

V _S	44 KIAS	V _A @ max weight	99 KIAS
V _{S0}	33 KIAS	V _A @ 2000 lbs	92 KIAS
V _R	55 KIAS	V _{FE} Flaps 10°	110 KIAS
V _X	60 KIAS	V _{FE} Flaps 20-30°	85 KIAS
V _Y	76 KIAS	V _{NO}	127 KIAS
V _{BG}	65 KIAS	V _{NE}	158 KIAS

Before Starting Engine

- 1) Preflight inspection – COMPLETE
- 2) Towbar – STOWED
- 3) Fuel caps – ON & SECURE
- 4) Pitot cover – REMOVED
- 5) Control lock – REMOVED
- 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) Fuel selector – BOTH
- 15) 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) Master switch – ON
- 6) Beacon/strobes – ON
- 7) Propeller area – “CLEAR” and visually clear area
- 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, visually confirm
- 5) Transponder – ALT & 1200
- 6) ATIS/AWOS/ASOS – CHECK
- 7) Flight instruments – SET (altimeter near FE)
- 8) Radios – SET, CONTACT GROUND

Taxi

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

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) Flight instruments – CHECK & SET
- 5) Doors & windows – CLOSED & LATCHED
- 6) Primer – IN & LOCKED
- 7) Mixture – RICH
- 8) Throttle – 1700 RPM
- 9) Magnetos – TEST R, BOTH, L, then BOTH (max. 125 RPM drop & 50 RPM differential)
- 10) Carb heat – CHECK HOT, note RPM drop, then COLD
- 11) Engine instruments – CHECK
- 12) Ammeter – CHECK (do not cycle the alternator!)
- 13) Suction gauge – CHECK
- 14) Throttle – IDLE (500-800 RPM), then 800-1000
- 15) Throttle friction – ADJUSTED
- 16) GPS/NAV – SET
- 17) Takeoff briefing – COMPLETE

“This will be a normal (soft-field/short-field) takeoff, flaps up (10°), departing runway ____ with a climb to ____ feet. V_R is 55, V_X is 60, and V_Y is 76 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 65. Any questions?”

Before Take-off

- 1) Lights – AS NEEDED
- 2) Transponder – ALT & squawk code
- 3) Flaps – UP for normal/short-field takeoff (10° for soft-field)
- 4) Mixture – 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, visually confirm
- 2) Throttle – Smoothly to FULL FWD
- 3) Engine instruments – CHECK
- 4) Elevator – Lift nosewheel at 55 KIAS
- 5) Climb – V_Y 76 KIAS until 1000' AGL & clear of obstacles, then climb at 85 KIAS

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

- 1) Airspeed – 76 to 85 KIAS*
- 2) Engine instruments – MONITOR
- 3) Mixture – RICH*

Cruise

- 1) Throttle – 2100 to 2400 RPM (< 70% power)
- 2) Engine instruments – CHECK
- 3) Mixture – If engine temp normal, LEAN for altitude
- 4) Trim – SET for cruise airspeed
- 5) Fuel selector – BOTH
- 6) 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 – ADJUSTED for altitude
- 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) Airspeed – 70 to 75 KIAS flaps UP
- 6) Airspeed – 65 to 70 KIAS flaps DOWN

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) Fuel selector – LEFT or RIGHT TANK
- 7) Control lock & sunshade – INSTALL
- 8) Pitot cover – INSTALL
- 9) Hobbs & tach – RECORD
- 10) Trash – REMOVE & TIDY UP
- 11) Tiedowns & chocks – INSTALL
- 12) Doors – LOCK

Soft-field Takeoff

- 1) Flaps – 10°
- 2) Elevator – FULL AFT
- 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 climb at V_Y 76 KIAS.
- 8) Flaps – RETRACT above 60 KIAS

* If obstacles are present, climb at 56 KIAS until clear of all obstacles before accelerating to V_Y .

Normal and Soft-field Landing

- 1) Flaps – 30°
- 2) Airspeed – PITCH for 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

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

Short-field Landing

- 1) Flaps – 30°
- 2) Airspeed – PITCH for 61 KIAS
- 3) Throttle – ADJUST for descent rate
- 4) Touchdown – MAIN WHEELS FIRST
- 5) Brakes – APPLY, but do not skid tires!
- 6) Flaps – RETRACT

Refer to AFM Section 4, Normal Procedures, and Section 5, Performance, to make adjustments for variations in conditions and to calculate takeoff & landing data.

* 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 running cool.