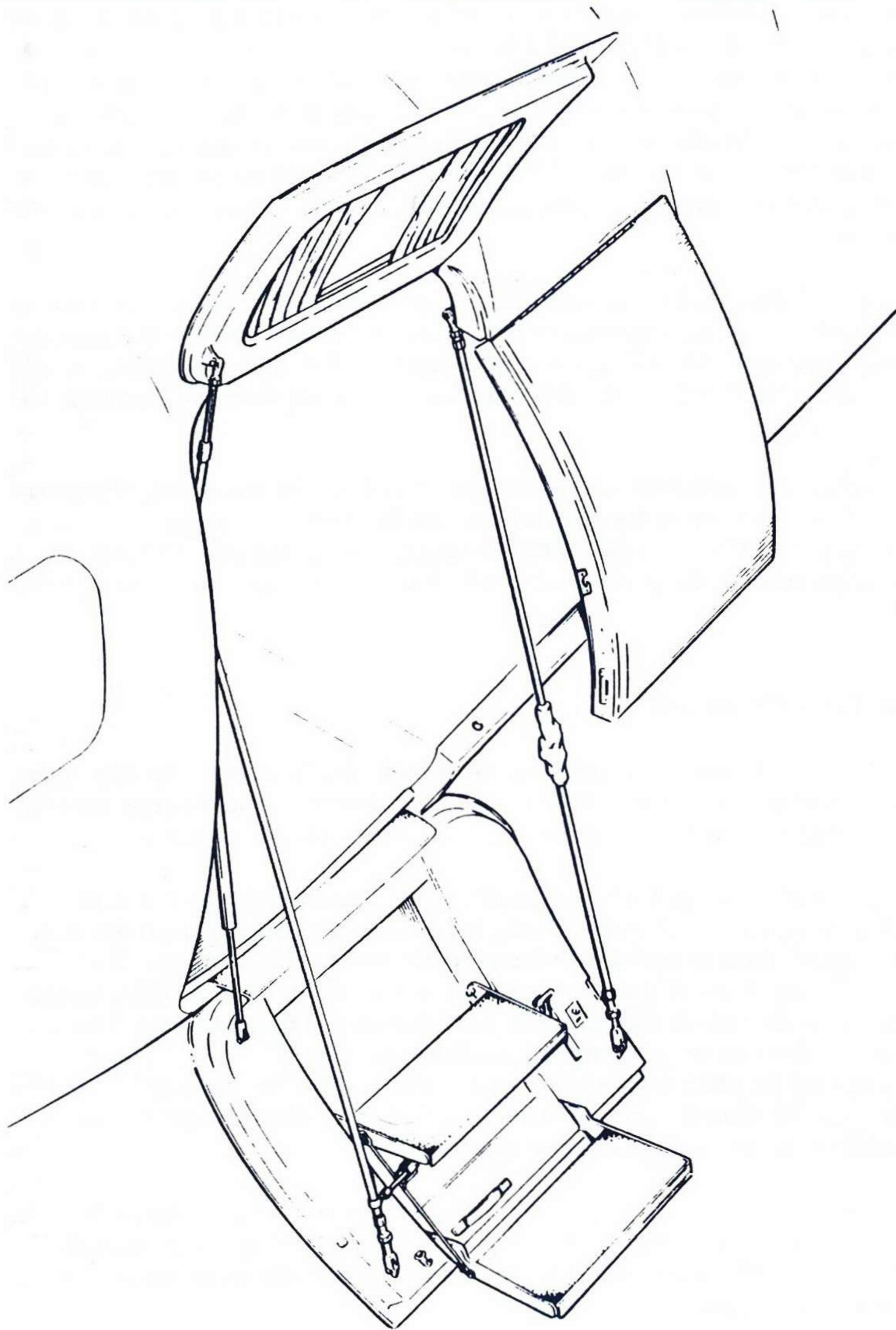
The pilot door installation provides direct access to the pilot compartment from the left side of the fuselage. The feature permits convenient pilot entry when the cabin area is loaded with cargo.

The door incorporates the pilot's side window and storm window. A door handle, theft lock and latching mechanism are provided on the inside of the pilot's door to maintain a secure theft-proof cockpit (Figure 7-45). To open the door from within the cockpit, release the latch on the bottom edge of the door and move the door handle to the OPEN position (aft). This will allow the door to be pushed out and forward until it latches in place. The door is held in place by a support arm, which must be released before the door can be closed. This is accomplished by pushing upward on the adjustment knob attached to the support arm.

The theft lock is an integral part of the main latching mechanism. This locking device is intended for ground purposes only, and should be unlocked prior to flight to allow the door to be opened from the outside in the event of an emergency landing.

\*Optional equipment

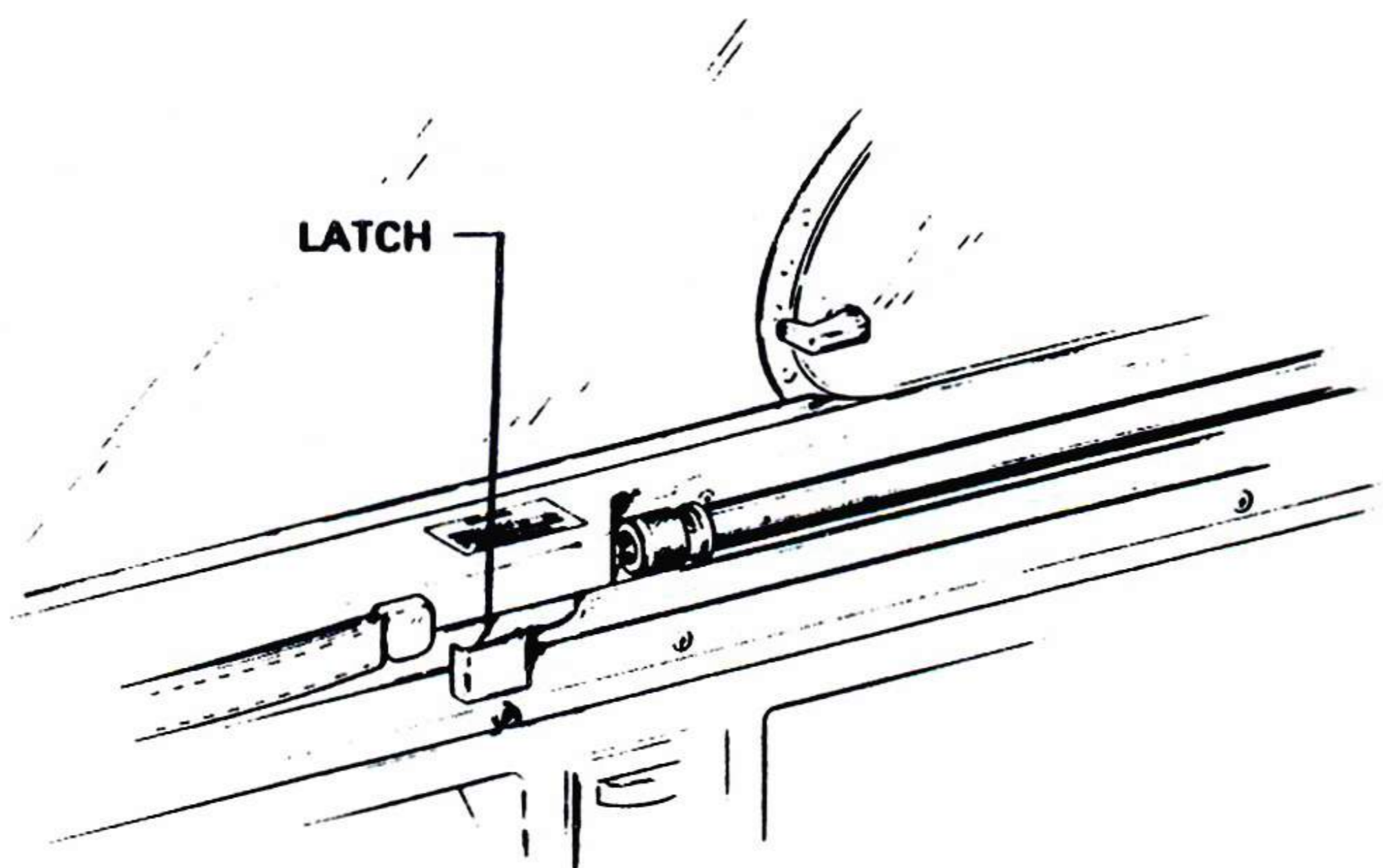
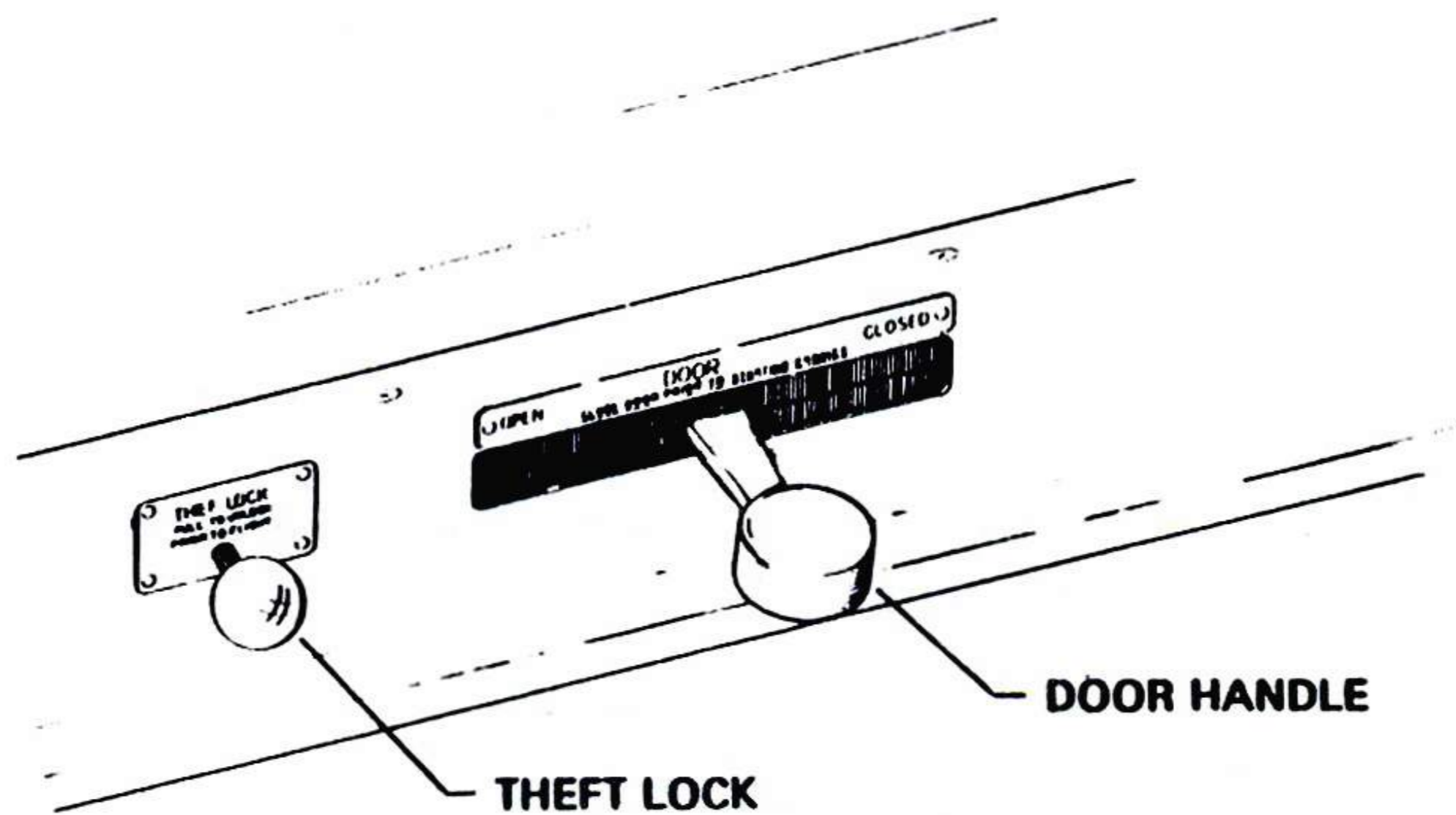




**TYPICAL CABIN ENTRANCE DOOR AND CARGO DOOR**

Figure 7-43





**PILOT'S DOOR**  
Figure 7-45



To open the pilot's door from outside the airplane, turn the door handle counterclockwise and pull out on the door. If the theft lock is pushed, or the door was previously locked from the outside, the key provided with the airplane must be used to unlock the door before opening.

### **7.77 CABINTRY\***

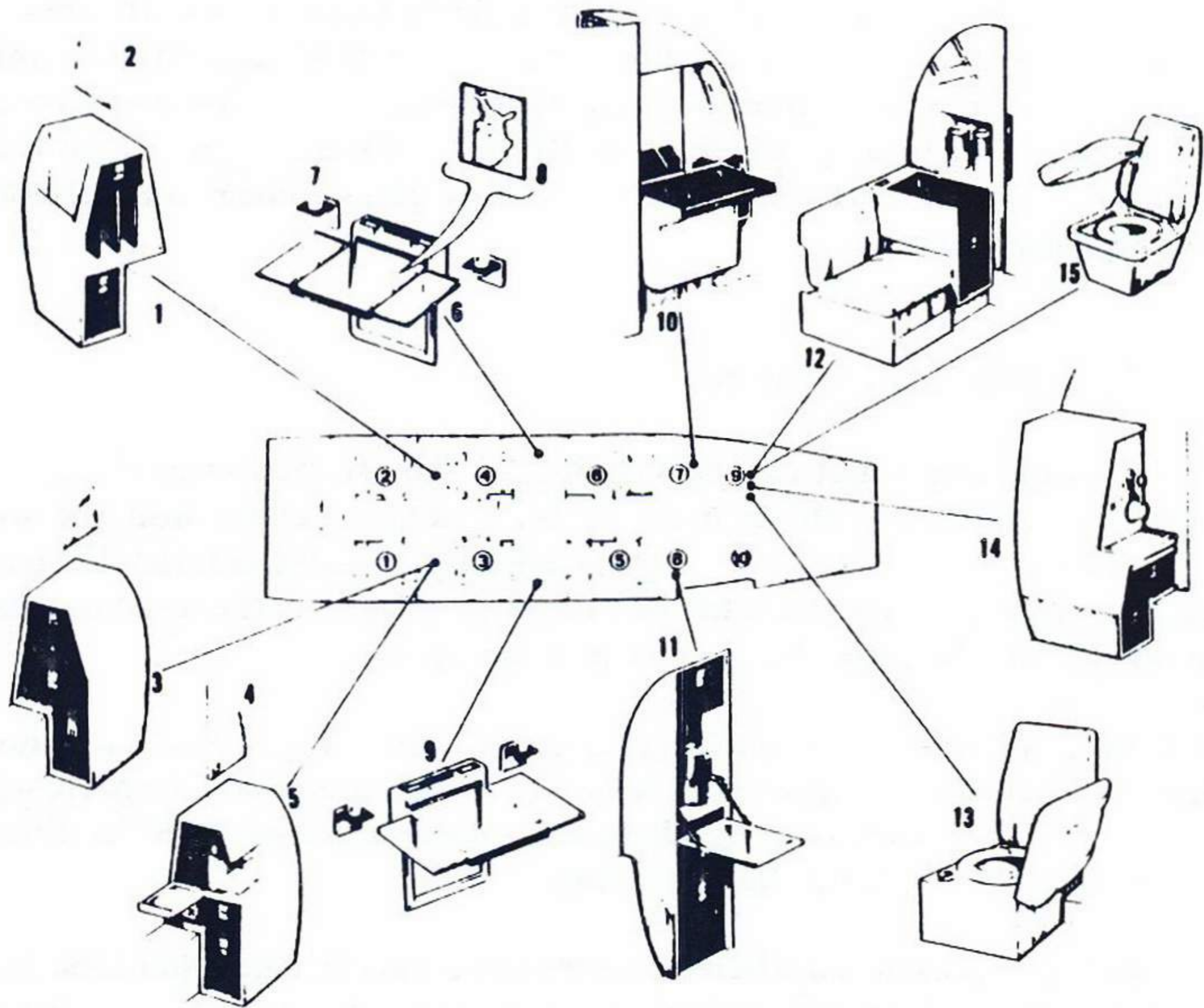
Among the optional interior appointments available in the Chieftain is a variety of cabinet installations (Figure 7-47).

Storage cabinets or a combination storage cabinet and refreshment unit may be installed aft of the crew seats, between the cockpit and the main cabin areas. The storage cabinet units include slots for map, chart, or manual storage and several slide-out drawers. The refreshment unit includes storage drawers, an ice chest, a one quart electrically heated liquid unit, a cup dispenser, and a pull-out work surface. The area between the cabinets and the cabin ceiling may be closed off with cabin dividers, and the walkway between the cabinet units may be equipped with a draw curtain to allow the cockpit area to be completely separated from the main cabin.

Cabinetry available for the aft cabin area includes storage cabinets, vanity, and refreshment units, which may be installed in the aft cabin area either forward of the cabin door or forward of the rear baggage area. Among the optional vanity and refreshment facilities available with rear cabinetry installations are: a mirror, an outlet for an electric razor, an ice chest, a beverage container, thermos pitchers, a half-gallon electrically heated liquid unit, a serving tray, a litter container, and storage drawers. The aft cabinets are mounted on vertical dividers extending the height of the cabin, and several are available with privacy curtains or folding doors to allow the aft cabin to be closed off from the passenger area.

\*Optional equipment





- 1. RIGHT FORWARD STORAGE CABINET
- 2. RIGHT FORWARD CABIN DIVIDER
- 3. LEFT FORWARD STORAGE CABINET
- 4. LEFT FORWARD CABIN DIVIDER
- 5. FORWARD REFRESHMENT UNIT
- 6. RIGHT FOLDING TABLE
- 7. CUP HOLDER
- 8. INLAID MAP TABLE TOP

- 9. LEFT FOLDING TABLE
- 10. RIGHT AFT VANITY/REFRESHMENT UNIT
- 11. LEFT AFT REFRESHMENT UNIT
- 12. AFT COMBINATION UNIT -  
REFRESHMENT/NINTH SEAT/TOILET
- 13. COMBINATION UNIT - NINTH SEAT/TOILET
- 14. AFT REFRESHMENT UNIT/CABIN DIVIDER
- 15. COMBINATION UNIT - NINTH SEAT/TOILET

**CABINERY OPTIONS**

Figure 7-47



### **7.79 FOLDING TABLES\***

Folding tables (Figure 7-47) can be installed on either or both sides of the cabin between the second and third windows. A table can be used only when the first seat in the passenger area is installed facing aft, conference style. The drop-leaf table pulls up from its wall rack and folds down into position. The table installation includes ash trays, glass holders, and recesses for holding small items.

### **7.81 TOILET INSTALLATION\***

A self-contained toilet can be installed in the aft section of the cabin (Figure 7-47). In either a side-facing or forward-facing seat position, the unit may be used as a passenger seat. The seat cushion conceals the toilet. Either a folding door or a draw curtain may be installed forward of the toilet to close off the aft cabin, assuring the occupant of privacy.

Plastic disposable bags which are available from Piper dealers should be placed in the toilet receptacle. After use, remove the plastic bag, close it with a wire tie, and, after landing, dispose of it in the proper field facilities. Do not attempt to flush the bag in a toilet.

A relief tube is exposed when the toilet seat is raised. The relief tube also serves as a vent for the toilet; therefore, be sure that the tube system is not blocked or obstructed.

### **7.83 EMERGENCY ELECTRICAL POWER PACK\***

An optional emergency electrical power supply installation is available for the Chieftain. This installation includes a 28 volt nickle-cadmium battery which will provide a short-term emergency electrical source to power nav 2, comm 2 and glide slope 2.

This installation is to be used only in an emergency situation and only after all emergency procedures for electrical failure outlined in Section 3 have been completed and no power from either alternator or from the airplane's battery is available to the avionics bus.

\*Optional equipment



The switch for the emergency power supply is located on the pilot's instrument panel. When the emergency mode is selected, nav 2, comm 2 and glide slope 2 are removed from the primary electrical system and are transferred to the emergency power supply.

The emergency power supply battery has a 3.8 amp hour life when fully charged. Limited operation (equipment turned OFF when not in actual use) of the nav 2, comm 2 and glide slope 2 is required to extend the life of the emergency battery. The pilot must become familiar with the current consumption of these avionics installations to allow budgeting of emergency electrical power to insure arrival at a landing site. Current consumption information is available in the manuals provided by the manufacturer of the avionics equipment.

For a complete description of the system, its operation and maintenance, refer to the appropriate operating and service manuals supplied by the system manufacturer.

#### **NOTE**

Under IFR conditions, an approach and landing should be made at the nearest suitable airport no more than 45 minutes after activation of the Emergency Power Switch. The 45 minute limitation assumes a fully charged emergency battery.