

**BEFORE STARTING ENGINE**

1. Preflight Inspection – COMPLETE.
2. Seats, Belts, Shoulder Harnesses, Canopy -- BRIEF PASSENGER, ADJUST and LOCK.
3. Fuel Selector Valve -- DESIRED TANK.
4. Radio Master Switches, Electrical Equipment -- OFF.
5. Brakes – TEST, SET or HOLD (as desired, release prior to taxi).
6. Circuit Breakers -- CHECK IN.

**STARTING ENGINE**

1. Master Switch -- ON
2. Mixture -- RICH
3. Carburetor Heat -- COLD
4. Auxiliary Fuel Pump -- ON-CHECK (fuel pressure)-OFF
5. Prime -- AS REQUIRED (up to 4 strokes when cold), CONFIRM LOCKED
6. Throttle -- OPEN 1/8 INCH
7. Propeller Area -- CLEAR
8. Ignition Switch -- LEFT MAG
9. Starter Button -- DEPRESS (release on engine start)
10. Ignition Switch -- BOTH
11. Oil Pressure -- CHECK (normal w/in 30 sec.)
12. Throttle -- ADJUST (1000 RPM or less for warm-up)
13. Radio Master Switches – ON
14. Transponder – ON, SET CODE (prior to taxi)

**PRIOR TO TAXI**

1. Flashing Beacon – ON or AS DESIRED
2. Radio Master Switches, Electrical Equipment – ON or AS DESIRED
3. Navigation Lights – ON (as required)
4. Gyro Instruments – CONFIRM OPERATION
5. Brakes -- RELEASE

**BEFORE TAKEOFF**

1. Brakes – HOLD or SET.
2. Canopy -- CLOSED /FLIGHT RANGE and SECURED (latch or tighten Lock)
3. Flight Controls -- FREE and CORRECT
4. Flight Instruments -- SET
5. Fuel Selector Valve -- FULLEST TANK
6. Auxiliary Fuel Pump -- ON
7. Mixture -- RICH (above 5000 feet, LEAN to obtain maximum RPM)
8. Flaps -- TEST
9. Elevator Trim -- TAKEOFF
10. Throttle -- 1700 RPM
  - a. Magnetos -- CHECK (RPM drop should not exceed 150 RPM on either magneto or 50 RPM differential between magnetos)
  - b. Carburetor Heat – ON (check for RPM drop) then OFF
  - c. Engine Instruments, Ammeter and Voltmeter -- CHECK (Normal)
  - d. Suction Gage -- CHECK (Normal)
11. Throttle -- 1000 RPM
12. Radios -- SET

### **NORMAL TAKEOFF**

1. Heading – CHECK WITH RUNWAY
2. Landing Light – ON or AS DESIRED
3. Wing Flaps -- UP
4. Throttle -- FULL OPEN (2275 RPM Min)
5. Mixture – RICH (above 5000 feet, LEAN to obtain maximum RPM)
6. Elevator Control -- LIFT NOSE WHEEL (at 60 MPH)
7. Time -- NOTE
8. Climb Speed -- 90-110 MPH (to safe altitude)

### **SHORT FIELD TAKEOFF**

1. Heading – CHECK WITH RUNWAY
2. Landing Light – ON or AS DESIRED
3. Wing Flaps – 1/2
4. Brakes -- APPLY
5. Throttle -- FULL OPEN (2275 RPM Min)
6. Mixture - - RICH (above 5000 feet, LEAN to obtain maximum RPM)
7. Brakes -- RELEASE
8. Elevator Control -- SLIGHTLY TAIL LOW
9. Time -- NOTE
10. Climb Speed -- 75 MPH (until all obstacles are cleared) then 90 - 120
11. Wing Flaps -- RETRACT (after reaching 89 MPH)

### **ENROUTE CLIMB**

1. Airspeed – 89 -120 MPH

#### **NOTE**

**If a maximum performance climb is necessary; 89 MPH at sea level, decreasing to 84 MPH at 13,000 ft. MSL**

2. Throttle -- FULL OPEN (monitor Cylinder Head Temperature)
3. Mixture -- RICH (below 5000 feet); LEAN (for max RPM above 5000 feet)
4. Auxiliary Fuel Pump -- OFF (at a safe altitude above terrain)
5. Flight Plan – OPEN or AS DESIRED

### **CRUISE**

1. Power -- 2000-2700 RPM
3. Mixture -- LEAN (Power below 75%)
4. Auxiliary Fuel Pump -- CONFIRM OFF
5. Fuel Tank Selector – SWITCH or AS NEEDED (every 30 Mins. for lateral balance)

### **IN RANGE /DESCENT**

1. Throttle – REDUCE (2700 RPM MAXIMUM)
2. Mixture – ADJUST (gradually richen during descent)
3. Auxiliary Fuel Pump -- ON
4. Prepare for arrival
  - a. Obtain altimeter setting. – RESET ALTIMETER
  - b. Obtain wind and sky conditions
  - c. Brief arrival plan and pattern entry
  - d. Communicate intentions

### **BEFORE LANDING**

1. Seats, Belts, Harnesses -- ADJUST and LOCK
2. Brakes -- TEST
3. Auxiliary Fuel Pump --ON
4. Fuel Selector Valve -- FULLEST TANK or DOWNWIND TANK (high side)
5. Mixture -- RICH
6. Carburetor Heat -- ON (below 2000 RPM, or apply full heat before closing throttle)

### **NORMAL LANDING**

1. Airspeed -- 81 - 85 MPH
2. Wing Flaps -- AS DESIRED (below 110 MPH)
3. Touchdown -- MAIN WHEELS FIRST
4. Landing Roll -- LOWER NOSE WHEEL GENTLY
5. Wing Flaps -- UP (after touchdown)
6. Braking -- MINIMUM REQUIRED

### **SHORT FIELD LANDING**

1. Wing Flaps -- FULL (below 110 MPH)
2. Airspeed -- MAINTAIN 75MPH
3. Power -- REDUCE (slowly, as obstacle is cleared)
4. Touchdown -- MAIN WHEELS FIRST
5. Wing Flaps -- UP (after touchdown)
6. Brakes -- APPLY HEAVILY

### **BALKED LANDING**

1. Throttle -- FULL OPEN
2. Carburetor Heat -- COLD
3. Wing Flaps -- UP
4. Airspeed -- 75 MPH (until all obstacles are cleared)

### **AFTER LANDING**

1. Wing Flaps -- UP
2. Carburetor Heat -- COLD
3. Auxiliary Fuel Pump -- OFF
4. Landing Light -- OFF or AS DESIRED
5. Time -- NOTE

### **SECURING AIRPLANE**

1. Parking Brake -- AS NEEDED
2. Radios, Electrical Equipment -- OFF
3. Mixture -- IDLE CUT-OFF.
4. Ignition Switch -- OFF
5. Master Switch -- OFF
6. Control Lock -- INSTALL
7. Tie Downs, Wheel Chocks -- DEPLOY (as desired)
8. Canopy -- CLOSED and LATCHED
9. Canopy Cover -- INSTALL AS NEEDED
10. Pitot and Vent Covers -- INSTALL
11. Flight Plan -- CLOSE or AS DESIRED

**MAXIMUM PERFORMANCE SPEEDS FOR SAFE OPERATION****SHORT FIELD TAKEOFF**

Takeoff IAS, Speed at 50 feet	75 MPH
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**BEST RATE OF CLIMB**

IAS, Sea Level	89 MPH
IAS, 13,000 Feet	84 MPH

**BEST ANGLE OF CLIMB**

IAS, Sea Level	75 MPH
IAS, 13,000 Feet	81 MPH

**DEMONSTRATED CROSSWIND VELOCITY**

Takeoff	18.4 MPH
Landing	18.4 MPH

**MAX ENDURANCE**

IAS, 2,000 Feet	85 MPH
IAS, 11,000 Feet	80 MPH

**MAX RANGE**

IAS, 2,000 Feet	102 MPH
IAS, 11,000 Feet	93 MPH

**MINIMUM SINK RATE**

IAS, (Power OFF, Prop WINDMILLING, Flaps UP)	71 MPH
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NORMA PROCEDURES CHECKLIST