

# Boxing the Wake and Wake Transition

## FAA Practical Test Standards, Private Pilot Glider, FAA-3-8081-22

### IV. AREA OF OPERATION: LAUNCHES AND LANDINGS

#### AERO TOW

##### C. TASK: MAINTAINING TOW POSITIONS

REFERENCE: Soaring Flight Manual. (FAA-H-8083-13, Page 7-7)

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to high-tow (slightly above the wake) and low-tow (slightly below the wake) positions during various phases of aero tow.
2. Makes smooth and correct control applications to maintain vertical and lateral positions during high and low tow.
3. Transitions from high- to low-tow position through the wake while maintaining positive control.
4. Maintains proper tow position during turns.

##### E. TASK: BOXING THE WAKE

REFERENCE: Soaring Flight Manual. (FAA-H-8083-13, page 7-11)

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to boxing the wake (maneuvering around the wake).
2. Maneuvers the glider, while on tow, slightly outside the towplane's wake in a rectangular, box-like pattern.
3. Maintains proper control and coordination.

At LVVSA we train to complete both tasks in one maneuver. Coordinate before takeoff with your tow pilot that your transition down through the wake is your signal that you are beginning the "box the wake" maneuver and to maintain current heading and speed. This can be "non radio" coordination in the event the radio frequency is busy.

## Boxing the Wake and Wake Transition

Boxing the wake starts at the standard “high-tow” position. The Pawnee in these illustrations is positioned slightly above the horizon for the camera to see the reference points against a clear sky. Your instructor will guide you to the proper “on the horizon” references both at the beginning and end of the maneuver.

**Starting Position:** Start in the standard “high- tow” position. Note that the tailwheel is centered between the main tires.



**Transition to Low Tow:** Transition straight down through the wake until the wake turbulence is no longer felt. For the Pawnee, the reference shows the tail wheel still centered between the main tires but is now up just above the wing line. Note the position of the horizontal tail just above where the Pawnee wing struts attach to the fuselage.



**Bottom Left Corner:** Slide left. Left rudder is required to slide to the lower left corner while maintaining the same elevation reference. Some slight bank in the direction of the skid may be needed to assist. Note that the tail wheel has maintained the same reference just above the wing and is now over the right main wheel. Also the horizontal tail is in line with a white trim panel on the pilot’s left window.



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**Top Left Corner:** This is the top left corner of the box. Note that as the glider ascends the tail wheel descends and maintains the same side to side reference with the right main tire. Also note that the Pawnee is back on the horizon. Left rudder and some slight bank away may be required to maintain this reference. The task is to climb the left side of the box from the lower left to the upper left without drifting left or right.



**Top Right Corner:** A level slide across the top of the box. Rudder work and stopping the slide with the tail wheel now positioned over the Pawnee left main tire. Don't slide too far or stop too early, it's hard to push out to the corner. Don't climb or descend, this is a level maneuver. A lot of rudder and a little bank may be needed to maintain this position.



**Bottom Right Corner:** This can be the hardest transition. Top-right to bottom-right corner. The tail wheel moves up above the wing with the same "left / right" reference to the main wheel that you had at the previous "top right corner" position. A little bank and rudder coordination is required to maintain the left-right reference while in the descent. Note also that the Pawnee horizontal tail is again just above the wing strut and aligned with the white stripe on the pilot's side window.





## Boxing the Wake and Wake Transition

**Return to Bottom Center:** Control your pitch and elevation references while sliding back to bottom center. Rudder work is needed to effectively stop the slide to center without overshooting. Note the tail wheel is centered between the main wheels, just slightly above the wing reference line and the horizontal tail is positioned just slightly above the wing struts.



Finish the maneuver by transitioning smoothly back up through the wake. Continue the climb and stop with the Pawnee back on the horizon in the normal tow position. Be careful not to overshoot and get too high, but don't stop too low either.

