

Normal Takeoff and Climb

OBJECTIVE: Develop proficiency in conducting various takeoff and climb profiles.

STANDARDS: Recreational Normal: $V_Y (\pm 10 \text{ knots})$ on climb out.

Private Normal: $V_Y (+10/-5 \text{ knots})$ on climb out.

CONDITIONS: Awareness of obstacles during all takeoffs.

DESCRIPTION:

- 1 Before Takeoff and Line-up Checklists complete.
 - Check for traffic on Downwind, Base, and Final.
- 2 Communicate, as appropriate.
 - While taxiing onto runway complete Line-up Checklist.
“Lights, camera, action:”
 - Lights = lights as appropriate.
 - Camera = transponder on/altitude.
 - Action = mixture rich.
 - Taxi into position, nosewheel straight on center line.
- 3 Apply full power.
 - Keep hand on throttle.
 - Heels on floor.
 - Check engine instruments.
- 4 At V_R , establish and maintain pitch attitude for takeoff.
 - Allow airplane to lift off when ready (approx. V_{LOF}).
- 5 Establish pitch attitude, climb out at V_Y .

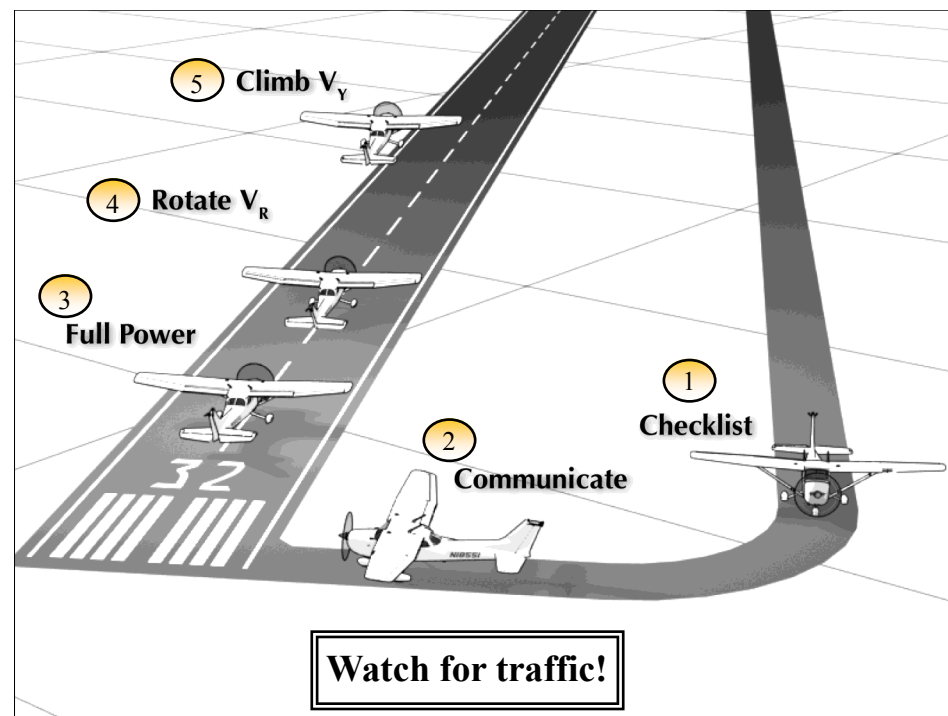
NOTE: Maintain ground track along the runway and extended centerline with coordinated use of rudder and aileron. Crab as necessary.

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

NOTE 1: In an airplane with retractable gear, when insufficient runway remains to land the airplane, tap the brakes and retract the landing gear as required.

NOTE 2: You are expected to compute takeoff and landing performance data prior to all flights. Special emphasis should be placed on determining that adequate runway exists.

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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.
- Over-control of elevators 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.