



**FREDERICK FLIGHT CENTER, INC.**

## **PROCEDURES GUIDE**

### **CESSNA 172N SKYHAWK**

**THESE PROCEDURES ARE DESIGNED TO PROVIDE STANDARDIZED METHODS UNDER NORMAL CONDITIONS. AS CONDITIONS CHANGE, THE PROCEDURES WILL NEED TO BE ADJUSTED.**

#### **PASSENGER BRIEFING (items to include)**

- Fire extinguisher (location and operation)
- Seat belts (operation: how to fasten and unfasten, times of use)
- Doors (operation)
- Evacuation (always go to the rear, never go towards the propeller)
- Windows (operation)
- Positive exchange of flight controls (when 2 pilots are sitting in the front)
- Questions

#### **PRE TAKEOFF BRIEFING (memorize)**

##### **Part 1**

1. In case of an engine failure or abnormality on the takeoff roll prior to rotation: retard the throttle to idle, maintain directional control with the rudder and bring the airplane to a stop.
2. In case of an engine failure after rotation with runway remaining: retard the throttle, maintain directional control with the rudder, land on the remaining runway, and bring the airplane to a stop.
3. In case of an engine failure after takeoff less than 1000 feet AGL with no runway remaining: pitch for 70 KIAS, find a suitable place to land within 30 degrees to each side, avoid obstacles.
4. In case of an engine failure after takeoff more than 1000 feet AGL: pitch for best glide speed (68) and proceed back to the airport for landing on the most suitable runway given the present circumstances.

##### **Part 2**

In case of an emergency I/you (the more experienced pilot) will be the PIC and I/you will back you up with the checklist.

##### **Remember:**

- The 4 scenarios above describe the very first actions that need to be taken. Additional action may be appropriate/required (discuss with your instructor).
- In all cases it is advised to retard the throttle in case the power suddenly comes back unexpectedly.

### TAXI

1. Speed:
  - a. control speed and direction with minimum power required and rudder - do not ride the brakes.
  - b. speed should be equivalent to a slow walk in congested areas.
  - c. speed should be equivalent to a fast walk on open taxiways.
2. Controls: position for wind direction and velocity.
3. Watch for traffic ("left is clear, right is clear")

### NORMAL TAKEOFF

1. Align aircraft with the centerline (heels on the ground).
2. Position ailerons as required for the wind.
3. Apply power smoothly until max power is reached (with adequate rudder pressure as required).
4. Check engine gauges to ensure indications are in the green and power output is at least 2300 rpm.
5. At 55 begin to apply back-pressure to rotate at 60.
6. Make small pitch and trim adjustments as necessary to achieve Vx-62 (obstacles) or Vy- 73 (no obstacles).

### NORMAL CLIMB

1. Continue climb at Vy (73) or accelerate from Vx (62) to Vy (73) once obstacles are cleared.
2. Maintain runway alignment until departure turn is initiated.
3. At 500 feet AGL flaps up.
4. At 700 feet AGL (or higher, depending on noise abatement procedures), make departure turn.
4. At 1000 feet AGL, lower the nose slightly and re-trim for cruise climb airspeed 90-100 KIAS (if desired).
5. Watch for traffic.

### CRUISE

1. After achieving the desired cruise speed, set power between 2000-2500 RPM (no more than 80% power is recommended).
2. Adjust trim for level flight.
3. Lean mixture as required.
4. Perform cruise checklist.

### **NORMAL LANDING (may be adjusted due to alternate pattern entry procedures, aka base/final entry)**

1. Perform a pre-landing check and ensure pattern entry is at pattern altitude, or at mid-field if performing closed traffic multiple landings. Set power to 2100 rpm and slow down before the turn to downwind.
2. Abeam the numbers on downwind, turn carb heat on, reduce power to 1500 rpm, set flaps to 10 degrees, slow to 80 knots then pitch down and trim for that airspeed. The descent starts with power already at 1500 RPM and once the airplane slows to 80 knots. Once at 80 knots pitch for 80 knots and the airplane will begin to descend.
3. Turn base when the numbers are 45 degrees between the fuselage and the wing, or when traffic permits.  
On the base leg:
  - a. judge for altitude and adjust power as needed to maintain the proper descent.
  - b. set flaps to 20 degrees.
  - c. maintain 70 knots.
4. On final:
  - a. adjust power as needed to maintain the proper descent.
  - b. set flaps to 30 degrees.
  - c. maintain 65-70 knots.

### **GO AROUND**

1. Simultaneously and smoothly turn off carb heat and apply full power with right rudder (in proportion to power) and pitch to level attitude.
2. Check airspeed: If above 60 - initiate a climb (pitch up). If below 60 – keep flying level in ground effect to accelerate.
3. Flaps – verify airspeed above 60 knots and positive rate of climb, retract flaps to 20 degrees, readjust pitch for climb.
4. Flaps – verify airspeed is at least V<sub>x</sub> (62) and positive rate of climb, retract flaps to 10 degrees, readjust pitch for climb.
5. Airspeed - climb at V<sub>x</sub> (62) or V<sub>y</sub> (73) once obstacles are cleared.
6. At 500 feet AGL, flaps up.
7. Avoid traffic and make go around announcement when able.

### **SHORT FIELD TAKEOFF**

1. Flaps - set to 10 degrees.
2. Align aircraft with the centerline at the extreme end of the runway.
3. Holding the brakes, apply max power.
4. Check engine gauges in the green and then release the brakes.
5. Rotate at 55 knots.
6. Climb at 62 knots until obstacles are cleared.
7. Adjust pitch and continue climb at 73 knots (V<sub>y</sub>).
8. At 500 feet AGL, flaps up.

### **SHORT FIELD LANDING**

1. Abeam the numbers, set flaps to 10 degrees and slow to 75 knots instead of 80.
2. On base, set flaps to 20 degrees and slow to 70 knots.
3. On final, establish a steeper and slightly higher than normal approach and slow to 62 knots with full flaps.
4. After touchdown, apply back pressure by pulling the yoke for aerodynamic braking; retract the flaps, while gently and smoothly applying the brakes for a complete stop. (To help avoid excess wear and tear on the brakes, simulate maximum braking whenever possible.)

### **SOFT FIELD TAKEOFF**

1. Perform all pre-takeoff checks before taxiing onto soft surface.
2. Flaps - set to 10 degrees.
3. Taxi onto the runway with full up elevator and do not use the brakes.
4. Without stopping on the runway, start to smoothly apply power/right rudder while continuing to hold full up elevator, as the nose rises reduce back pressure only enough to keep the tail from striking the runway while maintaining directional control with the rudders.
5. As soon as the airplane lifts off, smoothly lower the nose to level and accelerate in ground effect to V<sub>x</sub> (62kts) if an obstacle must be cleared. Accelerate to V<sub>y</sub> (73 kts) if no obstacle is present.
6. At 62kts or 73kts as required, pitch to climb attitude and climb out normally.
7. At 500 feet AGL, flaps up.

### SOFT FIELD LANDING

1. Abeam the numbers, set flaps to 10 degrees and slow to 75 knots instead of 80.
2. On base, set flaps to 20 degrees and slow to 70 knots.
3. On final, slow to 62 knots with full flaps.
4. Just prior to touchdown add 100-200 RPM above idle through the flare if desired for softer touchdown.
5. Upon touchdown, reduce the throttle to idle, hold the nose up as long as possible while maintaining full up elevator until on a hard surface.

### MANEUVERING DURING SLOW FLIGHT

1. Pre-maneuver check – complete.
2. Clearing turns -complete.
3. Power – Carb heat on and reduce to 1500 RPM.
4. Pitch and trim- adjust to maintain altitude.
5. Flaps – incrementally to full (10 degrees less than 110 knots, 20 and 30 degrees less than 85 knots while in the white arc).
6. Pitch/Speed – slow to 45 knots, maintaining heading and altitude.
7. Slightly before reaching desired airspeed (45) start to add power (and right rudder).
8. Maintenance – pitch=airspeed, power=altitude.
9. Recovery: (while maintaining heading and altitude)
  - a. simultaneously turn carb heat off and smoothly apply full power, right rudder (in proportion to power) and pitch to level attitude.
  - b. flaps – retract incrementally to 20 degrees and then to 10, last notch of flaps at a positive rate of climb.
  - c. perform cruise checklist
9. NOTE: this maneuver can be performed in two configurations.
  - a. flaps up = 55 knots
  - c. flaps 30 = 45 knots

### APPROACH TO LANDING STALL (POWER OFF)

1. Pre-Maneuver check – complete.
2. Clearing turns – complete.
3. Power – carb heat on and reduce to 1500 RPM.
4. Pitch and trim- adjust to maintain altitude.
5. Flaps – incrementally to full (10 degrees less than 110 knots, 20 and 30 degrees less than 85 knots while in the white arc).
6. Speed - at 65kts, **establish a descent to simulate final approach.**
7. Power – reduce to idle.
8. Pitch – increase smoothly to produce the stall while maintaining heading, altitude and coordinated flight.
9. Recovery: (while maintaining heading)
  - a. simultaneously and smoothly turn carb heat off and apply full power, right rudder (in proportion to power) and pitch slightly below level attitude.
  - b. flaps – Retract incrementally to 20 degrees and then to 10, last notch of flaps at a positive rate of climb.
  - c. initiate a climb (to get away from the ground) at Vy(74) to specified altitude.

- d. perform cruise checklist

**TAKE-OFF/DEPARTURE STALL**  
(POWER ON)

1. Pre-Maneuver check – complete.
2. Clearing turns – complete.
3. Power – Carb heat on and reduce to 1500 RPM (or lower if desired).
4. Pitch and trim – adjust to maintain altitude.
5. Speed – at 60kts, simulate take off by raising the nose while turning carb heat off and applying max power with right rudder.
6. Verify coordinated flight (wings level, ball centered) and maintain heading.
7. Keep raising the nose to produce the stall while maintaining coordinated flight.
8. Recovery: (coordinated use of rudder and aileron).
  - a. Pitch – lower the nose to slightly below level to gain airspeed (additional right rudder pressure is required).
  - b. Initiate a climb (to get away from the ground) at  $V_y(73)$  to specified altitude.

**STEEP TURNS**

1. Pre-Maneuver check – complete
2. Clearing Turns – complete
3. Prominent Landmark- select and set heading bug
4. Power – reduce to 2100 RPM (beginning of the green range)
5. Airspeed – slow to below Maneuvering speed  $V_A$  (approximately 95 knots).
6. Bank angle – roll into a 45° or 50° (for commercial) bank turn to left or right.
7. While rolling through 30 degrees of bank, simultaneously increase back pressure for additional lift and add approx 200 RPM to maintain airspeed.
8. Proceed through turn.
9. When approx 20-30 degrees from roll out heading/outside landmark, roll toward level bank, release back pressure and reduce approx 200 RPM.
10. Roll out on entry heading.
11. After visually clearing the other side, repeat in opposite direction.
12. Return to normal cruise