

# NORMAL PROCEDURES

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## INTRODUCTION

Pilot's Operating Handbook (POH) Section 4 provides checklist and amplified procedures for the conduct of normal operations. *However, some checklist and procedures specified in POH Section 4 may need to be modified because this airplane was upgraded to a 180 hp engine instead of a 160 hp engine, on which Section 4 is based. Normal procedures associated with optional systems can be found in POH Section 9.*

## SPEEDS FOR NORMAL OPERATIONS

Unless otherwise noted, the following speeds are based on a maximum weight of 2550 pounds and may be used for any lesser weight. *However, the performance specified in POH Section 5 may be inaccurate because this airplane was upgraded to a 180 hp engine instead of a 160 hp engine on which Section 5 data are based.*

### Takeoff, Flaps Up:

Normal Climb Out .....	75-85 KIAS
Short Field Takeoff, Flaps Up, Speed at 50 Feet ....	57 KIAS

### Enroute Climb, Flaps Up:

Normal, Sea Level .....	75-85 KIAS
Normal, 10,000 Feet .....	70-80 KIAS
Best Rate-of-Climb, Sea Level .....	73 KIAS
Best Rate-of-Climb, 10,000 Feet .....	72 KIAS
Best Angle-of-Climb, Sea Level .....	62 KIAS
Best Angle-of-Climb, 10,000 Feet .....	67 KIAS

### Landing Approach:

Normal Approach, Flaps Up .....	65-75 KIAS
Normal Approach, Flaps 30° .....	60-70 KIAS
Short Field Approach, Flaps 30° .....	62 KIAS

### Balked Landing:

Maximum Power, Flaps 20° .....	60 KIAS
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### Maximum Recommended Turbulent Air Penetration Speed:

2550 Lbs .....	105 KIAS
2150 Lbs .....	95 KIAS
1750 Lbs .....	85 KIAS

### Maximum Demonstrated Crosswind Velocity:

Takeoff or Landing .....	15 KNOTS
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## SHORT FIELD TAKEOFF

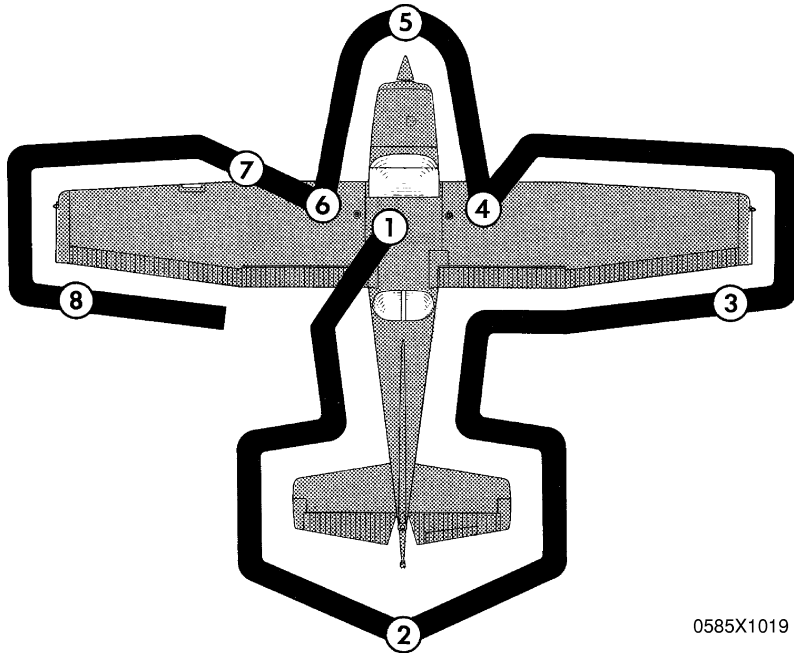
Climb Speed .....	57 KIAS (until all obstacles are cleared)
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## ENROUTE Climb

Airspeed .....	75-85 KIAS
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## NOTE

*Italic text in this checklist indicates a modification to the checklist in the Pilot's Operating Handbook.*



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## NOTE

Visually check airplane for general condition during walk-around inspection. In cold weather, remove even small accumulations of frost, ice or snow from wing, tail and control surfaces. Also, make sure that control surfaces contain no internal accumulations of ice or debris. Prior to flight, check that pitot heater is warm to touch within 30 seconds with battery and pitot heat switches on. If a night flight is planned, check operation of all lights, and make sure a flashlight is available.

Preflight Inspection

## CHECKLIST PROCEDURES

## PREFLIGHT INSPECTION

## (1) CABIN

1. Windshield -- CLEAN if required
2. Pitot Tube Cover -- REMOVE. Check for pitot blockage.
3. Nose Plugs -- REMOVE. Check for air intake blockage.
4. Documents/Hobbs/Tach -- CHECK
5. Pilot's Operating Handbook and Flyaway Notebook -- AVAILABLE IN THE AIRPLANE.
6. Airplane Weight and Balance -- CHECKED.
7. Control Wheel Lock -- REMOVE.
8. Ignition Switch -- OFF. Place keys on glare shield.

**WARNING**

WHEN TURNING ON THE MASTER SWITCH, USING AN EXTERNAL POWER SOURCE, OR PULLING THE PROPELLER THROUGH BY HAND, TREAT THE PROPELLER AS IF THE IGNITION SWITCH WERE ON. DO NOT STAND, NOR ALLOW ANYONE ELSE TO STAND, WITHIN THE ARC OF THE PROPELLER, SINCE A LOOSE OR BROKEN WIRE OR A COMPONENT MALFUNCTION COULD CAUSE THE PROPELLER TO ROTATE.

9. Avionics Master Switch -- OFF.
10. Master Switch -- ON.
11. Fuel Quantity Indicators -- CHECK QUANTITY
12. Flashing Beacon and Strokes -- CHECK
13. Interior Lights, Navigation Lights, and Landing Light -- CHECK for night operations
14. Fuel Selector Valve -- BOTH. Check movement RIGHT, LEFT, OFF set to BOTH.
15. Flaps -- EXTEND.
16. Master Switch -- OFF.
17. Elevator Trim -- SET for takeoff.
18. Baggage Door -- CHECK, lock with key.

**(2) EMPENNAGE**

1. Rudder Gust Lock *(if installed)* -- REMOVE.
2. Tail Tie-Down -- DISCONNECT.
3. Control Surfaces -- CHECK freedom of movement and security.
4. *Trim Tab* -- CHECK security.
5. *Antennas* -- CHECK for security of attachment and general condition.

**(3) RIGHT WING Trailing Edge**

1. Aileron -- CHECK freedom of movement and security.
2. *Flap* -- CHECK for security and condition.

**(4) RIGHT WING**

1. Wing Tie-Down -- DISCONNECT.
2. Main Wheel Tire -- CHECK for proper inflation *and general condition (weather checks, tread depth and wear, etc...)*.
3. Before first flight of the 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. *If water is observed, take further samples until clear and then gently rock wings and lower tail to the ground to move any additional contaminants to the sampling points. Take repeated samples from all fuel drain points until all contamination has been removed. If contaminants are still present, refer to WARNING below and do not fly airplane.*

**WARNING**

*IF, AFTER REPEATED SAMPLING, EVIDENCE OF CONTAMINATION STILL EXISTS, THE AIRPLANE SHOULD NOT BE FLOWN. TANKS SHOULD BE DRAINED AND SYSTEM PURGED BY QUALIFIED MAINTENANCE PERSONNEL. ALL EVIDENCE OF CONTAMINATION MUST BE REMOVED BEFORE FURTHER FLIGHT.*

4. Fuel Quantity -- CHECK VISUALLY for desired level.
5. Fuel Filler Cap -- SECURE *and VENT UNOBSTRUCTED*.

**(5) NOSE**

1. Engine Oil Level -- CHECK, do not operate with less than four quarts. Fill to six quarts for extended flight.
2. 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 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. *If water is observed, take further samples until clear and then gently rock wings and lower tail to the ground to move any additional contaminants to the sampling points. Take repeated samples from all fuel drain points until all contamination has been removed. If contaminants are still present, refer to WARNING above and do not fly airplane.*

3. *Engine Cooling Air Inlets* -- CLEAR of obstructions.
4. Propeller and Spinner -- CHECK for nicks and security.
5. Landing Lights -- CHECK for condition and cleanliness.
6. Carburetor Air Filter -- CHECK for restrictions by dust or other foreign matter.
7. Nose Wheel Strut and Tire -- CHECK for proper inflation *of strut and general condition (weather checks, tread depth and wear, etc...)* of tire.
8. Nose Tie-Down *(if installed)* -- DISCONNECT.
9. Static Source Opening (left side of fuselage) -- CHECK for stoppage.

**(6) LEFT WING**

1. Main Wheel Tire -- CHECK for proper inflation *and general condition (weather checks, tread depth and wear, etc...)*.
2. Before first flight of the 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. *If water is observed, take further samples until clear and then gently rock wings and lower tail to the ground to move any additional contaminants to the sampling points. Take repeated samples from all fuel drain points until all contamination has been removed. If contaminants are still present, refer to WARNING above and do not fly airplane.*
3. Fuel Quantity -- CHECK VISUALLY for desired level.
4. Fuel Filler Cap -- SECURE *and VENT UNOBSTRUCTED*.

**(7) 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 Opening -- CHECK for stoppage. To check the system, place a clean handkerchief over the vent opening and apply suction; a sound from the warning horn will confirm system operation.
4. Wing Tie-Down -- DISCONNECT.

**(8) LEFT WING Trailing Edge**

1. Aileron-- CHECK for freedom of movement and security.
2. *Flap* -- CHECK for security and condition.

**PREPARE FOR STARTING**

1. *Surrounding Area -- CHECK for personnel and hazards.  
REMOVE chocks and tow bar.  
MOVE aircraft to avoid propwash on parking  
area/hangar if required.*
2. *Master Switch -- ON.*
3. *Avionics Master Switch -- ON.*
4. *Radios -- SET (comm and nav)*
5. *Weather -- CHECK (ATIS/ASOS/AWOS)*
6. *Avionics Master Switch -- OFF*
7. *Master Switch -- OFF*
8. *Flight Plan -- Open*

**BEFORE STARTING ENGINE**

1. *Preflight Inspection -- COMPLETE.*
2. *Passenger Briefing -- COMPLETE.*
3. *Seats, Belts, Shoulder Harnesses -- ADJUST and LOCK.*
4. *Fuel Selector Valve -- BOTH.*
5. *Electrical Equipment -- OFF.*
6. *Avionics Master Switch -- OFF.*

**CAUTION**

The avionics *master* switch must be OFF during engine start to prevent possible damage to avionics.

7. *Brakes -- TEST and SET.*
8. *Circuit Breakers -- CHECK IN.*

**STARTING ENGINE**

1. *Mixture -- RICH.*
2. *Carburetor Heat -- COLD.*
3. *Master Switch -- ON.*
4. *Flashing Beacon -- ON.*
5. *Navigation Lights -- ON for night operations.*
6. *Prime -- AS REQUIRED (2 to 6 strokes; none if engine is warm).*
7. *Throttle -- OPEN  $\frac{1}{8}$  INCH.*
8. *Propeller Area -- CLEAR.*
9. *Ignition Switch -- START (release when engine starts).*
10. *Throttle -- 1200 RPM.*
11. *Oil Pressure -- CHECK.*
12. *Navigation Lights -- ON as required.*
13. *Avionics Master Switch -- ON.*
14. *Transponder -- SQUAWK 1200 or ATC assigned code.*
15. *Flaps -- RETRACT (verify visually).*

**TAXI**

1. *Throttle -- Maintain 1200 RPM for ground operations.*
2. *Radio -- REQUEST TAXI CLEARANCE or announce intentions.*
3. *Brakes -- CHECK during initial movement.*
4. *Nose Wheel Steering -- CHECK.*
5. *Ailerons -- POSITION for crosswind taxi.*
6. *Flight Instruments -- CHECK for proper movement during taxi.*

**BEFORE TAKEOFF**

1. *Parking Brake -- SET.*
2. *Cabin Doors and Window(s) -- CLOSED and LOCKED.*
3. *Seats and Seat Belts -- CHECK SECURE.*
4. *Flight Controls -- FREE and CORRECT.*
5. *Flight Instruments -- SET.*
6. *Fuel Quantity -- CHECK.*
7. *Fuel Selector Valve -- BOTH.*
8. *Mixture -- RICH (below 3000 feet).*
9. *Throttle -- 1700 RPM.*
  - a. *Magnetos -- CHECK (RPM drop should not exceed 125 RPM on either magneto or 50 RPM differential between magnetos).*
  - b. *Carburetor Heat -- CHECK (for RPM drop).*
  - c. *Engine Instruments and Ammeter -- CHECK.*
  - d. *Suction Gage -- CHECK.*
10. *Throttle -- 1200 RPM.*
11. *Avionics Master Switch -- ON.*
12. *Radios -- SET (Program GPS if needed).*
13. *Autopilot -- OFF.*
14. *Flashing Beacon, Navigation Lights and/or Strobe Lights -- ON as required.*
15. *Elevator Trim -- TAKEOFF.*
16. *Throttle Friction Lock -- ADJUST.*
17. *Wing Flaps -- SET for takeoff.*
18. *Radio -- REQUEST TAKEOFF CLEARANCE or announce intentions.*
19. *Brakes -- RELEASE.*

**TAKEOFF****NORMAL TAKEOFF**

1. Wing Flaps – UP.
2. Carburetor Heat – COLD.
3. Throttle -- FULL OPEN.
4. Mixture -- RICH (above 3000 feet, LEAN to obtain maximum RPM).
5. Elevator Control -- LIFT NOSE WHEEL (at 55 KIAS).
6. Climb Speed -- 70-80 KIAS.

**SHORT FIELD TAKEOFF**

1. Wing Flaps -- 10°.
2. Carburetor Heat – COLD.
3. Brakes -- APPLY.
4. Throttle -- FULL OPEN.
5. Mixture -- RICH (above 3000 feet, LEAN to obtain maximum RPM).
6. Brakes -- RELEASE.
7. Elevator Control -- SLIGHTLY TAIL LOW.  
*LIFT NOSE WHEEL (at 52 KIAS\*).*
8. Climb Speed -- 57 KIAS\* (until all obstacles are cleared).
9. Wing Flaps -- RETRACT slowly after reaching 65 KIAS and 50 ft AGL.

\* At max gross weight

**SOFT FIELD TAKEOFF**

1. Wing Flaps -- 10°.
2. Elevator -- FULL AFT
3. Throttle -- FULL OPEN (slowly).
4. Mixture -- RICH (above 3000 feet, LEAN to obtain maximum RPM).
5. Roll -- Maintain nose-high attitude with minimum weight on nose wheel.
6. Elevator Control -- LIFT AIRCRAFT off ground as soon as practical.  
*LEVEL AIRCRAFT just above runway surface.*  
*ACCELERATE to appropriate airspeed for climb.*
7. Wing Flaps -- RETRACT slowly after reaching 65 KIAS and 50 ft AGL.

**ENROUTE CLIMB**

1. Airspeed -- 75-85 KIAS.

**NOTE**

If a maximum performance climb is necessary, use speeds shown in the Rate of Climb chart in Pilot's Operating Handbook (POH) Section 5. *However, the performance specified in POH Section 5 may be inaccurate because this airplane was upgraded to a 180 hp engine instead of a 160 hp engine on which Section 5 data are based.*

2. Throttle -- FULL OPEN.
3. Mixture -- RICH (above 3000 feet, LEAN to obtain maximum RPM).

**CRUISE**

1. Power -- 2200-2700 RPM (No more than 75% is recommended).
2. Elevator Trim -- ADJUST.
3. Mixture -- LEAN.

**DESCENT**

1. Mixture -- ADJUST for smooth operation (full rich for idle power).
2. Power -- AS DESIRED.
3. Carburetor Heat -- AS REQUIRED (to prevent carburetor icing).

**BEFORE LANDING**

1. Seats, Belts, Harnesses -- SECURE.
2. Fuel Selector Valve -- BOTH.
3. Mixture -- RICH.
4. Carburetor Heat -- ON (apply full heat before closing throttle).
5. Autopilot -- OFF.

## LANDING

### NORMAL LANDING

1. Airspeed -- 65-75 KIAS (flaps UP).
2. Wing Flaps -- AS DESIRED (0-10° below 110 KAIS, 10°-30° below 85 KIAS).
3. Airspeed -- 60-70 KIAS (flaps DOWN).
4. Touchdown -- MAIN WHEELS FIRST.
5. Landing Roll -- LOWER NOSE WHEEL GENTLY.
6. Braking -- MINIMUM REQUIRED.

### SHORT FIELD LANDING

1. Airspeed -- 60-70 KIAS (flaps UP) – *Normal*.
2. Wing Flaps -- FULL DOWN (30°).
3. Airspeed -- 60 KIAS (until flare).
4. Power -- REDUCE to idle after clearing obstacle.
5. Touchdown -- MAIN WHEELS FIRST.
6. Brakes -- APPLY HEAVILY – *DO NOT LOCK THE BRAKES*.
7. Wing Flaps -- RETRACT.

### SOFT FIELD LANDING

1. Airspeed -- 65-75 KIAS (flaps UP). – *Normal*.
2. Wing Flaps -- FULL DOWN (30°).
3. Airspeed -- 60-70 KIAS (flaps DOWN).
4. Power -- 1200-1300 RPM at touchdown.
5. Touchdown -- *SOFTLY ON MAIN WHEELS FIRST*.
6. Power – *IDLE*.
7. Rollout -- *Maintain nose-high attitude with minimum weight on nose wheel.*
8. Brakes -- *NONE unless absolutely necessary.*

### BALKED LANDING

1. Throttle -- FULL OPEN.
2. Carburetor Heat -- COLD.
3. Wing Flaps -- 20° (immediately).
4. Climb Speed -- 55 KIAS.
5. Wing Flaps -- 10° (until obstacles are cleared).  
RETRACT SLOWLY after reaching a safe altitude and 65 KIAS.

## AFTER LANDING

1. Wing Flaps -- UP.
2. Carburetor Heat -- COLD.
3. Radio -- *REQUEST TAXI CLEARANCE or announce intentions*
4. Strobe Lights -- OFF.

## SECURING AIRPLANE

1. Parking Brake -- SET *as required*.
2. Transponder -- 1200.
3. Electrical Equipment -- OFF except Flashing Beacon and Navigation Lights at night.
4. Avionics Master Switch -- OFF.
5. Mixture -- IDLE CUTOFF (pulled full out).
6. Ignition Switch -- OFF. *Place keys on glare shield.*
7. Master Switch -- OFF.
8. Electrical Switches -- ALL OFF.
9. Control Lock -- INSTALL.
10. Fuel Selector Valve -- LEFT or RIGHT to prevent cross feeding.
11. Flight Plan -- CLOSE.

## SERVICE AIRPLANE

1. Main Gear -- CHOCK.
2. Grounding Wire -- CONNECT.
3. Ladder – POSITION.
4. Pump -- TURN ON AND ZERO COUNTER.
5. Refuel -- TO BOTTOM OF FILLER NECKS.
6. Counter -- NOTE fuel quantity for log.
7. Pump -- REPLACE HOSE AND TURN-OFF PUMP.
8. Grounding Wire – DISCONNECT.
9. Chocks -- REMOVE.
10. Tow Bar -- ATTACH.
11. Airplane -- MOVE TO PARKING SPOT.

**PARK AIRPLANE**

1. *Wings and Tail -- TIE DOWN.*
2. *Main Gear -- CHOCK.*
3. *Control Lock -- Verify INSTALLED.*
4. *Pitot Tube Cover, Nose Plugs, and Sun Screen -- INSTALL.*
5. *Hobbs, Tach, Fuel, and Oil -- RECORD.*
6. *Cabin -- CLEAN.*
7. *Flight Plan -- Verify CLOSED.*
8. *Doors -- LOCK.*

# EMERGENCY PROCEDURES

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# INTRODUCTION

Pilot's Operating Handbook (POH) Section 3 provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by airplane or engine malfunctions are extremely rare if proper preflight inspections and maintenance are practiced. Enroute weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered. However, should an emergency arise, the basic guidelines described *below* should be considered and applied as necessary to correct the problem. Emergency procedures associated with ELT and other optional systems can be found in POH Section 9.

## AIRSPEEDS

### AIRSPEEDS FOR EMERGENCY OPERATION

#### Engine Failure After Takeoff:

Wing Flaps Up .....	70 KIAS
Wing Flaps Down .....	65 KIAS

#### Maneuvering Speed:

2550 Lbs .....	105 KIAS
2150 Lbs .....	95 KIAS
1750 Lbs .....	85 KIAS

#### Maximum Glide:

2550 lbs .....	68 KIAS
2150 lbs .....	62 KIAS
1750 lbs .....	56 KIAS

Precautionary Landing With Engine Power ..... 65 KIAS

#### Landing Without Engine Power:

Wing Flaps Up .....	70 KIAS
Wing Flaps Down .....	65 KIAS



## OPERATIONAL CHECKLISTS

### 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).
3. Mixture -- IDLE CUT OFF.
4. Fuel Selector Valve -- OFF
5. Ignition Switch -- OFF.
6. Wing Flaps -- AS REQUIRED.
7. Master Switch -- OFF.

#### ENGINE FAILURE DURING FLIGHT (*Restart Procedures*)

1. Airspeed -- 75 KIAS
2. Carburetor Heat -- ON.
3. Fuel Selector Valve -- BOTH.
4. Mixture -- RICH.
5. Ignition Switch -- BOTH (or START if propeller is stopped).

#### NOTE

*If the propeller is windmilling, the engine will restart automatically within a few seconds. If the propeller has stopped (possible at low speeds), turn the ignition switch to START, advance the throttle slowly from idle and lean the mixture from full rich as required for smooth operation.*

6. Primer – IN and LOCKED.

## FORCED LANDINGS

### EMERGENCY LANDING WITHOUT ENGINE POWER

1. *Seats and Seat Belts -- SECURE.*
2. Airspeed -- 70 KIAS (flaps UP).  
65 KIAS (flaps DOWN).
3. Mixture -- IDLE CUT OFF.
4. Fuel Selector Valve -- OFF.
5. Ignition Switch -- OFF.
6. Wing Flaps -- AS REQUIRED (30° recommended).
7. Master Switch -- OFF (*when landing is assured*).
8. Doors -- UNLATCH PRIOR TO TOUCHDOWN.
9. Touchdown -- SLIGHTLY TAIL LOW.
10. Brakes -- APPLY HEAVILY.

### PRECAUTIONARY LANDING WITH ENGINE POWER

1. *Seats and Seat Belts -- SECURE.*
2. Wing Flaps -- 20°.
3. Airspeed -- 65 KIAS.
4. Selected Field -- FLY OVER, noting terrain and obstructions, then retract flaps upon reaching a safe altitude and airspeed.
5. Avionics *Master* Switch and Electrical Switches -- OFF.
6. Wing Flaps -- 30° (on final approach).
7. Airspeed -- 65 KIAS.
8. Master Switch -- OFF.
9. Doors -- UNLATCH PRIOR TO TOUCHDOWN.
10. Touchdown -- SLIGHTLY TAIL LOW.
11. Ignition Switch -- OFF.
12. Brakes -- APPLY HEAVILY.

**DITCHING**

1. Radio -- TRANSMIT MAYDAY on 121.5 MHz, giving location and intentions *and SQUAWK 7700*.
2. Heavy Objects (in baggage area) -- SECURE OR JETTISON.
3. *Seats and Seat Belts -- SECURE.*
4. Wing Flaps -- 20° to 30°.
5. Power -- ESTABLISH 300 FT/MIN DESCENT AT 55 KIAS.

**NOTE**

If no power is available, approach at 70 KIAS with flaps up or at 65 KIAS with 10° flaps.

6. *Approach -- High Winds, Heavy Seas -- INTO THE WIND.  
Light Winds, Heavy Swells -- PARALLEL TO SWELLS.*
7. Cabin Doors -- UNLATCH.
8. Touchdown -- LEVEL ATTITUDE AT ESTABLISHED RATE OF DESCENT.
9. Face -- CUSHION at touchdown with folded coat.
10. Airplane -- EVACUATE through cabin doors. If necessary, open window and flood cabin to equalize pressure so doors can be opened.
11. Life Vests and Raft -- INFLATE *WHEN CLEAR OF AIRPLANE.*

**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.

If engine starts:

2. Power -- 1700 RPM for a few minutes.
3. Engine -- SHUTDOWN and inspect for damage.

If engine fails to start:

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 blanket, or dirt.
10. Fire Damage -- INSPECT, repair damage or replace damaged 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 an airspeed - *within airspeed limitations* - 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 *Master* Switch -- OFF.
3. All Other Switches (except ignition switch) -- OFF.
4. Vents, Cabin Air, Heat -- CLOSED.
5. Fire Extinguisher—ACTIVATE (if available).

**WARNING**

After discharging an extinguisher within a closed cabin *and ascertaining that fire has been extinguished*, ventilate the cabin.

If fire appears out and electrical power is necessary for continuance of flight *to nearest suitable airport or landing area*:

6. Master Switch -- ON.
7. Circuit Breakers -- CHECK for faulty circuit, do not reset.
8. Radio Switches -- OFF.
9. Avionics *Master* Switch -- ON.
10. *Essential* Radio/Electrical Switches -- ON one at a time, with delay after each until short circuit is localized.
11. Vents/Cabin Air/Heat -- 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).

**WARNING**

After discharging an extinguisher within a closed cabin *and ascertaining that fire has been extinguished*, ventilate the cabin.

4. *Vents/Cabin Air/Heat -- OPEN when it is ascertained that fire is completely extinguished.*
5. Land the airplane as soon as possible to inspect for damage.

**WING FIRE**

1. Navigation Light Switch -- OFF.
2. Pitot Heat Switch -- OFF.
3. Strobe Light Switch -- OFF.

**NOTE**

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

**ICING****INADVERTENT ICING ENCOUNTER**

1. Turn pitot heat switch ON.
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 open defroster outlets to obtain maximum windshield defroster airflow. Adjust cabin air control to get maximum defroster heat and airflow.
4. Open the throttle to increase engine speed and 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 engine speed could be caused by carburetor ice or air intake filter ice. Lean the mixture for maximum RPM, if carburetor heat is used continuously.
6. Plan a landing at the nearest airport. With an extremely rapid ice buildup, select a suitable "off airport" landing site.
7. With an ice accumulation of ¼ inch or more on the wing leading edges, be prepared for significantly higher stall speed *and a longer landing roll*.
8. Leave wing flaps retracted. With a severe ice buildup on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.
9. Open left window and, if practical, scrape ice from a portion of the 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 the accumulation.
12. Perform a landing in level attitude.

**STATIC SOURCE BLOCKAGE****(Erroneous Instrument Reading Suspected)**

1. Alternate Static Source Valve -- PULL ON.
2. Airspeed -- Consult appropriate calibration tables in *Pilot's Operating Handbook* Section 5.

**LANDING WITH A FLAT TIRE****LANDING WITH A FLAT MAIN TIRE**

1. Approach -- NORMAL.
2. *Wing Flaps -- 30°.*
3. Touchdown -- GOOD MAIN TIRE FIRST, hold airplane off flat tire as long as possible *with aileron control.*
4. *Directional Control -- MAINTAIN using brake on good wheel as required.*

**LANDING WITH A FLAT NOSE TIRE**

1. *Approach -- NORMAL.*
2. *Flaps -- AS REQUIRED.*
3. *Touchdown -- ON MAINS, hold nose wheel off the ground as long as possible.*
4. *When nose wheel touches down, maintain full up elevator as airplane slows to stop.*

**ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS****OVER-VOLTAGE LIGHT ILLUMINATES**

1. Avionics Power Switch -- OFF.
2. Master Switch -- OFF (both sides) *for a few seconds.*
3. Master Switch -- ON.
4. Over-Voltage Light -- OFF.
5. Avionics *Master Switch* -- ON.

If over-voltage light illuminates again:

6. Flight -- TERMINATE as soon as possible

**AMMETER SHOWS DISCHARGE**

1. *Avionics Master Switch -- OFF.*
2. *Alternator Circuit Breaker -- CHECK IN.*
3. *Master Switch -- OFF (both sides) for a few seconds.*
4. *Master Switch -- ON.*
5. *Ammeter – SHOWS CHARGE.*
6. *Avionics Master Switch -- ON.*

*If Ammeter still shows discharge:*

7. *Alternator -- OFF.*
8. *Nonessential Radio/Electrical Equipment -- OFF.*
9. *Flight -- TERMINATE as soon as practical.*

