

# 2006 KITE

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## U S E R M A N U A L

**CROSSBOW • SWITCHBLADE • CONTRA • REVOLVER • CO2**



# **WARNING**

DO NOT USE THIS PRODUCT UNLESS YOU HAVE READ AND UNDERSTAND THESE WARNINGS AND INSTRUCTIONS WHICH ARE FOR YOUR SECURITY AND PROTECTION. THIS INFORMATION MAY BE SUBJECT TO CHANGE AT ANY TIME. FOR CURRENT UPDATES, PLEASE VISIT OUR WEBSITE AT: **[WWW.CABRINHAKITES.COM](http://WWW.CABRINHAKITES.COM)**

IF YOU ARE BELOW THE AGE OF 18, YOU SHOULD HAVE YOUR PARENT OR GUARDIAN READ THESE WARNINGS AND INSTRUCTIONS AND SHOULD NOT USE THIS PRODUCT UNLESS YOU ARE UNDER THE PROPER GUIDANCE AND SUPERVISION OF SUCH A PERSON.

The use of this product exposes the user to many unavoidable and unexpected risks, dangers and hazards. The suppliers of this product are not responsible for any damage to property or any personal injury caused by any use, misuse, abuse or irresponsible use of this product.

Kitesurfing is an extreme sport. Power kites and their lines and control equipment can be dangerous to flyers and to anyone in the vicinity of their use. Kitesurfing must be taken seriously and we recommend that, at least in the early stages of your use, you seek the guidance of professional instructors and experienced kiteboarders. Improper and/or unreasonable use of this kite may result in serious injury or death to yourself and others. Do not use your kite near power lines, airports or streets, and keep your kite fly lines away from people and obstacles. Always fly in an open area, observe wind and weather conditions, particularly in circumstances where you may encounter offshore, onshore winds or strong winds. Do not attempt to use your kite on water until you are confident and comfortable with the use of a trainer kite on land. Spend time to become familiar with the operation of your kite and remember that you are responsible for its operation and for the security of those around you. As you learn the sport, work within your own limitations and do not exceed them. If you intend to use the kite on water, always use appropriate protective gears and flotation devices and do not attach yourself or tie yourself permanently to the kite lines. The kite is not intended for use as a flying device nor indeed is it intended as a means of flotation.

## **RECOMMENDED KITESURFING PRACTICE:**

KITESURFING is an extremely diverse sport, with many disciplines and ability levels. As with all sports, there can be certain inherent risks. The following contains key security points to remember when operating your Cabrinha kite.

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# **! WARNING**

## **RECOMMENDED KITESURFING PRACTICE:**

- Kitesurfing is a **HAZARDOUS** activity and the use of Kitesurfing equipment involves the risk of serious personal injury to any part of the user's body or death.
- Injuries are an **INHERENT RISK** of kitesurfing and the participation in kitesurfing implies the user's acceptance of those risks.
- Children should always be under adult supervision.
- It is strongly recommended that beginners take lessons.
- **ALWAYS** inspect your equipment for signs of wear and tear each time before use, particularly all lines, canopy, bladders, screws and fittings.
- **IF** any products are found to show signs of wear & tear these should be repaired or replaced immediately and before further use. If in doubt about any signs of wear & tear, please contact your local vendor. Contact details are available from [www.cabrinhakites.com](http://www.cabrinhakites.com)
- **NEVER** place yourself in a situation where breakage of any one of the various kitesurfing components would pose a risk to yourself or others, or make it impossible to return to the shore securely & unassisted.
- Make sure you use properly designed and manufactured parts from reputable suppliers.
- Take time to study the conditions including sea state, tides, currents and weather forecasts before you decide to go sailing. Beware of sailing in offshore & onshore winds.
- Familiarize yourself with any new location before venturing onto the water. Ask the locals to tell you about any hazards.
- Watch out for other beach users, especially swimmers and small children. Make sure you keep your board and rig under control at all times and that they don't get blown about on the beach or in the water.
- Always use appropriate protective gear and floatation devices. Wear the correct protective clothing for the conditions such as a wetsuit or a UV top. It is recommended to wear a helmet.
- Make sure someone knows where you've gone & when you are expected back – always sail with a buddy.
- Be aware of the conditions as they change. Always return to the beach if there is a significant change in the conditions. i.e. wind dropping or wind & waves increasing.
- As you learn the sport, work within your own limitations and do not exceed them.
- Do not alter, modify or change this product.
- This product is designed and manufactured only for kitesurfing on water.
- Keep these warnings and instructions for future reference.

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## THANK YOU

for purchasing a Cabrinha kite and welcome to the sport of kiteboarding.

As you may know, the excitement of Kiteboarding is attracting people of all ages from all corners of the globe. It's one of the most dynamic and fastest growing sports of the new decade.

It can also be overwhelming if not approached in an educated manner. That's why we have supplied this extensive user's manual. It will help to educate you about your new kite and about the ways in which to use it. It also contains information regarding the set-up, care and maintenance of your new kite so that you can spend as much time on the water as possible.

Please read this user's manual carefully and entirely before using this kite. This manual is not intended to replace proper kiteboarding instruction, but rather to supplement it. Do not attempt to kiteboard without appropriate instruction. It will make this sport more enjoyable, not only for yourself, but for those around you.

# 06 IMPORTANT INFORMATION

## IMPORTANT INFORMATION

KITEBOARDING is an extremely diverse sport, with many disciplines and ability levels. As with all sports, there can be certain inherent risks. The following contains key points to remember when operating your Cabrinha kite.

- Be familiar with the set up and use of the supplied security systems: FRONTLINE with TAP OUT, OVERRIDE and the Harness Loop Quick Release systems.
- Make sure your OVERRIDE Control System is rigged and used according to the supplied instructions and that your OVERRIDE compatible kite is used with a OVERRIDE compatible control bar system.
- Make sure your FRONTLINE System is rigged and used according to the supplied instructions and that your FRONTLINE compatible kite is used with a FRONTLINE compatible control bar system.
- Always use your Cabrinha kite with a security system.
- NEVER permanently attach yourself to this kite, the control bar, or lines.
- NEVER use this kite as a flying device.
- NEVER touch the kite lines while they are under tension; do not catch the kite using these lines.
- When inflated but not in use, secure your kite with sand or with something heavy and non-abrasive; the more weight the better (see "Kite Care" for more information). An inflatable power kite will still fly, even without a rider, so be mindful of those around you and secure your kite. Your kite may cause serious injury or death if it launches unexpectedly.
- Do not lend your gear to someone who has not been fully instructed on the use of inflatable kites. Other users should also read this user's manual and be proficient in all its points.
- Check your gear before going on the water. Insure that your flying lines, security systems, kite, board, etc. are all rigged properly and are in working order.

## PROTECTIVE GEAR

We strongly recommend the use of the following protective gear:

- Helmet
- Life Jacket, Impact Vest, or Flotation Vest
- Neoprene Wet Suit
- Gloves
- Foot Protection
- Eye Protection
- Knife
- Sunscreen

# 06

# IMPORTANT INFORMATION

## WIND, WATER, & WEATHER CONDITIONS / WIND RANGE CHART

### WIND, WATER, AND WEATHER CONDITIONS

- Do not underestimate the power of the wind.
- Be aware of unpredictable and changing weather conditions.
- Avoid "offshore" or "onshore" wind conditions.
- Avoid strong, gusty wind.
- Be careful of wave conditions, especially when learning.
- Be educated about tides and rip currents.
- Be mindful of your ability level. Do not kiteboard if conditions are beyond your ability level.
- Be educated about air and water temperatures and wear appropriate protection against the elements.
- Do not use this product in thunderstorms.
- Consult an anemometer to determine wind speeds if necessary.
- Do not use an oversized kite. Consult your Wind Range Chart for the correct recommended size. Use your common sense. If in doubt about what kite size to use, choose smaller rather than bigger.
- All Cabrinha Kites are designed with a referenced rider weight of 75KG.

### WIND RANGE CHART

This wind range chart is only to be used as a point of reference. It is based upon a rider who is approximately 170 lbs. (75 kg). Actual use may vary based on your body weight, ability level, water conditions, board size, and riding style. When choosing a kite size, please use your personal experience, common sense, and always check what other riders are using on the water for a size reference.

	4 MPH 3.5 KNOTS	8 MPH 6.9 KNOTS	12 MPH 10.4 KNOTS	16 MPH 13.9 KNOTS	20 MPH 17.3 KNOTS	24 MPH 20.8 KNOTS	+	++	+++
<b>CROSSBOW</b>	16	Red		Pink		White			
	12	Red		Pink		White			
	9	Red		Pink		White			
	7	Red		Pink		White			
<b>CONTRA</b>	19.5	Red		Pink		White			
	16.5	Red		Pink		White			
<b>REVOLVER</b>	14	Red		Pink		White			
	12	Red		Pink		White			
	10	Red		Pink		White			
	8	Red		Pink		White			
	6.5	Red		Pink		White			
<b>C02</b>	5	Red		Pink		White			
	18	Red		Pink		White			
	17	Red		Pink		White			
	14	Red		Pink		White			
	12	Red		Pink		White			
	10	Red		Pink		White			
	8	Red		Pink		White			
	6.5	Red		Pink		White			

\* How to read: Red = best suited for. Pink = usable. White = not recommended.



**KNOW YOUR ABILITY LEVEL**

- Do not attempt kiteboarding without appropriate instruction.
- Do not kite alone.
- Launch, land, and ride together with a partner or have someone on shore who can keep an eye on you.
- Make sure you are in good physical condition before using this product.
- Practice flying a small, traction kite or a “trainer kite” before flying this kite.
- The more time spent on the “trainer kite”, the faster you will learn.
- Make sure you are a proficient swimmer before using this product in or near the water.
- Make sure the wind and water conditions are within your ability level and that you have made the correct equipment choices.
- Never kiteboard further from shore than you are able to swim back.
- Always save a reserve of energy; end your kiteboarding session before you are exhausted.
- Make sure you’ve done your homework and that you know the security precautions of all aspects of the sport: rigging, launching, landing, flying, riding, kiting among other water users, self rescuing, etc.
- Understand your security systems before ever launching your kite.
- Understand the technique of self-rescue before using this product in or near the water.
- Never let someone who is not familiar with inflatable kites launch, catch, or use your kite. You will endanger them, as well as yourself and those around you.
- You are responsible for the proper operation of your kite.

**KITEBOARDING LOCATION**

- Observe local laws and regulations regarding this product and the usage area.
- Talk to the local riders about the weather conditions and beach rules.
- Check your area thoroughly before launching your kite.
- Make sure you have considerable space in which to launch, land, and use this product.
- You should have at least 100 meters of space on both sides and downwind of you. Be especially aware of your downwind area.
- Be mindful and aware of the wind direction in relation to your launch area.
- Avoid areas with rocks and/or shallow or exposed reefs.
- Be mindful of tide changes. As water levels change, you may be exposed to new obstructions.
- Avoid launching, landing or using this product near power lines, telephone poles, trees, people, pets, buildings, automobiles, streets, sharp objects and airports.
- Avoid crowded beaches and waterways.
- Make sure your lines do not cross a walkway or passage.
- Do not let others walk between you and your kite.
- Be careful and mindful of other water users, including windsurfers, boaters, jet skiers, swimmers, floating objects, etc.
- Before launching, make sure you have scouted a backup landing area, in case you do not make it back to your launch spot.

# 06 IMPORTANT INFORMATION

## KITE CARE

Due to the often-extreme nature of kiteboarding, a thorough approach should be taken when caring for your kite and all its associated rigging, as well as your protective gear.

## PREPARING FOR YOUR SESSION

- Thoroughly check your protective equipment (helmet, etc.) to make sure it is in working order.
- A frequent inspection of the kite and the control system should be made in order to identify punctures, tears, or abrasions in the canopy, struts, or security systems. It is also necessary to check the fly lines for wear and for unwanted knots, which may reduce the strength of the fly lines.
- Do not rig on asphalt, cement, gravel, or other abrasive surfaces; doing so may damage your equipment. It is best to rig on sand or grass. Damage done to your equipment by rigging on abrasive surfaces will not be covered under warranty.
- Do not rig among sharp objects that could tear the canopy or puncture the struts and leading edge bladder.
- Take care not to expose your flying lines to sharp objects that may wear through them.
- While setting up, secure your kite with sand or sand bags. Do not secure your kite with rocks or other sharp or abrasive objects that may damage your kite.

## BETWEEN SESSIONS

- Never leave an inflated kite unattended on the beach for a long period of time. Winds may shift or change and the kite may become unsecured and fly off.
- Do not leave an inflated kite (secured or not), directly exposed to the wind for any length of time. This allows the trailing edge to flutter excessively, which can damage the kite or tangle the bridles/control lines. If you must leave the kite exposed to the wind on the beach, place sufficient amounts of sand between each strut and near the trailing edge to minimize or stop the fluttering.
- Do not leave your kite exposed to sunlight for long periods of time. Between sessions, choose a shaded area to secure your kite. When not in use, stow away.

## PROPER STORAGE

- It is recommended to wash your kite with fresh water and dry thoroughly before rolling and storing.
- Do not roll up kite when wet.
- Clear the kite of sand or other foreign objects before stowing.
- Once it is clean and dry, stow your kite in the supplied bag in a clean, dry, cool place.
- Do not place heavy objects on the bag containing the kite.
- Do not leave your kite inflated in your car or car rack box; exposing the kite to extreme temperatures while inflated may damage the internal bladders.
- Wash your control system with fresh water from time to time by placing the entire control system (with lines wound onto the bar) into a bucket of fresh water and let it sit for 5 minutes. Allow to dry thoroughly before storing in a dry location.
- Once it is clean and dry, stow your control bar in the supplied bag in a clean, dry, cool place.

**BEACH ETIQUETTE**

Here are some basic things to consider when sharing beaches and water accesses with other users:

**SAFETY**

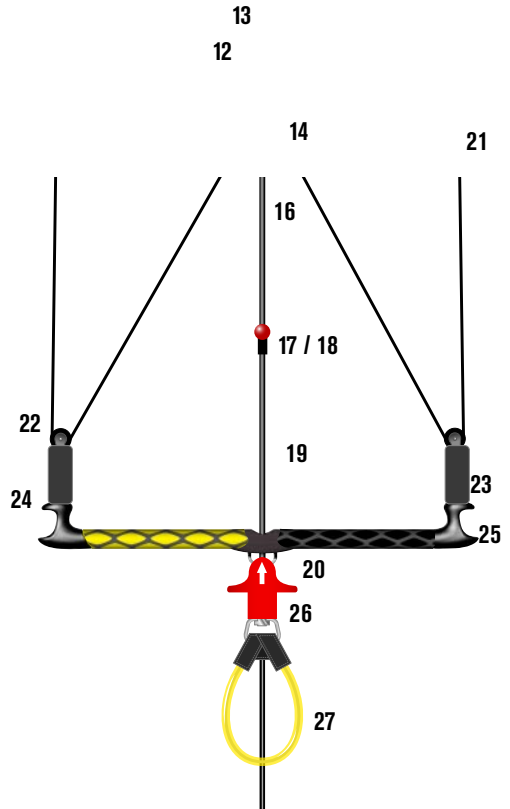
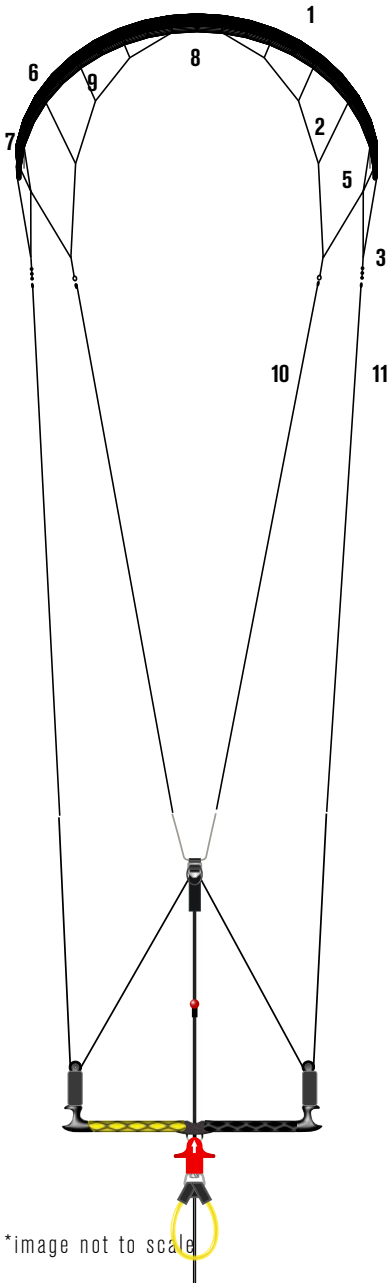
- Follow the instructions outlined in this manual.
- Follow the instructions and rules and regulations posted at the beaches you use.
- Check with local kiteboarding associations or shops prior to launching in a new area. There may be local rules and regulations to follow which are not posted.
- Utilize common sense.
- Do not touch other people's gear, unless instructed to do so by the owner. Picking up their bars, kites, etc. may disrupt a setup ritual they have.
- Always secure your kite with sand or sand bags. An unmanned kite is dangerous.
- Never leave an inflated kite unattended. Winds may shift and cause the kite to become unsecured and fly off.

**SETTING UP**

- Set up only the gear that you plan on using immediately. Deflate and put away your kites when not in use.
- Set up in an area where you have plenty of space.
- Set up in a manner conducive to having multiple users in the area.
- Roll up your lines when not in use.
- Always keep other beach and water access users in mind when launching, landing, and kiteboarding.
- Yield to other beach users. Be courteous and cooperative.
- Always be ready to lend assistance to other kiteboarders. The favor may be returned sooner than you think.

# 06 KITE OVERVIEW

CROSSBOW

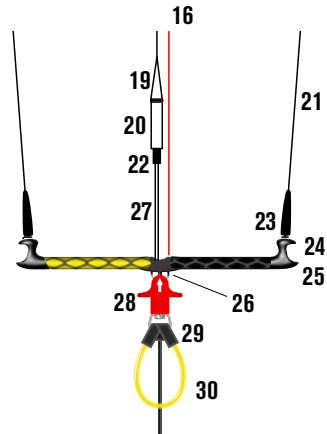
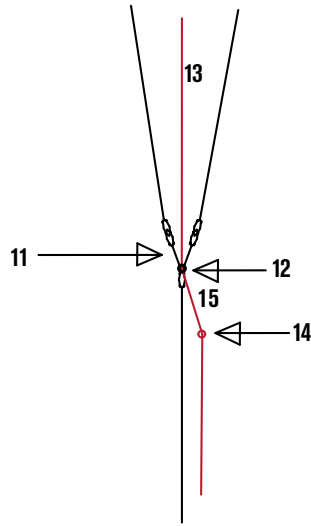
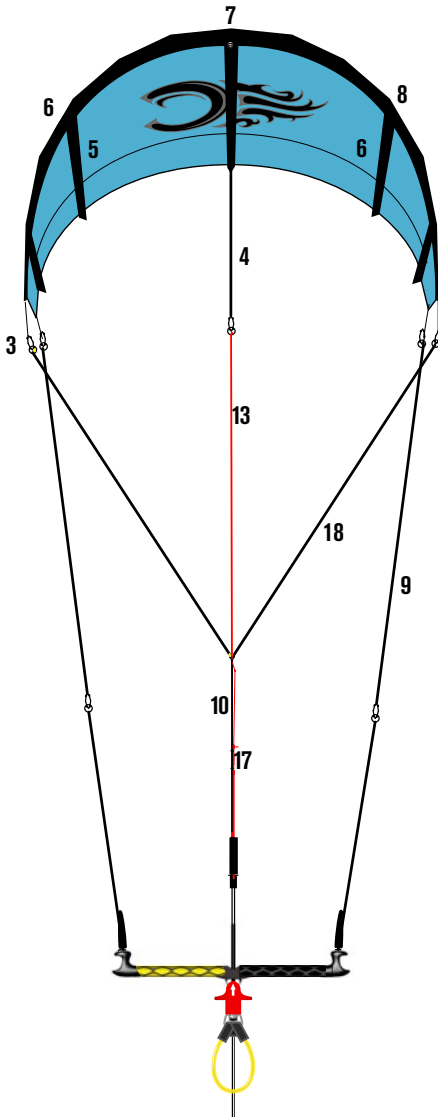


\*image not to scale

**CROSSBOW KITE OVERVIEW - CROSSBOW CONTROL SYSTEM with OVERRIDE**

1. 4-Line Kite Body
2. Bridle
3. Steering (Rear) Line Attachment Point
4. Depower (Front) Line Attachment Point
5. Pulleys
6. Multi-Segmented Dacron Leading Edge
7. True Match 3-D Battens
8. Airlock High Volume Valve
9. Standard Inflation Valves
10. Front Flying Line
11. Rear Flying Lines
12. Front Leader Lines
13. Grab Ball
14. Centerline Adjustment Strap
15. Power/Depower Extensions
16. Line Stop
17. Override Ball
18. Override Sleeve
19. Depower Main Line
20. Powerlock Loop
21. Rear Leaders
22. 2-1 Depower Pulleys
23. Bar Floats
24. Line Managers
25. Multi-Function Bar Ends
26. Harness Loop Quick Release
27. Harness Loop W/ Security Pin

# 06 KITE OVERVIEW



\*image not to scale

**CONTRA / REVOLVER / CO2 KITE OVERVIEW**  
**- POWERDRIVE CONTROL SYSTEM with FRONTLINE EQUIPPED**

1. 4-Line Kite
2. Rear Pigtail
3. Front Pigtail
4. Frontline Bridle
5. True Match 3-D Battens
6. Multi-Segmented Dacron Leading Edge
7. Airlock High Volume Valve
8. Standard Inflation Valves
9. Steering Lines (Rear Control Lines)
10. Frontline Main Line
11. Depower Line Attachment "V"
12. Frontline Ring Guide
13. Front Line
14. Frontline Length Limiter Ball
15. Bungie Section
16. Recovery Line
17. Payout Limiter Ball
18. De-Power Lines (Front Control Lines)
19. Mainline Adjuster
20. Centerline Adjustment Strap
21. Leader Lines
22. Line Stopper
23. Bar Floats
24. Line Managers
25. Multi-Functional Bar Ends
26. Powerlock Loop
27. De-Power Line
28. Harness Loop Qr With Tap Out Leash
29. Recovery Line Termination Ring
30. Harness Loop with Security Pin and Frontline Guide

**CONTROL SYSTEM COMMON FEATURES** - Crossbow CS, Powerdrive Carbon CS, Powerdrive Alloy CS**QUICK RELEASE SYSTEM (QRS)**

You should be familiar with the operation of the QRS in the event of a situation where you wish to activate the QRS feature.

**QRS - OPERATION**

Grab the release body and pull up until the pin is free.  
Under tension, the pin will release the harness loop. (Fig. 1)

**QRS - SETTING / RESETTING**

- Slide the QR Pin through the stainless steel Trapezoid. (Fig. 2)
- Fold the pin back over itself. (Fig. 3)
- Lift the QR Body up the Depower line. (Fig. 4)
- Lower the QR Body over the QR Pin. (Fig. 5)
- Your QR system is now ready for use.





**SECURITY PIN**

The harness loop can be used as the rider's sole connection to the DEPOWER SYSTEM, as long as it is equipped with a security pin. This security leash is active only when the rider is hooked into the Harness Loop. Therefore it is important that a secure connection is made between the Harness Hook and the Harness Loop. This critical connection allows you to depower the kite completely, spin your bar freely, and re-launch your kite easily, all while still being connected to your kite.

- You must be hooked into the Quick Release (QR) Harness Loop in order to activate the IMMEDIATE DEPOWER™ feature.
- Insert the Security Pin into the Harness Hook under the Loop. (Fig. 1)
- Make sure your quick release and control Systems are set up properly before launching or engaging the Security Pin on your Harness Loop.
- We suggest that you engage the Security Pin only when ready to launch and/or the Bypass leash is connected.

**CAUTION:** Be advised that when the Security Pin is engaged, you have a semi-permanent connection to the kite. As a precaution, know where your Quick Release Handle is and be educated on how to activate it before engaging the Security Pin.

**SECURITY PIN – ENGAGING**

- Double check that your QR and Control systems are set up properly.
- Hook into your harness loop. (Fig. 2)
- Once hooked into the harness loop, only engage the Security Pin once you are ready to launch
  - (OVERRIDE SYSTEMS ONLY) Disengage the Override ball.
  - (FRONTLINE SYSTEMS ONLY) Connect the Tap Out Leash.
- Insert the Security Pin into the center of the harness hook, making sure it is below the harness loop. Your harness loop must be between the harness hook and the Security Pin in order for this feature to work properly. (Fig. 3)
- Make sure that the Security Pin is secure. This will keep your harness loop from accidentally dropping out of your harness hook. Your Security Pin is now ready for use.

**SECURITY PIN – RELEASING**

You may disengage from the Security Pin in two ways:

- With your hands, slide the Security Pin out of the harness hook. (Fig. 4)
- Release the Quick Release Handle on your harness loop. (Fig. 5)



**BYPASS™ LEASH (optional)**

All 2006 Cabrinha kites can be used with the optional BYPASSTM Leash. This security leash is an optional feature and is recommended for first time users and kiteboarding schools, and for riders who kiteboard without being hooked into the harness loop.



If you choose not to ride with the BYPASSTM Leash, follow the instructions on using the security pin to make sure you have a positive connection to your kite.

**TIPS**

- Make sure you set up your BYPASSTM Leash properly before going on the water.
- When using your Cabrinha kite with the optional BYPASSTM Leash, you may activate the shutdown feature of the kite by simply unhooking from the harness loop
- If hooked into the harness loop when using the BYPASSTM Leash, you must first either unhook or activate the quick release on your harness loop in order to utilize the BYPASSTM Leash System as a means of shutting the kite down.

**CAUTION:** If using a BYPASSTM Leash on the Override control system, releasing the QRS will separate you from the kite. The Override CS is equipped with an alternate leash attachment point above the CAS which will allow the rider to remain attached to the left front line.

**Centerline Adjustment Strap (CAS)**

All Cabrinha control systems come with a CAS. To operate it is a "pull pull" action. This is used to change the length of your front (depower) lines.

- (Crossbow CS) Pull on the black ball to depower (Fig.1)
- (Crossbow CS) To increase power, pull on the red ball (Fig.2)
- (Powerdrive CS) Pull on the lower handle to depower (Fig.3)
- (Powerdrive CS) To increase power, pull down on the large plastic loop on the CAS. (Fig.4)



**Overview**

One of the most valuable features of the Crossbow Control System with Override™ is its ability to immediately and completely depower the kite by positioning the control bar into Override™ mode. By pushing the control bar past the Override™ ball and releasing it, the kite will immediately depower and fall from the sky. The Crossbow's approach to security is to make it a seamless part of the way the kite functions. There is nothing to "turn on" no handle to manually activate. For the first time in kitesurfing's history you, the rider have absolute control of the power of your kite.

**Relaunch**

The Crossbow's unique bridle allows the rider to perform a water relaunch by simply pulling on the left or right rear lines. Similar to Recon, the wingtip will rise out of the water and allow the rider to position the kite into a side launch position. This is all possible without the use of a 5th line or additional wing tip fittings.

**Override - Hooked In**

The security system can be operational when the rider is either hooked in to the harness loop or unhooked (with an attached leash). If a rider chooses the hooked in option, they must use and Cabrinha harness loop with security pin.

**Override - Unhooked**

The security system can be operational when the rider is either hooked in to the harness loop or unhooked (with an attached leash). If a rider chooses the unhooked in option, they must use a Cabrinha Bypass leash attached to the Harness loop.

- Attach the bypass leash to your harness
- Attach the clip to the harness loop



**CAUTION:** If using a BYPASS™ Leash on the Override control system, releasing the QRS will separate you from the kite. The Override CS is equipped with an alternate leash attachment point above the CAS which will allow the rider to remain attached to the left front line. See "Self Rescue with the Crossbow"

**OVERRIDE™ OPERATION**

This OVERRIDE™ system allows the rider to immediately turn off the power of the kite, even while riding, by simply pushing the bar past the Override Ball/sleeve. It is recommended that the Override ball be disengaged prior to launching.



**CAUTION:** The override ball is a convenience item that allows the rider to un-spin the bar after rotations without fully depowering the kite. If too much force is applied, the bar may push past the override point.

**OPERATION:**

If immediate depower is needed push the bar past the Override ball. The kite will immediately depower and slowly drop out of the sky. To resume riding, simply grab the control bar and sheet back in.

**CAUTION:** By sheeting the bar back in, the kite will immediately power back up and continue flying. Be aware of its position in the power window before powering back up. If the kite is on the water, use the techniques outlined in "Relaunching with the Override System" section below.



To reset the Override ball

- Reach up the depower mainline and grasp the Override ball
- Slide the override down to the Override sleeve
- Snap the ball back into place

**CAUTION:** Be aware that pulling down on the depower line could cause the rider to unhook from the harness loop. Be sure that your security pin or external leash is engaged.

To un-spin the bar after rotations:

- Let the bar out to the Override ball
- Un-spin the bar
- Grab the bar and sheet back in

**CAUTION:** The override ball is a convenience item that allows the rider to un-spin the bar after rotations without fully depowering the kite. If too much force is applied, the bar may push past the override point.



**MOVING THE OVERRIDE BALL/SLEEVE**

The Override length can be adjusted to suit individual rider needs.

- Loosen the Allen screws on the Override sleeve
- Slide the sleeve to the desired position
- Tighten the Allen screws lightly. – Do not over-tighten the screws.

**CAUTION:** The Override system comes preset at 35cm of depower. This is the best position to allow the convenience of bar spinning and depower. If you set the depower length less than 35 cm, you do so at your own risk.

**RELAUNCHING WITH THE OVERRIDE CONTROL SYSTEM**

The same features that de-power the kite also assist in quicker relaunching. When the kite is leading edge down on the water, it can be rolled into a side launch position by following these steps:

- The rear leader line is also your relaunch assist line
- Reach up the rear leader lines and pull the line toward your body. You may need to pull a couple of meters of line to get the wingtip to rise off of the water
- **CAUTION:** Make sure not to wrap the leader line around your hand or to allow your body to get entangled in it.
- It helps to keep your boards on your feet and in front of you to slow your forward momentum.
- The kite will roll onto one wingtip.
- Once on its side, the kite will begin to move toward the edge of the wind window. You may have to finesse the kite to the edge of the window; to do this, continue to hold onto the same leader line until the kite wants to re-launch.
- When the kite is ready to re-launch, release the leader line, slowly steer the kite up into the sky, and level out your bar.
- Once you begin riding again, you may reset the Override ball.

**Self Rescue with the Crossbow**

The Crossbow depower is designed to provide the rider with a greater range of depower and security. However, in the event of a self rescue, you may want to “flag” the kite.

We have provided for this situation by adding a “grab ball” on a sliding leader. This point may also be used to attach a leash if desired. In attaching a leash, the “spinning leash” feature is disabled”

If you want to flag the kite from this point:

- Grab the red ball above the CAS (img)
- Release the control bar
- Proceed with your self rescue

## Overview

The Frontline™ Security and Relaunch System with Tap Out™ is the easiest way to depower a classic arc kite from the top of the arc. This nose line depower system is standard equipment for all Contra, Revolver, and Co2 complete kites.

## Tap Out™

Tap Out™ is an on-board security feature designed to be used during the launching and/or landing process to reduce the risks associated with flying a kite on land. When enabled, Tap Out™ allows the rider to depower the kite completely by pushing the control bar in the direction of the kite. Once activated the load will transfer automatically to the Frontline™ and instantly depower the kite. The rider then stays connected to the depowered kite by a leash which is integrated into the system.

## Unhooked Mode

The Frontline™ function can also be used when riding unhooked to immediately depower the kite. By connecting a handle pass leash to the Frontline™ ring, the kite will depower by simply letting go of the bar when unhooked from the harness. To recover the kite in this mode there are no parts to reconnect. Just grab the bar, un-spin the lines, and its ready to launch again.

## Manual Activation

The Frontline™ system can be manually activated to depower the kite at anytime, even while riding, by lifting on the manual release handle.

## Relaunch Assist™

Frontline's Relaunch Assist™ feature can easily launch a downed kite in seconds. When the kite falls to the water or snow leading edge down, you can pull on the Frontline™ to flip it on its back. Then by pulling on one of the rear leader lines you can easily steer the kite into the side launch position.

## Frontline™ – Hooked In

The Frontline security system can be operational when the rider is either hooked in to the harness loop or unhooked (with an attached leash). If a rider chooses the hooked in option, they must use and Cabrinha harness loop with security pin. When the manual QR is activated, the rider will remain connected to the Frontline™ via the harness loop.

## TAP OUT™ leash

Frontline has added an important security feature by taking one step out of the release activation equation. The new Tap Out™ feature allows the rider to simply push the control bar to activate the IMMEDIATE DEPOWER™ function. This system allows the rider to immediately turn off the power of the kite, even while riding, by utilizing the Tap Out leash. The rider then stays connected to the de-powered kite by a leash that is attached to the rider.

Frontline with Tap out allows the rider to enable an automatic release security function prior to launching, landing, or at anytime while riding. This is simply done by attaching the Tap Out leash to the Powerlock loop. When the rider is on the water and away from any obstacles they can disconnect the Tap-Out leash.

The IMMEDIATE DEPOWER™ function can still be activated anytime by lifting the release handle in the direction of the kite.

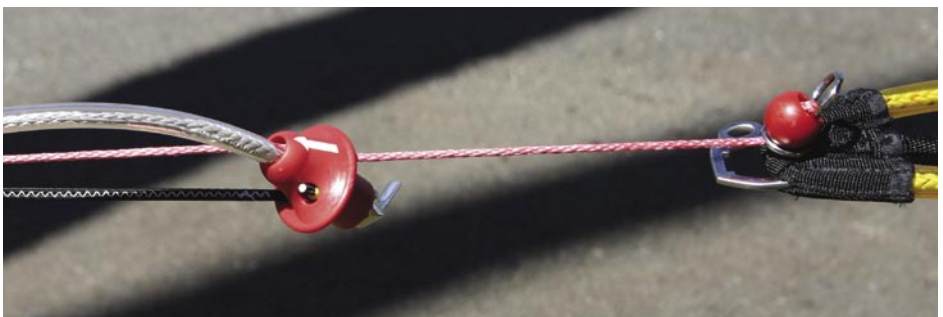
# 06

## CONTROL SYSTEM

### FRONTLINE OPERATION - TAP OUT™ (OPERATION)

#### TAP OUT™ - while in LAUNCH MODE

1. To activate the IMMEDIATE DEPOWER™ function while in Launch Mode, simply push the bar away from the body, until the QR activates (18cm).
2. This will release the TapOut™ quick release above the harness loop.
3. Once the Tap Out™ quick release is activated, the control system will slide up the Frontline recovery line.
4. This will leave the rider attached only to the nose line.
5. The kite will fully de-power and will drop out of the sky toward the water.



# 06

## CONTROL SYSTEM

### FRONTLINE OPERATION - TAP OUT™ (OPERATION)

#### TAP OUT™ - while in RIDE MODE

1. To activate the IMMEDIATE DEPOWER-ERTM function while riding, simply push the Harness Loop Quick Release, located at the top of the Centerline Harness Loop.
2. This will release the harness loop from the depower line.
3. Once the Tap Out™ quick release is activated, the Control system will slide up the Override recovery line.
4. This will leave the kite attached to the nose line.
5. The kite will fully de-power and will drop out of the sky toward the water.



If you activated the FRONTLINE while on the water, follow the steps of self-rescue and swim to shore. You may also reset the Frontline (see "Resetting the Frontline") and resume your session, if you choose, but CAUTION that this is an intermediate-advanced technique. If you activated the Frontline system when landing your kite, have your partner secure your kite on shore, reset the Frontline, and then wind your lines on the control bar.

CAUTION: The Frontline System is intended to be used for landing your kite and for emergency situations only.

CAUTION: The kite will not fly again until you manually reset the Frontline. (see "Resetting the Frontline Release System").





### Resetting The Frontline System

Your Frontline System can and should be reset before winding your lines on your control bar at the end of your session. The Frontline can also be reset on the water, if you choose, but please CAUTION this is an intermediate-advanced technique.

#### Instructions to reset your Frontline (on land):

1. Pull the recovery line through the control bar until the harness loop is back to the QR body. CAUTION: DO NOT wrap the leader line, flying line, etc. around your hand.
2. Insert the release pin into the release trapezoid on the harness loop. (Fig.1)
3. Fold the release pin through the release trapezoid. (Fig.2)
4. Lift up on the QR Body to allow the release pin to clear the bottom of the QR Body. (Fig.3)
5. Release the QR body and let it slide back over the release pin
6. Make sure the QR Body is over the release pin. CAUTION: This step is very important, because if you do not replace the QR body correctly, the harness loop may release when you relaunch.
7. Your Frontline Release System is now reset.
8. You are now ready to either relaunch your kite from the water or to wind your lines onto your control bar.



#### Instructions to reset your Frontline (on water):

1. While remaining hooked into your QR Harness Loop, swim or pull yourself along the recovery leader lines toward the Control system. CAUTION: Make sure to keep yourself free of your flying lines.
2. Reach forward and grab the QR Body. CAUTION: DO NOT wrap the leader line, flying line, etc. around your hand.
3. Insert the release pin in the trapezoid at the top of the harness loop. (Fig.1)
4. Fold the release pin through the trapezoid. (Fig.2)
5. Lift the QR body and lower it over the top of the QR pin, pull down on the QR Body to make sure it contains the pin. (Fig.3)
6. Make sure the QR Body is over the release pin. CAUTION: This step is very important, because if you do not replace the QR Body correctly, the Frontline system may reactivate when you relaunch.
7. Let the Recover leader slide through the bar until all line is reset. CAUTION: be aware of where the recover leader is at all times. Be careful not to let the line catch or wrap on any part of your body or board.
8. Your Frontline Release System is now reset.
9. You are now ready to relaunch your kite from the water. If you get into further trouble, be ready to pull your QRS.

### Relaunching with The Frontline System

The same features that de-power the kite also assist in quicker relaunching. When the kite is leading edge down on the water, it can be rolled into a side launch position by following these steps:

1. The Frontline recovery line is also your relaunch assist line
2. Reach up the recovery leader lines and pull the line toward your body. You may need to pull a couple of meters of line to get the kite to trip. **CAUTION:** Make sure not to wrap the leader line around your hand or to allow your body to get entangled in it. (Fig.1)



1

3. The kite will "trip", roll on to its back and move onto one wing tip
4. Once on its side, the kite will begin to move toward the edge of the wind window. You may have to finesse the kite to the edge of the window; to do this, continue to hold onto the same leader line until the kite wants to re-launch.
5. When the kite is ready to re-launch, release the leader line, slowly steer the kite up into the sky, and level out your bar.
6. Once you begin riding again, tension on your flying lines will reset the Recovery leader.



2



3



4



5

**SETUP** ◀

# 06 SETUP

## THE CROSSBOW CONTROL SYSTEM WITH OVERRIDE

### THE Crossbow CONTROL SYSTEM with Override

The Crossbow Control System is a control system specifically for The Crossbow kites.



### Components

- CONTROL BAR with end fittings and Powerlock loop
- De-power Line with QRS
- Override Ball
- Override Sleeve
- Bar floats with integrated Compound depower pulleys
- 27cm Harness Loop with Security Pin (23cm, 30cm, and 33 also available)
- Leader Lines (2) (yellow = left ; black = right)
- Centerline Adjustment Strap with Power adjustment extensions
- Emergency Shutdown ball

### Tips

- Your kite should be tuned so that when the rider is unhooked from the harness line the kite is fully sheeted in (powered), but not over sheeted.
- You may fine-tune the power of the kite with the Centerline Adjustment Strap.
- See the section on 4-Line Tuning for more explanation of 4-line kite tuning capabilities.

**THE POWERDRIVE CONTROL SYSTEM with Frontline**

The Powerdrive Control System is a control system for 4-LINE kites.

**Components**

- CONTROL BAR with end fittings and Powerlock loop
- De-power Line with QRS
- 27cm Harness Loop with Security Pin (30cm, 33cm, and 36cm also available)
- Leader Lines (2) (yellow = left ; black = right)
- Centerline Adjustment Strap
- Bar Floats

**Tips**

- Your kite should be tuned so that when the rider is unhooked from the harness line the kite is fully sheeted in (powered), but not over sheeted.
- You may fine-tune the power of the kite with the Centerline Adjustment Strap.
- See the section on 4-Line Tuning for more explanation of 4-line kite tuning capabilities.

# 06 SETUP #1

## CHECK YOUR LINE LENGTHS

### 1.1 CHECK YOUR LINE LENGTHS

The 2006 control bars come set up with the flying lines attached; however, it is wise to check your line lengths before going on the water. To do so, follow the directions below:

**CAUTION:** The Frontline and Override Control systems can be adjusted in the same manner as outlined below.

- Loop a piece of line (any rope or cord) around a tree or fence post.
- Tie the line in a knot around the tree, leaving a piece long enough to attach all lines.
- Roll out the flying lines from the post and set the control bar on the ground, facing up, with the yellow control lines on the left and the black control lines on the right (looking from your bar to the post). Make sure there are no obstructions in between your bar and the post. The Frontline will remain in the middle of the 4 control lines.
- Make sure your flying lines are not twisted or crossed.
- At the ends of the flying lines nearest the post you will notice that there are eyelets on the rear steering lines and front de-power lines. The overhand knots on the front (de-power) lines are there to eliminate incorrect connection to the kite.
- Take the rope attached to the post and feed it through the eyelets on all five lines, with the yellow on the left and the black on the right.
- Tie a bowline knot, with all five lines inside the loop.
- Walk back to the control bar.
- Make sure that the centerline adjustment strap is fully extended, so that the kite is set up at full power.
- Standing directly in line with the post, pull back hard and steady on the control bar by pulling straight back toward yourself.
- Your control bar should be in line with your shoulders and should be straight and not at an angle.
- All of the lines should have even tension under pressure. (I.e. no slack in the de-power lines, steering lines, or Frontline).
- If your control bar is even, your Control System is ready to attach to your inflated kite.

If your control bar is even, proceed to  
SETUP 2 - INFLATING YOUR KITE

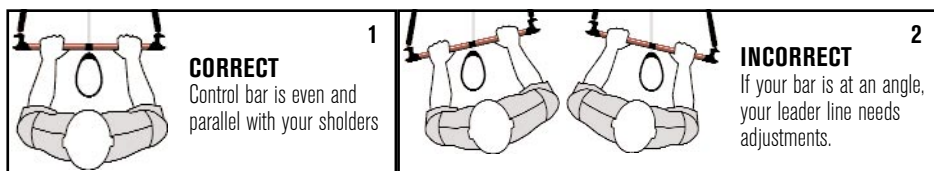
If your control bar is NOT even, follow the  
instructions in SETUP 1.2 - LINE LENGTH  
CORRECTIONS



## 1.2 LINE LENGTH CORRECTIONS

Adjustments are made by moving one or both of the knots on the ends of the leader lines. Your goal is to have all of your flying lines the same length. This includes your frontline if you are using a Frontline Control System.

- If one of the steering lines is too long, loosen the knot (located inside of the bar end on the long side) and move it toward the control bar.
- If one of the steering lines is too short, loosen the knot (located inside of the bar end on the short side) and move it toward the kite.
- Re-tighten the knot and check your line length again. (Fig. 1) Adjust again if necessary until the control bar is balanced.
- DO NOT put knots in your FLYING LINES. Knots in the flying lines compromise the life of the line. Put knots only in your LEADER LINES.
- It is highly unlikely that your center (de-power) lines are uneven. If they are, you may make the correction by adjusting the knots on the Center Leader Assembly. If the yellow-sheathed de-power line is too long, move the knot on the left center leader line toward the control bar. If this same de-power line is too short, move the knot away from the control bar. If the black-sheathed de-power line is too long, move the knot on the right center leader line toward the control bar. If this same de-power line is too short, move the knot away from the control bar.
- Once you've made the proper adjustment, check the bar again. All four lines should be the same length and the bar should be balanced. (Fig. 1)

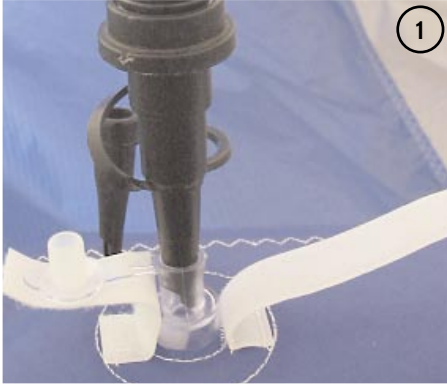


# 06 SETUP #2

## INFLATING THE STRUTS

### STEP 2.1 - INFLATING THE STRUTS

See the section on Kite Care before inflating the struts of your kite. Unroll your kite with the struts facing up.



**Hold the pump at a perpendicular angle to the valve. Use one hand to hold the valve steady and the other hand to operate the pump.**



**Secure Velcro covering over each strut valve.**

- Make sure your back is to the wind and that the leading edge of the kite is closest to your body. Secure the wingtips with sand to keep the kite from flapping in the wind.
- Partially inflate the center strut, then the two middle struts, followed by the end struts.
- When inflating, hold the pump at a perpendicular angle to the kite valve. Use one hand to hold the valve steady and the other hand to operate the pump. (Fig. 1) This will help maintain the life of the internal bladder.
- When all struts are partially inflated, go back to each strut, making sure the internal bladders are lined up correctly.
- Confirm that the corners of each strut under the leading edge are able to fully inflate. Lightly push air around in the bladders until the corners are free and correctly lined up.
- Now fully inflate each strut.
- When the strut is fully inflated, secure the valve plug and attach the Velcro covering across each valve. (Fig. 2)
- Do not over-inflate the struts. You may damage the internal bladder by over-inflating it. If the strut is fairly solid to the touch, it is fully inflated.
- Do not under-inflate the struts. This will cause poor performance and re-launching problems.



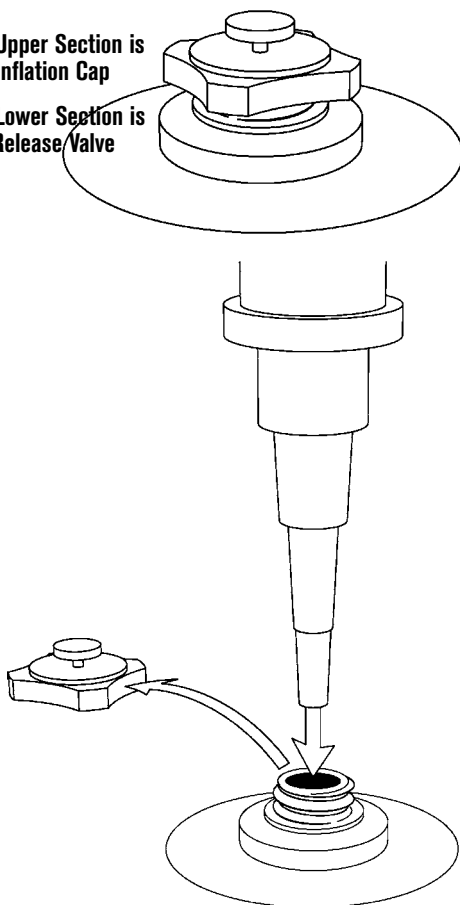
**STEP 2.2 - INFLATING THE LEADING EDGE**

All Cabrinha kites feature the 2-part, high-volume Airlock Valve as well as a standard valve on the leading edge bladder. The Airlock Valve is for inflating and deflating your kite. The standard valve's primary purpose is to keep the Airlock Valve from twisting.

- Make sure that the release valve is seated firmly by turning clockwise. Do not over tighten the release valve when the kite is not inflated. Doing so may twist and damage the bladder.
- Check that the standard valve plug and Velcro covering are secure before inflating the bladder.
- Open the inflation cap by turning it counter-clockwise. Insert pump (or use the adapter supplied with the Cabrinha pump) and inflate the leading edge.
- When the leading edge is fully inflated, remove pump valve and screw the inflation cap back on. Lightly turn/tighten until inflation cap is firmly secured.
- Do not under-inflate or over-inflate the leading edge. Proper inflation will make it difficult but not impossible to bend the ends of the kite in. If it is very easy to bend the wing tips in, the leading edge is under-inflated. Your kite should be firm enough that while on its back, the wing tips should extend into the air and the kite should retain its bowed shape. If the leading edge is under-inflated, it may cause poor performance and re-launching problems. All kites have been tested using 450mB pressure
- Once the leading edge is properly inflated, turn the kite over and secure with sand. (see SETUP STEP 2.3 TIPS ON SECURING YOUR KITE)

The Upper Section is  
The Inflation Cap

The Lower Section is  
the Release Valve



**Properly-Inflated Kite**



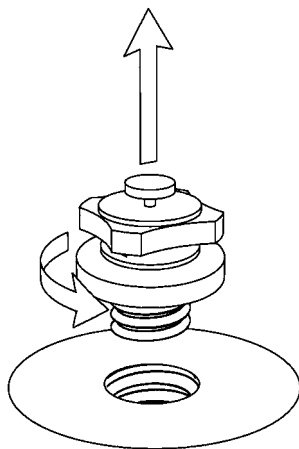
**Under-Inflated Kite**

# 06 SETUP #2

## DEFLATING THE LEADING EDGE

### STEP 2.3 - TIPS FOR SECURING YOUR KITE

- Never leave an inflated kite unattended on the beach for a long period of time. Winds may shift or change and the kite may become unsecured and fly off.
- Always secure your kite with sand, using more weight than you think you need. An unmanned kite is dangerous.
- Never secure your kite with rocks or sharp objects (including your board); they will compromise the life of the kite. If you do not have a sandy beach launch, consider sand bags.
- Do not leave an inflated kite (secured or not), directly exposed to the wind for any length of time. This allows the trailing edge to flutter excessively, which can damage the kite or tangle the control lines. If you must leave the kite exposed to the wind on the beach, place sufficient amounts of sand between each strut and near the trailing edge to minimize or stop the fluttering. Also, if possible, leave the kite in a shaded area.
- Keep in mind other beach users and make sure your kite and lines will not be a danger to others.
- Wind your lines onto the bar when you are not kiting. This will keep the beach free of lines and will prevent other beach users from becoming tangled in your equipment.



### STEP 2.4 - DEFLATING THE LEADING EDGE

To deflate the Leading Edge, you must unscrew the release valve and not the inflation cap. The release valve is the lower portion of the AIRLOCK. After deflating, clear the valve of any sand or debris; then seal the valve before stowing kite to prevent debris from getting inside internal bladder.

#### Important CAUTION

When closing valve on deflated kite, hold bladder in place to prevent twisting the bladder. Do not over tighten valve when kite is deflated. You may tighten it further when kite is partially inflated again.

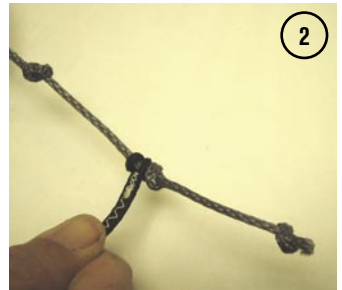
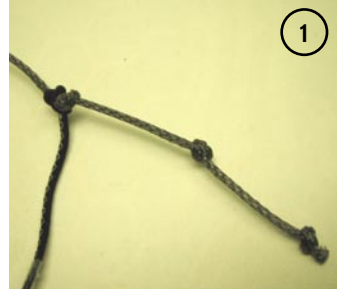


**STEP 3.1 - ATTACHING CONTROL LINES**

Once you have completed SET UP 1 & 2, you are ready to connect your control system to your inflated kite.

- With your lines laid out, carry the kite to the end of the flying lines farthest from your control bar. Make sure the leading edge is facing into the wind.
- Secure the kite with sand or sand bags. Do not secure kite with anything sharp or abrasive.
- (CROSSBOW CS) You will notice four connection bridles on your kite (two on each wingtip). There are three knots on each rear bridle and one larks head loop on each front bridle. Utilize the middle knot on the rear bridle; the other knots are there for tuning purposes. (Fig. 1)
- (POWERDRIVE CS) You will notice four connection bridles on your kite (two on each wingtip) and the Frontline bridle. There are three knots on each rear bridle and one larks head loop on each front bridle. The Frontline bridle has a single knot for line attachment. Utilize the top knot on the rear bridle; the other knots are there for tuning purposes. (Fig. 2)
- (POWERDRIVE CS) Attach the Frontline first. This will ensure that the other lines are attached straight and you will not forget to attach the Frontline. Slip the red larkshead loop onto the end of the Frontline Bridle. Give the knot a tug to secure.
- Slip the knot on your yellow-sheathed de-power (center) line into the larks head loop on the yellow bridle on the left wing tip of the kite. Give the knot a tug to secure.
- Using a larks head knot on the sheath of your flying line, attach your yellow steering (outside) line to the yellow bridle on the left wing tip of the kite. Give the knot a tug to secure.
- Slip the knot on your black-sheathed de-power (center) line into the larks head loop on the black bridle on the right wing tip of the kite. Give the knot a tug to secure.
- Using a larks head knot on the sheath of your flying line, attach your black steering (outside) line to the black bridle on the right wing tip of the kite. Give the knot a tug to secure.

CAUTION: See "Kite Overview" as reference.

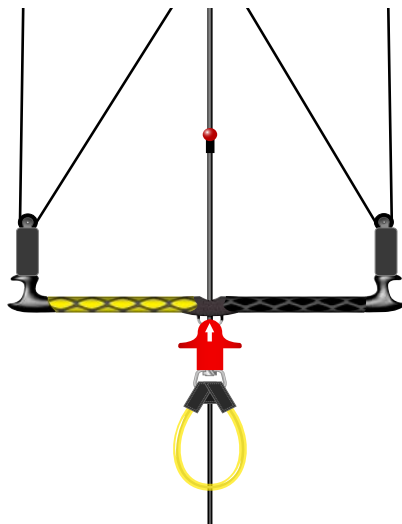


**STEP 3.2 - DOWNWIND LAUNCH SET UP (Bar downwind of kite)**

- Lay the bar 30 meters downwind of the kite so that the wing tips are facing the control bar (the leading edge of the kite should be facing into the wind). When setting the bar up downwind of the kite, you must turn the bar upside down before walking the lines out. This means that as you are looking toward the kite from behind, the yellow-sheathed lines will be on the right, while the black-sheathed lines will be on the left.
- (POWERDRIVE CS) Walk out the Frontline (red) line and attach to the Frontline bridle. {IMG}
- (CROSSBOW CS) Lay out the Crossbow Bridle. {IMG}
- Walk out the steering (outside) lines and using a larks head knot, attach them to the middle knots on the trailing edge or back bridles (remember, yellow-to-yellow; black-to-black).
- Walk out the white de-power (center) lines and slip each knot into the larks head loops on the corresponding leading edge or front bridles (remember, yellow-to-yellow; black-to-black). Make sure that the de-power lines do not cross the steering lines. {IMG}
- The lines should not cross each other or be twisted.
- Your kite is now ready to fly. Please see the sections of this manual that relate to safety and make sure you are familiar with the conditions before getting on the water. Kite tuning tips are located in this manual under Tuning.

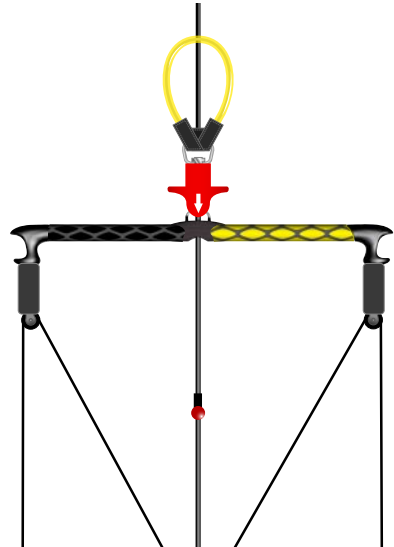
**Your kite is now ready to fly**

Please see the sections of this manual that relate to safety and make sure you are familiar with the conditions before getting on the water. Kite tuning tips are located in this manual under Tuning.



**STEP 3.3 - UPWIND LAUNCH SETUP (Bar upwind of kite)**

- Lay the bar 30 meters upwind of the kite. The leading edge will be pointed toward the bar and into the wind. The wing tips of the kite will be facing away from the bar. The control bar should be right side up.
- (POWERDRIVE CS) Walk out the Frontline (red) line and attach to the Frontline bridle. {IMG}
- (CROSSBOW CS) Lay out the Crossbow Bridle. {IMG}
- Walk out the steering (outside) lines and place them parallel to each other on the ground about 4 feet apart near the kite (remember, yellow-sheathed lines on the left and black-sheathed lines on the right).
- Place the steering lines far apart, so the kite will lie between them.
- Walk out the de-power (center) lines and place them in between the steering lines, parallel to each other, so that all four lines are lined up as follows (left to right): yellow-sheathed yellow line, yellow-sheathed white line, black-sheathed white line, black-sheathed black line. The lines should not cross each other or be twisted.
- Place the kite on top of the de-power lines and Frontline so the wing tips of the kite are pointing downwind and are near the ends of your steering lines.
- Make sure the kite is still secured with sand or sand bags.
- (POWERDRIVE CS) Attach the Frontline to the Frontline bridle.
- From outside of the kite, attach the steering lines to the corresponding back bridles on the wing tips (remember, yellow-to-yellow; black-to-black). Using larks head knots, attach the steering lines to the upper knots on the bridles. Give each knot a tug to secure. {IMG of both systems}
- From inside the kite, slip the knots on each of the de-power lines into the larks head loops on the corresponding leading edge bridles (remember, yellow-to-yellow; black-to-black). Give each knot a tug to secure.
- Again, double check to make sure that your lines do not cross each other, and are not twisted.

**Your kite is now ready to fly**

Please see the sections of this manual that relate to safety and make sure you are familiar with the conditions before getting on the water. Kite tuning tips are located in this manual under Tuning.

# 06 SETUP #4

## TUNING THE KITE - CROSSBOW

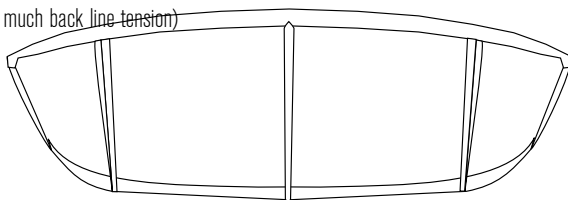
### TUNING THE KITE - CROSSBOW

Proper tuning of your Crossbow kite is essential for best performance. A properly tuned kite increases its efficiency, speed, and allows the kite to de-power correctly. The following guidelines will help you to properly tune the kite to suit your style of riding.

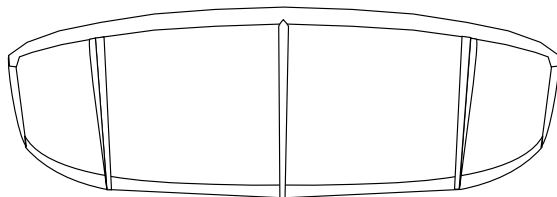
- All models have a desired sweet spot that is achieved by the correct tension of the steering (back) and de-power (front) lines. Fine-tuning of the kite may be done by making small adjustments to the Centerline Adjustment Strap (CAS).
- The Crossbow is very sensitive to over sheeting. Too much back line tension can cause the kite to fly slowly or even backwards in light wind. Over sheeting will also minimize the amount of shutdown available in the depower range.
- Do not 'over sheet' the kite. The first objective is to set the kite's maximum power while allowing it to fly efficiently across the sky. More power and quicker turning is achieved by tensioning the steering (back) lines. This is called 'sheeting in the kite'. There is however, a point of diminishing returns. Too much back line tension will cause the kite to fly slowly across the sky and not allow it to fly to the edge of the power window.
- With the kite directly overhead, hook into the harness loop and fully sheet in (power up) the kite. If the kite is over-sheeted, the kite will sit back in the window. (CAUTION: beware of lofting. Leaving the kite overhead for long periods of time increases the risk of this phenomenon. If you feel yourself being lifted, sheet out immediately and be ready to pull your QRS).
- De-power the kite by pulling on the CAS until the desired effect is achieved. The more you pull on the CAS the less power the kite will have. Keep in mind that you will still be able to de-power the kite through the Depower Loop, so do not de-power too much with the CAS. To increase power, pull down on the large plastic loop on the CAS.

View of kite from riders perspective. Kite in the neutral position directly above the rider.

Over sheeted wingtip (too much back line tension)  
Front line too tight



Correct Trim



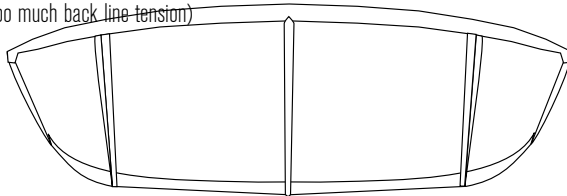
**TUNING THE KITE - CONTRA / REVOLVER / CO2**

Proper tuning of your CONTRA, REVOLVER, and CO2 kite is essential for best performance. A properly tuned kite increases its efficiency, speed, and allows the kite to de-power correctly. The following guidelines will help you to properly tune the kite to suit your style of riding.

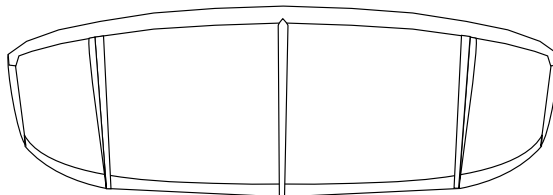
- All models have a desired sweet spot that is achieved by the correct tension of the steering (back) and de-power (front) lines. Fine-tuning of the kite may be done by making small adjustments to the Centerline Adjustment Strap (CAS).
- Do not 'over sheet' the kite. The first objective is to set the kite's maximum power while allowing it to fly efficiently across the sky. More power and quicker turning is achieved by tensioning the steering (back) lines. This is called 'sheeting in the kite'. There is however, a point of diminishing returns. Too much back line tension will cause the kite to fly slowly across the sky and not allow it to fly to the edge of the power window.
- With the kite directly overhead, hook into the harness loop and fully sheet in (power up) the kite. Observe the angle of the wingtips in relation to the other inflated battens. A common turning position is achieved when the wing tips are parallel to the inflated battens and the steering (back) lines are taught. (Fig. 1) If the wing tips are flared outward at the leading edge, the kite will be over sheeted. (Fig. 2) (CAUTION: beware of lofting. Leaving the kite overhead for long periods of time increases the risk of this phenomenon. If you feel yourself being lifted, sheet out immediately and be ready to pull your QRS).
- De-power the kite by pulling on the CAS until the desired effect is achieved. The more you pull on the CAS the less power the kite will have. Keep in mind that you will still be able to de-power the kite through the Depower Loop, so do not de-power too much with the CAS. To increase power, pull down on the large plastic loop on the CAS.
- The Frontline needs to be tuned so that it is under light tension. Too much tension and the kite will be depowered and sluggish. Not enough and the kite may breath and wobble in gusts. The ball should sit firmly on the stainless ring at the end of the mainline (image)

View of kite from riders perspective. Kite in the neutral position directly above the rider.

Over-sheeted wingtip (too much back line tension)  
Front line too tight

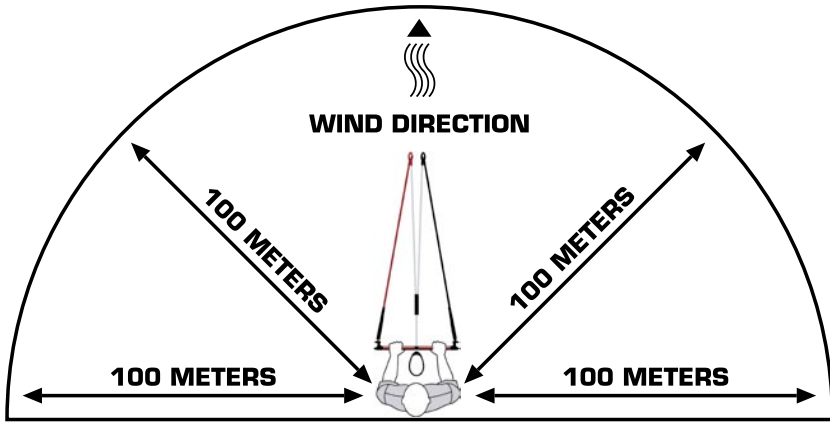


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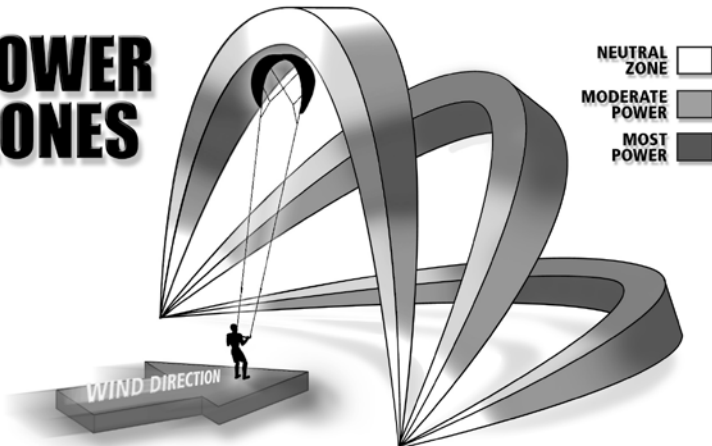


**⚠ WARNING****AREA OF OPERATION**

This is the 100 meters of area to each side and downwind of the rider. Do not launch your kite if you do not have this distance between yourself and other people, or obstructions.

**KITE POSITIONS, ZONE & POWER**

It is important to understand kiteboarding's basic zones of power before you launch a kite. Unfortunately, people often think that the kite is stable in neutral position. However, wind fluctuates—it gusts and lulls—and in neutral position, something known as lofting can occur when wind fluctuates. When a kite luffs (or receives less wind in its foil), the kite will move slightly away from the pilot. When a gust hits, the kite receives a surge of power, and often that surge of power is too much for a kiteboarder standing with the kite high overhead. As a result, the kiteboarder may be lofted (lifted) into the air. Lofting can be serious, but you may reduce the chances of lofting by understanding the power zones, and by avoiding putting your kite in the neutral position while on land.

**POWER ZONES**



**Neutral Position** - This is the position just above the pilot's head in the sky. If the pilot levels out the bar, the kite will gravitate to the neutral position. However, it is difficult and dangerous to keep the kite in this position. Although in this position the kite may feel steady and may feel like it has the least amount of power or pull, it is also the position in which on land the pilot is most susceptible to lofting. On the water, the neutral position can be utilized to rest while you reel in your board, but on land, we strongly suggest you do not utilize the neutral position. After launching, it is best to make your way to the water without delay. Do NOT linger on land with the kite in neutral position. It is VERY dangerous.

**Lofting** - Lofting occurs when the kite is above the riders head in the neutral position. Instability in the wind can cause sudden vertical force and lift a rider off of their feet.

**Neutral Zone** - This is the area that includes the neutral position and the area to the left and right of the pilot. It encompasses the most upwind or windward positions in which to fly the kite. When flown here, the kite has less power or pull than when it is in the power zone. However, use caution when the kite is in this zone, especially when on land, and especially in gusty wind conditions.

**Power Zone** - This is the area in front and to the sides of the pilot, but excluding the neutral position and zones. It is the area in which the kite has the most power and pull. When flown in this area, the kite can be powerful and dangerous, so avoid flying your kite in this zone when learning. Use extreme caution when flying the kite in this zone.

**Generating Power** - One way to generate power from your kite is by steering your kite from low to high or from high to low in the sky. The movement of your kite in the sky creates lift, which creates power. Keep this in mind, especially when learning. When bringing the kite from a low position up to the neutral position, the movement of the kite actually creates power and generates speed, so be prepared.

When under-powered, you may use this ability of the kite to your advantage by creating power and speed to get planing.

## STEERING

### Key Points to Remember

- When practicing steering a kite on land, always remember that your kite has extreme power. Be prepared. We suggest you develop your kite handling skills on land with a trainer kite, and then move to the water for further practice using the “body dragging” techniques with your power kite.
- When first learning to fly your kite, always keep your eyes on the kite.
- Steer slowly. Do not make any abrupt motions with the control bar.
- Keep in mind the power of the kite.
- Never turn the control bar like a car steering wheel. It is ineffective for steering the kite and may actually cause the kite to become out of control.

### Steering the Kite to the Left

- Hold the bar with both hands, shoulder distance apart.
- With your eyes on the kite, slightly pull on the control bar with your left hand, pulling it toward your body.
- This will allow your left arm to bend and your right arm to extend. Keeping one arm extended is important; do not pull both arms toward your body at the same time.
- Pull slowly. The quicker your movements, the faster the kite will turn and the more power it will create.
- Once the kite starts to turn, it will continue to turn left unless you “tell it” otherwise.
- Be ready to steer the kite in the other direction.



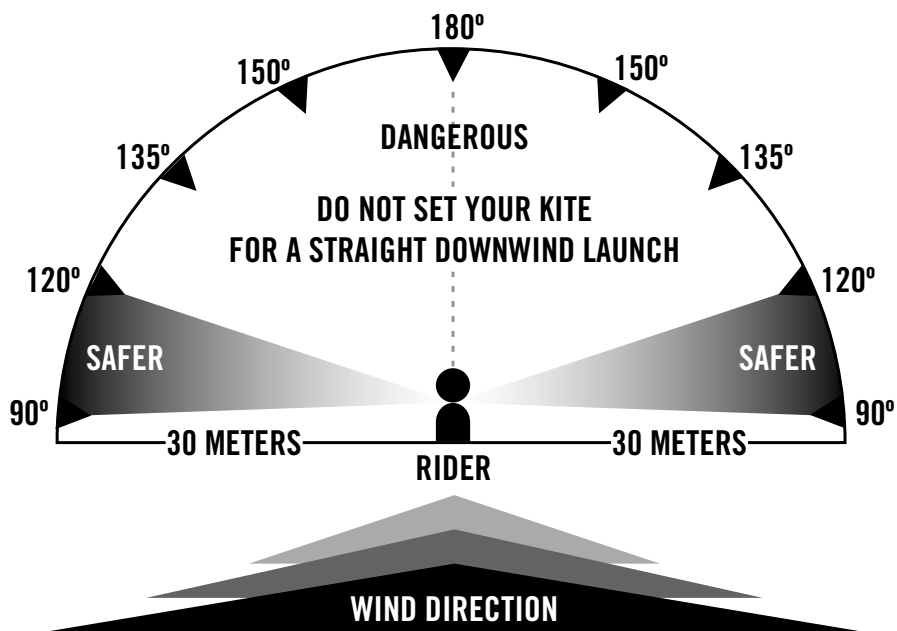
### Steering the Kite to the Right

- Hold the bar with both hands, shoulder distance apart.
- With your eyes on the kite, slightly pull on the control bar with your right hand, pulling it toward your body.
- This will allow your right arm to bend and your left arm to extend. Keeping one arm extended is important; do not pull both arms toward your body at the same time.
- Pull slowly. The quicker your movements, the faster the kite will turn and the more power it will create.
- Once the kite starts to turn, it will continue to turn right unless you tell it otherwise.
- Be ready to steer the kite in the other direction.



### Planning Your Launch

- Choose an area where you have at least 100 meters of space to your left and right and especially downwind of you.
- Set up your equipment so that your kite is downwind of where you will be launching, but most importantly, so that it is at an angle off of the wind.
- DO NOT SET UP YOUR KITE FOR A STRAIGHT DOWNWIND LAUNCH! The kite will launch with too much power and you will endanger the lives of yourself and those around you if you launch in this manner.
- Basically, if the wind is at your back, and straight downwind is at a  $180^\circ$ , then you will want to set your kite at about a  $100^\circ$  off the wind, either to the left or to the right of you.
- The more the kite is positioned into the wind when you launch, the less power it will have when it goes up, and the easier your launch will be.
- Your partner will stand with the kite while you will stand 30 meters away at your control bar.
- Make sure you launch slowly, and launch the kite at an angle, NOT STRAIGHT DOWNWIND!



**LAUNCHING WITH A PARTNER**

1. Before launching, re-familiarize yourself with your Quick Release System in the event that you must engage them. Make sure you have them properly set up.
2. Next, thoroughly check your lines, your gear, and your launching and landing sites; if all is okay, you are ready to launch your kite.
3. Before you launch, organize a clearly defined release signal that you and your partner both understand.
4. (CROSSBOW CS) – Disengage the Override ball.
5. (POWERDRIVE CS) - Connect the Tap Out leash.
6. Next, engage the security pin.
7. Have your partner stand with the kite at 100° off of the wind.
8. Your partner should hold the kite in the middle of the leading edge, with the leading edge vertical and pointing into the wind.
9. Your partner should stand behind the kite and not to the side or in front of the kite.
10. Also, your partner SHOULD NOT touch the bridle or flying lines.
11. With the control bar in your hands and at chest height, take a few steps back to take the slack out of the flying lines.
12. Signal your partner to let go of your kite. It is important that your partner lets you steer the kite out of his or her hands.
13. Your partner SHOULD NOT throw the kite into the air. Instruct him/her against doing this BEFORE you launch. When the kite is thrown into the air, it hinders the ability of the kite to launch properly. When thrown, the kite may either launch too abruptly and powerfully or it may not launch at all. It is a very dangerous way to launch.
14. Once your partner lets go of the kite, have him/her move upwind of you and out of your way.
15. SLOWLY steer the kite to the edge of the power window. DO NOT make any abrupt motions. The slower you steer the kite, the more in control you will be.
16. With the kite at the edge of the power window and the wind at your back, walk slowly to the water's edge, keeping in constant check with the kite. You should know what the kite is doing at all times.
17. (CROSSBOW CS) If anything goes wrong with the launch, you should be ready to push the control bar away to depower the kite.
18. (POWERDRIVE CS) If anything goes wrong with the launch, you should be ready to utilize the Quick Release System with TAP OUT.
19. WARNING: the more wind there is during your launch, the faster everything will happen. That is why it is important that you launch the kite slowly.
20. (POWERDRIVE CS) When you are on the water and at an appropriate distance from any obstacles, you may disconnect the Tap Out leash. This will disable the TAP OUT function. You must then manually shut down or de-power the kite by pulling the release body in the direction of the kite.
21. (CROSSBOW CS) When you are an appropriate distance from any obstacles, you may engage the override ball. You will then need to use force to push the bar past the Override ball to immediately depower your kite.

**WARNING:** the more wind there is during your launch, the faster everything will happen. That is why it is important that you launch the kite slowly.

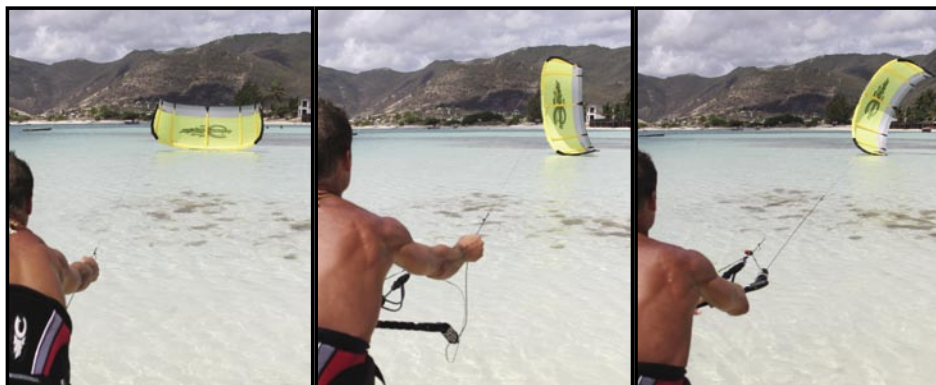
**LANDING A KITE TO YOUR PARTNER**

1. Prior to launching, make sure your partner has been instructed on how to land your kite properly.
2. Also, you should always determine adequate landing spots before you launch your kite.
3. Having done that, make sure that when you are heading toward shore, that your landing location is still un-crowded and un-obstructed.
4. Never land your kite over, on top of, or near others, especially if they are downwind of you. You should have an area clear of people, pets, power lines, trees, and other obstructions.
5. As you approach shore, keep your kite low near the water, at the edge of the power window.
6. Drop down (or step) off your board and body drag the final distance to shore. Do not approach the shoreline with speed.
7. Slowly steer your kite into the wind and to your partner.
8. Your partner should be on the windward side of your kite as he/she approaches it.
9. Once the kite is nearly touching the ground, your partner should grab the kite at the middle of the leading edge strut. He/she should grab the kite in the same location on the kite as when it was launched.
10. Your partner **SHOULD NOT** grab the kite bridles or flying lines.
11. Your partner should **AVOID** grabbing the kite by either wing tip or the trailing edge of the kite. Grabbing the kite by the wing tip or the trailing edge will often cause it to flip or spin; the kite will also be hard to manage.
12. Once your partner has the kite's leading edge, he/she should walk the kite away from the water's edge.
13. Your partner may either continue to hold the kite or he/she may secure the kite by turning it over, with the struts down and the leading edge pointed into the wind, and securing it with sand or sand bags.
14. Once on land, with your kite secured, you may wind up your lines.

**RELAUNCHING – CROSSBOW**

Important **CAUTION**: Proper inflation of the struts, especially the leading edge, is imperative for water re-launchability of your kite. Make sure your kite struts are properly inflated before entering the water.

- When your kite goes down on the water, know that the kite may re-launch on its own, often when you do not expect it to, so be prepared.
- If your kite goes down on its face, with the leading edge and struts facing the water, you must steer the kite onto its side in order to re-launch.
- Pull the rear leader line toward your body. Maintain constant tension on this leader line. **CAUTION**: Make sure not to wrap the leader line around your hand and do not allow your body to get entangled in the lines. You may need to pull as much as two meters of leader in order to lift the wingtip of the kite.
- **HINT**: Keep your board on your feet and in front of you. This will slow your forward momentum and increase the speed of relaunch.
- Once the wingtip begins to lift, the kite will soon roll onto its side.
- Once on its side, the kite will begin to move toward the edge of the wind window. You may have to finesse the kite to the edge of the window; to do this continue to hold onto the same leader line until the kite wants to re-launch.
- Sometimes, especially in light wind, you must be patient as the kite works its way to the edge of the wind window. Do not get impatient and start pulling on both sides of the bar. This only confuses the kite. Continue to work the kite to the original side you chose.
- When the kite is ready to re-launch, release the leader line and steer the kite up into the sky. Slowly steer your kite into the sky and level out your bar.



**RELAUNCHING – Frontline**

Important **CAUTION**: Proper inflation of the struts, especially the leading edge, is imperative for water re-launchability of your kite. Make sure your kite struts are properly inflated before entering the water.

- When your kite goes down on the water, know that the kite may re-launch on its own, often when you do not expect it to, so be prepared.
- If your kite goes down on its face, with the leading edge and struts facing the water, you must steer the kite onto its side in order to re-launch.
- Pull the recovery leader line toward your body. Maintain constant tension on this leader line. **CAUTION**: Make sure not to wrap the leader line around your hand and do not allow your body to get entangled in the lines. You may need to pull as much as two meters of leader in order to trip the kite.
- Once the kite is tripped, it will soon roll onto its side.
- Once on its side, the kite will begin to move toward the edge of the wind window. You may have to finesse the kite to the edge of the window; to do this continue to hold onto the same leader line until the kite wants to re-launch.
- Sometimes, especially in light wind, you must be patient as the kite works its way to the edge of the wind window. Do not get impatient and start pulling on both sides of the bar. This only confuses the kite. Continue to work the kite to the original side you chose.
- When the kite is ready to re-launch, release the leader line and steer the kite up into the sky. Slowly steer your kite into the sky and level out your bar.
- Once you begin riding again, tension on your flying lines will reset the Frontline to its proper flying tension



**CROSSBOW CS / POWERDRIVE CS**

In order to replace your control system's flying lines, you must first remove the existing flying lines from the leader lines. You may then attach new flying lines to the current leader lines, assuming the leader lines are in an acceptable condition.

**Connect Your New Flying Lines to the Leader Lines**

- Lay your Control System face up on the ground approximately 30 meters away from a post or tree to which you will be attaching your lines in order to check that the lengths are even (see Step 1.2).
- Unwind and lay out the color-coded FLYING LINES between the post and the control bar. You will have two sets of lines-the front (or inside) DE-POWER LINES and the back (or outside) STEERING LINES
- Make sure your flying lines are not twisted or crossed. Do this by walking down your lines, separating them from each other. Once you have them separated, lay them down in this order from left to right while looking from your control bar toward the end of the lines: yellow steering line, yellow-sheathed white de-power line, black-sheathed white de-power line, black steering line.
- You will connect the steering lines to the rear leader with a "larks head to knot" connection. You must first create a larks head loop with each of the flying lines. {IMG} You will then place the yellow-sheathed loop over the knot on the left leader line. Pull the connection tight to secure. Then place the black-sheathed loop over the knot on the right leader line. Pull the connection tight to secure
- Pull the connection tight for a secure connection (Fig. 3).
- In order to replace your center lines, you must first create a larks head loop with each de-power flying line. You will then place the yellow-sheathed loop over the knot on the left leader line on the Centerline Adjustment Strap (CAS). Pull the connection tight to secure. Then place the black-sheathed loop over the knot on the right leader line on the CAS. Pull the connection tight to secure
- Your flying lines are now connected to your leader lines, and you are ready to make sure that all of your lines are even.





**POWERDRIVE CS**

In order to replace your Powerdrive control system's Frontline, you must first remove the existing Frontline from the control system. You may then attach a new frontline to the controlsystem.

**Connect Your New Frontline**

- Lay your Control System face up on the ground approximately 30 meters away from a post or tree to which you will be attaching your lines in order to check that the lengths are even (see Step 1.2).
- Unwind and lay out the new Frontline between the post and the control bar.
- You will connect the upper frontline to the lower frontline with a "larks head to larks head" connection. Push the lower frontline loop through the upper frontline loop (Fig.1)
- Thread the kite end of the upper frontline through the lower frontline loop
- Pull the entire upper frontline through the loop
- Pull the connection tight for a secure connection (Fig. 2).
- Slide the 16mm tie ball down the upper frontline (Fig. 3)
- Thread the upper frontline through the ring at the base of the "V" (Fig. 4)
- Your frontline line is now connected to your control system, and you are ready to make sure that all of your lines are even.



**Major Tears**

For a major tear in the kite fabric, consult your dealer for a reputable kite repair loft.

**Minor Tears**

For a minor tear in the kite fabric, you may repair the tear with kite repair tape. Your kite has been supplied with an adhesive kite repair material.

1. Clean and dry your kite.
2. Lay the kite flat on a clean, dry, smooth surface.
3. Cut two pieces of repair tape the same size, making sure they are each big enough to cover the entire tear.
4. Carefully cover one side of the tear with a piece of the repair tape. Gently rub the tape smoothly onto the surface of the kite.
5. Next, cover the opposite side of the tear with the second piece of repair tape, in the same manner as before.
6. Make sure the tape is secure.

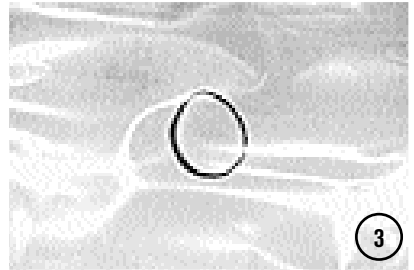
**REPAIRING STRUT BLADDERS****Key Points to Remember**

- Before attempting to repair one of your kite bladders, make sure your kite is clean and dry. Always keep your kite pump, valves and bladders free of sand, water and other things that will dirty them.
- Make sure the bladders are deflated.
- Avoid repairing your kite on the beach or in dirty, dusty, windy, or abrasive areas. It is best to find a clean, dry spot out of the wind. A grassy spot is ideal.
- You will need a set of flying lines and a bladder repair kit (supplied with kite) before you begin to repair the bladder.

1. First, lay the kite out with the struts facing up.
2. Detach the Velcro closure at the base of the damaged strut. This will open up the sleeve of the strut and will allow you access to the internal bladder. (Fig. 1)
3. Next, separate the valve plug from the Velcro closure so that the valve is free from the strut's sleeve. This will essentially disconnect the bladder from the sleeve. Keep track of the valve plug for later use.
4. Tie one flying line around the valve. Cinch it down well on the valve. Do not tie the knot through the hole on the valve or you may damage it.
5. Gently insert the valve down into the strut sleeve.
6. Go to the base of the sleeve and gently pull the bladder out of the sleeve, leaving the flying line through the sleeve. Having the flying line through the sleeve will allow you to easily replace the bladder once it is repaired. (Fig. 2)
7. Inflate the bladder and plug the valve so that it maintains air. Do not over inflate the bladder.



8. Submerge the bladder in water to locate the hole. A bathtub or large sink full of water is best.
9. Look for bubbles to locate the hole.
10. Once you have located the leak, dry the area and mark the hole with a circle. A permanent marker works best for this. (Fig. 3)
11. Dry and clean the rest of the bladder with a soft towel.
12. Again, deflate the bladder.
13. Decide whether to use the glue or a patch supplied in your bladder repair kit.
14. If the hole is on a seam, you will need to glue the area.
15. If the hole is on a flat area of the bladder, remove the backing on one of the patches and press it onto the bladder, covering the hole.
16. Set the bladder aside for approximately 20 minutes to dry.
17. Again, inflate the bladder and check to make sure it is now holding air.
18. If you have repaired the holes in the bladder, coat the entire bladder in talcum powder to assist insertion back into the sleeve.
19. Deflate once again.
20. Tie the flying line from the end of the strut opening onto the valve.
21. Lay the bladder flat at the end of the strut, so that you may now feed it back into the sleeve.
22. Gently feed the valve, followed by the rest of the bladder, into the sleeve.
23. From the valve opening of the sleeve, you will pull the flying line out of the sleeve, while pulling the bladder back into place.
24. Once the bladder is replaced, pull the valve back into the hole of the sleeve and remove the flying line from its base.
25. Re-attach the Velcro at the base end of the sleeve. (Fig. 4)
26. Re-attach the valve plug.
27. Inflate the strut partially to make sure the bladder fits into all four corners of the sleeve.
28. Inflate the strut entirely or deflate it if you are going to store the kite.

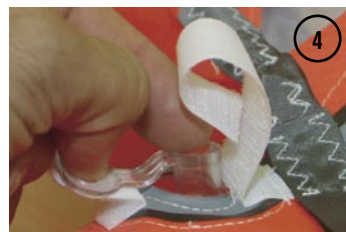


# 06 REPAIRS

## LEADING EDGE BLADDERS

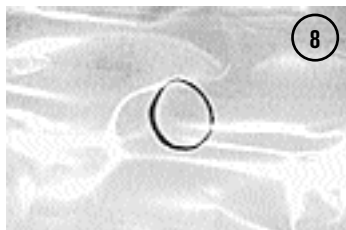
### REPAIRING LEADING EDGE BLADDERS

- First, lay the kite out with the struts facing up.
- Each end of the Leading Edge (LE) bladder is folded over and secured with a Velcro closure. You will also find a zipper access pocket at the center of the LE. Undo each Velcro closure and unzip the center access pocket. This will open up the sleeve of the strut and will allow you access to the bladder. (Fig. 1,2)
- Separate the Airlock Valve Assembly from the leading edge. Carefully lift the retainer ring from the bladder. Keep track of the assembly for later use. (Fig. 3,4,5)
- Next, on the standard valve, separate the valve plug from the Velcro closure so that the valve is free from the strut's sleeve. This will essentially disconnect the bladder from the sleeve. Keep track of the valve plug for later use.
- For the next step, you will need two flying lines. Starting with one end of the leading edge, tie one line around the wing tip end of the bladder. Cinch the line down well. Using the second line, follow the same procedure with the other end of the leading edge bladder. (Fig. 6)
- Next, gently push the valves down into the strut sleeve.
- Now, access the leading edge bladder through the zippered access pocket near the leading edge valve. (Fig. 7)
- Gently pull one side of the bladder out of the sleeve at a time, leaving the flying line through both sides of the sleeve. Having the flying line through the sleeve will allow you to easily replace the bladder once it is repaired.
- Once out of the sleeve, inflate the bladder and plug both valves so that it maintains air. Do not over inflate the bladder.
- Submerge the bladder in water to locate the hole. A bathtub or large sink full of water is best. You will need to submerge one section of the bladder at a time in order to locate the hole. Look for air bubbles to locate the hole.
- Once you have located the leak, dry the area and mark the hole with a circle. A permanent marker works best for this. (Fig. 8)
- Dry and clean the rest of the bladder with a soft towel.
- Again, deflate the bladder.
- Decide whether to use the glue or a patch supplied in your bladder repair kit.
- If the hole is on a seam, you will need to glue the area.
- If the hole is on a flat area of the bladder, remove the backing on one of the patches and press it onto the bladder, covering the hole.
- Set the bladder aside for approximately 20 minutes to dry.

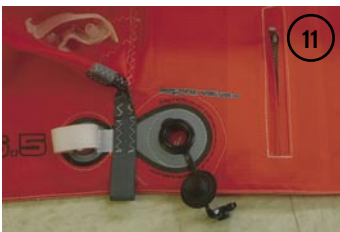


# 06 REPAIRS

## LEADING EDGE BLADDERS



- Again, inflate the bladder and check to make sure it is now holding air.
- Deflate once again.
- Tie each flying line to the corresponding ends of the bladder.
- Lay the bladder flat near the center access pocket and fold it, accordion style, so that you may feed each end back into the sleeve without twisting the bladder.
- Starting with one end, feed the bladder into the access pocket.
- Walk to one end of the leading edge and gently pull on the flying line, while holding the end of the sleeve. Slowly feed the bladder back into this side of the sleeve.
- Next, follow the same instructions with the other side of the bladder, until the valve is near the hole and the bladder is fully inserted.
- Tuck the ends of the bladder into the corresponding tips. (Fig. 9)
- Once the bladder is replaced, pull the valve back into the hole of the sleeve. (Fig. 10)
- Next, place the standard valve back into position and replace the valve plug in the Velcro. (Fig. 11)
- Making sure not to catch the internal bladder in the zipper, close the center LE zipper pocket. Next, fold over wingtip access pockets and secure the Velcro strips.
- Re-attach the Airlock Valve Assembly.
- Partially inflate the Leading Edge to make sure the bladder fits into all four corners of the sleeve.
- Inflate the Leading Edge entirely or deflate it if you are going to store the kite.



# 06 GLOSSARY

## FREQUENTLY USED KITEBOARDING & WIND TERMINOLOGY

### TRAINER KITE

a kite that may be used on land to simulate the motions used in kiteboarding. It is an excellent instructional and learning tool. Despite its small size, this kite still has power, so be alert.

### INFLATABLE KITE

a kite with inflatable tubes designed to float the kite and to facilitate water re-launchability.

### STRUTS

the outer fabric tubes found on your kite. They house the inner inflatable bladders, which are filled with air to give structure to the kite.

### BLADDER

the inner inflatable tube found within the leading edge and the struts of the kite. (Imagine a bike-it has both a tire on the outside and an inner tube which holds air).

### FRONTLINE

Security Leash & Relaunch System

### QRS-QUICK RELEASE SECURITY SYSTEM

connection points on the control systems that the pilot may release in an emergency. QRS Harness Leash (Patent) that is attached to the rider and kite, designed to disconnect you in an emergency.

### BYPASSTM LEASH SYSTEM

an optional security leash feature that is recommended for first time users and kiteboarding schools, and for riders who kiteboard without being hooked into the harness loop.

### CONTROL BAR

the steering device the pilot uses to steer the kite.

### BRIDLES

the lines that hang from the wing tips of the kite. The flying lines will be attached from the control bar to these bridle lines in order to connect control bar to kite.

### LEADER LINES

The lines that attach directly to the control bar. You will

attach these lines to the flying lines in order to connect them to your bar.

### FLYING LINES

a term used to describe all four of the lines included with your kite package. These lines connect the bridle lines on the kite to the leader lines on the control bar and are typically 20-30 meters in length.

### STEERING LINES

the two outside flying lines that attach to the trailing edge bridles on the kite-one to the left wing tip and the other to the right wing tip.

### DE-POWER LINES

the two center flying lines that attach to the leading edge bridles on the kite-one to the left wing tip, the other to the right wing tip. These lines assist in de-powering the kite. Frontline

### HARNESS

a piece of equipment used to temporarily attach the rider to the control bar harness line. This enables the rider to save energy by utilizing their body weight and all of their muscles to hang on to the kite. Most common are the waist harness (attaches around the torso) and the seat harness (attaches to the waist and around the legs)

### KITEBOARDING

the term used to describe the sport of power kiting on water.

### KITESURFING

another term used to describe the sport of power kiting on water.

### NEUTRAL POSITION

This is the position just above the pilot's head in the sky. If the pilot levels out the bar, the kite will gravitate to the neutral position. However, it is difficult and dangerous to keep the kite in this position. Although in this position the kite may feel steady and may feel like it has the least amount of power or pull, it is also the position in which on land the pilot is most susceptible to lofting. On the water, the neutral position can be utilized to rest while you reel in your board, but on land, we strongly suggest you do not utilize the neutral position. After launching, it is best to make your way to the water without delay. Do NOT linger on land with the kite in

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neutral position. It is VERY dangerous.

## NEUTRAL ZONE

This is the area that includes the neutral position and the area to the left and right of the pilot. It encompasses the most upwind or windward positions in which to fly the kite. When flown here, the kite has less power or pull than when it is in the power zone. However, use caution when the kite is in this zone, especially when on land, and especially in gusty wind conditions.

## POWER ZONE

This is the area in front and to the sides of the pilot, but excluding the neutral position and zones. It is the area in which the kite has the most power and pull. When flown in this area, the kite can be powerful and dangerous, so avoid flying your kite in this zone when learning. Use extreme caution when flying the kite in this zone.

## LAUNCHING

the motion in which the pilot steers the kite from their partner's hands into the sky.

## SELF LAUNCHING

a technique in which the pilot launches the kite without assistance, usually by weighting down a wing tip with sand until he/she is ready to launch.

## RE-LAUNCHING

the motion in which the pilot steers the kite off of the water and back into the sky.

## BODY DRAGGING

this is an instructional tactic / step in which the pilot flies the kite while in the water, but without the board. The pilot will launch, then walk to the water, and basically drag in the water while practicing flying, re-launching and self-rescue techniques.

## WATER STARTING

the motion of the pilot in which he/she goes from sitting or lying in the water to standing on the board.

## GYBING

the motion in which the pilot changes the direction of the board he/she is riding. The pilot switches from a starboard tack to a port tack or vice versa.

## PLANING

the point in time in which the pilot gets the board skimming on the water.

## LANDING

the motion in which the pilot steers the kite into their partner's hands on shore.

## OVER-POWERED

a situation in which the pilot has a kite too powerful for his/her ability level, weight, strength, and/or wind conditions.

## UNDER-POWERED

a situation in which the pilot has a kite not powerful enough for his/her weight, strength, and/or wind conditions.

## REACH

a direction of travel relative to the wind direction. Generally 90-160 degrees off the wind.

## LULL

a term used to describe wind when it lessens in strength, for any amount of time. A term also used to describe the complete de-powering of a kite.

## LUFF

a term used to describe what happens to the kite in a lull.

## SIDESHORE

wind is blowing from the left or from the right, parallel to the shore. Ideal wind direction for kiteboarding.

## ONSHORE

wind is blowing directly or to a great extent directly from the water toward the land. Do not operate your kite in or near water in this wind direction.

## SIDE ONSHORE

wind is blowing from either the left or the right and from the water toward the land. This is a combination of onshore and sideshore wind. Utilize caution when operating your kite in or near water in this wind direction.

## OFFSHORE

wind is blowing from the shore directly or to a great extent out to the water. Do not operate your kite in or near water in this wind direction.

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## SIDE OFFSHORE

wind is blowing from either the left or the right and from the shore out to the water. This is a combination of offshore and sideshore wind. Do not operate your kite in or near water in this wind direction.

## GUSTY WIND

wind is inconsistent and varies considerably from one wind strength to another.

## DOWNWIND

the direction in which the wind is traveling.

## UPWIND

the direction from which the wind is blowing.

## LEEWARD

the downwind side of the kiteboarder.

## WINDWARD

the upwind side of the kiteboarder.

## KNOTS

a measure of speed based on nautical miles.

1 knot = 1 nautical mile per hour.

1 knot = 1.15 miles per hour.

1 knot = 1.85 kilometers per hour.

## MPH

Miles Per Hour. A measure of speed.

1 mph = 1.6 kilometers per hour.

## BEAUFORT SCALE

a system for estimating wind strength based on the effects wind has on the physical environment (eg. the behavior of waves, smoke, etc.). Instruments are not used to determine wind strengths in this point scale (0 = calm to 12 = hurricane).



