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ALMA Owner's Manual

Foil kite

Welcome to Airwave

Airwave has a long history of designing airsports equipment, beginning with hang gliders in 1986, then with World Championship-winning paraglider designs. Airwave Kites is the latest incarnation of the Airwave family.

Airwave is owned and managed by Bruce Goldsmith Design, a leading manufacturer of quality paragliders and paragliding equipment. Bruce Goldsmith was a founding member of Airwave Paragliders, and has been designing paragliders for more than thirty years. He heads up the young and dynamic Airwave kite design team who are based in the south of France. Their aerodynamics and engineering expertise is combined with a passion for kiting that drives them to create cutting-edge kites that we love to fly. Airwave kites are manufactured in Sri Lanka, and distributed from our warehouse in Austria.

Congratulations on your purchase of the Airwave ALMA

At Airwave we are passionate about kiting, and our goal is to make the best kites we can – kites that we love to fly in all seasons, on all terrains.

The ALMA is a versatile kite for hyrdofoil, snow, surf, twintip, and land kiting. It is a monofoil-hybrid design: the front half is closed inflated cells and back section is monosurface. Its five inflatable spars are a unique feature of the ALMA. They give it structural rigidity and almost completely stop the flutter, which is a downside of single-surface foil kites. It combines the best features fo tube kites and foil kites.

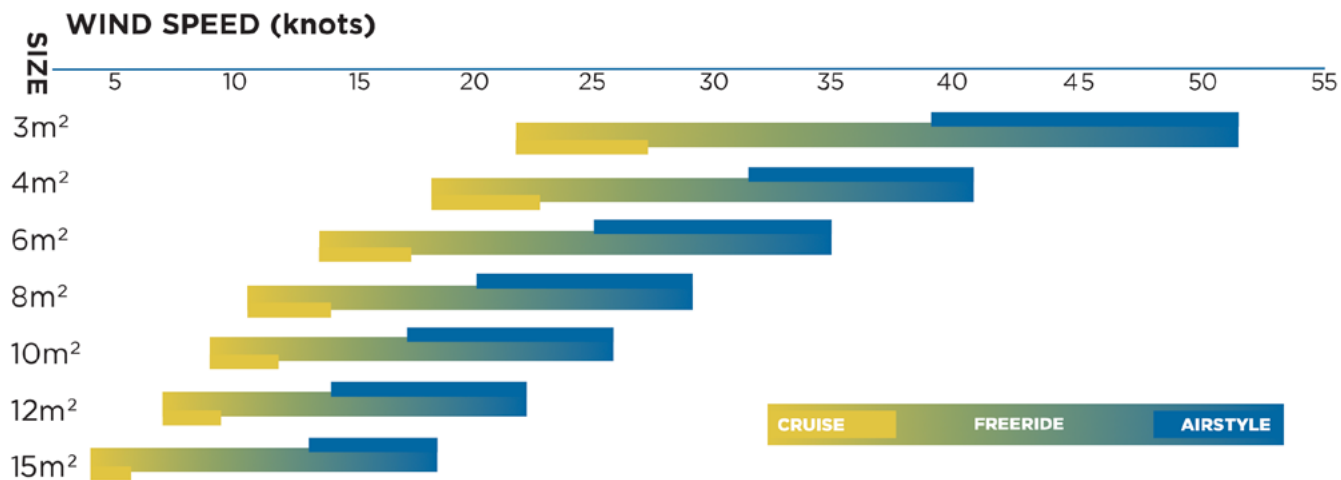
The ALMA is very light despite being made of durable, standard-weight fabrics, and it packs small so it is perfect for



snow-touring. The simple line layout makes it easy to set up for use, and it is very easy to re-launch unaided. It stays airborne in light breezes, is easy to control and forgiving of positioning errors.

Power generation is progressive making for fast and controllable loops. It's amazing for hydrofoiling, great for twin-tip, and perfect for technical ascents on snow. It's suitable for very wide wind ranges:

Usable wind ranges



This manual has been prepared to give you information and advice about your kite. Please read it carefully, before heading out and having fun! More information and replacement parts are available through our dealers. You can find your nearest one on airwave.aero.

Choosing your Quiver

This table below is intended to help a rider choose the right quiver. The suggested wind speeds are for a 75kg rider. They do not take into account rider's skills, hydrofoil design style and board volume – all parameters which can play a major role.

The Airwave reference set-up uses a high aspect foil carving front wing and volume less pocket board 120*45

SIZE	Wind speeds (knots)					
	Light Cruising		Freeride sweet spot		Airstyle, power, foil	
3	22	27	28	38	39	52
4	18	22	21	31	32	41
6	13	17	18	24	25	35
8	11	14	15	19	20	29
10	9	12	13	16	17	26
12	7	9	10	13	14	23
15	4	6	7	12	13	18

Safety

Kite flying can be dangerous, both for the person flying the kite and those around them. You are responsible for the safety of yourself and those around you when using this product.

Please read this manual before flying your kite. If you are under 18, please ask your legal guardian to read it. You should not use this product unless you are under proper guidance and supervision.

Before using this product, you should have undergone training with a certified instructor or school.

Only use this product if you are in good physical health, and are not under the influence of alcohol or drugs.

Practise launching, landing and self-rescue techniques in light winds before using this product near water and in strong winds.

It is advisable to have an assistant to help launching and landing your kite.

Always use a safety leash system. An uncontrolled kite is a danger to those downwind of it.

This product should be used with a kite-specific harness, and a helmet, wetsuit, gloves, shoes and protective eyewear

We strongly recommend to use only the Airwave bar with this product.

Always carefully inspect all of your equipment before using it. Knots in the lines reduce their strength, so should be removed before using the kite; a line breaking under tension is dangerous.

Test your quick-release device regularly, and rinse it in fresh water after every session to maximise its lifespan.

Check any safety systems regularly for signs of wear. The mechanical quick release trim loop must be changed after 250 hours of kiting. The wearing of your quick-release devices is not considered a warranty issue.

You should not attempt to fly with this kite – it is not tested or licensed as an aircraft.

This product is not designed for riders weighing more than 120kg.

Always inspect a new location before kiting there. It's a good idea to speak to any locals who kite there and find out about and stick to any local rules and regulations; you should also identify any potential hazards including obstacles, shallows or currents on water; rocks and avalanches in the mountains. Is the location accessible to rescue crews in the event of an emergency?

Always fly in weather conditions that are appropriate for your skill level and kite size, and never during thunderstorms or in offshore winds. Only very experienced riders should be kiting in winds stronger than 25 knots on the water. If you have a doubt it is always recommended to use a smaller size or wait for a lighter day. In the mountains this product should not be used in more than 15 knots.

Ensure you have a clear area downwind and both sides of your launch area, and keep a safety margin of at least two line-lengths downwind of you.

Do not kite near people or obstacles. Kiting near power lines, roads, airports, cliffs, etc. is extremely dangerous. Never let anyone, including yourself, get between the kite and the control handles when using the product.

ALMA overview

IN A NUTSHELL: The ALMA is a hybrid single skin with a high aspect ratio, a radical arc, and 5 closed cells

HIGH ARC DESIGN: makes the ALMA both agile and stable

INFLATABLE STRUTS: 5 closed cells are reinforced with long high-density nylon rods. They stiffen the kite and stop any flutter when the bar is released.

MORPHING AEROFOIL: The shape of the aerofoil changes when it is powered or depowered. As a result, the power to depower ratio is exceptional.

SMART DRAINAGE SYSTEM: there are drainage channels at the end of the double-skin region, and at the trailing edge of the inflatable struts

SIMPLE LINE LAYOUT: simplest of any kite on the market with only 6 attachment points per side for each of the 3 line levels



The Airwave control bar



Setting Up



CAUTION!

Always secure your kite properly even if the wind is light. A runaway kite can be a serious danger to people or animals downwind.

Do not leave the kite flapping in the wind and sun for long periods as this will shorten its lifespan.



Unrolling and securing the kite

Unroll the kite with the wind at your back – let it naturally flow out downwind. Fold the upwind tip over and use sand to weigh it down to stop the kite from blowing away. The bar bag can be filled with sand and used as a sandbag for this purpose

Rigging the kite

Unwind the lines from the control bar while walking crosswind away from the kite. Before attaching the control bar to the kite, it is important to check for tangles in the lines.

Starting at the kite end, run along one of the middle lines first, all the way to the bar, removing any knots or twists and clearing any lines which have passed over it. Freeing the central lines should result in all the lines on that side being cleared. Repeat on the second side.





When rigging the kite, the **red** side of the bar attaches to the **left** side of the kite. Untangle and separate the lines from the control bar, by following them along from the bar towards the kite.

Connect the lines together using the universal connectors and a lark's head knot; red to red, green to green, then the two middle lines.

Always double-check the lines are correctly attached to the bar. Wrongly attached lines could mean the kite does not fly correctly, which could put you and others in danger.



Inflating the kite

Before flying the kite, it needs to be inflated by closing the two deflation valves in the middle of the trailing edge, and then holding the leading edge openings into the wind.



Connecting to harness

With the kite secure and all the lines correctly rigged, you can connect the leash to the flag-out system, then hook the chicken loop onto your harness and pass the chicken dick through the hook.



Launching



Always check the wind and weather conditions, and your equipment, especially the safety system before launching. Do not use any kite in winds stronger than its recommended upper wind range.

The ALMA can be easily launched without the need for an assistant.

With the kite laid out parallel to the wind, walk away from it to tension the lines. Apply pressure to the side of the bar connected to the downwind end of the kite then slowly walk backwards upwind until the sail catches the wind. Continue walking until the kite is completely off the ground.

Do a final check for crossed lines or other problems before committing to using the kite. If there is a problem, land or release the kite and rectify the problem.

Landing



We recommend having a helper for landing the kite.

Fly the kite to the edge of the window and lower it gently. When it is low enough, your helper should grab the tip.

Run towards your helper to untension the lines. The kite will then flap downwind, and your helper can secure it on the beach.

The depower handle

Pull the depower handle towards you to depower the kite; to release, pull it sharply towards you again then let go. It will return to the neutral position.



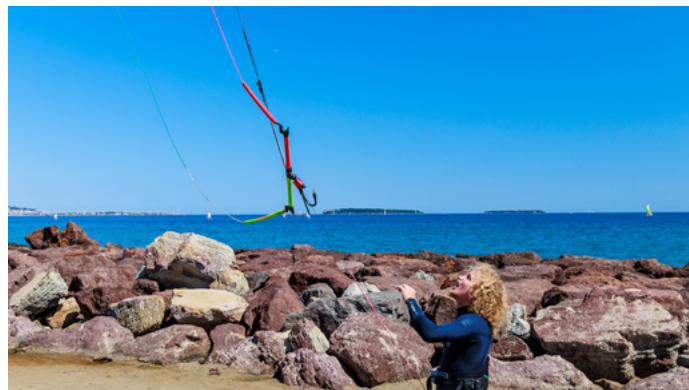
Neutral position



Depower activated

Quick-releases





To depower the kite so that it flags out, simply push the red Quick Release release handle away from you. The kite will instantly lose power, and will flag out and fall to the ground.

Reloading the quick-release



1. Pull out the release



2. Thread the chicken loop through the hole



3. Let go of the release and it should lock back into place



4. Pull on the chicken loop to double-check it is secure

Rewinding the bar after releasing

To avoid knotting the lines, pull the release line towards you until you can grab the bar. Fold the release line around the control bar in a figure-8 pattern. When you reach the leash, unhook it and continue folding the main lines in figure-8s around the bar. When all the lines are wound, secure them on the bar.



Emergency (leash) quick release

In an emergency, you can completely detach from the kite by pushing the leash quick release in the direction of the arrow

This will completely detach the kite and control system from the user, and could therefore hit anything or anyone downwind causing damage or injury. It should be used in emergency situations only!



Resetting the leash quick-release

To reset the leash quick release, pull the plastic handle back and pass the cable through the metal ring on your harness. Then slide the loop over the metal pin and insert the pin into the plastic handle. Release, and it will lock back into place.



Packing

Packing the Bar



To pack the bar, pull the chicken loop all the way to the bar and fold both plastic bits inside. Fold the lines around the bar in a figure-8 pattern, until you reach the kite. Secure the lines with a half-twist over the end of the bar, and secure with the rubber bands.

Packing the kite



Open the deflation valves in the trailing edge, and bring the tips together to fold the kite in two, then roll into a sausage shape. Fold in half, then pack into the bag. The bar can be stowed in the front pocket of the bag and secured with its strap.



Care and Maintenance

Your kite is durable and UV and saltwater resistant, but proper care can extend its lifespan.

- The bar should be rinsed with fresh water after every session.
- The kite can also be rinsed in fresh water, but it is not necessary to do so after every session. Detergents damage the cloth and should be avoided. Use of detergents on your kite will invalidate the warranty.
- Do not leave a wet kite in its bag or it can develop mildew (cloth) or rust (metal parts). Dry it in the shade, away from the sun and direct heat.
- Store in a cool, dry place out of the sun.
- Do not allow the kite to hit the ground or water leading-edge first, as this can cause overpressure that can tear the ribs apart.
- Do not allow the glider to be caught in breaking waves and this will destroy it!

Regular checks

You should inspect your equipment before and after every use. Check the upper and lower surfaces of the kite, line attachment points, bridles and control system and quick releases. Worn or damaged parts should be replaced.

Depending on use, the flying lines and other parts will likely need to be replaced within the lifespan of your kite. Not servicing these parts can lead to damage to the kite and will void the warranty. Failure of parts while under tension can cause serious injury.

Line checks / trimming the bar

You should regularly check that your kite's lines are all the same length. Lines should be measured with 5kg tension applied. If there is more than 40mm difference between line lengths, the bar needs to be retrimmed. Generally, the main lines will stretch and the back lines shrink. You can easily retrim the bar by extending the back lines.



Check the backstall tendency

Stabilise your kite above your head at the top of the wind window (12 o'clock). Set the depower to the neutral position. Pull the bar down completely for 3 seconds. If the kite starts backstalling and falling back within that time frame, that means it can be retrimmed.

Trimming the kite

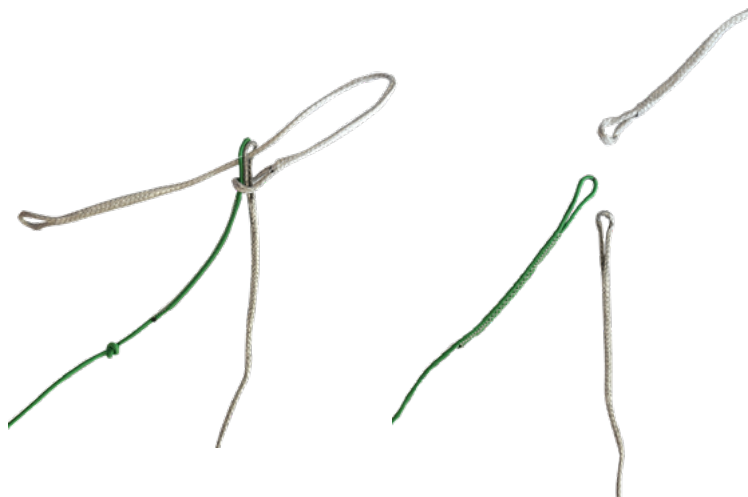
If your kite stalls after less than 3 seconds when pulling the bar, it needs to be re-trimmed. To trim the kite, you can simply release the knot on the pulley line of the kite's bridle (indicated with an arrow in the image below).

The lines can be easily separated to release the knot on the green pulley line:



Before

After



Specifications

	THREE	FOUR	SIX	EIGHT	TEN	TWELVE	FIFTEEN
Linear Scaling factor	0.6	0.7	0.9	1.0	1.1	1.2	1.4
Projected Area (m ²)	2.1	2.9	4.4	5.9	7.4	8.8	11
Flat Area (m ²)	3	4	6	8	10	12	15
Weight excl bag (kg)	0.70	0.88	1.18	1.42	1.62	1.98	2
Number of main lines	3/3/3	3/3/3	3/3/3	3/3/3	3/3/3	3/3/3	3/3/3
Cells single/double skin	31/5	31/5	31/5	31/5	31/5	31/5	31/5
Flat Aspect Ratio	4.8	4.9	5.0	5.2	5.2	5.2	5.3
Projected aspec ratio	3.1	3.1	3.2	3.3	3.3	3.3	3.4
Root Cord m	0.9	1.1	1.3	1.5	1.7	1.8	2.1
Flat span m	3.7	4.4	5.5	6.5	7.2	7.9	8.9
Projected span m	2.5	3.0	3.8	4.4	5.0	5.4	6.1
Wind Range (Twin tip)	28-52	22 - 40	20 - 40	17 - 30	14 - 25	12 - 22	12 - 22
Wind Range (Foil/Snow)	22-38	15 - 40	13 - 35	10 - 28	8 - 23	7 - 18	7 - 18
Recommended line lengths (m)	17	17	17	17	18	18	18
Recommended bar width (cm)	50	50	50	50	62	62	62

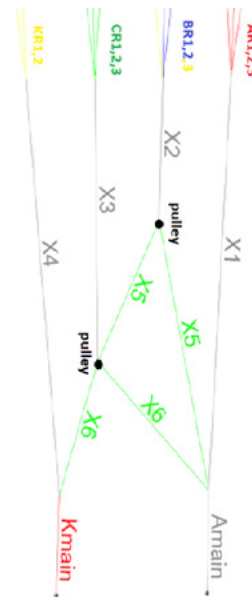
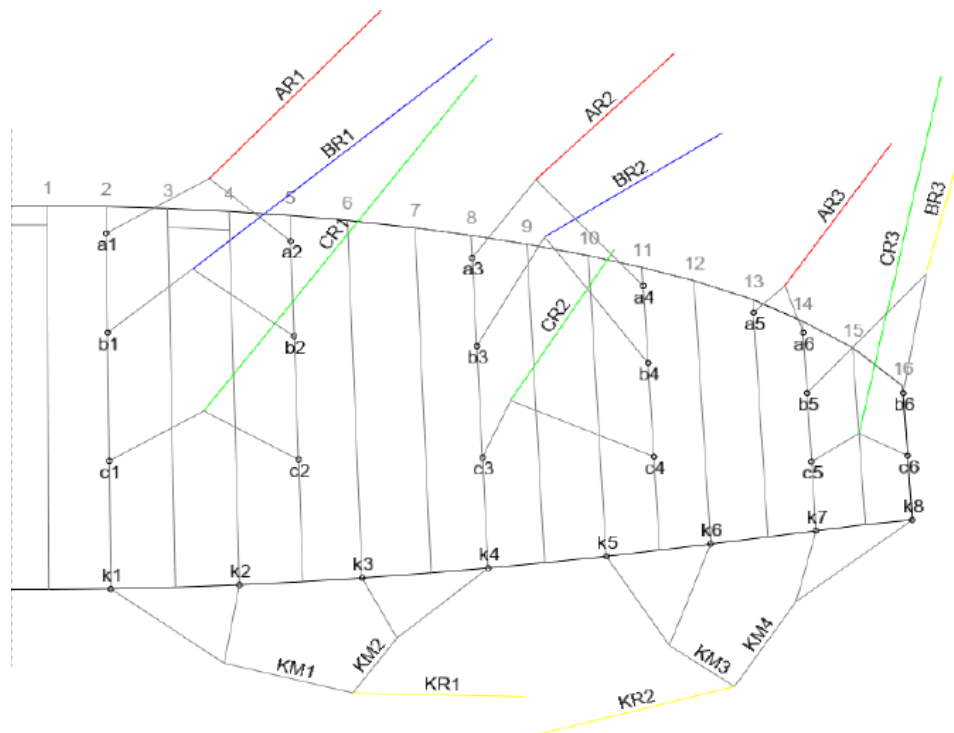
Materials

The ALMA is made from the following strong and durable materials.

Top surface	Porcher Skytex 38g/m ² / MJ Tex 32
Bottom surface	Porcher Skytex 38g/m ² / MJ Tex 32
Internal structure	Porcher Skytex 38g/m ² hard
Nose reinforcing	2mm Perlon
Pulleys	Sprenger
Top lines	Liros DC100 / DC60
Lower lines	Liros PPSL180 / PPSL120
Brakes	Edelrid 800U series

Spare parts can be obtained through our network of registered Airwave repair shops. For a full list check airwave.aero

Lines



The line lengths for all sizes of ALMA can be downloaded in Excel format from www.airwave.aero.

Warranty

AIRWAVE takes the greatest care in design and production of its products and offers 6 months warranty, from the date of purchase against defects in materials and workmanship.

In order to benefit from the AIRWAVE warranty, you are required to complete the warranty form on the website in the “Warranty” section, within 14 days of purchase. Only a fully completed warranty form, including the name of the retailer and date of purchase, will be accepted to validate this warranty.

In order to settle a warranty claim, AIRWAVE must be notified in writing immediately after discovery of a defect. We will require photos showing the defect, and/or inspection of the equipment, to be posted at the owner's cost.

If a product is deemed to be defective by AIRWAVE, the warranty covers the repair or replacement of the defective product only. The owner is not entitled to replacement equipment during the warranty claim.

Some degradation of materials due to wear and tear is to be considered normal and will be excluded from claims. The warranty does not cover damage caused by anything other than defects in material and workmanship. This means that damage caused by careless or incorrect use of the product including accidents, inadequate maintenance, unsuitable storage, damage by solvents, fuel, chemicals, sand or seawater, overloading, rigging with non-AIRWAVE components, exposure to extreme temperatures, or prolonged sun exposure and colour fading are also excluded.

This warranty is voided if any unauthorised repair, change or modification has been made to any part of the equipment. The warranty for any repaired or replaced equipment is good from the date of the original purchase only. The original purchase receipt must accompany all warranty claims.

The claim for warranty service exists between the person or entity who purchased the equipment from AIRWAVE. The warranty obligations only apply to private sport and leisure time activities, not for use for commercial purposes.

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