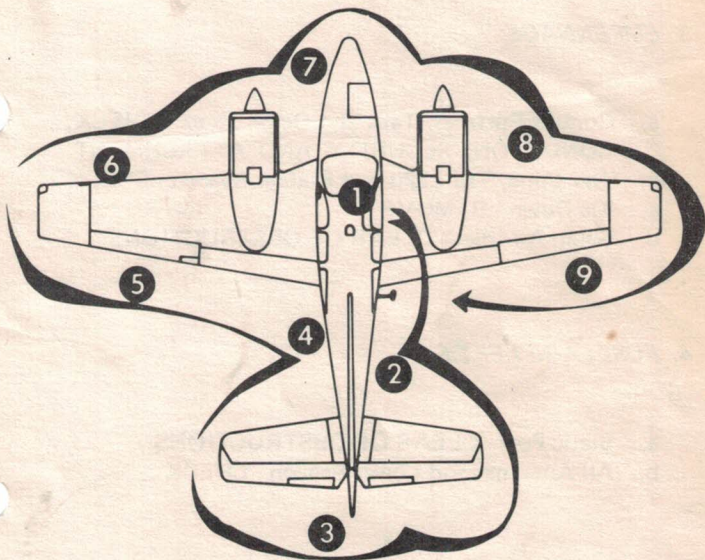


NORMAL PROCEDURES

SECTION II

NORMAL PROCEDURES

All airspeeds quoted in this section are indicated airspeeds (IAS)



PREFLIGHT CHECK

1. COCKPIT CHECK

- a. Control Locks - REMOVE AND STOW
- b. Parking Brake - SET
- c. All Switches - OFF
- d. Trim Tabs - SET TO ZERO

2. FUSELAGE RIGHT SIDE

- a. Load Distribution - CHECKED
- b. Baggage Door - SECURE
- c. Static Port - CLEAR OF OBSTRUCTIONS
- d. Emergency Locator Transmitter - ARMED

3. EMPENNAGE

- a. Control Surfaces, Tabs and Deice Boots - CHECK, CONDITION, SECURITY AND ATTACHMENT.
- b. Tail Cone, Tail Light and Rudder Beacon - CHECK
- c. Tie Down - REMOVE
- d. Cabin Air Inlet - CLEAR OF OBSTRUCTIONS

4. FUSELAGE LEFT SIDE

- a. Static Port - CLEAR OF OBSTRUCTIONS
- b. All Antennas and Lower Beacon - CHECK

5. LEFT WING TRAILING EDGE

- a. Fuel Sump Aft of Wheel Well - DRAIN
- b. Fuel Vents - CHECK.
- c. Flaps - CHECK GENERAL CONDITION
- d. Aileron - CHECK CONDITION AND FREEDOM OF MOVEMENT, TAB NEUTRAL WHEN AILERON NEUTRAL

6. LEFT WING LEADING EDGE

- a. Lights and Deice Boot - CHECK FOR CONDITION
- b. Stall Warning Vane - CHECK FREEDOM OF MOVEMENT
- c. Fuel - CHECK QUANTITY AND CAP SECURE
- d. Fuel Sight Gage - CHECK, COVER SECURE
- e. Tie Down, Chocks - REMOVE
- f. Engine Oil - CHECK QUANTITY, CAP AND DOOR SECURE
- g. Engine Cowling and Doors - CHECK CONDITION AND SECURITY
- h. Engine Air Intake - REMOVE COVER AND EXAMINE FOR OBSTRUCTIONS
- i. Propeller - EXAMINE FOR NICKS, SECURITY AND OIL LEAKS
- j. Cowl Flap - CHECK
- k. Wheel Well Doors, Tire, Brake Line and Shock Strut - CHECK
- l. Landing Gear Uplock Rollers - CHECK
- m. Fuel Drains - DRAIN (3)

7. NOSE SECTION

- a. Wheel Well Doors, Tire and Shock Strut - CHECK
- b. Pitot - REMOVE COVER, EXAMINE FOR OBSTRUCTIONS
- c. Taxi Light - CHECK
- d. Heater Air Inlets - CLEAR
- e. Oxygen - CHECK
- f. Baggage Door - SECURE

8. RIGHT WING LEADING EDGE

- a. Wheel Well Doors, Tire, Brake Line, and Shock Strut - CHECK
- b. Landing Gear Uplock Rollers - CHECK
- c. Cowl Flap - CHECK
- d. Fuel Drains - DRAIN (3)
- e. Engine Oil - CHECK QUANTITY, CAP AND DOOR SECURE
- f. Engine Cowling and Doors - CHECK CONDITION AND SECURITY
- g. Propeller - EXAMINE FOR NICKS, SECURITY AND OIL LEAKS
- h. Engine air Intake - REMOVE COVER AND EXAMINE FOR OBSTRUCTIONS
- i. Fuel Sight Gage - CHECK, COVER SECURE
- j. Fuel - CHECK QUANTITY AND CAP SECURE
- k. Tie Down and Chocks - REMOVE
- l. Lights and Deice Boot - CHECK FOR CONDITION

9. RIGHT WING TRAILING EDGE

- a. Aileron - CHECK CONDITION AND FREEDOM OF MOVEMENT
- b. Fuel Vents - CHECK
- c. Fuel Sump Aft of Wheel Well - DRAIN
- d. Flaps - CHECK GENERAL CONDITION

NOTE

Check operation of lights if night flight is anticipated.

BEFORE STARTING

1. Seats - POSITION AND LOCK. SEAT BACKS UPRIGHT
2. Seat Belts and Shoulder Harnesses - FASTEN
3. Oxygen - CHECK QUANTITY AND OPERATION
4. Landing Gear Handle - DOWN
5. Cowl Flap Controls - CHECK (OPEN)
6. Fuel selector Valves - ON
7. All Circuit Breakers, Switches and Equipment Controls - CHECK
8. Battery and Alternator Switches - ON (If external power is to be used, Alternator Switches - OFF)

CAUTION

The alternator control switches must be turned OFF prior to connecting an auxiliary power unit for starting, battery charging or electrical equipment check-out. This procedure protects the voltage regulators and system electrical equipment from voltage transients (power fluctuations). During cold weather starts, the alternator control switch should be turned OFF to minimize battery power drain.

9. Fuel Quantity Indicators - CHECK QUANTITY (See LIMITATIONS for take-off fuel)
10. Landing Gear Position Lights - CHECK

STARTING

1. Throttle Position - APPROX. 1/2 INCH OPEN
2. Propeller Control - LOW PITCH (HIGH RPM)
3. Mixture Control - FULL RICH

NOTE

If the engine is hot and the ambient temperature is 90°F or above, place mixture control in IDLE CUT-OFF, switch auxiliary fuel pump to HIGH for 30 to 60 seconds, then OFF. Return mixture control to FULL RICH.

4. Auxiliary Fuel Pump - HIGH, until pressure stabilizes then - OFF
5. Magneto/Start Switch - START

NOTE

In the event of a balked start (or overprime condition) place mixture control in IDLE CUT-OFF and open the throttle; operate the starter to remove excess fuel. As engine starts, reduce the throttle to idle rpm and place the mixture control in FULL RICH.

6. Warm-up - 1000 to 1200 RPM
7. Oil Pressure - 25 PSI within 30 seconds
8. External Power (if used) - DISCONNECT
9. Alternator Switches - ON

WARNING

As a safety precaution for personnel, when using external power, start the right engine first since the external power receptacle is in the left nacelle. Disconnect external power before starting left engine.

10. Using the same procedure, start other engine.

AFTER STARTING AND TAXI

1. Throttle - 1000 to 1500 RPM
2. Avionics - ON AS REQUIRED
3. Exterior Lights - AS REQUIRED
4. Brakes - CHECKED

BEFORE TAKE-OFF

1. Seat Belts and Shoulder Harnesses - CHECK
2. Auxiliary Fuel Pumps - OFF (If ambient temperature is 90° F or above, use LOW pressure boost)
3. All Instruments - CHECKED
4. Fuel Indicators - CHECK QUANTITY
5. Mixture Controls - FULL RICH (Lean to take-off power at full throttle if field elevation is above 3000 feet MSL)
6. Propellers - EXERCISE AT 2200 RPM

NOTE

When exercising propellers in their governing range, do not move the control lever aft past the detent. To do so will allow the propeller to change rapidly to the full feathered position, imposing high stresses on the blade shank and engine.

7. Throttles - 1700 RPM
8. Magnetos - CHECK (Variance between individual magnetos should not exceed 50 rpm)
9. Throttles - 1500 RPM
10. Propellers - FEATHERING CHECK (Do not allow an rpm drop of more than 500 rpm)
11. Throttles - IDLE
12. Electric Trim - CHECK OPERATION
13. Trim - AS REQUIRED FOR TAKE-OFF
14. Flaps - CHECK AND SET FOR TAKE-OFF
15. Controls - CHECK FULL TRAVEL AND FREEDOM OF MOVEMENT
16. Doors and Windows - LOCKED
17. Parking Brake - OFF

TAKE-OFF

Take-Off Full Throttle - 2700 RPM

1. Power - SET (take-off power before brake release)
2. Airspeed - ACCELERATE (to and maintain take-off speed)
3. Landing Gear - RETRACT (when aircraft is positively airborne)
4. Airspeed - ESTABLISH DESIRED CLIMB SPEED (when clear of obstacles)

CRUISE CLIMB

1. Power - SET CRUISE CLIMB POWER (25.0 in. Hg or Full Throttle - 2500 rpm)
2. Mixture Controls - LEAN TO APPROPRIATE FUEL FLOWS
3. Airspeed - ESTABLISH CRUISE CLIMB SPEED
4. Cowl Flaps - AS REQUIRED

CRUISE

1. Power - SET AS DESIRED (Use Horsepower Calculator or Tables in PERFORMANCE section)
2. Fuel Flow - LEAN AS REQUIRED

LEANING USING THE EXHAUST GAS TEMPERATURE INDICATOR (EGT)

The system consists of a thermocouple type exhaust gas temperature (EGT) probe mounted in the right side of each exhaust system. This probe is connected to an indicator on the right side of the instrument panel. The indicator is calibrated in degrees Fahrenheit. Use EGT system to lean the fuel/air mixture when cruising at 75% power or less in the following manner:

1. Lean the mixture and note the point on the indicator that the temperature peaks and starts to fall.

- a. CRUISE (LEAN) MIXTURE - Increase the mixture until the EGT shows a drop of 25°F below peak on the rich side of peak.

- b. BEST POWER MIXTURE - Increase the mixture until the EGT shows a drop of 100°F below peak on the rich side of peak.

CAUTION

Do not continue to lean mixture beyond that necessary to establish peak temperature.

2. Continuous operation is recommended at 25°F or more below peak EGT only on the rich side of peak.

3. Changes in altitude and power settings require the peak EGT to be rechecked and the mixture reset.

NOTE

Best power will result in approximately a 2 mph increase in speed, an increase of fuel flow, and a reduction in range. Range graphs are based on CRUISE (LEAN) MIXTURE.

OPERATIONAL SPEEDS

(Settings Established at 5300 lbs)

Minimum Single-Engine Control	. . . . .	91 mph/79 kts
Single-Engine Best Angle-of-Climb	. . . . .	107 mph/93 kts
Single-Engine Best Rate-of-Climb	. . . . .	112 mph/97 kts
Two-Engine Best Angle-of-Climb	. . . . .	97 mph/84 kts
Two-Engine Best Rate-of-Climb	. . . . .	119 mph/103 kts
Maximum Demonstrated Crosswind		
Component	. . . . .	25 mph/22 kts

NORMAL DESCENT

Plan descent well ahead of arrival at destination. Set power, as required, for desired rate of descent. Recommended descent speeds:

Smooth air	. . . . .	226 mph/196 kts
Rough air	. . . . .	180 mph/156 kts

BEFORE LANDING

1. Seat Belts and Shoulder Harnesses - FASTEN. SEAT BACKS UPRIGHT.
2. Fuel Selector Valves - CHECK ON
3. Auxiliary Fuel Pumps - OFF, OR LOW AS PER AMBIENT TEMPERATURE
4. Cowl Flaps - AS REQUIRED
5. Mixture Controls - FULL RICH, OR AS REQUIRED BY FIELD ELEVATION
6. Flaps - APPROACH 15° POSITION (Maximum extension speed, 175 mph/152 kts.)
7. Landing Gear - DOWN (Gear extension speed, 175 mph/152 kts.)
8. Flaps - DOWN (Maximum extension speed, 140 mph/122 kts.)
9. Airspeed - ESTABLISH NORMAL LANDING APPROACH SPEED
10. Propellers - LOW PITCH (HIGH RPM)

BALKED LANDING

1. Propellers - LOW PITCH (HIGH RPM)
2. Power - MAXIMUM ALLOWABLE
3. Airspeed - 96 mph/85 kts
4. Flaps - UP
5. Gear - UP
6. Cowl Flaps - AS REQUIRED

AFTER LANDING

1. Landing and Taxi Lights - AS REQUIRED
2. Flaps - UP
3. Trim Tabs - SET TO ZERO
4. Cowl Flaps - OPEN

SHUT DOWN

1. Parking Brake - SET
2. Propellers - LOW PITCH (HIGH RPM)
3. Throttles - 1000 RPM
4. Auxiliary Fuel Pumps - OFF
5. Mixture Controls - IDLE CUT-OFF
6. Magneto/Start Switches - OFF AFTER ENGINES STOP
7. Battery and Alternator Switches - OFF
8. Electrical and Avionics Equipment - OFF
9. Controls - LOCKED
10. If airplane is to be parked for an extended period of time, install wheel chocks and release the parking brake as greatly varying ambient temperatures may build excessive pressures on the hydraulic system.

NOTE

Induction air scoop covers, included in the loose tools and accessories, are to prevent foreign matter from entering the air scoops while the aircraft is parked.

ELECTRIC ELEVATOR TRIM

1. ON-OFF switch - ON
2. Control Wheel Trim Switch - Forward for nose down, aft for nose up (when released the switch returns to the center - OFF position)

Malfunction procedures are given in the EMERGENCY PROCEDURES section.

COLD WEATHER OPERATION

PREFLIGHT INSPECTION

In addition to the normal preflight exterior inspection, remove ice, snow, and frost from the wings, tail, control surfaces and hinges, propellers, windshield, fuel cell filler caps, fuel vents, and crankcase breathers. If you have no way of removing these formations of ice, snow, and frost, leave the aircraft on the ground, as these deposits will not blow off. The wing contour may be changed by these formations sufficiently that its lift qualities are considerably disturbed and sometimes completely destroyed. Complete your normal preflight procedures, including a check of the flight controls for complete freedom of movement.

Conditions for accumulating moisture in the fuel tanks are most favorable at low temperatures due to the condensation increase and the moisture that enters as the system is serviced. Therefore, close attention to draining the fuel system will assume particular importance during cold weather.

1. Battery switch - ON
2. Alternators, Electrical, and Avionics Equipment - OFF
3. Connect external power unit
4. Set the output of the power unit at 27.0 to 28.5 volts
5. External power unit - ON
6. Start right engine first (use normal start procedures)
7. After engine has been started, turn external power unit - OFF
8. Alternator Switches - ON
9. Disconnect external power before starting left engine

TAXIING

Avoid taxiing through water, slush or muddy surfaces if possible. Water, slush or mud, when splashed on the wings and tail surfaces may freeze, increasing weight and drag and perhaps limiting control surface movement.

ICING FLIGHT

Airplanes are approved for flight into light to moderate icing conditions in accordance with operational practices of Bureau of Flight Standards Release No. 434 when the following equipment is installed and operable: Emergency Static Air Source, Surface Deice System, Propeller Deice or Anti-ice System, Pitot Heat, Heated Stall Warning, Heated Fuel Vents, Windshield Defogging or Storm Window, Alternate Induction Air, and External Antenna Mast capable of withstanding ice loads as well as the equipment normally required for IFR flight.

Stalling airspeeds should be expected to increase due to the distortion of the wing airfoil when ice has accumulated on the airplane. For the same reason, stall warning devices are not accurate and should not be relied upon. With ice on the airplane, maintain a comfortable margin of airspeed above the normal stall airspeed.

1. EMERGENCY STATIC AIR SOURCE

If the Emergency Static Air Source is desired for use:

- a. Emergency Static Air Source - ON EMERGENCY (lower sidewall adjacent to pilot)
- b. For Airspeed Calibration and Altimeter Corrections, refer to EMERGENCY PROCEDURES section

CAUTION

Be certain the emergency static air valve is in the OFF NORMAL position when the system is not needed.

2. SURFACE DEICE SYSTEM

a. BEFORE TAKE-OFF

- (1) Power - 2000 RPM
- (2) Surface De-ice Switch - AUTO (UP)
- (3) Pneumatic Pressure - 9 to 20 PSI (while boots are inflating)
- (4) Wing Boots - CHECK VISUALLY FOR INFLATION AND HOLD DOWN

b. IN FLIGHT

When ice accumulates 1/2 to 1 inch

- (1) Surface De-ice Switch - AUTO (UP)
- (2) Pneumatic Pressure - 9 to 20 PSI (while boots are inflating)

(3) Repeat - AS REQUIRED

CAUTION

Rapid cycles in succession or cycling before at least 1/2 inch of ice has accumulated may cause the ice to grow outside the contour of the inflated boots and prevent ice removal.

Stall speeds are increased 5 mph in all configurations with surface deice system operating.

NOTE

Either engine will supply sufficient vacuum and pressure for deice operation.

- c. For Emergency Operation refer to the EMERGENCY PROCEDURES section.

3. ELECTROTHERMAL PROPELLER DEICE

CAUTION

Do not operate the propeller deice when the propellers are static.

a. BEFORE TAKEOFF

- (1) Propeller Deice Switch - ON
- (2) Propeller Deice Ammeter - CHECK, 7 to 12 amps (2 Blade), 14 to 18 amps (3 Blade)

- (3) To check the automatic timer, watch the propeller deice ammeter closely for at least two minutes. A small momentary needle deflection approximately every 30 seconds shows that the timer is switching and indicates normal system operation.

b. IN FLIGHT

- (1) Propeller Deice Switch - ON The system may be operated continuously in flight and will function automatically until the switch is turned OFF.
- (2) Relieve propeller imbalance due to ice by increasing rpm briefly and returning to the desired setting. Repeat as necessary.

CAUTION

If the propeller deice ammeter indicates abnormal reading, refer to the EMERGENCY PROCEDURES section.

4. PROPELLER ANTI-ICE SYSTEM or PROPELLER AND WINDSHIELD ANTI-ICE SYSTEM (FLUID FLOW)

CAUTION

This anti-ice system is designed to PREVENT the formation of ice. Always turn the system ON before entering icing conditions.

a. PREFLIGHT

- (1) Check quantity in reservoir
- (2) Check slinger ring and lines for obstructions
- (3) Check propeller boots for damage

b. IN FLIGHT

- (1) Prop Anti-ice Switch - ON
- (2) Windshield Anti-ice Switch - CYCLE AS REQUIRED
- (3) Anti-ice Quantity Indicator - MONITOR

NOTE

Prop Anti-ice switch must be ON before Windshield Anti-ice System will function.

System endurance is approximately two hours with full reservoir when using anti-ice props only, and approximately 28 minutes with propellers and left windshield in operation.

5. PITOT HEAT AND HEATED STALL WARNING

- a. Pitot Heat Switch(es) - ON (Note deflection on Loadmeter) Heated Stall Warning is activated by the left pitot heat switch.

NOTE

Switches may be left on throughout flight. Prolonged operation on the ground could damage the Pitot Heat System.

6. HEATED FUEL VENT

- a. Fuel Vent Switch - ON (before entering ice)

7. WINDSHIELD DEFOGGING

- a. Defrost Control - PUSH ON
- b. Pilot's Storm Window - OPEN, AS REQUIRED

OXYGEN SYSTEM

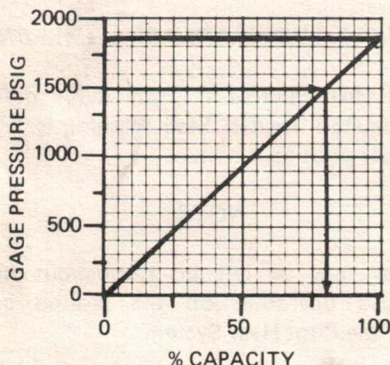
WARNING

NO SMOKING when using oxygen.

PREFLIGHT

1. Check Oxygen Pressure Gage for pressure reading.
2. Determine percent of full system.
3. Multiply oxygen duration in minutes by percent of full system.

OXYGEN AVAILABLE WITH PARTIALLY FULL BOTTLE



EXAMPLE:

People	5
Gage Pressure	1500 psi
Percent Capacity (from chart)	80%
Cylinder Capacity (full)	49 cu ft
Altitude (planned flight)	15,000 feet
Duration (full cylinder)	149 minutes
Duration (80% full)	119 minutes

IN FLIGHT

The use of oxygen is recommended to be in accordance with current FAR operating rules.

1. Oxygen Control Valve - OPEN SLOWLY
2. Mask - INSERT FITTING, DON MASK (Adjust mask for proper fit)
3. Oxygen Flow Indicator - CHECK, (the red plunger lifts from its seat when the hose is inserted into the oxygen coupling)

CAUTION

The following table sets forth the average time of useful consciousness (time from onset of hypoxia until loss of effective performance at various altitudes).

30,000 ft MSL	. . . . .	1 to 2 minutes
28,000 ft MSL	. . . . .	2-1/2 to 3 minutes
25,000 ft MSL	. . . . .	3 to 5 minutes
22,000 ft MSL	. . . . .	5 to 10 minutes
12-18,000 ft MSL	. . . . .	30 min or more

AFTER USING

1. Discontinue use by unplugging mask from outlet.

NOTE

Closing the control valve while in flight is not necessary due to automatic sealing of the outlet when the mask is unplugged.

2. Oxygen Control Valve - CLOSED (may be accomplished during shut-down).

OXYGEN DURATION

Oxygen duration is computed for a Scott Altitude Compensated System assuming 90% of cylinder volume usable and using Scott oxygen masks rated at 3.0 Standard Liters Per Minute (SLPM). These masks are identified by a green color coded plug-in.

Duration in minutes at the following altitudes:

	Persons Using	12,500	15,000	20,000
49 cu ft	1	1014	746	507
	2	507	373	253
	3	338	248	169
	4	253	186	126
	5	202	149	101
	6	169	124	84
66 cu ft	1	1344	988	672
	2	672	494	336
	3	448	329	224
	4	336	247	168
	5	268	197	134
	6	224	164	112