

VIII C. Straight Climbs and Climbing Turns

About: A Straight climb is flight in which heading is maintained and altitude is increased. A climbing turn is a basic flight maneuver used to change heading and increase altitude.

TSW: Develop knowledge of the elements related to straight and turning climbs.

How: Learn proper use of controls for maneuvering the airplane, attaining the proper attitude in relation to the horizon by using outside and inside references.

Procedure:

1. Straight and level to straight climb

- a. Full power, elevator back, nose to or slightly above horizon
- b. Elevator controls our speed. Throttle controls rate of climb.
 - i. Trim to alleviate required back pressure.
- c. As airplane slows the airplane will want to turn left, add right rudder pressure to overcome P-factor
- d. Lead level off, bring nose over, airspeed will pick up, elevator is now being used to control altitude.
- e. As airplane picks up speed, power back to cruise power and remove trim. It takes a few moments for the airplane to speed up, will have to fight altitude for a moment.
- f. R-rudder no longer needed in cruise
- g. Establish straight and level

2. Climbing turn

- a. Full power, elevator back, nose to or slightly above horizon
- b. Elevator controls our speed. Throttle controls rate of climb.
 - i. Trim to alleviate required back pressure.
- c. 25-30 degree bank with R aileron and R rudder pressure.
- d. 180 degree turn
- e. Roll out wings level, left aileron, left rudder if needed.
- f. Pitch forward (pressure on yoke), power to cruise, remove trim, airplane should settle.
- g. Establish straight and level

Discussion Points:

3. Trim technique.
 - a. The airplane should be trimmed so that it will fly at the desired pitch attitude without constant assistance, “hands-off flight”.
 - b. Trim by first applying control pressure to attain the desired attitude, then adjust the trim to relieve the control pressures, the airplane should maintain that attitude when flying hands-off.
4. Methods that can be used to overcome tenseness and over controlling.
 - a. Do not hold the yoke too firmly, since it prevents sensing the control pressures.
 - b. When moving the yoke, try to sense the control pressures and respond to them by making small movements instead of just simply moving the yoke without feel.
 - c. Make smooth control movements, not too fast and “jerky”.

Common errors:

5. Failure to cross-check and correctly interpret outside and instrument references.
6. Application of control movements rather than pressures.
7. Uncoordinated use of flight controls.
8. Faulty trim technique.

Evaluations/ Standards:

9. Alt: +/-100ft, A/S +/- 10kts, Bank angle +/-5°, Head: +/-10°
10. The student has the ability to maintain a constant airspeed climb while maintaining coordination and making any necessary adjustments. The student has the ability to notice changes and properly correct for them by using outside references and crosschecking them with the instruments.