

V _S	57 MPH	V _{BG}	80 MPH
V _{SO}	49 MPH	V _A	112 MPH
V _R	60 MPH	V _{FE}	100 MPH
V _X	68 MPH	V _{NO}	145 MPH
V _Y	91 MPH	V _{NE}	182 MPH

Before Starting Engine

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

Starting Engine

- 1) Primer
 - Engine Cold – 2-3 strokes, locked
 - Engine Hot – 0-1 strokes, locked
- 2) Carb heat – COLD
- 3) Throttle – OPEN ¼ inch
- 4) Mixture – RICH
- 5) Propeller area – “CLEAR” and visually clear area
- 6) Master switch – ON
- 7) Beacon/Strobes – ON
- 8) Ignition – START, slowly advance throttle, release after start
- 9) Throttle – SET 800 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) Flaps – UP
- 5) Transponder – ALT & 1200
- 6) ATIS/AWOS/ASOS – CHECK
- 7) Radios – Set, CONTACT GROUND for taxi

Taxi

- 1) Brief taxi instructions, airport diagram & hot spots
- 2) Brakes – CHECK gently
- 3) Turn coordinator – CHECK
- 4) Vacuum instruments – CHECK

Run-up

- 1) Nosewheel straight, brakes held tight
- 2) Flight Controls – “FREE & CORRECT”
- 3) Trim – SET FOR TAKEOFF (yoke aft, trim flush with elevator)
- 4) Instruments – CHECK & SET (altimeter near FE)
- 5) GPS/NAV – SET
- 6) Doors & windows – CLOSED & LATCHED
- 7) Primer – IN & LOCKED
- 8) Mixture – RICH
- 9) Throttle – 1700 RPM
- 10) Magnetos – TEST R, BOTH, L, then BOTH (max. 125 RPM drop & 50 RPM differential)
- 11) Carb heat – CHECK HOT, note RPM drop, then COLD
- 12) Engine instruments – CHECK
- 13) Ammeter – CHECK (do not cycle the alternator!)
- 14) Suction gauge – CHECK
- 15) Throttle – IDLE (500-800 RPM), then 800-1000
- 16) Throttle friction – ADJUSTED
- 17) Takeoff briefing – COMPLETE

“This will be a normal (short-field/soft-field) takeoff, flaps up (10°), departing runway _____ with a climb to _____ feet. V_R is 60 MPH (55 KIAS). V_X is 68 MPH (59 KIAS). V_Y is 91 MPH (79 KIAS). 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 (70 KIAS). Any questions?”

Before Take-off

- 1) Lights – ON as needed
- 2) Transponder – ALT & squawk code
- 3) Flaps – UP for normal/short-field takeoff (10° for soft-field/short runway)
- 4) Mixture – Full RICH or set for DA
- 5) Carb heat – COLD
- 6) Trim – SET FOR TAKEOFF
- 7) Fuel – CHECK quantity, fuel on BOTH, primer LOCKED
- 8) Seats & seatbelts – ADJUSTED
- 9) Doors & windows – CLOSED & LATCHED
- 10) Radios – SET & CONTACT TOWER

Normal Takeoff

- 1) Flaps – UP
- 2) Throttle – Smoothly to FULL FWD
- 3) Engine instruments – CHECK
- 4) Elevator – Lift nosewheel at 60 MPH (55 KIAS)
- 5) Climb speed – 75 to 85 MPH (65 to 74 KIAS)

Enroute Climb (above 1000' AGL)

- 1) Airspeed – 80 to 90 MPH (70-80 KIAS)
- 2) Engine instruments – MONITOR
- 3) Mixture – Lean slightly above 3000'

Cruise

- 1) Throttle – 2100 to 2400 RPM (< 75% power)
- 2) Mixture – LEAN for altitude
- 3) Engine instruments – CHECK
- 4) Flight instruments – CHECK
- 5) Fuel selector – BOTH
- 6) Trim – SET for cruise airspeed

Descent

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

Before Landing

- 1) Lights – ON as needed
- 2) Fuel – CHECK quantity, fuel on BOTH, primer LOCKED
- 3) Carb Heat – ON before closing throttle
- 4) Mixture – RICH
- 5) Airspeed – 80 MPH flaps UP (70 KIAS)
- 6) Airspeed – 75 MPH flaps DOWN (65 KIAS)

After Landing (stop once clear of runway)

- 1) Radio – Switch to GROUND when advised
- 2) Flaps – UP
- 3) Mixture – LEAN for taxi
- 4) Carb Heat – COLD
- 5) Lights – ON as needed
- 6) Trim – SET for takeoff
- 7) Transponder – ALT & 1200
- 8) Radios – CONTACT GROUND for taxi

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) Fuel selector – LEFT or RIGHT TANK
- 7) Control lock, sunshade, pitot cover – INSTALL
- 8) Hobbs & tach – RECORD
- 9) Tiedowns & chocks – INSTALL
- 10) Doors – LOCK

Soft-field Takeoff

- 1) Flaps – 10°
- 2) Elevator – FULL AFT
- 3) Brakes – Minimize use
- 4) Throttle – Smoothly bring 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 climb at V_Y 91 MPH (78 KIAS)
- 8) Flaps – RETRACT above 70 MPH (60 KIAS)

Note: *If obstacles are present, climb at V_X 68 MPH (59 KIAS) until clear of all obstacles before accelerating.

Normal and Soft-field Landing

- 1) Flaps – 30°
- 2) Airspeed – PITCH for 75 MPH (65 KIAS)
- 3) Throttle – ADJUST for descent rate
- 4) Touchdown – MAIN WHEELS FIRST
- 5) Elevator – Increase gradually to FULL AFT during deceleration
- 6) Brakes – Minimize use

Short-field Takeoff (minimum ground run)

- 1) Flaps – 10° for short-field takeoff
- 2) Brakes – HOLD
- 3) Throttle – Smoothly to FULL FWD
- 4) Engine instruments – CHECK
- 5) Brakes – RELEASE
- 6) Elevator – Lift nosewheel at 60 MPH (55 KIAS)
- 7) Climb – Airspeed V_X 65 MPH (56 KIAS) until clear of obstacles
- 8) Accelerate – 80 to 90 MPH (70-80 KIAS)
- 9) Flaps – RETRACT above 70 MPH (60 KIAS)

Maximum Performance Takeoff (obstacle)

- 1) Flaps – UP for obstacle takeoff
- 2) Brakes – HOLD
- 3) Throttle – Smoothly bring to FULL FWD
- 4) Engine instruments – CHECK
- 5) Brakes – RELEASE
- 6) Elevator – Lift nosewheel at 60 MPH (55 KIAS)
- 7) Climb – 68 MPH (59 KIAS) until clear of obstacles
- 8) Accelerate – 80 to 90 MPH (70-80 KIAS)

Short-field Landing

- 1) Flaps – 40°
- 2) Airspeed – 70 MPH (60 KIAS)
- 3) Throttle – ADJUST for descent rate
- 4) Touchdown – MAIN WHEELS FIRST
- 5) Brakes – APPLY, but do not skid tires!
- 6) Flaps – RETRACT