

Ground Checklists and Information

| Preflight | | |
|------------------------------------------------------------------|-----------------|--|
| Fluids | | |
| Magnetos | OFF | |
| Fuel quantity | CHECK VISUALLY | |
| Fuel sumps | DRAIN | |
| Left wing, right wing, fuel strainer. Inspect for contamination. | | |
| Fuel filler caps | SECURE | |
| Engine oil level | CHECK | |
| Minimum 6 quarts | | |
| Cabin | | |
| Pitot cover | REMOVE | |
| POH | VERIFY PRESENT | |
| Master | ON | |
| Flaps | EXTEND | |
| Fuel gauges | CHECK QUANTITY | |
| Lights | CHECK | |
| Tach time | RECORD | |
| Pitot heat | TEST | |
| Master | OFF | |
| Fire extinguisher | SECURE | |
| Control lock | REMOVE | |
| Empennage | | |
| Rudder gust lock | REMOVE | |
| Control surfaces | CHECK | |
| Freedom of movement and security | | |
| Right | | |
| Main wheel tire | CHECK INFLATION | |
| Aileron | CHECK | |
| Freedom of movement and security | | |
| Nose | | |
| Propeller, spinner | CHECK | |
| For nicks and security | | |
| Landing light | CHECK CLEAR | |
| Air filter | CHECK CLEAR | |
| Nosewheel & strut | CHECK INFLATED | |
| Static source | CHECK CLEAR | |
| Left | | |
| Main wheel tire | CHECK INFLATION | |

| Light Gun Signals | | |
|-------------------------------------|--|------------------------------------------------------------------------|
| Aircraft on the Ground | | Aircraft in Flight |
| Cleared for takeoff | | Cleared to land |
| Cleared for taxi | | Return for landing (to be followed by steady green at the proper time) |
| STOP | | Give way to other aircraft and continue circling |
| Taxi clear of the runway in use | | Airport unsafe, do not land |
| Return to starting point on airport | | Not applicable |
| Exercise extreme caution | | Exercise extreme caution |

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| Preflight (continued) | | |
|----------------------------------|-------------|--|
| Fuel tank vent | CHECK CLEAR | |
| Pitot tube | CHECK CLEAR | |
| Stall warning | TEST | |
| Aileron | CHECK | |
| Freedom of movement and security | | |
| Final | | |
| Flight Circle | DISPATCH | |
| Tach, Hobbs times | RECORD | |
| Baggage door | LOCK | |
| Chocks | REMOVE | |
| Tie-downs | REMOVE | |

| Securing | | |
|-------------------|----------|--|
| Control lock | INSTALL | |
| Tie-downs, chocks | APPLY | |
| Vents, windows | CLOSE | |
| Pitot cover | APPLY | |
| Tach, Hobbs times | RECORD | |
| Flight Circle | CHECK IN | |
| Doors | LOCK | |

| Speeds | | |
|--------------------------------------------|-----------|-------|
| | | KIAS |
| Best glide (V _G) | | 65 |
| Best angle of climb (V _x) | Sea level | 64 |
| | 10,000 ft | 62 |
| Best rate of climb (V _y) | Sea level | 78 |
| | 10,000 ft | 68 |
| Landing approach | Flaps up | 60-70 |
| | Flaps 40 | 55-65 |
| Normal takeoff climb | | 70-80 |
| Short-field takeoff climb | Flaps up | 59 |
| | Flaps 10 | 55 |
| Normal enroute climb | Sea level | 80-90 |
| | 10,000 ft | 70-80 |
| Design maneuvering speed (V _A) | 2300 lbs | 97 |
| | 1950 lbs | 89 |
| | 1600 lbs | 80 |

Operating Checklists

| Start | | |
|----------------------------------------|---------------|--|
| Before Start | | |
| Preflight inspection | COMPLETE | |
| Passenger briefing | COMPLETE | |
| Brakes | TEST and SET | |
| Seats, belts, harnesses | SECURE | |
| Fuel valve | BOTH | |
| Radios, electrical equipment | OFF | |
| Circuit breakers | CHECK IN | |
| Beacon switch | ON | |
| Engine Start | | |
| Mixture | RICH | |
| Carburetor heat | COLD | |
| Prime | AS REQUIRED | |
| Throttle | OPEN 1/8 INCH | |
| Master | ON | |
| Propeller area | CLEAR | |
| Ignition switch | START | |
| Release when engine starts | | |
| Oil pressure | CHECK | |
| If no pressure in 30 seconds, shutdown | | |
| Mixture | GROUND LEAN | |
| Before Taxi | | |
| Avionics | ON | |
| Headset | ON | |
| Flaps | RETRACT | |
| Transponder | VERIFY ALT | |
| Weather | OBTAIN | |
| Altimeter | SET | |
| EFB Setup | AS DESIRED | |
| Navigation, landing lights | ON | |

| Run-up | | |
|------------------------------------|------------------------|--|
| Instruments | CHECK and SET | |
| VOR check | IF NEEDED | |
| Brakes | SET | |
| Doors and windows | CLOSED, LOCKED | |
| Flight controls | FREE and CORRECT | |
| Fuel valve | BOTH | |
| Mixture | RICH (below 3000 feet) | |
| Throttle | 1700 RPM | |
| Magnetos | CHECK | |
| Max drop 125 RPM, max diff. 50 RPM | | |
| Engine gauges, ammeter | CHECK | |
| Vacuum gauge | CHECK | |
| Gyroscopic instruments | CHECK | |
| Carburetor heat | TEST | |
| Idle | TEST | |
| Mixture | GROUND LEAN | |
| Throttle friction | ADJUST | |

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| Before Takeoff | | |
|------------------------------------|------------------------|--|
| Radios, navigation, instruments | SETUP | |
| Takeoff briefing | COMPLETE | |
| Beacon, navigation, landing lights | ON | |
| Carburetor heat | AS REQUIRED | |
| Flaps | 0-10° | |
| Trim | TAKEOFF | |
| Fuel valve | BOTH | |
| Fuel quantity | CHECK | |
| Mixture | RICH (below 3000 feet) | |

| Climb | | |
|----------|-----------------------------|--|
| Airspeed | 70-90 KIAS | |
| Throttle | FULL | |
| Mixture | RICH (lean above 3000 feet) | |

| Cruise | | |
|---------|----------------------|--|
| Power | 2200-2700 RPM (≤75%) | |
| Trim | ADJUST | |
| Mixture | LEAN (for max RPM) | |

| Descent | | |
|-----------------|-------------|--|
| Mixture | RICH | |
| Power | AS DESIRED | |
| Carburetor heat | AS REQUIRED | |

| Before Landing | | |
|-----------------|-------------------------|--|
| Fuel valve | BOTH | |
| Mixture | RICH | |
| Carburetor heat | ON | |
| Airspeed | 60-70 KIAS (flaps UP) | |
| Flaps | AS DESIRED | |
| Airspeed | 55-65 KIAS (flaps DOWN) | |

| Balked Landing | | |
|-----------------|----------------|--|
| Throttle | FULL | |
| Carburetor heat | COLD | |
| Flaps | 20° | |
| Airspeed | 55 KIAS | |
| Flaps | RETRACT slowly | |

| After Landing | | |
|----------------|-------------|--|
| Flaps | UP | |
| Caburetor heat | OFF | |
| Mixture | GROUND LEAN | |

| Shutdown | | |
|------------------------------|---------|--|
| Brakes | SET | |
| Tach time | RECORD | |
| Radios, electrical equipment | OFF | |
| Mixture | CUT-OFF | |
| Magnetos | OFF | |
| Master | OFF | |

Engine Failures, Abnormal Landings

| Engine Failure During Takeoff Run | |
|-----------------------------------|---------|
| Throttle | IDLE |
| Brakes | APPLY |
| Flaps | RETRACT |
| Mixture | CUT-OFF |
| Magnetos | OFF |

| Engine Failure Shortly After Takeoff | |
|--------------------------------------|------------------------------------------|
| Airspeed | Flaps up: 65 KIAS Flaps down: 60 KIAS |
| Mixture | CUT-OFF |
| Fuel valve | OFF |
| Magnetos | OFF |
| Flaps | AS REQUIRED |
| Master | OFF |

| Engine Failure During Flight | |
|------------------------------|------------------------------------------|
| Airspeed | 65 KIAS |
| Carburetor heat | ON |
| Fuel valve | BOTH |
| Mixture | RICH |
| Magnetos | BOTH |
| Primer | (START if prop stopped) IN and LOCKED |

| Forced Landing With Engine Failure | |
|------------------------------------|------------------------------------------|
| Airspeed | Flaps up: 65 KIAS Flaps down: 60 KIAS |
| Mixture | CUT-OFF |
| Fuel valve | OFF |
| Magnetos | OFF |
| Flaps | AS REQUIRED 40° recommended |
| Master | OFF |
| Doors | UNLATCH BEFORE TOUCHDOWN |
| Touchdown | SLIGHTLY TAIL LOW |
| Brakes | APPLY HEAVILY |

| Precautionary Landing | |
|-----------------------------|--------------------------------------------------------------------------------------------------------|
| Flaps | 20° |
| Airspeed | 60 KIAS |
| Selected field | FLY OVER Note terrain/obstructions. Retract flaps upon reaching a safe altitude and airspeed. |
| Radios, electrical switches | OFF |
| Flaps | 40° (on final approach) |
| Airspeed | 60 KIAS |
| Master | OFF |
| Doors | UNLATCH BEFORE TOUCHDOWN |
| Touchdown | SLIGHTLY TAIL LOW |
| Magnetos | OFF |
| Brakes | APPLY HEAVILY |

| Ditching | |
|---------------------------|-----------------------------------------------------------------------------------------------------------|
| Radio | MAYDAY on 121.5 MHz Give location, intentions |
| Heavy objects | SECURE or JETTISON |
| Flaps | 20°-40° |
| Power | 300 FT/MIN DESCENT AT 55 KIAS If no power available, approach flaps up 65 KIAS or flaps 10° 60 KIAS |
| Strong wind, heavy seas: | LAND INTO WIND |
| Light wind, heavy swells: | LAND PARALLEL TO SWELLS |
| Doors | UNLATCH |
| Touchdown | LEVEL ATTITUDE at established rate of descent |
| Face | CUSHION at touchdown with coat |
| Airplane | EVACUATE |
| Life vests/raft | INFLATE |

| Landing Without Elevator Control | |
|----------------------------------|---------------------------------------------------------|
| Trim | FOR LEVEL FLIGHT at 60 KIAS, flaps 20° |
| Approach | Control glide angle using power, do not change trim. |
| Flare | USE NOSE-UP TRIM & POWER |
| Touchdown | THROTTLE IDLE |

Fires, Icing, Flat Tire, Electrical

| Engine Fire During Start On Ground | |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Cranking | CONTINUE |
| If engine starts: | Power 1700 RPM for a few minutes |
| Engine | SHUTDOWN |
| If engine fails to start: | Throttle FULL OPEN Mixture CUT-OFF Cranking CONTINUE for 2-3 minutes |
| Fire extinguisher | OBTAIN |
| Master | OFF |
| Magnetos | OFF |
| Fuel valve | OFF |
| Fire | EXTINGUISH Use fire extinguisher, seat cushion, wool blanket, or dirt. If practical, try to remove air filter if it is ablaze. |
| Both cases: inspect and repair damage before conducting another flight. | |

| Engine Fire in Flight | |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Mixture | CUT-OFF |
| Fuel valve | OFF |
| Master | OFF |
| Cabin heat & air | OFF (except overhead vents) |
| Airspeed | 100 KIAS If fire is not extinguished, increase glide speed to find an airspeed which will provide an incombustible mixture |
| Forced Landing With Engine Failure checklist | EXECUTE |

| Electrical Fire in Flight | |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Master | OFF |
| All other switches (except magnetos) | OFF |
| Vents/cabin air/heat | CLOSE |
| Fire extinguisher | USE |
| If fire appears out and electrical power is necessary to continue flight: | |
| Master | ON |
| Circuit breakers | CHECK (do not reset faulty circuit) |
| Radio/electrical switches | ON One at a time with delay after each until short circuit is localized |
| Vents/cabin air/heat | OPEN (when fire completely extinguished) |

| Cabin Fire | |
|-------------------------------|------------------------------------------------------------------------------------------|
| Master | OFF |
| Vents/cabin air/heat | CLOSED (to avoid drafts) |
| Fire extinguisher | USE WARNING: After discharging extinguisher within a closed cabin, ventilate cabin |
| Land ASAP, inspect for damage | |

| Wing Fire | |
|-------------------------------------------------------------------------------------------------------------|-----|
| Nav lights | OFF |
| Pitot heat | OFF |
| NOTE: Sideslip to keep flames away from fuel tanks and cabin. Land ASAP using flaps only as required. | |

| Inadvertent Icing Encounter | |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Pitot heat | ON |
| Turn back or change altitude to obtain an OAT less conducive to icing. | |
| Cabin heat | FULL ON |
| Defroster | OPEN |
| Cabin air | ADJUST Maximize defroster heat and airflow |
| Throttle | OPEN |
| Carburetor/air filter icing | MONITOR Apply carb heat as required, lean mixture for maximum RPM if used continuously |
| Land | NEAREST AIRPORT With very rapid ice build-up, select suitable off-airport landing site |
| With ≥ 1/4 inch ice on the leading edges, prepare for significantly higher stall speed | |
| Flaps | LEAVE RETRACTED |
| Open left window and scrape ice from windshield, if necessary for visibility | |
| Forward slip if necessary for visibility | |
| Approach speed | 65-75 KIAS Depending on level of accumulation |
| Landing | Perform in level attitude |

| Static Source Blockage | |
|-------------------------------|-------------------------------------------|
| Alternate static source valve | PULL ON |
| Airspeed | Use calibration table in POH section 5 |

| Landing With a Flat Main Tire | |
|-------------------------------|------------------------------------------------------------------|
| Approach | NORMAL |
| Touchdown | GOOD TIRE FIRST Hold flat tire off ground as long as possible |

| Over-Voltage Light Illuminates | |
|------------------------------------------|------------------|
| Master | OFF (both sides) |
| Master | ON |
| If over-voltage light illuminates again: | |
| Flight | TERMINATE ASAP |

| Ammeter Shows Discharge | |
|-----------------------------------|--------------------------------|
| Alternator | OFF |
| Nonessential electrical equipment | OFF |
| Flight | TERMINATE as soon as practical |