

V <sub>S</sub>	57 MPH	V <sub>BG</sub>	80 MPH
V <sub>SO</sub>	49 MPH	V <sub>A @ max</sub>	112 MPH
V <sub>R</sub>	60 MPH	V <sub>FE</sub>	100 MPH
V <sub>X</sub>	68 MPH	V <sub>NO</sub>	145 MPH
V <sub>Y</sub>	91 MPH	V <sub>NE</sub>	182 MPH

**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/short-field (soft-field) takeoff, flaps up (10°), departing runway \_\_\_\_\_ with a climb to \_\_\_\_\_ feet. V<sub>R</sub> is 60 MPH, V<sub>X</sub> is 68, and V<sub>Y</sub> is 91. 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 – 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 60 MPH
- 5) Climb – 75 to 85 MPH until clear of obstacles

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

- 1) Airspeed – 80 to 90 MPH\*
- 2) Engine instruments – MONITOR
- 3) Mixture – RICH\*

**Cruise**

- 1) Throttle – 2100 to 2400 RPM (below 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 – 75 to 80 MPH flaps UP
- 6) Airspeed – 70 to 75 MPH 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  $V_Y$  91 MPH
- 8) Flaps – RETRACT above 80 MPH

\* If obstacles are present, climb at 65 MPH until clear of all obstacles before accelerating to  $V_Y$ .

**Normal and Soft-field Landing**

- 1) Flaps – 30°
- 2) Airspeed – PITCH for 75 MPH
- 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 – UP
- 2) Brakes – HOLD
- 3) Throttle – Smoothly to FULL FWD
- 4) Engine instruments – CHECK
- 5) Brakes – RELEASE
- 6) Elevator – Lift nosewheel at 60 MPH
- 7) Climb – 68 MPH until clear of obstacles
- 8) Accelerate – 80 to 90 MPH

**Short-field Landing**

- 1) Flaps – 30°
- 2) Airspeed – PITCH for 70 MPH
- 3) Throttle – ADJUST for descent rate
- 4) Touchdown – MAIN WHEELS FIRST
- 5) Brakes – APPLY, but do not skid tires!
- 6) Flaps – RETRACT

N2838Q is a Cessna 172L with a Superhawk Lycoming O-360-A4M conversion. Please refer to Cessna and Lycoming Operating Manuals, as well as Penn Yan Aero Service STC for full operating details.

\* 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.