Normal Takeoff and Climb

OBJECTIVE: To develop proficiency in conducting normal takeoff and climb profiles.
STANDARDS: Sport - Airspeed: Recommended speed +10/-5 knots on climb out
Recreational/Private - Airspeed: V_Y +10/-5 knots on climb out
CONDITIONS: Awareness of obstacles during all takeoffs.

DESCRIPTION:

1. • Ensure that the Before Takeoff Checklist has been completed.
   • Ensure that the items on the Line-up Checklist have been completed and/or reviewed.
   • Visually check for traffic on Downwind, Base, and Final in the active and other traffic patterns.
2. • Communicate, as appropriate – non-towered airport make traffic advisory call, towered airport read back takeoff clearance.
   • Taxi onto the runway, as appropriate.
   • Complete the items from the Line-up Checklist while taxiing. Use the phrase "lights, camera, action" to help remember any items deferred (lights = lights as appropriate, camera = transponder on/altitude, action = mixture rich).
   • Taxi the aircraft into position, centered on the runway with the nosewheel straight, as close to the approach end as possible.
3. • Smoothly and positively apply full power with heels on the floor so as not to hold brakes. Keep a hand on the throttle in the event an abort becomes necessary.
   • Check engine instruments (engine rpm and all other "engine instruments in the green") and airspeed indicator ("airspeed alive").
4. • At V_R, establish and maintain pitch attitude for takeoff. Allow airplane to lift-off when it is ready (approximately V_{LOF}).
5. • Establish the pitch attitude enabling climb out at V_Y or as recommended. Maintain a ground track along the runway and extended centerline with coordinated use of rudder and aileron.

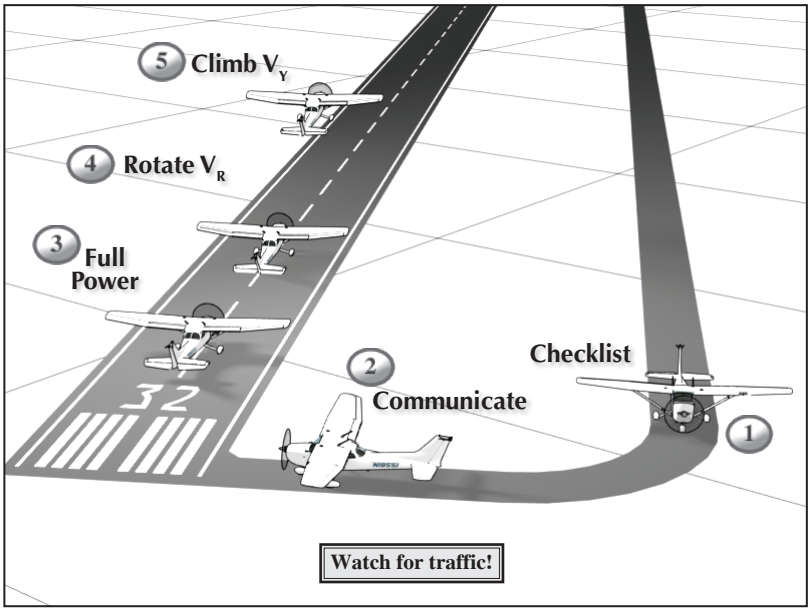
NOTE: In an airplane with retractable landing gear, ensure a positive rate of climb, tap the brakes, and retract the gear when insufficient runway remains to land the airplane.

   • Establish cruise climb above a minimum safe altitude (500-1000' AGL).

NOTE: You should compute takeoff and landing performance data prior to all flights. Special emphasis should be placed on determining that adequate runway exists.

NOTES:

Normal Takeoff and Climb



COMMON ERRORS:

- Failure to adequately clear the area prior to taxiing into position on the active runway.
- Abrupt use of the throttle.
- Failure to check engine instruments for signs of malfunction after applying takeoff power.
- Failure to anticipate the airplane's left turning tendency on initial acceleration.
- Overcorrecting for left turning tendency.
- Relying solely on the airspeed indicator rather than a developed feel for indications of speed and airplane controllability during acceleration and lift-off.
- Failure to attain proper lift-off attitude.
- Inadequate compensation for torque/P-factor during initial climb resulting in a sideslip.
- Overcontrol of elevator during initial climb-out.
- Limiting scan to areas directly ahead of the airplane (pitch attitude and direction), resulting in allowing a wing (usually the left) to drop immediately after lift-off.
- Failure to attain/maintain best rate-of-climb airspeed (V_Y).
- Failure to employ the principles of attitude flying during climb-out, resulting in "chasing" the airspeed indicator.

NOTES: