

V <sub>S</sub>	47 KIAS	V <sub>A @ max weight</sub>	97 KIAS
V <sub>S0</sub>	41 KIAS	V <sub>A @ 1950 lbs</sub>	89 KIAS
V <sub>R</sub>	55 KIAS	V <sub>FE</sub>	85 KIAS
V <sub>X</sub>	59 KIAS	V <sub>NO</sub>	128 KIAS
V <sub>Y</sub>	73 KIAS	V <sub>NE</sub>	160 KIAS
V <sub>BG</sub>	65 KIAS		

**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<sub>R</sub> is 55, V<sub>X</sub> is 59, and V<sub>Y</sub> is 73 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 – ON as needed
- 2) Transponder – ALT & squawk code
- 3) Flaps – UP for normal/obstacle takeoff (10° for soft-field/short-field)
- 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 55 KIAS
- 5) Climb speed – 70 to 80 KIAS

**Enroute Climb** (above 1000' AGL)

- 1) Airspeed – 70 to 85 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 – 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
- 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  $V_Y$  73 KIAS
- 8) Flaps – RETRACT above 60 KIAS

Note: \*If obstacles are present, climb at  $V_X$  55 KIAS until clear of all obstacles before accelerating.

**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 (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 55 KIAS
- 7) Climb – Airspeed  $V_X$  55 KIAS until clear of obstacles
- 8) Accelerate – 70 to 80 KIAS
- 9) Flaps – RETRACT above 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 55 KIAS
- 7) Climb – 59 KIAS until clear of obstacles
- 8) Accelerate – 70 to 80 KIAS

**Short-field Landing**

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