Preflight Inspection

Cabin

1. Control Wheel Lock – REMOVED
2. Ignition Switch – OFF
3. Avionics Power Switch – OFF
4. Master Switch – ON
5. Fuel Quantity Indicators – CHECK QUANTITY
6. Master Switch – OFF
7. Fuel Selector Valve – BOTH
8. Baggage Door – CHECK for security, lock with key if child's seat is to be occupied

EMPENNAGE

1. Rudder Gust lock – REMOVE
2. Tail Tie- Down – DISCONNECT
3. Control Surface – CHECK freedom of movement and security

RIGHT WING Trailing Edge

1. Aileron – CHECK freedom of movement and security

RIGHT WING

1. Wing Tie- Down – Disconnect
2. Main Wheel Tire – CHECK for proper inflation
3. Before first flight of day and after each refueling, use sampler cup and drain small quantity of fuel form fuel tank sup quick-drain valve to check for water, sediment, and proper fuel grade.
4. Fuel Quantity – CHECK VISUALLY for desired level
5. Fuel Filler Cap – SECURE and vent unobstructed

NOSE

1. Static Source Openings (both sides of fuselage – CHECK for stoppage.
2. Propeller and Spinner – CHECK for nicks, security and oil leaks
3. Landing Lights – CHECK for condition and cleanliness
4. Carburetor Air Filter – CHECK for restrictions by dust of other foreign matter.

5. Nose Wheel Strut and Tire – CHECK for proper inflation.
6. Nose Tie Down – DISCONNECT
7. Engine Oil Level – CHECK Do not operate with less than nine quarts. Fill to twelve quarts for extended flights
8. Before first flight of the day and after each refueling. Pull out strainer drain knob for about four seconds to clear fuel strainer of possible water and sediment. Check strainer drain is closed. If water is observed, the fuel system may contain additional water, and further draining of the system at the strainer, fuel tank sumps, and fuel selector valve drain plug will be necessary

LEFT WING

1. Main Wheel Tire – CHECK for proper inflation
2. Before first flight of day and after each refueling, use sampler cup and drain small quantity of fuel from fuel tank sump quick – drain valve to check for water, sediment and proper fuel grade.
3. Fuel Quantity – CHECK VISUALLY for desired Level
4. Fuel Filler Cap – SECURE and vent unobstructed

LEFT WING Leading Edge

1. Pitot Tube Cover – REMOVE and check opening for stoppage
2. Fuel Tank Vent Opening – CHECK for stoppage
3. Stall Warning Vane – CHECK for freedom of movement while master switch is momentarily turned ON (horn should sound vane is pushed upward)
4. Wing Tie- Down – DISCONNECTED

BEFORE STARTING ENGINE

1. Preflight Inspection – COMPLETE
2. Seats, Belts, Shoulder Harness – ADJUST and LOCK
3. Fuel Selector Valve – BOTH
4. Avionics Power Switch, Autopilot, (if installed) Electrical Equipment – OFF
5. Brakes – TEST and SET

6. Cowl Flaps – OPEN (move lever out of locking hole to reposition)
7. Circuit Breakers – CHECK IN

STARTING ENGINE

1. Mixture – RICH
2. Propeller – HIGH RPM
3. Carburetor Heat – COLD
4. Throttle – OPEN ½ INCH
5. Prime – AS REQUIRED
6. Master Switch – ON
7. Propeller Area- CLEAR
8. Ignition Switch – START (release when engine starts)

   NOTE

   If engine has been overprimed, start with throttle ¼ to ½ open. Reduce throttle to idle when engine starts
9. Oil Pressure – CHECK

BEFORE TAKEOFF

1. Cabin Doors and Windows – CLOSED and LOCKED
2. Parking Brake – SET
3. Flight Controls – FREE and CORRECT
4. Flight Instruments – SET
5. Fuel Selector Valve – BOTH
6. Mixture – RICH
7. Elevator and Rudder Trim – TAKEOFF
8. Throttle – 1700 RPM
9. Avionics Power Switch – ON
   a. Magnetos – CHECK (RPM drop should not exceed 150 RPM on either magneto or 50 RPM differential between magnetos).
   b. Propeller – CYCLE from high to low RPM; return to high RPM (full in).
   c. Carburetor Heat – CHECK (for RPM drop)
   d. Engine Instruments and Ammeter – CHECK

e. Suction Gage - CHECK

10. Radios –SET
11. Autopilot (if installed) – OFF
12. Flashing Beacon, Navigation Lights and /or Strobe Lights – ON as required.
13. Throttle Friction Lock – ADJUST
14. Parking Brake – RELEASE

TAKEOFF

NORMAL TAKEOFF

1. Wing Flaps – 0 -20
2. Carburetor Heat – COLD
3. Power – FULL THROTTLE and 2400 RPM
4. Elevation Control – LIFT NOSE WHEEL at 50 KIAS
5. Climb Speed - 70 KIAS (flaps 20)
    1. 80 KIAS (flaps UP)

SHORT FIELD TAKEOFF

1. Wing Flaps- 20
2. Carburetor Heat – COLD
3. Brakes – APPLY
4. Power – FULL THROTTLE and 2400 RPM
5. Brakes – RELEASE
6. Elevator Control – MAINTAIN SLIGHTLY TAIL LOW ATTITUDE
7. Climb Speed – 57 KIAS (until all obstacles are cleared).
8. Wing Flaps – RETRACT slowly after reaching 70 KIAS

ENROUTE CLIMB

NORMAL CLIMB

1. Airspeed – 85-95 KIAS
2. Power – 23 INCHES Hg and 2400 RPM
3. Fuel Selector Valve – BOTH
4. Mixture – FULL RICH (mixture may be leaned above 5000 ft)
5. Cowl Flaps – OPEN as required

MAXIMUM PREFORMANCE CLIMB

1. Airspeed – 78 KIAS at sea level to 72 KIAS at 10,000 feet.
2. Power – FULL THROTTLE and 2400 RPM
3. Fuel Selector Valve – BOTH
4. Mixture – FULL RICH (mixture may be leaned above 5000 feet)
5. Cowl Flaps – FULL OPEN

CRUISE

1. Power – 15-23 INCHES Hg, 2100-2400 RPM (no more than 75% power).
2. Elevator and Rudder Trim – ADJUST
3. Mixture – LEAN
4. Cowl Flaps – CLOSED

DESCENT

1. Power – AS DESIRED
2. Carburetor Heat – AS REQUIRED to prevent carburetor icing
3. Mixture – ENRICHEN as required
4. Cowl Flaps – CLOSED
5. Wing Flaps – AS DESIRED (0-10 below 140 KIAS, 10-40 below 95 KIAS)

BEFORE LANDING

1. Seats, Belts, Harnesses – ADJUST and LOCK
2. Fuel Selector Valve – BOTH
3. Carburetor Heat – ON (apply full heat before closing throttle).
4. Propeller – HIGH RPM.

5. AutoPilot (if installed) – OFF

LANDINGS

NORMAL LANDINGS

1. Airspeed – 70- 80 KIAS (flaps UP)
2. Wing Flaps – AS DESIRED (0 below 140 KIAS, 10-40 Below 95 KIAS)
3. Airspeed – 60-70 KIAS (flaps Down)
4. Trim – ADJUST
5. Touchdown – MAIN WHEELS FIRST
6. Landing Roll – LOWER NOSE WHEEL GENTLY.
7. Braking – MINIMUM REQUIRED

SHORT FIELD LANDING

1. Airspeed – 70 -80 KIAS (flaps UP)
2. Wing Flaps – 40 (below 95 KIAS)
3. Airspeed – MAINTAIN 60 KIAS
4. Trim – ADJUST
5. Power – REDUCE to Idle as obstacle is cleared.
6. Touchdown – MAIN WHEELS FIRST.
7. Brakes – APPLY HEAVILY
8. Wing Flaps – RETRACT for maximum brake effectiveness.

BALKED LANDINGS

1. Power – FULL THROTTLE and 2400 RPM
2. Carburetor Heat – COLD
3. Wing Flaps – RETRACT to 20
4. Climb Speed – 55 KIAS
5. Wing Flaps – RETRACT slowly after reaching 70 KIAS.
6. Cowl Flaps – OPEN

AFTER LANDING

1. Wing Flaps – UP
2. Carburetor Heat – COLD
3. Cowl Flaps – OPEN

SECURING AIRPLANE

1. Parking Brake – SET
2. Avonic Power Switch, Electrical Equipment – OFF
3. Throttle – IDLE
4. Mixture- IDLE CUT- OFF (pull full out)
5. Ignition Switch – OFF
6. Mater Switch – OFF
7. Control Lock – INSTALL
8. Fuel Selector Valve – RIGHT

EMERGENCY PROCEDURES

ENGINE FAILURES

ENGINE FAILURE DURING TAKEOFF RUN

1. Throttle – IDLE
2. Brakes – APPLY
3. Wing Flaps – RETRACT
4. Mixture – IDLE CUT-OFF
5. Ignition Switch – OFF
6. Master Switch – OFF

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1. Airspeed – 70 KIAS (flaps UP), 65 KIAS (flaps DOWN)
2. Mixture – IDLE CUT-OFF
3. Fuel Selector Valve – OFF
4. Ignition Switch – OFF
5. Wing Flaps – AS REQUIRED (40 RECOMMENDED)
6. Master Switch – OFF

ENGINE FAILURE DURING FLIGHT

Airspeed – 70 KIAS

1. Carburetor Heat – ON
2. Fuel Selector – BOTH
3. Mixture – RICH
4. Ignition Switch – BOTH (or START if propeller is stopped)
5. Primer – IN and LOCKED

FORCED LANDINGS

EMERGENCY LANDINGS WITHOUT ENGINE POWER

1. Airspeed – 70 KIAS (Flaps UP),
   65 KIAS (flaps DOWN)
2. Mixture – IDLE CUTOFF
3. Fuel Selector Valve – OFF
4. Ignition Switch – OFF
5. Wing Flaps – AS REQUIRED (40 RECOMMENDED)
6. Master Switch – OFF
7. Doors – UNLATCH PRIOR TO TOUCHDOWN
8. Touchdown – SLIGHTLY TAIL LOW
9. Brakes – APPLY HEAVILY

PRECAUTIONAY LANDINGS WITH ENGINER POWER

1. Airspeed – 65 KIAS
2. Wing Flaps – 20
3. Selected Field – FLY OVER, noting terrain and obstructions, then retract flaps upon reaching a safe altitude and airspeed
4. Electrical Switches – OFF
5. Wing Flaps – 40 (on final approach)
6. Airspeed – 65 KIAS
7. Avionics Power and Master Switches – OFF
8. Doors – ULACHED PRIOR TO TOUCHDOWN.
9. Touchdown – SLIGHTLY TAIL LOW
10. Ignition Switch – OFF
11. Brakes – APPLY HEAVILY

DITCHING

1. Radio – TRANSMIT MAYDAY on 121.5 Mhz, giving location and intentions.
2. Heavy Objects (in baggage area) – SECURE OR JETTISON
3. Flaps – 20 -40
4. Power – ESTABLISH 300 FT/MIN DESCENT at 60 KIAS

5. Approach – High Winds, Heavy Seas – INTO WIND, Light Winds, Heavy Swells – PARALLEL TO SWELLS
6. Cabin Doors – UNLATCH
7. Touchdown – LEVEL ATTITUDE AT ESTABLISHED DESCENT
8. Face – CUSHION at touchdown with folder coat.
9. Airplane – EVACUATE through cabin Doors. If necessary, open window and flood cabin to equalize pressure so doors can be opened.
10. Life Vest and Raft – INFLATE

FIRES

DURING START ON GROUND

1. Cranking – CONTINUE, to get a start which would suck the flames and accumulated fuel through the carburetor and into the engine.
2. Power – 1700 RPM for a few minutes
3. Engine – SHUTDOWN and inspect for damage
4. Throttle – FULL OPEN
5. Mixture – IDLE CUT OFF
6. Cranking – CONTINUE
7. Fire Extinguisher – OBTAIN (have ground attendants obtain if not installed)
8. Engine SECURE
    a. Master Switch – OFF
    b. Ignition Switch – OFF
    c. Fuel Selector Valve - OFF
9. Fire – EXTINGUISH using fire extinguisher, wool blankets, or dirt
10. Fire Damage – INSPECT, repair damage or replace damage components or wiring before conducting another flight.

ENGINE FIRE IN FLIGHT

1. Mixture – IDLE CUT- OFF
2. Fuel Selector Valve – OFF
3. Master Switch – OFF
4. Cabin Heat and Air – OFF (except overhead vents)

5. Airspeed – 100 KIAS (IF fire is not extinguished, increase glide speed to find airspeed which will provide an incombustible mixture).
6. Forced Landing – EXECUTE (as described in Emergency Landing Without Engine Power)

ELECTRICAL FIRE IN FLIGHT

1. Master Switch – OFF
2. Avionics Power Switch – OFF
3. All Other Switches (except ignition switch) – OFF
4. Vents/Cabin Air/ Heat – CLOSED
5. Fire Extinguisher – ACTIVATE (if available)
6. Master Switch - ON
7. Circuit Breaker - CHECK for faulty circuit, do not reset.
8. Radio Switches - OFF
9. Avionic Power Switch - ON
10. Radio/Electrical Switches - ON one at a time, with delay after each until short circuit is localized
11. Vents/Cabin Air/Heats - OPEN when it is ascertained that fire is completely extinguished.

CABIN FIRE

1. Master Switch - OFF
2. Vents/Cabin Air/ Heat - CLOSED (to avoid drafts)
3. Fire Extinguisher - ACTIVATE (if available)
   After discharge an extinguisher with a closed cabin, ventilate the cabin
4. Land the airplane as soon as possible to inspect for damage

WING FIRE

1. Navigation Light Switch - OFF
2. Strobe Light Switch (if installed) - OFF
3. Pitot Heat Switch (if installed) - OFF

NOTE

Perform a slideslip to keep the flames away from the fuel tank and cabin, and land as soon as possible using flaps only as required for approach an touchdown.

ICING

INADVERTENT ICING ENCOUTER

1. Turn pitot heat switch ON (if installed)
2. Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.
3. Pull cabin heat control full out and rotate defroster control clockwise to obtain maximum defroster airflow
4. Increase engine speed to minimize ice build-up on propeller blades
5. Watch for signs of carburetor air filter ice and apply carburetor heat as required. An unexplained loss in manifold pressure could be caused by carburetor ice or air intake filter ice. Lean the mixture if carburetor heat is used continuously.
6. Plan a landing at the nearest airport. With an extremely rapid ice build-up select a suitable "off-airport" landing site
7. With an ice accumulation of 1/4 inch of more on the wing leading edges. be prepared for significantly higher stall speeds.
8. Leave wing flaps retracted. With a severe ice build-up on the horizontal tail. the change in wing wake airflow direction caused by wing flaps extension could result in a loss of elevator effectiveness
9. Open left window and if practical scrape ice from a portion of windshield for visibility in the landing approach.

10. Perform a landing approach using a forward slip, if necessary, for improved visibility.
11. Approach at 80 to 90 KIAS depending upon the amount of ice accumulation
12. Perform a landing in level attitude

STATIC SOURCE BLOCKAGE

(Erroneous Instruments Reading Suspected)

1. Alternate Static Source Calve (if installed) - PULL ON
2. Airspeed - Consult appropriate table in Section 5
3. Altitude - Cruise 50 feet higher and approach 30 feet higher than normal.

LANDING WITH A FLAT MAIN TIRE

1. Approach - NORMAL
2. Wing Flaps - FULL DOWN
3. Touchdown - GOOD TIRE FIRST, hold airplane off flat tire as long as possible with aileron control.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNTIONS

AMMETER SHOWS EXCESSSIVE RATE OF CHARGE

(Full Scale Deflection)

1. Alternator - OFF
2. Nonessential Electrical Equipment - OFF
3. Flight - TERMINATE as soon as practical.

LOW- VOLTAGE LIGHT ILLUMINATES DURING FLIGHT

(Ammeter Indicates Discharge)

NOTE

Illumination of the low - voltage light may occurs during low RPM conditions with an electrical load on the system such as during a low PRM taxi. Under these conditions, the light will go out at higher PRMR. The master switch need not be recycled since an over-voltage condition has not occurred to de-active the alternator system.

1. Avionics Power Switch - OFF
2. Master Switch - OFF (both sides)
3. Master Switch - ON
4. Low - Voltage Light - CHECK OFF
5. Avionics Power switch - ON
6. Alternator - OFF
7. Nonessential Radio and Electrical Equipment - OFF
8. Flight - TERMINATE as soon as practical.