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SECTION VII
OPTIONAL SYSTEMS

This section contains a description, operating procedures, and performance data (when applicable) for some of the optional equipment which may be installed in your aircraft. Contact your Cessna Dealer for a complete list of available optional equipment.

AVIONICS MASTER SWITCHES

Two avionics master switches are provided with factory installed avionics. The master switch breaker labeled AVN MASTER is located in the top forward section of the side console. This switch supplies power from the battery bus through a circuit breaker located aft of the battery box and to the individual avionics circuit breakers and is used for all normal operations. An emergency avionics master switch breaker labeled EMG AVN PWR is located in the lower section of the side console and is protected by a red switch guard cover. This switch supplies power from the alternator bus to the individual avionics circuit breakers. The emergency avionics master switch is recommended for use only when the avionics master switch, associated wiring or battery circuits become inoperative.

NORMAL OPERATION

(1) Battery Master Switch - ON.
(2) Avionics Master Switch - ON after engine start.
(3) Radios - SET.

EMERGENCY OPERATION

(1) Emergency Avionics Power Switch - ON.

AUXILIARY FUEL SYSTEM (40 and 63 Gallon Options)

The auxiliary tanks are available in either of two sizes; 20 U.S. gallon usable each wing or 31.5 U.S. gallon usable each wing. The auxiliary tanks

are installed in each wing just outboard of each engine nacelle and feed directly to the fuel selector valves. Fuel vapor and excesss fuel from the engines are returned to the main fuel tanks. The auxiliary tank is vented into the main tank. The main tank is in turn vented to the atmosphere.

When the selector valve handles are in the AUXILIARY position, the left auxiliary tank feeds the left engine and the right auxiliary tank feeds the right engine. The fuel quantity indicator continuously indicates fuel remaining in the tanks selected. When the fuel selector handles are in the AUXILIARY position, AUX TANK indicator lights will illuminate and the fuel quantity gage will indicate the fuel in the auxiliary tanks (pounds in white and gallons in blue). When the fuel selector handles are in the MAIN position, the fuel quantity gage will indicate the fuel in the main tanks. A three-position switch, spring-loaded to center, allows checking fuel quantity in the tanks not selected. The switch, adjacent to the auxiliary tank indicator lights, is labeled MAIN and AUX. By positioning the switch to the appropriate tank position, the fuel quantity in that tank will be indicated on the fuel quantity gage.

If the auxiliary tanks are to be used, select fuel from the main tanks for 60 minutes with 20 gallon tank and 90 minutes with 31.5 gallon tank prior to switching to auxiliary tanks. This is necessary to provide space in the main tanks for vapor and fuel returned from the engine-driven fuel pumps. If sufficient space is not available in the main tanks for this diverted fuel, the tanks can overflow through the vent line. Since part of the fuel from the auxiliary tanks is diverted back to the main tanks instead of being consumed by the engines, the auxiliary tanks will run dry sooner than may be anticipated. However, the main endurance will be increased by the returned fuel. The total usable fuel supply is available during cruising flight only. An engine failure or engine driven pump failure results in the auxiliary fuel on the side of the failure being unusable. Operation on the auxiliary fuel tanks near the ground (below 1000 feet AGL) is not recommended.

OPTIONAL WING LOCKER FUEL SYSTEM

Optional wing locker fuel tanks (20 gal. usable each wing) are installed in the forward portion of the nacelle wing lockers. There are no separate fuel selector controls for the wing locker fuel tanks. The wing locker fuel is pumped directly into the main tanks with a fuel transfer pump. Indicator lights mounted on the instrument panel are illuminated by pressure switches to indicate fuel has been transferred. The wing locker fuel should not be transferred until there is 180 lbs. or less in the main fuel tanks to prevent overflow of the main tank fuel. Fuel should be crossfed as required to maintain fuel balance after wing locker fuel has been transferred.

NOTE

Wing locker transfer pump switches provided on the instrument panel, energize the wing locker fuel transfer pumps for transferring fuel. These switches should be turned ON only to transfer fuel and turned OFF when the indicator lights come ON indicating fuel has been transferred.

OXYGEN SYSTEM

The oxygen system is designed to provide adequate oxygen flow rates for altitudes up to 30,000 feet. The pilot and passengers shall always use the blue hose assemblies. The system consists of a 48.3 or 76.6 cubic foot oxygen bottle, an altitude compensated regulator, oxygen bottle pressure indicator, a mechanically actuated on-off valve and the necessary outlets and plumbing. See Figure 7-1 for oxygen consumption rates at various altitudes.

OXYGEN SYSTEM OPERATION

The oxygen system is activated by pulling the oxygen knob to the ON position, allowing oxygen to flow from the regulator to all cabin outlets. A normally closed valve in each oxygen outlet is opened by inserting the connector of the mask and hose assembly. After flights using oxygen, the pilot should ensure that the oxygen system has been inactivated by unplugging all masks and pushing the oxygen knob completely to the OFF position.

NOTE

If the oxygen knob is left in an intermediate position between ON and OFF, it may allow low pressure oxygen to bleed through the regulator into the nose compartment of the aircraft.

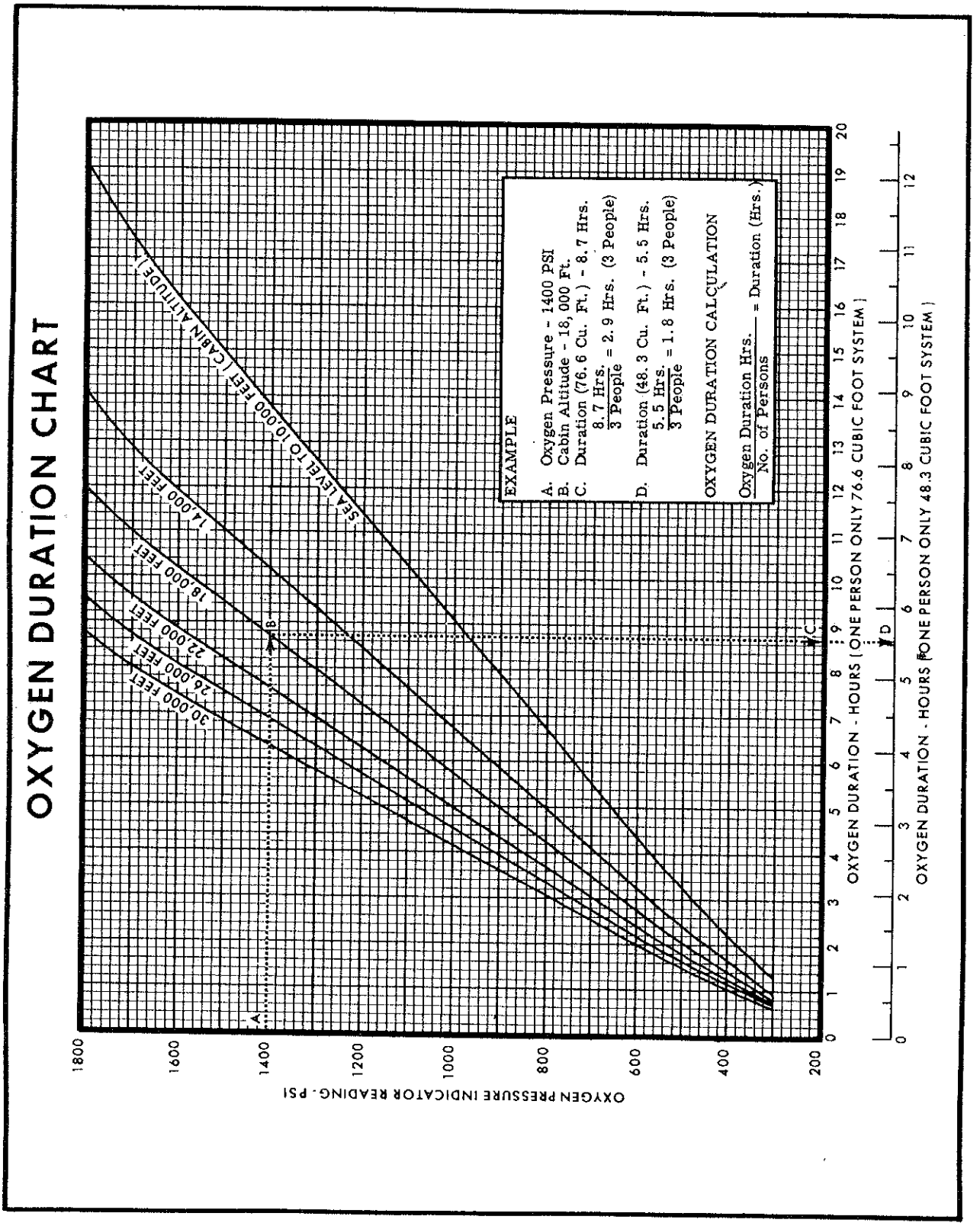

OXYGEN DURATION CHART
OXYGEN PRESSURE INDICATOR READING - PSI
1800
1600
1400
1200
1000
800
600
400
200
SEA LEVEL TO 10,000 FEET (CABIN ALTITUDE)
14,000 FEET
18,000 FEET
22,000 FEET
26,000 FEET
30,000 FEET
A
B
C
D
EXAMPLE
A. Oxygen Pressure - 1400 PSI
B. Cabin Altitude - 18,000 Ft.
C. Duration (76.6 Cu. Ft.) - 8.7 Hrs.
8.7 Hrs. / 3 People = 2.9 Hrs. (3 People)
D. Duration (48.3 Cu. Ft.) - 5.5 Hrs.
5.5 Hrs. / 3 People = 1.8 Hrs. (3 People)
OXYGEN DURATION CALCULATION
Oxygen Duration Hrs. / No. of Persons = Duration (Hrs.)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
OXYGEN DURATION - HOURS (ONE PERSON ONLY 76.6 CUBIC FOOT SYSTEM)
0 1 2 3 4 5 6 7 8 9 10 11 12
OXYGEN DURATION - HOURS (ONE PERSON ONLY 48.3 CUBIC FOOT SYSTEM)

Figure 7-1

Before Flight:

(1) Oxygen Knob - PULL ON.
(2) Oxygen Pressure Gauge - Check for sufficient pressure for anticipated flight requirements. (See figure 7-1.)
(3) Check that oxygen masks and hose assemblies are available.

During Flight:

> WARNING
>
> Permit no smoking when using oxygen. Oil, grease, soap, lipstick, lip balm, and other fatty materials constitute a serious fire hazard when in contact with oxygen. Be sure hands and clothing are oil-free before handling oxygen equipment.

(1) Mask - Connect mask and hose assembly and put mask on.
(2) Hose Coupling - Plug into overhead console.
(3) Oxygen Flow Indicator - Check Flow. (Indicator toward mask indicates proper flow.)
(4) Disconnect hose coupling from console when not in use.

AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG		AMBIENT TEMPERATURE °F	FILLING PRESSURE PSIG
0	1600		70	1925
10	1650		80	1950
20	1675		90	2000
30	1725		100	2050
40	1775		110	2100
50	1825		120	2150
60	1875		130	2200

Example - If ambient temperature is 70°F, fill oxygen cylinder to approximately 1925 psig - as close to this pressure as the gage can be read. Upon cooling, the cylinder should have approximately 1800 psi pressure.

Figure 7-2

OXYGEN SYSTEM SERVICING

The oxygen cylinder, when fully charged, contains 48.3 or 76.6 cubic feet of oxygen, under a pressure of 1800 psi at 70°F. Filling pressures will vary, however, due to the ambient temperature in the filling area, and because of the temperature rise resulting from compression of the oxygen. Because of this, merely filling to 1800 psi will not result in a properly filled cylinder. Fill to the pressures indicated in Figure 7-2 for the ambient temperature.

> NOTE
>
> Oil, grease, or other lubricants in contact with oxygen create a serious fire hazard, and such contact must be avoided when handling oxygen equipment.

The cylinder is serviced through an external filler valve located just above the aft end of the nosewheel doors. The Servicing Requirements table, located on the inside back cover of the manual, lists the correct type of oxygen for refilling the cylinder.

The face masks used with the oxygen system are the partial-rebreathing type. The pilot's mask is a permanent type mask, while the remainder are the semi-permanent type. They may be cleaned with alcohol or used as disposable masks. Additional masks and hose assemblies are available from your Cessna Dealer.

COLD WEATHER EQUIPMENT

WINTERIZATION KIT

A winterization kit consisting of engine cooling air inlet restrictor baffles is available for use during continuous operation in very low temperature conditions. These baffles may be installed as an assist in maintaining engine cylinder head temperatures in recommended temperature range. The winterization kit must be removed at temperatures of 20°F or above.

PROPELLER DEICE SYSTEM

The propeller deice system consists of electrically heated boots on the propeller blades. Each boot consists of two heating elements "Outboard" and "Inboard," which receive their electrical power through a deice timer. To reduce power drain and maintain propeller balance, the timer directs current to the propeller boots in cycles between boot elements and between propellers.

NORMAL OPERATION

To operate the propeller deice system proceed as follows:

(1) Battery Switch - ON
(2) Propeller Deice Switch Breaker - ON (up position).
(3) Ammeter - CHECK.

NOTE

- Periodic fluctuation (2 bladed 8 to 12 Amp. and 3 bladed 12 to 18 Amp.) of the propeller deice ammeter pointer indicates normal operation of the deicing elements of first one propeller and then the other.

- To check all the heating elements of both propellers and the deice timer for normal operation, the system must be left ON for approximately two and one-half minutes.

The timer directs current to the propeller boots in cycles between boot elements and between propellers in the following cycling sequence:

Heating Period No. 1 - Outboard halves - right engine blades.
Heating Period No. 2 - Inboard halves - right engine blades.
Heating Period No. 3 - Outboard halves - left engine blades.
Heating Period No. 4 - Inboard halves - left engine blades.

Each heating period lasts for approximately one-half minute.

EMERGENCY OPERATION

Abnormal operation of the propeller deice system is indicated by the propeller deice switch breaker tripping to the OFF position. Failure of the switch breaker to stay reset indicates that deicing is impossible for the propellers.

A reading below 8 Amp. (2 bladed) and 12 Amp. (3 bladed) on the propeller deice ammeter indicates that the blades of the propeller are not being deiced uniformly.

> WARNING
>
> When uneven deicing of the propeller blades is indicated, it is imperative that the deicing system be turned OFF. Uneven deicing of the blades can result in propeller unbalance and engine failure.

DEICE BOOT SYSTEM

OPERATING CHECKLIST

Before Entering Aircraft

(1) During the exterior inspection, check the boots for tears, abrasions, and cleanliness. Have boots cleaned and any major damage repaired before takeoff.

During Engine Runup

(1) Position deice switch to ACTUATE and check inflation and deflation cycles. The pressure indicator light (amber in color) should light when the system reaches 10 PSI. The system may be recycled as soon as the light goes OFF, or as required.

NOTE

The deice system is manually controlled. Every time a deicing cycle is desired, the switch must be positioned to ACTUATE. The switch will instantly spring back to OFF, but a 6 second delay action in the timing relay will complete the deicing inflation cycle.

(2) Check boots visually for complete deflation to the vacuum hold-down position.

NOTE

Complete inflation and deflation cycle will last approximately 30 seconds.

In Flight

(1) When ice has accumulated to approximately 1/2 inch thick on the leading edges, position deice switch to ACTUATE.

After Landing

(1) Check boots for damage and cleanliness. Remove any accumulations of engine oil or grease.

OPERATING DETAILS

Cycling the deice boots produces no adverse aerodynamic effects in any attitude within the allowable flight limitations.

Deice boots are intended to remove ice after it has accumulated rather than preventing its formation. If the rate of ice accumulation is slow, best results can be obtained by leaving the deice system OFF until 1/4 to 3/4 inch of ice has

accumulated. After clearing this accumulation with one or two cycles of operation, the system should remain OFF until a significant quantity of ice has again accumulated. Rapid cycling of the system is not recommended, as this may cause the ice to grow outside the contour of the inflated boots, preventing its removal.

NOTE

Since wing and horizontal stabilizer deice boots alone do not provide adequate protection for the entire aircraft, known icing conditions should be avoided whenever possible. If icing is encountered close attention should be given to the pitot-static system, propellers, induction systems, and other components subject to icing.

The deice system will operate satisfactorily on either or both engines. During single-engine operation, suction to the gyros will drop momentarily during the boot inflation cycle.

*

DEICE BOOT CARE

Deice boots have a special, electrically-conductive coating to bleed off static charges which cause radio interference and may perforate the boots. Fueling and other servicing operations should be done carefully, to avoid damaging this conductive coat or tearing the boots.

Keep the boots clean and free from oil and grease, which swell the rubber. Wash the boots with mild soap and water, using benzol or unleaded gasoline, if necessary, to remove stubborn grease. Do not scrub the boots and be sure to wipe off all solvent before it dries.

Small tears and abrasions can be repaired temporarily without removing the boots and the conductive coating can be renewed. Your Cessna Dealer has the proper materials and know-how to do this correctly.

ALCOHOL WINDSHIELD DEICE SYSTEM

The alcohol windshield deice system consists of an alcohol tank, a pump, left and right-hand dispersal tubes, and a switch breaker.

The alcohol tank, located in the aft end of the right wing locker, has a 3.0 gallon capacity. The tank should be filled with isopropyl alcohol only. Water dilution of the alcohol is not recommended, as any water contained in the alcohol will reduce the efficiency of ice removal and may freeze on the windshield at very low temperatures. The pump located adjacent to the tank provides positive pressure to the windshield dispersal tubes. The left and right-hand dispersal tubes located at the forward base of the windshield provide flow pattern control throughout the aircraft's speed envelope. Each tube contains five holes which should be inspected and cleaned with a small diameter wire as necessary.

OPERATING CHECKLIST

Before Entering Aircraft

(1) During the exterior inspection, check the windshield dispersal tubes for cleanliness. Check the tank alcohol level. Flow requirements are 3.0 gallons per hour of continuous operation.

During Engine Runup

*(1) Position the windshield deice switch breaker to ON. Allow approximately 10 seconds for flow to begin. Assure that each of the five holes in left and right-hand dispersal tubes are flowing alcohol. Return the windshield deice switch breaker to the OFF position.

Normal Operation

To operate the windshield deice system, proceed as follows:

(1) Windshield Deice Switch Breaker - ON.

NOTE

For operation in continuous enroute icing conditions, allow approximately 1/8 to 1/4 inch of ice to accumulate. The windshield deice system can be used as an anti-ice system by continuous use and should be so used during the approach to landing. However, the maximum endurance with a 3-gallon tank is approximately 1.0 hour of continuous operation. Airspeed should be 140 KIAS or below for best results.

(2) Windshield - CHECK (allow approximately 10 seconds for alcohol flow to begin).

(3) When windshield ice is removed, windshield deice switch breaker - OFF.

WARNING

The windshield deice switch breaker must be positioned OFF 20 seconds prior to reaching minimum descent altitude. The alcohol film must be allowed to evaporate before a clear field of vision through the windshield is available.

Emergency Operation

Abnormal operation of the alcohol windshield deice system is indicated by the switch breaker tripping to the OFF position or failure of alcohol to flow onto the windshield. Do not leave system on more than 3 minutes without alcohol flow.

PROPELLER SYNCHRONIZER

The propeller synchronizer matches propeller RPM of the two engines on the aircraft. The propeller RPM of the slave (right) engine will follow changes in RPM of the master (left) engine over a limited range. This limited range feature prevents the slave engine losing more than a fixed amount of propeller RPM in case the master engine is feathered with the synchronizer ON. The synchronizer switch in the OFF position will automatically actuate the synchronizer to the center of its range before stopping, to insure that the control will function normally when next turned on. The system indicator light should light when the synchronizer switch is in the ON position.

In addition to maintaining propeller synchronization and elimination of the unpleasant audio beat accompanying unsynchronized operation, the propeller synchronizer can also provide a significant reduction in cabin vibration by maintaining an optimum angular or phase relationship between the two propellers.

With the propeller slightly out of synchronization so that an audio beat is obtained approximately once each 5 seconds, it should be noted that the vibration level of the cabin and instrument panel will increase and decrease at a rate of approximately once each 20 seconds. Optimum operation will be obtained by manually synchronizing the propellers and engaging the synchronizer during the period of minimum vibration. The angular relationship of the propellers should be maintained for extended periods of time unless disturbed by moderate atmospheric turbulence.

NOTE

- Manually synchronize and phase the engines prior to switching the propeller synchronizer system ON.
- The propeller synchronizer must be switched OFF during takeoff, landing and single-engine operation.

ECONOMY MIXTURE INDICATOR

The Cessna Economy Mixture Indicator is an exhaust gas temperature sensing device which is used to aid the pilot in selecting the optimum fuel-air mixture for cruising flight at less than 75% power. Exhaust gas temperature (EGT) varies with the ratio of fuel-to-air mixture entering the engine cylinders.

OPERATING INSTRUCTIONS

(1) In takeoff and full power climb, lean the mixture as indicated by the white or blue markings on the fuel flow indicator.

NOTE

Leaning in accordance with markings on the fuel flow indicator will provide sufficiently rich mixture for engine cooling. Leaner mixtures are not recommended for power settings in excess of 75%.

(2) In level flight (or cruising climb at less than 75% power), lean the mixture to peak EGT, then enrichen as desired using Figure 7-3 as a guide.

NOTE

- Changes in altitude, OAT or power settings require the EGT to be rechecked and the mixture reset.
- Operation at peak EGT is not authorized for normal continuous operation, except to establish peak EGT for reference. Operating leaner than peak EGT minus 25°F (enrichen) is not approved.

(3) Use rich mixture (or mixture appropriate for field elevation) in idle descents or landing approaches. Leaning technique for cruise descents may be with EGT reference method (at least every 5000 feet) or by simply enriching to avoid engine roughness, if numerous power reductions are made.

MIXTURE DESCRIPTION	EXHAUST GAS TEMPERATURE	TAS LOSS FROM BEST POWER	RANGE INCREASE FROM BEST POWER
BEST POWER (Maximum Speed)	Peak Minus 75°F (enrichen)	0 KNOTS	0%
RECOMMENDED LEAN (Owners Manual & Computer Performance)	Peak Minus 25°F (enrichen)	2 KNOTS	10%

Figure 7-3

ELECTRIC ELEVATOR TRIM

The electric elevator trim system consists of an electrically operated drive motor and clutch assembly, which receives power through a momentary ON two way switch and an emergency disengage switch.

NORMAL OPERATION

To operate the electric elevator trim system proceed as follows:

(1) Battery Switch - ON.
(2) Elevator Trim Disengage Switch - ELEVATOR TRIM.
(3) Trim Switch - ACTUATE (AS DESIRED).
(4) Elevator Position Indicator - CHECK.

> NOTE
>
> To check the operation of the disengage switch, actuate the elevator trim switch with the disengage switch in the disengage position. Observe that the manual trim wheel and indicator do not rotate when the elevator trim switch is actuated.

EMERGENCY OPERATION

Electric Elevator Trim System Failure

(1) Elevator Trim Disengage Switch - DISENGAGE.

> NOTE
>
> The disengage switch removes all power from the system and places motor and clutch circuits to ground.

(2) Manual Trim - AS REQUIRED.

DUAL HEATED PITOT SYSTEM

The dual heated pitot airspeed system consists of two pitot heads manifolded together and located on the sides of the fuselage just forward of the pilot's compartment.

WITHOUT WEATHER RADAR INSTALLED

When the system is installed without the radar nose, the standard pitot head remains in the normal position and indicates on the pilot's airspeed indicator in the normal manner. Refer to Pilot's Checklist for airspeed calibrations for the pilot's indicator when using normal or alternate static source. The dual pitot system indicates on the copilot's airspeed indicator. The following table presents the copilot's airspeed calibrations when using normal static source. Refer to Pilot's Checklist for airspeed calibrations for the copilot's indicator when using alternate static source.

NORMAL STATIC SOURCE
WITHOUT WEATHER RADAR INSTALLED

AIRSPEED CORRECTION TABLE

Gear Position Flap Position KCAS	Up 0° KIAS	Down 15° KIAS	Down 35° KIAS
70	65	59	64
80	78	74	77
100	99	98	99
120	119	119	120
140	139	140	140
160	158	160	
180	178		
200	198		
220	218		

Figure 7-4

WITH WEATHER RADAR INSTALLED

When the optional weather radar is installed, the standard pitot head is deleted and only the two side pitot heads are installed. In this configuration both

the pilot and copilot's airspeed indicators are connected to the optional pitot heads. The airspeed calibrations with this configuration are shown in the following table. Refer to Pilot's Checklist for airspeed calibrations when using alternate static source.

NORMAL STATIC SOURCE
WITH WEATHER RADAR INSTALLED

AIRSPEED CORRECTION TABLE

Gear Position Flap Position KCAS	Up 0° KIAS	Down 15° KIAS	Down 35° KIAS
70	61	61	64
80	75	74	77
100	98	97	98
120	118	118	119
140	138	138	140
160	158	158	
180	178		
200	199		
220	219		

Figure 7-5

AIR CONDITIONING SYSTEM

The optional air conditioning system consists of the following major components: a pair of evaporators, an electrically driven compressor and condenser module and control panel.

The control panel, located on the right instrument panel, provides two switches for the selection of the AIR CONDITIONING or VENTILATE mode and for blower speed control. As the system is electrically driven, it is important to monitor the voltammeter to prevent battery discharge.

The evaporators are located on the aft baggage shelf and direct conditioned air into the cabin. The compressor and condenser module, located in the aft cabin, liquify the Freon gas and remove the heat absorbed by the evaporators. The heat is then exhausted overboard through the underside of the fuselage. All condensation from the evaporators is drained overboard by a pair of condensate drain lines.

LIMITATIONS

(1) The aircraft must be equipped with dual 100 amp. alternators.
(2) Air conditioning must be in the OFF or VENTILATE position for take-off and landing.

NORMAL PROCEDURES

Preflight Inspection

(1) Inspect overboard heat and condensate drain lines for obstructions.

Before Starting Engines

(1) Air Conditioning Switch - OFF.

Before Taxiing

> CAUTION
>
> During ground operation, monitor battery discharge rate by positioning voltammeter selector to BAT. Turn off nonessential electrical loads if voltammeter indicates discharge of the battery.

(1) Air Conditioning Switch - AS DESIRED.
(2) Blower Switch - AS DESIRED.

Before Takeoff

(1) Air Conditioning Switch - OFF or VENTILATE.

After Takeoff

(1) Air Conditioning Switch - AS DESIRED.
(2) Blower Switch - AS DESIRED.

Before Landing

(1) Air Conditioning Switch - OFF or VENTILATE.

After Landing

> CAUTION
>
> During ground operation, monitor battery discharge rate by positioning voltammeter selector to BAT. Turn off nonessential electrical loads if voltammeter indicates discharge of the battery.

(1) Air Conditioning Switch - AS DESIRED.
(2) Blower Switch - AS DESIRED.

EMERGENCY PROCEDURES

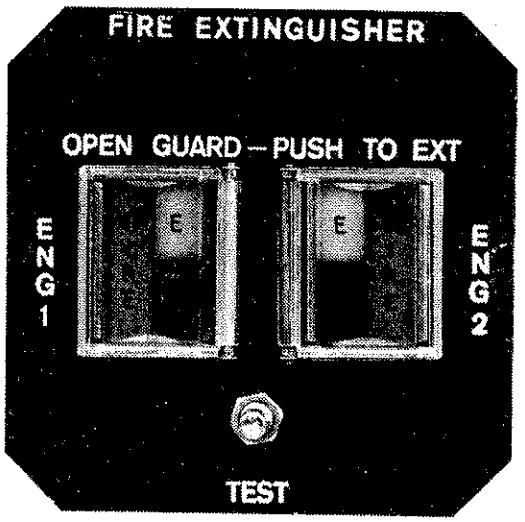
Engine Inoperative Procedures

* (1) Air Conditioning Switch - OFF or VENTILATE.

FIRE DETECTION AND EXTINGUISHING SYSTEM

The fire detection and extinguishing system consists of three major components: three heat sensitive detectors located in each engine accessory compartment; an annunciator and actuator panel (see Figure 7-6); and a compressed Freon single shot gas bottle in each engine accessory compartment.

A test function is provided to test the system circuitry. When the test switch is pushed all lights should illuminate, if any light fails to illuminate replace the bulb. If the green light does not illuminate after replacing the bulb, replace firing cartridge in fire extinguisher. Any other light failure, after replacing bulbs and firing cartridge, indicates malfunction in unit or associated wiring.



Annunciation		
Legend	Color	Cause of illumination
Fire	Red	Fire condition existing in engine compartment
E	Amber	Fire extinguisher container empty
OK	Green	Fire cartridge and associated wiring is in operational condition

Figure 7-6

If an overheat condition is detected, the appropriate FIRE light will annunciate the engine to be extinguished. To activate the extinguisher, open the guard for the appropriate engine and press the FIRE light. Freon, under pressure, will be discharged to the engine and engine accessory compartments. The amber light E (Figure 7-6) will illuminate after the extinguisher has been discharged and will continue to show empty until a new bottle is installed. The FIRE light will remain illuminated until compartment temperatures cool.

OPERATING CHECKLIST

NORMAL

Before Takeoff

(1) Press the test switch - all lights should illuminate.

EMERGENCY

If a fire warning light indicates an engine compartment fire and is confirmed or if a fire is observed without a fire warning light:

(1) Shut down the appropriate engine as follows:
  (a) Mixture control - IDLE CUT-OFF.
  (b) Propeller - FEATHER.
  (c) Magnetos - OFF.
  (d) Fuel selector - OFF.
(2) Open the appropriate guard and push FIRE light.
(3) Land as soon as practical.

NOTE

Better results may be obtained if the airflow through the nacelle is reduced by slowing the aircraft (as slow as practical) prior to actuating the extinguisher.

SERVICING

The system should be checked each 100 hours or annual inspection whichever occurs first.

Check the pressure gage on each bottle to ensure the following pressures:

PRESSURE TEMPERATURE CORRECTION TABLE

Temp °F	-60	-40	-20	0	+20	+40	+60	+80	+100	+120
Gage	110	127	148	174	207	249	304	367	442	532
Actual	134	155	180	212	251	299	354	417	492	582

If these pressures are not indicated, have the bottle serviced.

LOCATOR BEACON (Model SHARC-7)

The locator beacon system is a sweep tone emergency radio transmitter incorporating an externally mounted whip antenna and a transmitter with an integral three position switch, all located on the left side of the fuselage tailcone. The switch can be reached by removing the plug button located adjacent to the locator beacon placard. Normally, the switch is in the ARM (AUTOMATIC "G" OPERATION) position; this position allows the transmitter to be activated automatically by the "G" switch. The ON (EMERGENCY & TEST) position should be used only to test the equipment or whenever a rescue is desired. The OFF (AFTER RESCUE) position should be used only after the rescue as this position will disable all emergency transmissions.

The locator beacon transmits on both UHF and VHF emergency frequencies simultaneously.

NOTE

The battery pack should be changed on an annual basis.

NORMAL PROCEDURES

(1) Antenna - CHECK (during preflight inspection)
(2) Locator Beacon Switch - ARM (for all flight operations).

EMERGENCY PROCEDURES

Before Landing

(1) If time permits, use aircraft radio (121.5 MHz) to transmit distress call; include aircraft position if possible.

After Landing

(1) Plug Button - REMOVE (located on left side of tailcone).
(2) Locator Beacon Switch - ON.

After Rescue

(1) Locator Beacon Switch - OFF.

ANGLE OF ATTACK SYSTEM

The angle of attack system is a sensitive lift measurement device which provides a continuous evaluation of lift performance of the aircraft, regardless of weight, wing loading, attitude, air density, turbulence, and gear/flap configuration. The system consists of an indicator , see Figure 7-7, stall warning horn test switch, computer and lift sensor. The lift sensor is located in the leading edge of the left wing. The standard aircraft stall warning system is removed and its function is assumed by the angle of attack system.

For a normal approach to landing, the pointer should be aligned with the center mark. Alignment of the pointer with the "FAST" diamond provides a more comfortable airspeed margin for an approach in turbulent or gusty conditions.

The red "SLOW" zone on the left side of the indicator shows the trend toward stall. The stall warning horn will sound between 4 and 9 knots above the aircraft stall speed.

To correct for an off-speed condition a small attitude correction should be held while waiting to see the result on the indicator. "Chasing" the pointer may result in a longitudinal pilot induced oscillation. The instrument is intended to be used as a reference to assist in determining the proper speed for the landing approach. The airspeed indicator is still the primary instrument for speed control.

A PRESS-TO-TEST feature is incorporated to test the general condition of the system prior to flight. When the test button is pressed, the pointer should move to the SLOW end of the scale and the stall warning horn should sound.

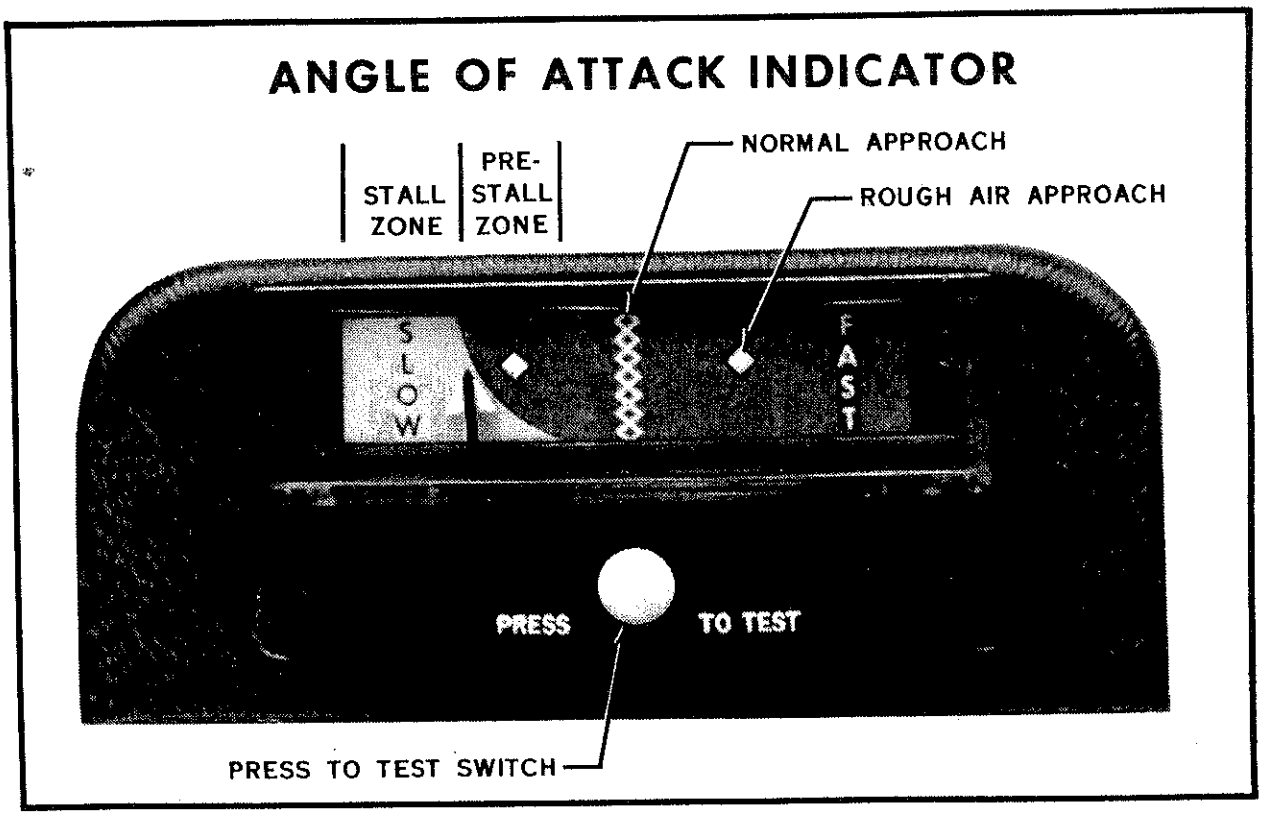


Figure 7-7

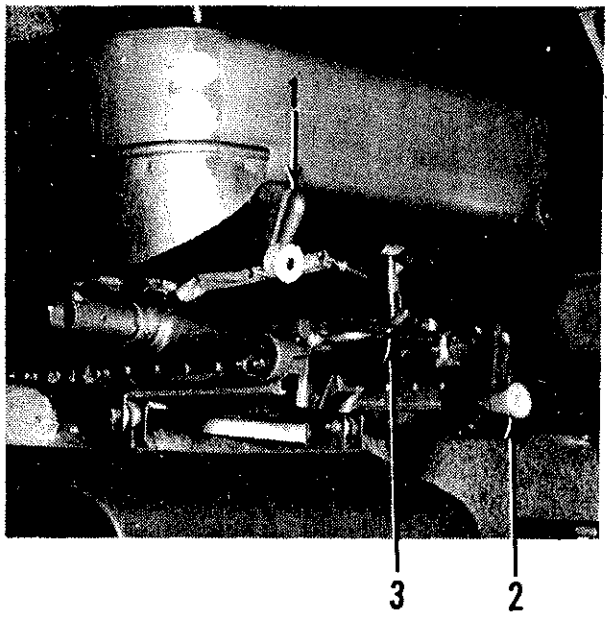
MANUAL AND ELECTRICAL ADJUSTABLE SEATS

The optional manually or electrically adjustable pilot's and copilot's seats are available to add to your flying comfort. Either of these seats may be adjusted fore and aft or vertically, and tilted to any desired position, within the limits of the seat.

MANUALLY ADJUSTED SEAT CONTROLS

Controls for the optional manually adjustable seats are located at the front of the seat. Rotating the handcrank (1, Figure 7-8), at the forward right-hand corner of the seat, tilts the back. Rotating the handcrank (2, Figure 7-8), at the forward left-hand corner of the seat, raises and lowers the seat. The fore and aft adjustment lever (3, Figure 7-8) is located at the forward side of the seat near the center. It is recommended that the seat be moved to the aft position prior to making tilt or vertical adjustments, to provide maximum handcrank clearance.

MANUALLY ADJUSTABLE SEAT



1. TILT ADJUSTMENT HANDCRANK
2. VERTICAL ADJUSTMENT HANDCRANK
3. FORE AND AFT ADJUSTMENT LEVER

Figure 7-8

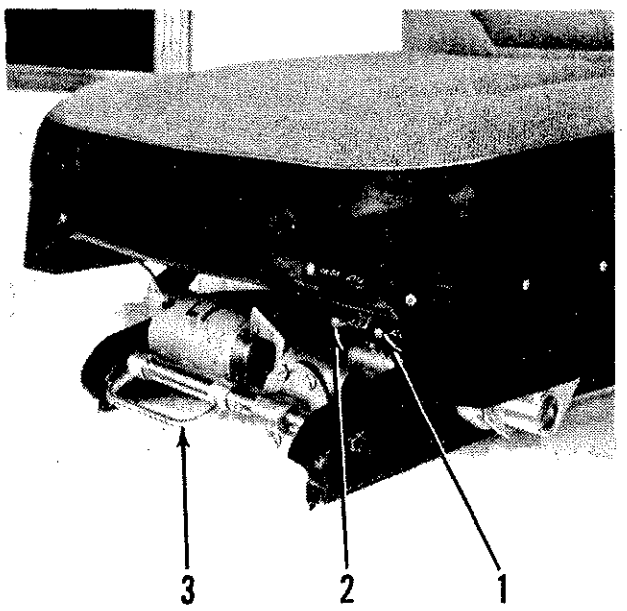
ELECTRICALLY ADJUSTED SEAT CONTROLS

Controls for the optional electrically adjustable seats are located at the forward side of the seat at the left-hand corner. Activating the left-hand switch (1, Figure 7-9) tilts the back. Activating the right-hand switch (2, Figure 7-9) raises and lowers the seat. The fore and aft adjustment lever (3, Figure 7-9) is located at the forward side of the seat near the center. Both engines should be started prior to making tilt or vertical adjustemens to the seats to preclude excessive battery drain.

NOTE

It is recommended that the loads on seat backs and bottoms be partially relieved while making vertical or tilt adjustments.

ELECTRICALLY ADJUSTABLE SEAT



1. TILT ACTIVATION SWITCH
2. VERTICAL ACTIVATION SWITCH
3. FORE AND AFT ADJUSTMENT LEVER

Figure 7-9

STROBE LIGHTS

The optional high intensity strobe lights will enhance anti-collision protection. However, the lights should be turned off when taxiing in the vicinity of other aircraft, or during flight through clouds, fog or haze.