

## XI.C. Chandelles

**About:** Maximum performance 180° climbing turns that begin from approximately straight and level flight and conclude with the airplane in a wings level nose high attitude just above stall speed.

**TSW:** Learn proficiency as it pertains to maximizing climb performance for the power and bank selected

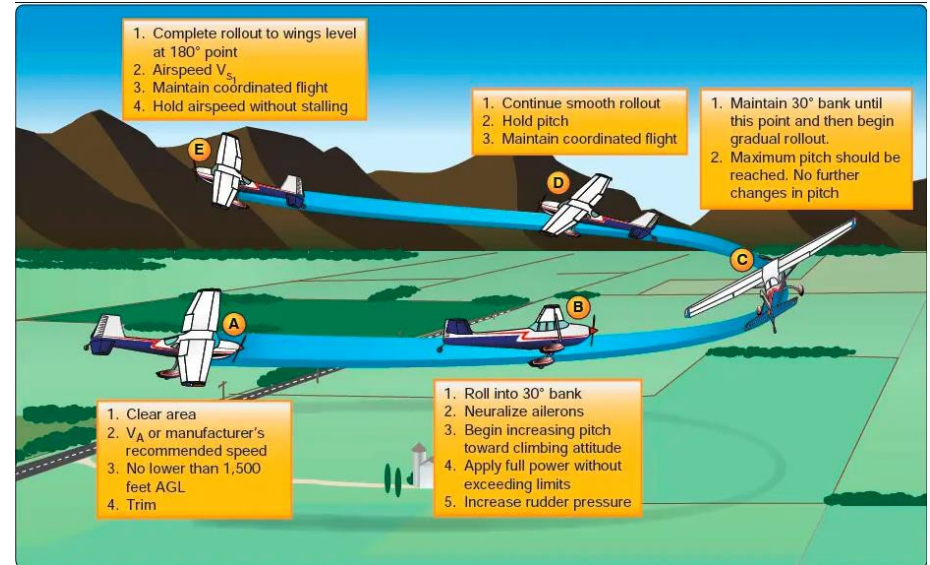
**How:** This is shown by a 180° degree turn in two phases: the first 90° having constant bank and changing pitch and the second having constant pitch and changing bank.

### Procedure:

1. No lower than 1500 AGL
2. Two 90 degree clearing turns
3. Bug heading, pick outside references
4. Airspeed  $V_a$ , trim for level flight
5. Roll into 30° bank advance full power
6. Maintain 30° bank while increasing pitch to maximum during first 90° of turn.
7. Smoothly roll out while maintaining pitch to arrive at 180° of turn just above stall speed.

### Discussion Points:

1. Maintain coordination
2. If pitch is not correct airspeed at completion can be above stall speed or airplane may stall before completion
3. Smoothly enter 30° bank using coordinated aileron and rudder pressure
4. Smoothly apply elevator back pressure to slowly attain max pitch over first 90° of turn.
5. As airplane slows, P-factor becomes more apparent more R-rudder is needed at higher pitch attitudes and lower airspeed for coordination.
6. Airplane will experience overbanking tendency while in first 90° turn.



### Common errors:

8. Improper pitch, bank, power, & coordination during entry or completion
9. Max performance: correct pitch, 30° bank, full power, coordination
  - a. Initial bank is to: Shallow -> Stall, Steep -> No max performance
  - b. Pitch is to: High -> Stall, Low -> No max performance
  - c. Not holding constant 30° bank
10. A stall during the maneuver
11. Not scanning for traffic/ clearing area

### Evaluations/ Standards (Commercial ACS):

12. Clear the area.
13. Select an altitude that will allow the maneuver to be performed no lower than 1,500 feet above ground level (AGL).
14. Establish the appropriate entry configuration, power, and airspeed.
15. Establish the angle of bank at approximately 30°.
16. Simultaneously apply power and pitch to maintain a smooth, coordinated climbing turn, in either direction, to the 90° point, with a constant bank and continually decreasing airspeed.
17. Begin a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
18. Complete rollout at the 180° point, **±10° just above a stall airspeed**, and maintaining that airspeed momentarily avoiding a stall.
19. Resume straight-and-level flight with minimum loss of altitude.