Visualized Flight Maneuvers Handbook
For High Wing Aircraft
Third Edition
For Instructors and Students
Visualized Flight Maneuvers Handbook
for High Wing Aircraft
Third Edition

Based on original book by Harold J. Holmes,
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NORMAL TAKEOFF & CLIMB
(Private, Sport, Commercial, CFI)

Objective: Takeoff and climb out to the downwind leg of the traffic pattern.

Task: Check Manufacturer Recommendations

1. Complete preflight inspection (see Page 4)
   - Complete starting airplane check (see Page 6)
   - Taxi to the upwind runway

2. Complete before-takeoff check (see Page 6)
   - Wing flaps 0° for normal takeoff

3. Know local airport traffic pattern and altitude procedures
   - Practice situational awareness and runway incursion avoidance procedures

4. Obtain takeoff and departure clearances, if required
   - Look out and check that runway and approaches are all clear

5. Line up on runway centerline, nose wheel straight
   - Select a reference point straight ahead for tracking
   - Keep heels on floor, and toes on rudder pedals, not brakes
   - Keep straight with rudder
   - Keep wings level with aileron
   - Check RPM for full power
   - Check engine instruments are in the green arc
   - Ease the weight off nose wheel as elevator becomes effective
   - Apply full throttle smoothly and positively

Continued

7. Use right rudder to offset torque as required.

Manufacturer Recommended lift-off speed ____ knots

8. Keep right hand on the throttle.

9. Establish the attitude that results in $V_Y$ with full throttle.

Manufacturer Recommended $V_Y$ ____ knots

Trim off any control pressure.

Normal Takeoff & Climb (Continued)
**Elevator Trim Stalls**

*(CFI only)*

**Objective:** Demonstrate what can happen when full power is applied for a go-around while not maintaining positive control of the airplane.

**Task:** Check Manufacturer Recommendations

1. Find practice area where terrain is appropriate for maneuvering, emergency landing area available
2. Select an altitude that allows maneuver to be completed no lower than 1,500 feet AGL
3. Clear area for other aircraft
4. Extend landing gear
5. Extend flaps, 1/2 to full
6. Trim airplane for level hands-off flight

1. Carburetor heat on (fully out), or as required
2. Power to IDLE (throttle fully out)
3. Establish glide attitude and best glide speed
   
   *Manufacturer Recommended best glide speed _______ knots*
4. Advance throttle smoothly to maximum power
   
   *Carburetor heat off (fully in)*
5. The combined force of thrust, torque, and back elevator trim cause the nose to rise sharply and turn to the left
   
   *Do not attempt to correct these forces*
6. When pitch attitude increases above the normal climbing attitude, and it is apparent a stall is imminent, apply forward pressure to the control column
   
   *With airplane held in the normal climbing attitude, adjust trim to relieve the heavy control pressures*
   
   *Maintain wings-level with coordinated aileron and rudder*
7. Complete normal go-around and level-off procedures
   
   *Retract gear and flaps (in increments) as airspeed reaches $V_Y$*
   
   *Resume normal flight attitude, power, and airspeed with minimum loss of altitude*

**Evaluation:**

- Demonstrate and simultaneously explain elevator trim stalls, in selected landing gear and flap configurations, from an instructional standpoint
- Analyze and correct simulated common errors related to elevator trim stalls in selected landing gear and flap configurations
SECONDARY STALLS

(CFI only)

Objective: Demonstrate what happens when stall recovery is attempted before the airplane has regained sufficient flying speed.

Task: Check Manufacturer Recommendations

1. Find practice area where terrain is appropriate for maneuvering, emergency landing area available
2. Select an altitude that allows maneuver to be completed no lower than 1,500 feet AGL
3. Clear area for other aircraft
4. Perform a stall

- Allow airplane to stall for a second time
- At full stall, release back pressure
- Add full power
- Allow airspeed to build before returning to straight-and-level flight
- Resume normal flight attitude, power, and airspeed with minimum loss of altitude
- Practice from both a power-on and power-off stalled condition

Evaluation:
- Demonstrate and simultaneously explain secondary stalls, in selected landing gear and flap configuration, from an instructional standpoint
- Analyze and correct simulated common errors related to secondary stalls in selected landing gear and flap configurations
**LAZY EIGHTS**

*(Commercial and CFI)*

**Objective:** With constant change in control pressure due to changing combinations of climbing and descending turns at varying airspeeds, experience the full performance range of the airplane while flying a lazy eight pattern.

**Task:**

1. Find practice area where terrain is appropriate for maneuvering, emergency landing area available
2. Set power to obtain maneuvering speed \( V_A \), cruise speed, or manufacturer recommended speed (whichever is less)
3. Select an altitude that allows maneuver to be performed no lower than 1,500 feet AGL, or manufacturer recommended (whichever is higher)
4. Clear area for other aircraft
5. Trim airplane for level hands-off flight
6. Fly crosswind and select an upwind reference point abeam the wing tip
7. Raise the nose above the horizon and begin a climb
8. Slowly roll in bank, and enter a coordinated climbing turn into the wind
9. Pass the 45° reference point with maximum nose-up for maneuver
10. Increase bank angle through 15°
11. Speed is decreasing
12. Pitch attitude begins decreasing
13. Bank angle continues to increase

*Continued*
• Arrive at maximum bank angle 30° at 90° reference point
• Pitch attitude is momentarily level
• Take note of minimum airspeed
• Take note of maximum altitude
• Pitch continues to decrease
• Bank decreases
• Speed increases

• Pass the 135° reference point with the lowest nose attitude for the maneuver

• At the 180° reference point, airplane is momentarily level
• Altitude is same as entry altitude
• Airspeed is same as entry airspeed
• Begin to raise the nose
• Gently roll bank in the opposite direction

• Pass the 45° reference point with maximum nose-up for maneuver
• Increase the bank angle through 15°
• Speed is decreasing
• Pitch attitude begins decreasing
• Bank angle continues to increase

• Arrive at maximum bank angle 30° at 90° reference point
• Pitch attitude is momentarily level
• Take note of minimum airspeed
• Take note of maximum altitude
• Pitch continues to decrease
• Bank decreases
• Speed increases

• Pass the 135° reference point with the lowest nose attitude for maneuver
• Reduce bank angle through 15°
• Speed continues to increase
• Pitch begins increasing
• Bank angle continues to decrease

• At the 180° reference point, airplane is wings-level
• Altitude is same as entry altitude
• Airspeed is same as entry airspeed
• Resume straight-and-level flight

Evaluation:
• Select an altitude that allows the task to be performed no lower than 1,500 feet AGL or the manufacturer's recommended altitude, whichever is higher
• Select a prominent 90° reference point in the distance
• Establish the recommended entry power and airspeed
• Plan to be and remain oriented while maneuvering the airplane with positive, accurate control, and demonstrate mastery of the airplane
• Achieve the following throughout the task—
  a. Constant change of pitch, bank, and turn rate
  b. Altitude and airspeed consistent at the 90°-points, ±100 feet and ±10 knots respectively
  c. Through proper power setting, attain starting altitude and airspeed at the completion of maneuver, ±100 feet and ±10 knots respectively
  d. Heading tolerance ±10° at each 180° point
• Continue task through at least two 180° circuits and resume straight-and-level flight
• Maintain coordination throughout maneuver
• Correct for torque effect in right and left turns
• Loops should be symmetrical
• Pitch and bank attitude should have a constant rate of change throughout the maneuver