

KITING

During training you'll learn three primary ways of handling the wing: pre-kiting the wing without the harness on, inflating the wing with the harness on in reverse position, and inflating the wing with the harness on in forward position. You'll also learn to pack, unpack, layout, and handle the wing on the ground.

Handling the Wing on the Ground:

Learning to lay out the wing on the ground, to ball it up into a rosette and carry it around, to bundle it for storage, and to keep the lines from getting tangled is a fundamental prerequisite.

When pulling the wing out of the bag, it's essential to keep the end loops of the risers (the connection points that hook into the carabiners) away from any of the paraglider lines. If the loops ever go through any lines, or through other parts of a riser, you will create a twist in the lines. Always pull the ends straight away from the wing, and point them like a dart away from the glider. While holding onto the end loops, toss approximately 10 feet of lines towards the wing to give some SLACK so that the risers don't get dragged on the ground while opening the wing.

To open the wing, point the leading edge openings up towards the sky, drag the wingtips out away from the center and forward closer to your standing position, then straighten out the leading-edge openings by walking each cell out hand by hand into a perfect tight arc, facing directly into the wind. The tips should be approximately 8 feet from where the pilot stands, and the center of the wing should be farthest from that position.

To ball the wing into a rosette, drape the ends of the risers behind your left leg, grab all the lines into a bundle in your left hand at the maillons, and wrap all the lines into coils of 6-10 inches with your right hand, until you reach fabric. Walk toward the wing as you coil the lines, and avoid pulling the wing toward you, as that will abrade the fabric. Lift the wing straight up as you coil the lines near the fabric, and pull it into a ball that you can lug over your shoulder.

To put the wing away, simply drop the rosette onto your open stuff sack on the ground, toss the entire coil of lines into the center of the wing, and fold wing fabric around all the exposed lines. Tuck all of the loose lines into the center of the wing, and place the riser ends on top of the fabric, as far away as possible from any lines. It may look like a mess of lines, but don't worry, as long as the riser loop ends don't ever go through a line, they won't get tangled.

Pre-Kiting:

The purpose of pre-kiting is to lay out the wing into the wind, to straighten the lines, and to inspect the wing before launch. Open the wing into an arch and extend the lines into the wind, separate one riser in each hand. Hold the riser ends in right hand, hold A lines in your left hand and position them on top, clear all the way to the cell openings. Drop ends, position right hand fingers in front of D risers, put thumbs through brake toggles, and grip brakes + D's with the right hand (clasp brakes and risers together, so the brakes don't come unclipped).

To inflate and raise the wing, pull A's, release brakes, and walk backward. To deflate and drop the wing, release A's, pull brakes, and walk forward. Don't pull brakes and A's at the same time (this just cups the wing in the power band). Pop the wing open momentarily (for just a second or two) to inflate it ('build a wall'), and then drop it back down. Adjust your position and TURN the wing around the radius with you at the center, so that the wind line blows straight THROUGH YOUR BACK and into the CENTER of the wing. You will need to rotate towards the DOWNWARD SIDE OF THE WING (this is counterintuitive, and one of the toughest concepts to internalize). Drop some grass or dirt straight down to see the current momentary wind direction. Adjust the position of the wing so that the tips pop open perpendicular to the wind. Rotate to BILLOW each side of the wing evenly. Fully inflate the wing with air. When the wing can raise up perfectly level, without leaning to one side or the other at all, then it is straight and ready to kite up. For the wing to be ready to launch, it shouldn't need any correction to come up evenly - just pull the arched wing straight up squarely into the wind with A's.

You can practice the 'steering wheel' pre-kiting technique to help lay the wing out straight, but this doesn't help you learn to launch or fly. Avoid doing much pre-kiting practice without a harness. The goal of kiting practice is to get the wing above your head, while hooked into the wing, in a harness (as you will while flying), to stabilize it, and keep it centered over your head in forward position, as if ready to launch. The main challenges are learning to stop the surge as it's coming up to the 12 o'clock position over your head, and learning to stop left-right roll oscillations while you move forward with the wing over your head (keeping centered under the wing).

The most important concept to keep in mind whenever you're kiting the wing is to walk straight INTO THE WIND, and STEER the wing so that it stays perfectly straight into the wind. If it goes off center from the wind line, STEER it back. DO NOT RUN AROUND THE WING. The instant the wing moves sideways to you in the wind, you lose control, because there is no air flow over the wing, and the aerodynamic properties of the control surfaces stop working. The wing needs to be moving forward into the wind, in order for controls to work. No matter what the wing does, always continue to move the same direction into the wind, and steer the wing so that its center point and you make a straight line into the wind.

Reverse Inflation:

1. Lay the wing out into the wind, and pre-kite it before hooking into your harness, CLEAR THE 'A' LINES (and others). SLACK all the lines with the leading edge cells facing upward, ensuring no lines are lifted off the ground, so that the wing catches no wind at all. Walk around one side of the wing, throw the lines in toward the center, and then re-center yourself in front of the wing.

2. To hook in, turn the risers 180 degrees - the lines/risers which are on top will end up being the side you'll turn towards, when you turn to run forward. Do not turn or separate the risers during this process. CLIP IN: check that the carabiners are inverted and straight (facing forward as they will fly), the gate is locked, the 'road' is not twisted (run your hand down the full length of the riser fabric and its entire assembly, ensuring the brake side of the risers are facing forward when hanging down), then pull your arms outward so that lines run clear to the pulley.

Be ready - IF YOU GET PULLED BY WIND, RUN TOWARD THE WING (slack the lines *completely*), pull brakes, and run around the SIDE of the lines so feet don't get caught. Grab a wingtip and reel in the cells if wind is too strong.

3. Grab BOTH center A lines over the top of risers with the hand least likely needed for braking. Practice switching lines between hands - you can only use brake in the hand which is not holding A's.

4. Pre-kite the wing into the wind again in the harness. Determine wind direction by dropping grass or dusty dirt straight down. Pull A's and walk backward into the wind until the wing INFLATES COMPLETELY and straightens into the wind (just a few feet above the ground). Fill and straighten the wing a few times (pop and drop) as needed, using only 'A's, and ROTATING around the radius of the wing, to ensure it comes up straight WITHOUT ANY BRAKE INPUT REQUIRED, and your body directly in front of the wing center. You're now straight into the wind.

5. INFLATE the wing straight up with the A's, while walking directly backward into the wind. Push your butt into the seat. During the initial stages of practice, IF THE WING COMES UP UNEVENLY AT ALL, DROP IT BACK DOWN AND PRE-KITE AGAIN. If the wing is straight, with NO TILT WHATSOEVER, continue pulling A's to raise the wing overhead. If winds are strong, allow the wing to pull you slightly forward for just a moment (running forward slows the wing's ascent). Your arms should raise with the wing, and the A's should pull upward. At 11-12 o'clock, release the A's and BRAKE THE SURGE. The stronger the wind, the harder you will have to pull brakes, to keep the wing from overshooting you. Continue to WALK BACKWARD INTO THE WIND, and keep consistent tension into the wind as it's speed varies. Stabilize the wing roll: shuffle left/right to the low side of the wing (follow the center dot), PULL SAME SIDE BRAKE (while in reverse). Always continue moving backward INTO THE WIND, no matter which direction the wing

moves. STEER the wing back to the wind centerline. do not run around the wing.

6. Only when the wing is *stable* over your head for at least a few seconds, TURN forward, never stop moving directly into the wind. Turn your forward shoulder to help keep moving forward during the turn. Keep the wing moving forward into the wind as you turn.

7. Shuffle to the lower side of the wing (follow the center dot) and pull *opposite brake to keep the roll centered (opposite side brake while facing forward). Never stop moving forward into the wind while shuffling - run diagonally. Pull both brakes to stop pitch surges. Always move forward into the wind to avoid stalls and to maintain control. Without air flow (speed), control inputs aren't effective!

8. If the wing falls back past 10 o'clock, TURN AROUND QUICKLY to face the wing, and let it fall. You can pull some A's to keep the wing from slamming down, or to pull the wing back up into the wind to continue kiting.

No matter what the wing does, ALWAYS MOVE *INTO THE WIND* and STEER the wing into the wind. If the wing goes off the wind center line, do NOT run around the wing. Running around the wing sideways to the wind is the biggest natural inclination that needs to be beaten with practice.

Learn to only pull the wing overhead when the wall is FULLY INFLATED and PERFECTLY STRAIGHT. It should be floating with ZERO TILT a foot or two above the ground - standing up perfectly into the wind. If it's fully inflated straight and level into the wind, just pull on the A's to bring it straight over head. Pull brakes to stop the surge, then hands up and keep moving into the wind. Turn without slowing air speed over the wing, then hands up, lean back, add some power, and you're off the ground.

High Wind:

If the wind is strong, be prepared to RUN TOWARD the wing, pull brakes, and run around the SIDE of the lines so feet don't get snagged. Don't hold the wing in the power band - either pull it over your head to 12 o'clock to fly it, or pull it back to the ground and SLACK the lines.

It can help to layout the wing PARALLEL to the wind (or 10ish degrees into it). CUP JUST THE FAR CORNER CELLS into the wind (pull some brake attached to that corner before you pull A's). Pull the wing up cobra style, so that the entire wing is never in the power band.

In very strong wind, to avoid being dragged, WRAP brakes for more authority (wear gloves), and pull the back edge all the way forward with brakes. Pulling B lines can help reduce the surface area of the power band. RUN toward the wing as far as needed, do not fight it

even for a moment. If winds are too strong, GRAB A WING TIP, so that it blows parallel to the wind like a streamer, and reel in the cells so that the brake lines don't pull the opposite corner. Unclip carabineers, gather up the leading edge cells so that no openings can catch any wind, and bag the wing.

Forward Launch:

If there's no wind, lay out the leading edge of the wing in a PERFECT NATURAL ARCH (spread it out tightly and evenly, cell by cell, so that the wing's center is farthest from you, and tips are closest) and stand directly in front of it's center. If there is just a whisper of wind from variable directions (less than can be used to pre-kite), just lay out directly into the wind as well as possible.

To hook in forward, check that A's are on top, all the way to the cells: extend the riser end (connection loop) forward like a DART with 2 hands: 1 checking A's clear back to the cell openings, the other pulling the riser end forward, then bend the riser connection straight down 90 degrees and pull the carabiner straight up to join it. Do not turn the riser or carabineer during this process. Let the riser drop down and walk backward a few feet closer to the wing.

Give a thumbs-up sign, swing your arm behind you, then bring your thumb between your leg and the riser to scoop the A lines with your thumb. The split A riser fabric should touch the back of your thumb, the maillons should face upward on the thumb side of your hand, and the other risers should drop over your arm. Check that the A's have ended up on top all the way back to the leading edge cells, and that brakes are clear to the pulley. If the A's are not completely clear on top, redo your connection. Hold your hands up in goal post position, then out in cross position. DO NOT PULL YOUR HANDS FORWARD to put undue pressure on the A's (this collapses the leading edge).

To raise the wing, torpedo and use the weight of your body falling forward. Keep your ARMS BACK. Pull the wing up, at 11 o'clock, release the A's and brake the surge very lightly (if there is any at all), then continue with step 7 of the reverse launch process. The faster you move, the more your control inputs will work as expected. If you stop running even for a second, the wing will not respond effectively, and will fall backward. AIR SPEED over the wing is required to make the wing fly, and for the controls to function properly. Run, run, run.

To drop the wing, TURN AROUND and continue to RUN BACKWARD into the wind (the same direction you were running forward) pull brakes, release tension on the A's, and slack the lines on the ground.

KITING SUMMARY:

Pre-kite: horseshoe wing, tips close (8-10 feet), center farthest

from you, cells up, riser ends clear and pointing away from lines. If no wind, walk around wing to open cells into perfect arch. Separate risers in both hands, A's on top in left hand, clear to cells, drop ends, right fingers in front of risers, thumbs in brakes. Pull A's and walk back into wind to lift, pull brakes and stop walking to drop wing. Pop and drop: lift and build wall, fully inflate and billow wing so it stands straight up, steering wheel and rotate wing into wind till perfectly level, no tilt. Check lines (rows, no knots, no bunched fabric). Weather vane and hover, then pull A's and run backward to raise wing fully. Stop surge with brakes. Release A's as wing touches ground, for perfect arch layout.

Forward: pre-kite, then dart, 1 hand checks lines clear to cells, other hand points end straight down, connect carabineer straight up (turn your belly in towards center). Hook in carabineers straight (fabric in flying position), gate locked, road straight, trimmers even, riser bundle arranged perfectly, brakes clear to pulley. Thumbs up, behind, between leg and riser, scoop A, with next fabric riser on the back of thumb. Rest of riser over arm. Check A's clear to cells, brakes still clear. Goal post, cross, arms back, run, little bit of brakes at 11 o'clock (A's release), hands up, stay under center dot, lean back, correct with brakes opposite direction of your shuffle run. Always run and steer forward into wind. Power, and you're off the ground.

Reverse: pre-kite wing, SLACK by walking outside lines to not snag feet, toss lines toward wing, then walk back to center. A's on top, turn risers 180 degrees (lines that are on top will be the shoulder you turn back towards). Hook in carabineers straight (fabric in flying position), gate locked, road straight, trimmers even, riser bundle arranged perfectly, brakes clear to pulley. Grab A's from over top in center of risers with ONE hand, switch hands to pull brakes. Pre-kite wing into perfectly level wall, straight into wind, run backward, raise and STEER wing into wind. Brakes at 11 o'clock (release A's), then hands up, stabilize wing for 5 seconds (in reverse, pull same brake as the side you shuffle), do not run around wind center line. Turn without slowing wing speed or altering course, hands up, stay under center dot into wind, lean back, correct brakes opposite direction of your shuffle run. Always run and steer forward into wind. Power, and you're off the ground.

SIMULATOR

The goals are to learn smooth and even throttle control, to become comfortable with the force of the engine pushing on your back and swinging your body forward and aft, to run through every segment of the first flights (inflation, launch, climb out, turns, getting seated, altitude adjustment, landing) along with the specific vocal

and visual commands that are used for each input and response. Becoming comfortable with headset communication while the engine is running loudly is also important.

"Arms to goalpost, then cross position. Ready? 3-2-1 RUN towards me (ARMS BACK), arms rise up, 'BRAKES' (pull both brakes to check the surge and release A's), LEAN BACK ('posture', stand up straight), HANDS UP to pulleys (goal post), RUN RUN, stabilize and taxi straight (SHUFFLE left/right and correct with opposite LEFT/RIGHT brakes to SHOULDER). IF the wing oscillates or surges too much, 'ABORT/STOP/KILL'. Otherwise (inspect the wing and lines), run run, GENTLY add a little MORE POWER, sip the power ever so gradually, lean back, add a little MORE throttle, MORE... gradually MORE... MORE throttle, run faster, IF the wing oscillates or surges, ABORT/STOP/KILL, Otherwise - it's good, go go go, hands up, gently more throttle, more more, HANDS UP, FULL POWER, bounce and run/kick, DO NOT SIT, bounce and kick/skip forward repeatedly, FULL power, (you can let the seat scoop you above 50', but don't actively try to sit, wiggling back a bit is ok, but keep HANDS UP), if there's torque, just a little less power, but DON'T DUMP THROTTLE quickly, all throttle and brake movements slowly, gradually, progressively - full power all the way up to 100', hands up. Reduce throttle gently to level flight, (less/more...). Get ready to turn, look down/back/up right, pull right gently 1234 to SHOULDER and hold (gently release left), pull '1 inch harder' as instructed, hold (dive a bit), OK slowly release 1234, HANDS UP, more/less throttle to find level flight, as instructed. Next leg of pattern: gradually add more power, full throttle up to 200 feet. Reduce power, hands up, turn to shoulder 1234 (1 inch harder as needed). Release 1234, hands up, level flight. Next leg of the pattern: gradually full power, hands up to 300', then reduce power. More turns (to SHOULDER, plus 1 inch harder as instructed). Are you seated? If not, STOW non-throttle brake, WAVE hand, then when instructed, push into seat. When seated, pinch and grab blowing brake at pulley, don't worry about getting hand inside toggle, just hold it. Practice more level flight and altitude adjustment (more/less throttle), hands up, you're doing great, the wing is over your head, you're safe, hands up, take a breath, look around and enjoy yourself, continue more turns/more/less throttle, (reduce throttle a bit before left turns), if the wing oscillates - reduce throttle and hold a turn, notice upwind/downwind speeds, notice torque on more throttle, notice wing pitching up/down forward/back with throttle adjustments, practice weight shift turns, hands up. Set up for final approach into wind (go around if needed), get out of the seat (push your pelvis forward, hang upright from leg straps, with straight body, no bend at waist), one foot forward, hands up, kill the engine, hands up, do not turn, eyes on me (small corrections), wait wait wait, not yet, hands up, it feels screaming fast (too fast to run), but NOT YET, ... wait wait wait... Ok get ready (shoulder), ... AND... NOW, FLAIR to BELLY, then as your foot touches the ground, PUSH DOWN ALL THE WAY, HARD TO BUTT, run, run, turn around and run backward, pull both brakes to drop the wing, woohoo!"