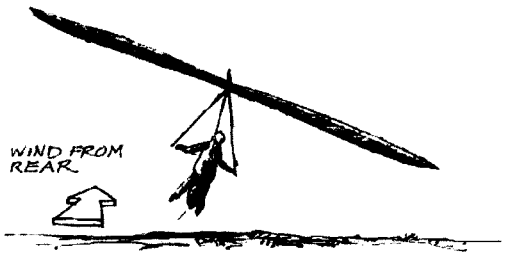
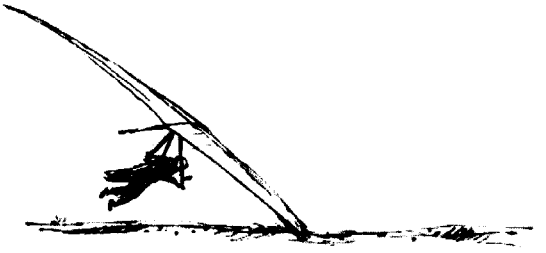
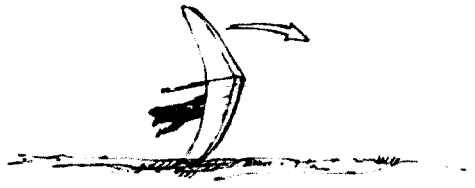


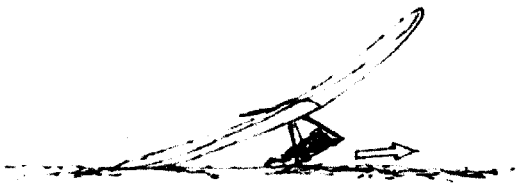
① PILOT SURPRISED BY A TAILWIND STARTS TURN.



② LOWER WING CONTACTING GROUND HELPS BRING GLIDER AROUND.



③ BANK ANGLE IS REDUCED BY SIDEWAYS SLIDE ALONG GROUND – THE OPPOSITE REACTION IN AN UPWIND GROUND LOOP.



④ PILOT AND BASETUBE SLIDES SIDEWAYS IF GLIDER DOESN'T TURN ALL THE WAY AROUND INTO THE WIND.

Emergency Downwind Landing

Crash or try to run it out? Dennis Pagen offers another technique for downwind landings

Recently a friend had a bad experience. He was landing in a narrow field in light wind on a thermic day. Just as he committed to a best-guess final, the wind switched and blew 15 to 25 km/h from behind. He tried to rely on the small wheels his base tube sports, but they dug in the soft ground, the glider stopped abruptly and he plowed head-first into it. It was an ugly and potentially lethal sight. What should he have done? Let's find out.

Downwind landings on a hang glider are equipment- and often pilot-damaging because even in still wind, landing speeds typically require a few running steps. With a tailwind the required running-speed often exceeds our capabilities, especially if we are flying faster, high-performance gliders and wearing confining high-performance harnesses. Clearly we need to land into the wind if at all possible. But just as the opening story illustrates, sometimes in thermal conditions – especially in light general wind – we get surprised from behind.

LIGHT TAILWINDS

A rule to live by is to try to run out a landing in a tail wind if that wind is 8 km/h or less. If you are a good runner and have good flare timing, chances are you will remain on your feet and avoid a serious nose-in. However, if you can't land consistently with a flare in zero wind, you will probably whack in a slight tailwind. However, this whack will have less severe consequences to your body if you do not remain in the prone position to rely on small wheels as my friend did.

The best way to do a light tailwind landing is to concentrate on the feedback from the glider. Ignore the ground rushing by – focus straight ahead – and feel the bar pressure, stall indications and the glider's response to very slight pitch changes. Then, when the glider has lost all the energy it can without stalling, give a good hearty flare, drop your feet and hit the ground running. Take as long strides as you can and try to slow down gradually while supporting the glider. Again, your success at landing gently with a good flare in general conditions sets you up for success when back-sided by a light tailwind.

Remember that a strong flare out and up is the secret to getting the nose up high and stopping all forward airspeed. In fact, the more VG you have pulled, the better, for the glider will be easier to flare, it will stall all at once and will stop more abruptly. I recently saw such a full-VG tailwind landing performed on a raft by Austrian pilot Wolfgang Seiss during the World Air Games and the video revealed he only took three short steps. Of course, when surprised by a tailwind on final we won't normally have the time or presence of mind to pull on more VG, but it is food for thought.

STRONGER TAILWINDS

If the wind is stronger than around 8 km/h, the situation is more serious and calls for a totally different approach. We should note that the technique we recommend here is an emergency procedure because landing in a significant tailwind on our limited limbs is an emergency. Like all emergency procedures it is designed to minimise the damage first to the human, and second to the equipment.

The procedure is simple: as soon as you detect a significant tailwind when you are committed to your final approach, initiate a 180-degree turn. That sounds logical, but what if we are only metres above the ground? The emergency procedure is the same. If you are high enough to complete a 180, fine, once you are pointed into the wind, level out and flare. If you are not high enough to complete a 180, do the same thing. Start your turn. At some point your wing on the side you are turning toward will contact the ground. If you get only 90-degrees around, the lowered wing hitting the ground will slide quite readily and you'll come down in a side slide. Generally when the base tube hits it too will slide because it is tilted upwards in the direction of the slide. Chances are you won't even break an upright if the ground is relatively smooth. Note that with the wind blowing on top of the wing, it tends to flatten out the bank, as opposed to increasing the bank as it does if you perform a ground loop when facing the wind. The accompanying figure shows the emergency tailwind landing procedure.

If you only get a small distance around the desired 180, your movement over the ground will usually spin the glider around so you again slide sideways as described above. At worst, you will hit an upright with your side (and perhaps break it) which is infinitely better than ploughing into the glider or ground head first, which is the worst case scenario. If you get considerably around the 180 any contact with the ground will help you face the wind and you'll probably come out smelling like a rose. Remember, when you complete a 180 with the aid of the ground rotating you in a tailwind, you may be moving backwards, but by the time the turn is complete the ground slide will have slowed you enough to avoid too much of an abrupt stop.

There are a few situations where the procedure will not work as well as described. On rough ground or with brush you probably won't slide, but the chance of injury will still be greatly reduced. Also, wheels on the base tube may actually worsen the situation if they catch the ground sideways and stop the slide. Finally, as with all hard landing situations, be sure to pull in your arms at the last moment so whacking the glider or ground doesn't break a bone.

In case you have doubts about performing a turn close to the ground with a probability of hitting a tip on the ground, note that we first published this procedure in the early 90s and since then quite a few pilots have said they have tried it and it has saved them a severe accident. It works to minimise the damage – chances are there will be none. Put it in your bag of tricks for those dire moments when fate has not smiled on your day. Having a backup plan is better than no plan, especially when it is an emergency procedure used for dire emergencies.