

Water ballast checkout and tips for Discus CS N9094D.

- (1) If you have not previously flown with water ballast in other gliders, you should get some experience first flying 4D without ballast before trying water ballast.
- (2) You must calculate and explain to the satisfaction of a Flight Committee member or CFG: (a) How much water could you put in the wing tanks and stay within maximum gross weight? (b) How much water would you put in the tail to balance that amount of water in the wings? (c) Also make these calculations for a ½ load of water ballast (about 10 gallons each wing). How much water would you put in the tail then? Is your CG at no more than 66% of the aft limit? (d) How much water could you have in the tail with zero water in the wings, and stay within the rear CG limit?
- (3) The dump valves on Schempp-Hirth gliders usually leak. The trick is to open the dump valves, make sure the mating surfaces are clean, then put some petroleum jelly (Vaseline) or lithium grease around the dump valve openings. Then close the dump valves using the cockpit control. Once they are closed use the red handled screw tool to pull them down and make sure they are seated.
- (4) Dump control should be closed before rigging / derigging. If you don't do that the wings won't go on without a lot of forcing which could damage the mechanism. If the wings get stuck ½" out check the dump valve control and wiggle the stick and spoiler controls to seat the automatic hook ups. Then the wing should go the rest of the way.
- (5) You need to use a water meter when filling the wing tanks - the wings hold over max gross for anyone who meets the min cockpit weight. BASA plans to buy one and keep it in the 4D trailer.
- (6) Filling the tail tank is accomplished with a small water container placed on the horizontal stabilizer, feeding into the open tube inside the top of the vertical stabilizer. BASA plans to get a container and feed tube set up for this. You control the amount of water in the tail tank by placing tape over the open holes below the level you want to fill it to.
- (7) The pilot should be aware of the change in handling and stall speed. At max gross (1157lb) the stall speed increases ~10 knots. Thermaling speed becomes 55-60kts and speed control needs more attention. Cruise speeds are significantly higher - if not dump the water as it isn't helping. Pilots should initially fly with no more than ½ the allowed water ballast, since the change in handling at that weight is easier to adjust to. You may find that amount of ballast is the sweet spot for climb/run/handling performance anyway.
- (8) When flying in the mountains freezing point is usually at cloud base. The manual says you should dump when temperature reaches 2C. I don't know anyone who does that as it's really not practical. The water doesn't freeze in the few minutes you are there. However, if in a wave climb, or unusually cold thermal conditions exist, you should dump at 2C to avoid freezing as you go higher. The biggest safety issue with temperature is that the tail tank is more likely to freeze than the wing tanks, and you could return for landing with the wing tanks fully dumped but frozen water still in the tail tank. You should calculate how much water you can safely have in the tail with zero water in the wings - you could set this as a limit on your tail ballast amount if you anticipate low temperatures.
- (9) If a wing drops on takeoff and doesn't come up, pull the tow release immediately (keep hand close to, but not on the yellow handle during takeoff roll). In low-wind or tailwind conditions, you can consider starting the takeoff roll with spoilers open and then closing them once you have aileron authority. But you must be sure to get the spoilers fully closed and locked, so they don't pop open later on tow. Some tow pilots are not comfortable with having you start the takeoff roll with spoilers open, so consult with the tow pilot before trying.
- (10) Pre-landing checklist must include dumping water.