

Drop Zone Flying

for the GA Pilot

by Jennifer Jager

Whether you are the pilot who has already operated at a skydiving drop zone airport or the one who will, it is good to know there is a method to the seeming madness of "parachutes everywhere" and that "jumpers away!" doesn't necessarily mean "RUN AWAY!" Understanding skydiving operations and the jump pilot's flying environment may help alleviate any apprehension or confusion experienced when flying at or around airports with a drop zone (DZ). As a jump pilot, I have witnessed pilots in the pattern hear the "jumpers away" call, decide

they have to get out of there and often head into a worse place to be. Hopefully, a better understanding of what to expect from jumpers and their pilots will promote safety and foster a good working relationship between airport users.

Flying skydivers is an exciting specialty in commercial aviation and a great way to build time. Since it is commercial, jump aircraft are required to have 100-hour inspections. However, we operate under Title 14 Code of Federal Regulations (14 CFR) parts 91 and 105, not 119 or 135, since the jumpers are not considered "passen-

gers." The most common modifications to the aircraft involve a jump door and interior reconfiguration. For example, a Cessna 182 would have a right-side door hinged at the top, the seats (except pilot seat) and right-side control yoke removed, and seat belts installed for four skydivers. Any modifications require the appropriate maintenance, Supplemental Type Certificates (STC), Forms 337, etc. The owner/operator also must have FAA-approved Operating Limitations, which state restrictions such as on pitch and bank angles and parachutes required.

Like towing gliders, hauling sky-



divers has its unique characteristics. And, like the glider pilots preferring their tow pilots to have some soaring experience, skydivers prefer a jump pilot who has an understanding of their sport. As odd as it may seem, many skydivers do *not* enjoy the plane ride to altitude, so a professional attitude and smoothness with commercial flying skills is greatly appreciated.

The Cessna 182 has historically been the most common skydiving vehicle, but that is changing. The 182 will be the aircraft used at smaller drop zones (DZ), and it is most likely where a new jump pilot would get experience before moving into the increasingly popular turboprops. As mentioned above, you have the only seat as four jumpers climb in and bend themselves to sit on the floor around you, sometimes bumping your mixture, throttle, flaps, or even twisting your fuel shut off.

Ninety per cent of your time is spent in two attitudes: up and down, which for reciprocating engines translates to hot and cooling, so you get a great education in engine care such as preventing shock cooling, proper leaning, and power settings. The minimal time (less than two minutes) that

you're straight and level is called jump run. On any given day, there is a small area over the ground (the "spot") that is ideal for a jumper's exit to allow them to land where desired. It takes experience to be efficient and to get to the right spot, at the right altitude, at the right time. It can vary from directly overhead to several miles upwind of the drop zone based on the jumps planned and on the winds at all altitudes below. Jumper exit may be anywhere from 2,500 to 15,000 feet AGL, and they can be in groups of one to more than 20.

Intentionally opening the door in flight is a unique characteristic. And I don't mean cracking it—I mean opening the side of the aircraft for several people to leave, often all at once. Jump plane doors vary, but no matter, there is usually a considerable change in the cockpit environment. Opening a C-182 door in-flight for the first time is attention getting with the wind, noise, and view change. After everyone leaves, it is still aerodynamically "attached" to the bottom of the wing. It takes an aggressive, initially uncomfortable slip to break the door free. Then you lean across the cockpit and latch it while maintaining the slip. You

appreciate TSO'd (Technical Standard Orders) seat belts the first time a rear seat safety belt sneaks out and bangs on the fuselage as you have to literally lie down across the cockpit to pull it back in before closing the door. The larger jump aircraft often have Lexan roll-up doors (or tailgates). If the last jumper doesn't close it on the way out and it can get cold (like -20°C) at altitude!

Many takeoffs occur at maximum gross weight and many landings take place at minimum (often needing full nose up trim and full elevator to get a good flare in a 182). Meanwhile your cargo moves around constantly during the climb then they often put as many as possible outside one side of the aircraft until they all leave at once. Full control movements are not uncommon. And "topping it off" is essentially unheard of as fuel is carefully calculated to maximize jumper load while adhering to regulations. Skydivers often get twitchy when winds gust greater than 20 mph, so you may get a break from huge crosswinds. However, clouds don't necessarily stop them and can be challenging for the pilot as all the jumpers must also abide by 14 CFR § 91.155 for clearance requirements and VFR weather minimums while they are in freefall or under canopy.

Turboprops are often used at the larger DZs. Because of turbine power and characteristics, the climb and descent rates are huge (pegged needle or greater than 3,000 fpm) and can be unnerving at first. The plane is often landing at the same time as the jumpers who have just fallen about 10,000 feet at 120 mph before opening their parachutes. Turnarounds between jumper loads can be 40 minutes for Cessnas and under 20 minutes for turboprops during which you climb and descend through double-digit thousands of feet and maintain communication with air traffic control (ATC) and UNICOM and sometimes a DZ manifestor. It can be busy. ATC tries to help with any threats of aircraft below.



William Boettcher photo courtesy U.S. Parachute Association





and the pilot and skydivers scan the airspace before exit.

There are unique emergency situations, too. One deadly scenario is a skydiver hitting or the gear opening early and wrapping around parts of the exterior airplane. An open parachute can rip the tail off. Some accidents have occurred due to a stall when the pilot fails to correct for the sudden increase in drag when they climb out or for the center of gravity (CG) shift when they all move to the rear.

There are about 200 United States Parachute Association (USPA) member drop zones in the U.S. These operations have agreed to abide by USPA's Basic Safety Requirements. Most skydiving operations are grateful for the use of public airports. We certainly want to maintain good relations with the other pilots and never want to scare people away. The following tips are provided to help share the airspace.

When flight planning or flying by pilotage, take notice of the little magenta parachute symbols. They usu-

ally mean it, especially on Saturdays and Sundays. Many jumpers abide by the rule "Jump only when the temperature is above your age," but there are a lot of 20-something skydivers, so ridiculously cold weather is not enough to stop ops.

If your flight plan includes landing at or transitioning within five miles of one of these drop zones, monitor ATC for that area listening for the "one minute to jumpers away" call or for their traffic advisories (possibly you) or ask UNICOM if the jump plane is up. A typical load will exit at 14,000 feet in numerous groups, fall about one minute, and be under canopy for about two minutes. However, some prefer opening very high for a very long canopy descent.

Even if jumpers are exiting, in free fall or under canopy, it is still safe to approach and land or to take off. Use pattern altitude, a wider pattern, and enter on the 45. **Please do not cross midfield.** By the time they get to your pattern altitude, all jumpers should be under canopy and within range for their non-powered glide to

the landing area. This will put them inside your pattern (unless the spot was off, which does happen). Don't forget to look and listen for the plane they just got out of, since it can often land at the same time with its high rate of descent. Listen carefully for the jump plane's radio calls, but don't rely on the jump pilot hearing all your calls on UNICOM. When he's up at 13,500 feet, he's hearing all traffic and squeals on that frequency in over a hundred mile radius and often must turn the volume down on UNICOM to focus on ATC.

The absolute worst place to find oneself is from pattern altitude up to 14,000 feet over or upwind (winds aloft) of the airport and DZ. People are falling through that air at over 120 mph and canopies can be opening at *any* altitude. In one accident years ago, a transiting plane was the loser in a battle with a freefalling skydiver.

Hauling jumpers can be an enjoyable use of a commercial license. Your cargo loads and unloads itself. It is time-building in high-performance aircraft at the least, and there is potential for night flight time, too. (Yes, they sometimes jump when it is pitch black). You maintain your skills to a commercial level, and you learn a whole new side of the federal regulations and about Form 337s. Please visit a DZ. Just don't park in the nice grass field out front; it's probably where the skydivers land at 25-50 mph. Or better yet, come experience a jump—you know there is no such thing as a perfectly good airplane.



Jennifer Jager (Comm/CFI-ASEL, AMEL, Instr) is a jump pilot at Skydive Orange <www.skydiveorange.com> and Skydive Virginia! <www.skydivevirginia.com>.

