

V _S	62 MPH	V _A	125 MPH
V _{SO}	50 MPH	V _{FE}	95 MPH
V _X	75 MPH	V _{NO}	147 MPH
V _Y	90 MPH	V _{NE}	182 MPH
V _{BG}	80 MPH	Flaps settings: -7°, 0°, 24°, 40°, 48°	

Before Starting Engine

- 1) Preflight inspection – COMPLETE
- 2) Towbar – STOWED
- 3) Fuel caps – ON & SECURE
- 4) Pitot cover – REMOVED
- 5) Controls – FREE
- 6) Documents – ON BOARD
- 7) Hobbs & tach – RECORDED
- 8) Airplane keys – ON DASH
- 9) Passenger briefing – COMPLETE
- 10) Seats & seatbelts – ADJUSTED
- 11) Brakes – TEST & SET
- 12) Avionics & electrical equipment – OFF
- 13) Circuit breakers – CHECK IN
- 14) Doors – CLOSED & LOCKED

Starting Engine

- 1) Primer
 - Engine Cold – 3-4 strokes, locked
 - Engine Hot – 0-1 strokes, locked
- 2) Carb heat – COLD
- 3) Throttle – OPEN ¼ inch
- 4) Mixture – RICH
- 5) Master switch – ON
- 6) Anticollision lights – ON
- 7) Propeller area – “CLEAR” and visually clear area
- 8) Ignition – START, slowly advance throttle, release after start
- 9) Throttle – SET 900 to 1000 RPM
- 10) Oil pressure – CHECK GREEN within 30 seconds

After Start

Look around and move if people are waiting.

Don't block the ramp!

- 1) Ammeter – CHECK slightly positive
- 2) Avionics – ON
- 3) Mixture – LEAN for taxi, slightly rich of engine roughness
- 4) Fuel selector – FULLEST TANK
- 5) Flaps – UP, visually confirm
- 6) Transponder – ALT & 1200
- 7) ATIS/AWOS/ASOS – CHECK
- 8) Flight instruments – SET
- 9) Radios – SET, CONTACT GROUND

Taxi

- 1) Brief taxi diagram & hot spots
- 2) Brakes – CHECK gently
- 3) Flight instruments – CHECK OPERATION

Run-up

- 1) Tailwheel straight, brakes held tight
 - 2) Flight Controls – FREE & CORRECT
 - 3) Trim – SET FOR TAKEOFF (yoke aft, trim flush with elevator)
 - 4) Flight instruments – CHECK & SET
- Once CHTs are above 250° F:***
- 5) Doors & windows – CLOSED & LATCHED
 - 6) Primer – IN & LOCKED
 - 7) Mixture – RICH
 - 8) Throttle – 1800 RPM
 - 9) Magnetos – TEST R, BOTH, L, then BOTH (max. 175 RPM drop & 50 RPM differential)
 - 10) Carb heat – CHECK HOT, note RPM drop, then COLD
 - 11) Propeller – CYCLE (approx. 300 RPM drop)
 - 12) Engine instruments – CHECK
 - 13) Ammeter – CHECK (do not cycle the alternator!)
 - 14) Suction gauge – CHECK
 - 15) Throttle – IDLE (500-800 RPM), then 900-1000
 - 16) Throttle friction – ADJUSTED
 - 17) GPS/NAV – SET
 - 18) Takeoff briefing – COMPLETE

“This will be a normal (short/soft-field) takeoff, flaps 0° (24°), departing runway ____ with a climb to _____. V_X with flaps 24° is 75 MPH and V_Y flaps 0° is 90 MPH. For any abnormality with runway remaining, I will call “abort, abort,” reduce the throttle to idle, and bring the aircraft to a stop on the runway. For an engine failure below 400’ AGL, I will land straight ahead. I will not attempt to return to the runway until reaching a safe altitude. For any abnormality or emergency I will aviate, navigate, communicate, and run the appropriate checklist. Best glide is 80 MPH. Any questions?”

Before Take-off

- 1) Lights – AS NEEDED
- 2) Transponder – ALT & squawk code
- 3) Flaps – 0° for normal/crosswind takeoff (24° for short/soft-field)
- 4) Mixture – RICH (or set for DA)
- 5) Prop – FULL FWD
- 6) Carb heat – COLD
- 7) Trim – SET FOR TAKEOFF
- 8) Fuel – CHECK quantity, fuel on FULLEST TANK, primer LOCKED
- 9) Seats & seatbelts – ADJUSTED
- 10) Doors & windows – CLOSED & LATCHED
- 11) Radios – SET & CONTACT TOWER

Normal Takeoff

- 1) Flaps – 0°, visually confirm
- 2) Throttle – Smoothly to FULL FWD
- 3) Engine instruments – CHECK
- 4) Climb – V_Y 90 MPH

Enroute Climb (at 1000' AGL & clear of obstacles)

- 1) Airspeed – 90 - 100 MPH*
- 2) Throttle – 25" MP
- 3) Engine instruments – MONITOR
- 4) Mixture – RICH*

Cruise

- 1) Throttle – 21" MP
- 2) Prop – 2200 RPM
- 3) Engine instruments – CHECK
- 4) Mixture – If engine temp normal, LEAN for altitude
- 5) Trim – SET for cruise airspeed
- 6) Fuel selector – BOTH
- 7) Flight instruments – CHECK

Descent

- 1) ATIS/AWOS/ASOS – CHECK
- 2) Flight instruments – CHECK & SET
- 3) Radios – SET, report 10 miles out
- 4) Approach/pattern entry briefing – COMPLETE
- 5) Carb heat – ON if required
- 6) Throttle – REDUCE for descent
- 7) Mixture – ENRICHEN throughout descent
- 8) Seats & seatbelts – ADJUSTED

Before Landing

- 1) Lights – AS NEEDED
- 2) Fuel – CHECK quantity, fuel on BOTH, primer LOCKED
- 3) Carb Heat – ON before closing throttle
- 4) Mixture – RICH
- 5) Prop – FULL FWD below 12" MP
- 6) Airspeed – 80 to 75 MPH flaps 0° to 24°
- 7) Airspeed – 75 to 70 MPH flaps 40° to 48°

After Landing (stop once clear of runway)

- 1) Radio – Switch to GROUND when advised
- 2) Flaps – UP, visually confirm
- 3) Mixture – LEAN for taxi
- 4) Carb Heat – COLD
- 5) Lights – AS NEEDED
- 6) Trim – SET FOR TAKEOFF
- 7) Transponder – ALT & 1200
- 8) Radios – CONTACT GROUND

Shutdown

- 1) Avionics and electrical switches – OFF
- 2) Throttle – 1000 RPM
- 3) Mixture – IDLE CUTOFF
- 4) Ignition – OFF, key on dash
- 5) Master switch – OFF
- 6) Pitot cover & sunshade – INSTALL
- 7) Hobbs & tach – RECORD
- 8) Trash – REMOVE & TIDY UP
- 9) Tiedowns & chocks – INSTALL

Soft-field Takeoff

- 1) Flaps – 24°
- 2) Elevator – Set parallel to the ground
- 3) Brakes – Minimize use
- 4) Throttle – Smoothly to FULL FWD
- 5) Engine instruments – CHECK
- 6) Elevator – Maintain nose high/tail low until liftoff
- 7) Climb – *Remain in ground effect to accelerate, then transition to climb at V_Y 90 MPH and retract flaps to 0°

* If obstacles are present, climb at 75 MPH until clear of all obstacles before accelerating to V_Y .

Normal and Soft-field Landing

- 1) Flaps – 0°, 24° or 40°
- 2) Airspeed – PITCH for 80 to 75 MPH
- 3) Throttle – ADJUST for descent rate
- 4) Touchdown – 3-POINT ATTITUDE
- 5) Elevator – Increase gradually to FULL AFT during deceleration
- 6) Brakes – Minimize use

* Max demonstrated crosswind is 14 MPH, but this is not a limitation.

* Flaps 0° or 24° is recommended in stronger crosswinds.

Short-field Takeoff

- 1) Flaps – 24°
- 2) Brakes – HOLD
- 3) Throttle – Smoothly to FULL FWD
- 4) Engine instruments – CHECK
- 5) Brakes – RELEASE
- 6) Climb – V_X 75 MPH until clear of obstacles
- 7) Accelerate – V_Y 90 MPH and retract flaps to 0°

Short-field Landing

- 1) Flaps – 48°
- 2) Airspeed – PITCH for 70 MPH
- 3) Throttle – ADJUST for descent rate and to assist with the flare
- 4) Touchdown – 3 POINT ATTITUDE
- 5) Brakes – APPLY, but do not skid tires!
- 6) Flaps – RETRACT

* Hot days: If oil temp and/or EGTs are warmer than normal, do not lean during climb. Use the higher enroute climb speed as soon as possible for better cooling. Mixture may be leaned slightly during climb above 5000' if engine temps are cool.