

# Foundations of Flight

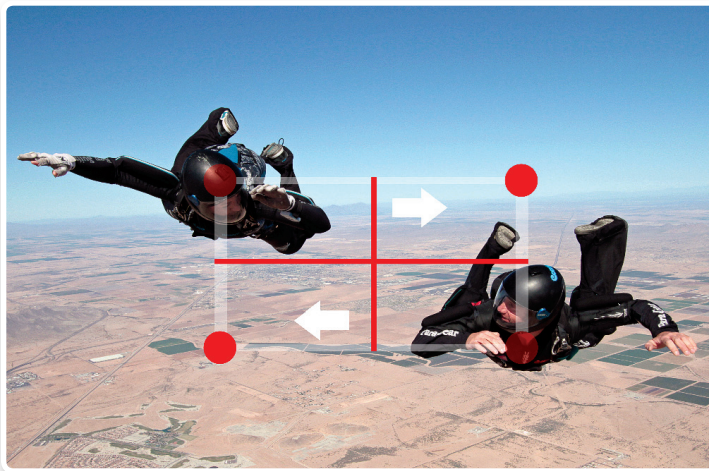
AXIS  
Flight School

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## Two-Way Vertical Transitions (aka "Over-Unders" or "Burbles Hopping")

Brought to you by Brianne Thompson of AXIS Flight School at Skydive Arizona in Eloy with Thomas Hughes of Arizona Airspeed. Photos by Niklas Daniel.

A burble (also known as a "wake") is a pocket of still air formed above or behind an object or body in freefall. The shape and size of a burble is relative to the size of the body producing it and the speed at which the body is traveling. A jumper flying through another's burble may feel as if he is being "sucked into" that jumper, and if the resulting collision is serious enough, it can pose a safety hazard such as an injury or a premature opening. This drill is not only fun, it will also help you learn to navigate burbles safely.



To view the jump, use the QR code above or visit the Foundations of Flight page at [parachutistonline.com](http://parachutistonline.com).

## Purpose

### Safety

- ▶ To be able to recognize and either avoid or navigate through a burble.
- ▶ To be able to avoid getting "taken out" if another jumper goes low on a formation.
- ▶ To avoid having a burble affect stability during a skydive.

### Performance

- ▶ To learn a fundamental skill for performing 4-way and 8-way formation skydiving blocks.
- ▶ To further develop your fall-rate skills and apply them to a new task.

## Execution

Essentially, both jumpers will be flying to the corners of a hypothetical box around one another. The jumpers should think of the corners of the box as checkpoints at which they want to stop.

The jumpers should start this drill by flying parallel to one another on the same level about 6 feet apart. After establishing good eye contact, both jumpers should nod their heads in agreement to key each move.

The first part of this maneuver requires Jumper A to speed up his fall

rate (fly in a straight line "downward") and Jumper B to slow down her fall rate (fly in a straight line "upward"). Once both jumpers are in their respective quadrants (at about a 4-foot level difference), both perform a horizontal side-slide. Both jumpers should slide only far enough to fly to the other corner of the box.

At this point, Jumper A slows down (goes "up") and Jumper B speeds up (goes "down"). Both jumpers then perform a horizontal side-slide in the opposite direction to return to their original quadrants of the box.

## Helpful Hints

- ▶ Review "Foundations of Flight—The Side Slide" and "—Level Changes" (May and June 2011 issues of *Parachutist*)
- ▶ When a jumper is on the top level during the vertical transition, his goal is to move horizontally in a straight line, not allowing the other jumper's burble to disrupt his line of travel. The top jumper should initiate the side-slide and then anticipate the burble by "getting big" so that he can actually reach around the burble to get lift.
- ▶ The jumpers should maintain eye contact throughout the maneuver to coordinate their moves. Success requires the jumpers to move at the same time.
- ▶ Don't move too much. In other words, think of your imaginary box as being small. ♦