REV

Camber Control System

REVOLUTION HANG GLIDER OWNER and SERVICE MANUAL Rev 2

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MANUAL REVISION HISTORY

Revision No	Description	Applicable Serial No	Date
0	Initial Issue	RN-13.5-001 >	30 November 2009
1	Inclusion Rev 14.5 Improved tuning data	RN-13.5-001 > RN-14.5-001>	7 April 2010
2	Inclusion of Rev 14.5 Sprog Settings (Confirmed DHV testing 07/06/11)	RN-13.5-001 > RN-14.5-001>	9 May 2011

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Section 1 DESIGN FEATURES

The Revolution is the result of continued refinement of our high performance topless hang glider. The goals for the Rev development were to increase high-speed performance, reduce weight and retain the great handling, which has been a characteristic of AirBorne gliders. We had the luxury of starting from the ground up, with only the basic control frame hardware remaining unchanged. All of our design objectives have been met or exceeded.

The first time you see a REV, you'll notice some obvious changes from the C4. The planform has a slightly deeper mid span chord, the tip wands exit the LE with a more tangential sweep and the percentage of double surface is greater.

When you look at the sail you'll see it's cleaner than ever. With the VG on it is twang tight and wrinkle free. The top surface layout is the now the common "rim & fill" style with load bearing heavier cloths used where needed. Lighter, more flexible laminates "fill" in the remainder allowing minor stretching to make the skin slick and tight. The under surface carries much more tension than previous wings but still allows for blow-down outboard to optimise the airfoil for higher speeds. The sail also includes as standard, a fairing for the pullback hardware. After you tension the cross bars you can just pull the zip and the rear keel hardware is enclosed as an extension to the keel pocket.

Looking inside the sail you'll see the engine room of the wing. The Camber Control System (CCS) is the most obvious change with a tensioning system used to control the airfoil from distorting upwards at high speeds. The CCS is activated when the VG approaches the full on setting and maintains precise airfoil shape. The control of the airfoil results in a reduction in profile drag. The distortion of the upper surface at high speeds has been well documented on other gliders and the drag penalty is obvious.

In combination with the new airfoil section, with increased double surface and improved pitch characteristics, the Rev gives the pilot smooth positive pitch feedback throughout an extremely wide speed range.

At AirBorne we have a well-developed quality assurance program, ensuring that every glider is built in accordance with the standard it was designed and tested to. This gives even the most experienced pilot a sense of security.

We hope that you have hours of great flying with your new glider. Fly high and safely.

Rick, Russell and Shane Duncan, Rob Hibberd and Paul Mollison,
AirBorne WindSports

Section 2 SPECIFICATIONS and OPTIONS

STANDARD SPECIFICATIONS

	REV-13.5		REV-14.5	
	METRIC	IMPERIAL	METRIC	IMPERIAL
SAIL AREA	13.43 sq m	144 sq ft	14.45 sq m	156 sq ft
WING SPAN	10.04 m	32.9 feet	10.64	34.9 ft
ASPECT RATIO	7.5		7.8	
NOSE ANGLE	126-131 degrees		126-131 degrees	
DOUBLE SURFACE %	95%		95%	
BATTENS	24 + 6		24 + 6	
GLIDER WEIGHT	33 kg	72 pound	35 kg	77 pound
PACK UP LENGTH	5.0 m	16.4 ft	5.3 m	17.4 ft
SHORT PACK LENGTH	3.9 m	12.8 ft	4.2 m	13.8 ft
RECOMMENDED PILOT HOOK IN WEIGHT RANGE (Includes Equipment)	70-105 kg	154-231 pounds	85-120 kg	187-264 pounds
VNE (Recommended Maximum Velocity)	90 km/h	55 mph	90 km/h	55 mph
VA (Recommended Maximum Rough Air Manoeuvring Velocity)	74 km/h	46 mph	74 km/h	46 mph
VD (Maximum Steady State Velocity)	125 km/h	78 mph	125 km/h	78 mph

Table 2 Specifications

Note: The stall speed of the Rev at maximum recommended wing loading is less than the minimum requirement of 25 mph (40 km/h).

Conversions: * 0.4536 kg/pound * 25.4 mm/inch * 1.609 km/mile
Va = Test speed x 0.707
Vne = Test Speed x 0.816

OPTIONS AND ALTERNATIVES

The Rev has various options or alternatives available. An alternative is used when one or more choices are required but one choice **must** be made. An option is something that **can** be included on the glider but is not required

The Rev airframe is standard with 7075 alloy and carbon rear leading edges. Carbon transverse battens. The sail standard configuration is leading edge and trailing edge material PX10 with PX5 used as the main sail in fill cloth. The main sail can be white or grey. The undersurface is made from 4oz dacron with 3 separate panels with a variety of colours available.

Alternatives	Part No	Description	Comment
Control Frame			
Airfoil 13.5 Airfoil 14.5	109960 110402	Aluminium Airfoil 56mmx26mm	Comfortable with good feel
Micro Drag 13.5 Micro Drag 14.5	109964 110403	Aluminium Airfoil 76mmx21mm	Reduced drag. Broader section
Base Bar			
Round	108609	Aluminium Round 28mm x 2 mm	Standard Round Speed Bar with foam grips
Streamline	108857	Aluminium Airfoil 46mmx20mm	Airfoil Speed Bar. Reduced Drag
Carbon	108563	Moulded Carbon	Carbon Speed Bar airfoil design with rounded section for holding. Good in cold.
Battens			
Standard 13.5 Standard 14.5	110328 110401	Standard Hinge	Standard 10.8x0.7mm 7075 alloy battens
Light 13.5 Light 14.5	110329 110400	Light Weight Hinge	Curved section 10.8x0.7mm with straight section 12x.45mm. Lighter and stiffer
Sprogs			
Alloy 7075	100347	Aluminium Round	Standard 7075 alloy
Carbon	110348	Carbon Round	Carbon tube with bonded lug. Stiffer and lighter
Options			
Carbon Inserts	109356	Carbon Kevlar 1800x195	Helps retain airfoil shape at high speeds. Improved high-speed glide.

Table 3 Airframe Alternatives and Options

Section 3 OPERATING LIMITATIONS

WARNING

Hang Gliding is a high-risk sport. The safe operation of this hang glider ultimately rests with you, the pilot. We believe that in order to fly safely you must maturely practice the sport of hang gliding. You should never fly this hang glider beyond the placard limits. The velocity never to exceed (VNE) for your glider is given in Section 2, as is the maximum speed for manoeuvres or flying in rough air (VA). The indicated airspeeds given are for calibrated instruments mounted on, or near, the base bar of the control frame. It is recommended that you fly your REV with an airspeed indicator, as it is relatively easy in the VG on configuration to exceed the placard limitations. Flight operations should be limited to non-aerobatic manoeuvres where the pitch angle does not exceed 30 degrees up or down to the horizon and where the bank angle does not exceed 60 degrees. Aggressive stalls and spins should not be attempted. Operations outside the recommended flight envelope, such as aerobatic manoeuvres or erratic pilot technique may ultimately produce equipment failure. Your glider was designed for foot launched soaring and should not be flown by more than one person at a time. It should not be flown backwards or inverted. The setting up and breaking down of a hang glider, transportation on cars and flying itself will have an effect over time on its structural integrity. The glider will require maintenance as outlined in the maintenance section of this manual. Like any aircraft safety depends on a combination of careful maintenance and your ability to fly intelligently and conservatively. The owner and operator must understand that due to inherent risks involved in flying a hang glider, no warranty of any kind is made or implied against accidents, bodily injury and death, other than those that cannot by law be excluded. We hope that your new glider will provide you with many hours of safe flying.

Section 4 WARRANTY STATEMENTS

This warranty extends to new Hang Gliders and/or accessories and equipment manufactured by AIRBORNE WINDSPORTS PTY LTD ("Airborne") and shall not embrace any other accessories or equipment in the sale.

AIRBORNE warrants to the customer the hang glider and/or accessories manufactured or supplied by AIRBORNE to be free from defect in material and workmanship under normal use and service and of merchantable quality and fit the purpose for which they are ordinarily used. This Warranty will apply for a period of ninety (90) days from the date of dispatch of the hang glider not withstanding the number of hours flown but subject to the hang glider remaining the property of the customer. This warranty does not exclude any rights implied in favour of any customer by any applicable Federal and State legislation.

AIRBORNE will make good any parts required because of defective material or workmanship as set out in the Warranty.

THE WARRANTY WILL NOT APPLY TO:
Any mechanical adjustments, parts, replacements, repairs or other servicing that in the judgement of AIRBORNE are made or should be made as maintenance.
Any defect caused by any alteration or modification not approved by AIRBORNE.
Any defect caused by the fitment of parts that are not made or approved by AIRBORNE.
Any defect caused by misuse, accidents, negligence or failure to carry out proper maintenance service.
Damage caused by continued operation of the hang glider after it is known to be defective.
Any defect or consequential loss, damage or injury caused by overloading.
Loss of use of the hang glider, loss of time, inconvenience, damages for personal injuries, loss of property or other consequential damages.
Failure due to wear and tear, accident, fire, incorrect or incomplete rigging and/or assembly, exposure to the elements, operation outside the placarded limitations and repairs attempted or made other than by AIRBORNE or it's authorised agent.

AIRBORNE will replace, free of charge, any original part that is determined by it to be defective under the terms of this Warranty and reserves the right to pay monetary compensation or make good the defect in any manner it deems appropriate.

The customer is responsible for transporting the hang glider or parts to and from AIRBORNE or its authorised agent when making claims under this Warranty. The hang glider or parts are at the customer's risk whilst in transit to and from AIRBORNE or its authorised agent.

NOTE: Warranty service is available to the customer from AIRBORNE WINDSPORTS PTY LIMITED or authorised agent.

Section 5 ASSEMBLY PROCEDURES

The wing can be assembled in two positions, either lying flat or standing on the control frame. Assembling the REV on the control frame is the most popular method of assembly in light winds. This method is preferable as the sail is less prone to being soiled or damaged during assembly. In higher winds it is preferable to lay the glider flat for assembly with the nose into the wind until ready to launch.

ASSEMBLING ON THE FRAME

Unzip Bag. Lay the wing down with zip up and the nose facing approximately 120 degrees from the wind direction.

Assemble Control Frame. Spread the control frame down tubes and connect the base bar. The pip pins are then inserted from front to rear. Check that all the rigging wires are outside the control frame.

Stand Glider Up. Rotate the control frame to the vertical position and rotate the wing 180 degrees so that it is sitting on the base bar.

Remove Bag. Remove the glider bag and unclip all of the ties.

Locate Nose Battens. Locate the nose battens on the locating pins. If you fail to load the battens prior to tensioning the glider the VG should be pulled full tight before attempting to locate the battens.

Figure 1 Nose Batten

Spread Leading Edges. Carefully spread both leading edges out half way then spread leading edges to their approximate flying position. Check the side wires are not twisted.

It is essential that the keel and the leading edges are kept in the same plane when spreading the leading edges or damage will result.

Attach front flying wires. Ensure that the front flying wires are secure and that the quick clip is positively locked.

Figure 2 Front Wires

Insert mainsail battens #1 - 5. Remove the battens from the bag. The red battens are for the left side and the green for the right. Insert the battens from the centre to the tip with gentle pressure, until the batten meets resistance. Shake the sail at the trailing edge whilst maintaining gentle pressure on the batten to allow the batten to be inserted over the cross bar.
DO NOT FORCE THE BATTENS!

Tension cross bars. The cross bars are tensioned by pulling the 2:1 pull back rope until the shackle is positioned on the quick clip. Ensure that the catch is positively locked.

Figure 3 Tension Cross Bars

Install keel stand. The rear keel extension can be removed and inserted through the hole on the lower side of the keel. This raises the wing tips and allows easier installation of battens. The keel stand should only be used in light wind conditions and level ground otherwise the keel may be damage.

Figure 4 Keel Stand

Insert tip rods. Remove the tip bags and insert the tip rod into the tip plug fitting at the rear of the leading edge. Ensure that the rod is fully inserted.

Load tip rod. Move to the front of the wing. For the right tip hold the rear leading edge with your right hand and the end of the sail with your left. Align the lever plug and bend the tip tube towards the trailing edge as you tension the tip tube. Locate the plug on the end of the tube. When installing the left tip rod the leading edge should be held with your left hand.

Figure 5 Load Tip Rod

Close tip lever. Move to the tip. Place your left thumb in the rope loop of the tip lever and close the lever. The lever should be held in the same plane as the trailing edge. Do not let the lever close rapidly as damage may result. Check that the lever is against the fibre tube and is not being forced above or below the tube. Close the velcro once the lever is properly closed. Repeat for the left wing using the opposite hands. Ensure Velcro access is closed evenly

Figure 6 Close Tip Lever

Insert remaining mainsail battens. Slide battens into sail pocket. Unclip hinge fitting by depressing with thumb. Close fitting while supporting underside of batten

To adjust batten load tension, release latch from sail and rotate batten clip. See Section 12 for tuning instructions

CAUTION Damage to the latch mechanism will occur if the fitting is not correctly depressed before opening

Figure 7 Unloading Batten Latch

Load washout struts. The washout rods or sprogs should be rotated into position over the sprog retainer loop and the zips closed fully. It is a good time to inspect the junctions prior to closing all zips. Lifting the trailing edge assists with locating and zipping sprogs into position.

Figure 8 Load Sprog

Insert under surface battens.
The under surface battens should be inserted as far as possible. The batten should then be pushed in with your thumb. Use the string to pull the batten to the rear of the pocket.

Figure 9 Insert Under Surface Battens

Install nose fairing. Attach the nose fairing applying the top hook and loop fastener first then gently tension over the nose plates and attach the hook and loop fastener to the under surface.

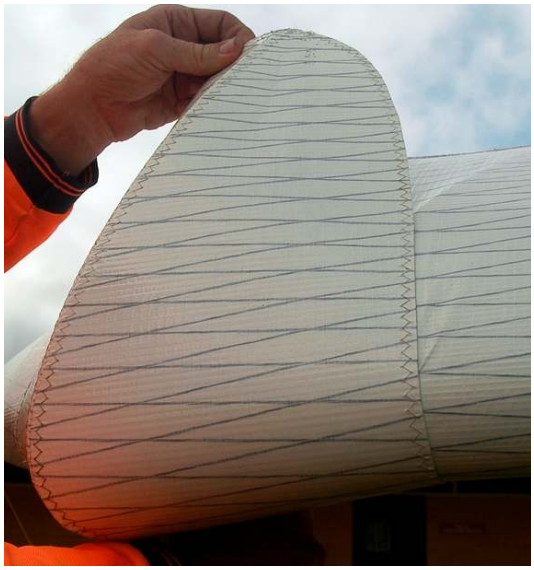


Figure 10 Install Nose Fairing

Pre-flight inspection.
You are now ready for the wing pre-flight inspection as outlined in the next section. It is imperative that you carry out this inspection every time you rig and before you fly.

ASSEMBLING LYING FLAT

Unzip the bag. Lay the wing down with zip up and the nose facing into the wind. Unzip the bag and unclip centre ties.

Assemble control frame. Spread the control frame down tubes and connect the base bar. The pip pins are then inserted from front to rear. Check that all the rigging wires are outside the control frame.

Rotate glider. Rotate the glider so that the control frame is under the wing. Make sure the rigging is not tangled.

Remove bag. Remove the glider bag and unclip all of the ties.

Locate Nose Battens. Locate the nose battens on the locating pins. If you fail to load the battens prior to tensioning the glider the VG should be pulled full tight before attempting to locate the battens.

Spread leading edges. Carefully spread both leading edges out half way firstly then spread leading edges to their approximate flying position. Check the side wires are not twisted.

It is essential that the keel and the leading edges are kept in the same plane when spreading the leading edges or damage will result.

Insert tip rods. Remove the tip bags and insert the tip rod into the fitting at the rear of the leading edge. Ensure that the rod is inserted all of the way.

Load tip rod. Move to the front of the wing. For the left tip hold the rear leading edge with your left hand and the end of the sail with your right. Bend the tip rod towards the trailing edge as you apply sail tension to the tip rod. Locate the tip lever on to the tip rod. When installing the right tip rod the leading edge should be held with your right hand.

Close tip lever. Move to the trailing edge. Place your right thumb in the rope loop of the tip lever and close the lever. The lever should be held in the same plane as the trailing edge. Do not let the lever close rapidly as damage may result. Repeat loading and closing for the right wing.

Insert mainsail battens. Remove the battens from the bag. The red battens are for the left side and the green for the right. Insert the battens from the centre to the tip with gentle pressure, until the batten meets resistance. Shake the sail at the trailing edge whilst maintaining gentle pressure on the batten to allow the batten to be inserted over the cross bar. DO NOT FORCE THE BATTENS

Tension cross bars. The cross bars are now tensioned by pulling the 2:1 tensioning rope until the shackle is positioned on the quick clip. Ensure that the catch is positively locked. When tensioning with the glider lying flat the keel can be raised approximately 200 mm to allow the side flying wires to be loose.

Attach front flying wires. Lift glider and attach front flying wires. Ensure that the front flying wires are secure and that the quick clip is positively locked.

Install nose fairing. Attach the nose fairing applying the top hook and loop fastener first then gently tension over the nose plates and attach the hook and loop fastener to the under surface.

Load Washout Struts. The sprogs should be rotated into position over the webbing retainer loops and the zips closed fully. It is a good time to inspect the junctions prior to closing all zips.

Insert under surface battens. The under surface battens are inserted then pulled back into the rear of the batten pocket with the string handle.

Pre-flight inspection. You are now ready for the wing pre-flight inspection as outlined in the next section. It is imperative that you carry out this inspection every time you rig and before you fly.

Section 6 PRE-FLIGHT INSPECTION

The wing was designed so that drag would be kept to a minimum. This means that most of the pre-flight checkpoints are enclosed.

A thorough pre-flight inspection is mandatory for any aircraft, and the best technique is a circular walk around the wing.

The nose area is the ideal place to start your pre-flight check, followed by each assembly point.

Keep in mind the three most critical set up areas:

The nose quick clip
Control bar base tube fasteners
The cross bar tensioner quick clip.

Starting at the nose we suggest the following checklist (ensuring all bolts and fasteners have the appropriate thread protruding beyond the nut).

Check the nose plate assembly ensuring that the VG routing is normal. Sight along both leading edges checking for similar curves.

Walk towards the tip feeling for dents in the leading edge.

Check cross bar/leading edge junction and inner sprog assemblies through the zipper access.

Check outer sprog assemblies through the zipper access.

Check sail tip lever is fully closed and the sail is not damaged.

Check the tip rod is properly located and the rear leading edge is undamaged.

Walk towards the keel checking all battens are secured.

Check the sprogs are loaded and the zips are fully closed.

Check the cross bar retaining shackle is secured on the quick clip.

Repeat the above steps for the other side wing in reverse order.

Check all lower rigging is correctly routed and free from damage. The most likely area for damage on wires is around the swage and thimble area.

Check control bar corners are correctly assembled with pip pin and cover.

Ensure the hang loop rocker is rotated 90 degrees to the keel and that hang loops are securely positioned and in good order. The hang loop should be free to move in both directions.

Check control bar top assembly and ensure that the down tubes are straight.

Unzip under surface and check cross bar hinge and restraining straps. The VG should be operated and inspected to ensure it is functioning properly.

Ensure that the double surface is zipped up and nose fairing is secure.

Clip your harness into the main and back up hang loops and perform a "hang check". Make sure that your harness is the correct distance from the base bar, your leg loops are secure and your carabiner is locked.

HANG GLIDER DAILY INSPECTION

Inspection of the following items prior to every flight is required:

Check wires for twisted or jammed thimbles or damaged strands. **Particular attention should be given to side wires**

Check wire ends for bolt and/or other fastener security.

Check for bends, dents, and scratches in all tubes.

Nose plate connections; spring clip retains front wires.

Tips secure; tip rod and lever undamaged, zipper closed.

Battens and batten clip ends not broken or bent.

A-frame connection on both sides.

Variable geometry operation (full and free movement).

Rear keel connections; spring clip retains shackle and tensioner cable.

Crossbar tension wire; free of kinks, frays, abrasions, broken strands.

Crossbar operation (free floating).

Sprog tubes, rod ends and clevis pins secure.

Sail condition; no tears, symmetrical appearance.

Harness straps and webbing secure, height adjustment correct.

Emergency parachute secure, correctly mounted and attached, operating handle accessible.

Section 7 BREAK DOWN PROCEDURE

To break down your REV, just reverse the set-up procedure steps as described. Included here are a few guidelines to follow which will save you time and prevent potential wear areas on your sail.

It is possible to leave the nose battens in during daily operations!

Set VG to full off position

Unzip keel pocket and install keel stand. Only use stand on even ground and in light winds.

Remove nose fairing.

Unzip sprogs and rotate them towards each other. The sprogs remain outside the sail.

Remove four or five tip battens and the under surface battens.

Unload tip lever and remove tip rod.

Fold tip lever towards sail and roll sail whilst keeping tension along the trailing edge. Fit tip bags.

Let off the sail tension and pull each wing in slightly.

Pull out the remaining battens.

Unzip centre rear zips and fold out control frame padding.

Fold both wings in symmetrically, bringing both leading edges back at the same time or in small steps side to side.

Place padding over the keel end.

Roll the sail up parallel to the leading edge. One tie should be wrapped around the keel and leading edge to hold them together whilst the other side wing is rolled.

Ensure that the sail is rolled into the leading edge pockets. It is important that the ties are not over tensioned as this can damage the mylar insert.

Position glider bag.

Roll glider over and undo control bar PIP pins. Fold base bar rearward. Attach down tube padding around down tube base. Place cover over the speed bar. Undo the two centre ties and fold the down tubes between the leading edges. Lay the wires smoothly to avoid kinking. Secure the centre ties and zip up bag.

The REV has 1x19 wires to minimize drag. The wires are more prone to kinking and should be treated with care.

For de-rigging flat, position top control frame padding. Undo nose wires and pull wing forwards then follow steps as previously described.

If resistance is encountered during any phase of set up or break down procedure stop and investigate before continuing.

Section 8 SHORT PACKING

ASSEMBLY FROM SHORT PACK

This procedure is to be followed if the wing arrives in a short packed configuration. The short packed wing has had the rear leading edges removed to reduce the packed size for transport. The correct reassembly of the wing is critical for safety and performance. If there are any doubts about the correct procedure for assembly after shipping contact AirBorne.

Remove wing from box. Ensure that all staples are removed before pulling the wing from the box. Damage to the sail may result if caught on box staples.

Unzip bag. Remove padding from the nose of the wing. Remove all wing straps.

Assemble the control frame. Assemble control frame and rotate the wing so that it is lying flat on the ground.

Spread leading edges. Spread both leading edges approximately ½ metre. Remove the tip bags, which have been used as protection on the rear of the front leading edges. Remove clevis pin from rear leading edge to allow it to insert into front leading edge tube.

Install Rear Leading Edges. Slide rear leading edges with sprog facing forward through rear access zip.
As the leading edge is pushed in through the tip access zip ensure that the sprog exits the outer sprog zip.
Insert rear leading edges in the correct side (left and right hand sides are marked).

Figure 11 Install Rear Leading Edges (RHS shown)

Unzip cell. The cell inboard of the inner sprog zip can be unzipped to allow easier access to the front / rear leading edge junction. Access is through the inboard sprog zip

Figure 12 Unzip Cell

Slide rear leading edge into front tube. Ensure that the tube is in front of all cells. Take care when sliding the tube into the sail as damage may result if forced

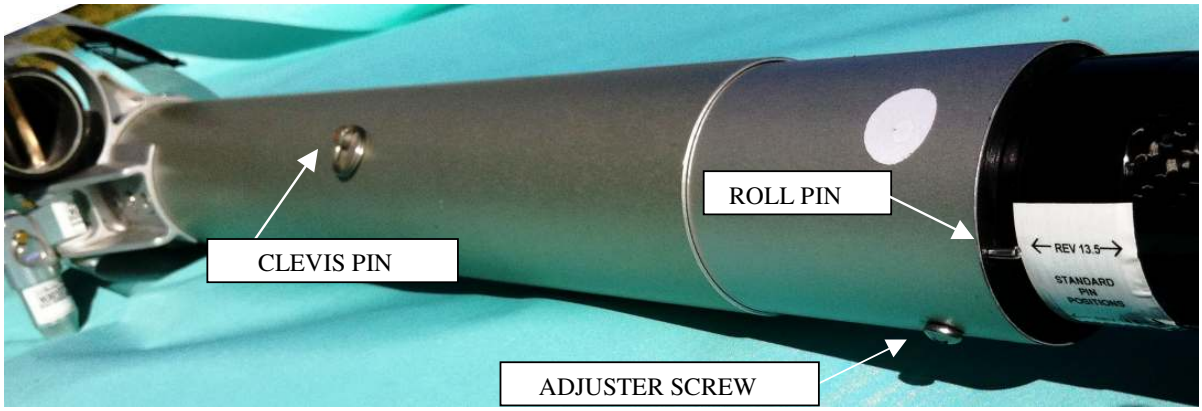


Figure 13 Rear Leading Edge Orientation

Rear leading edge orientation. Correct orientation of the clevis pin and ring is essential.
The photo shows the orientation of the right side leading edge. The clevis pin is inserted from the outside under side of the leading edge then the clevis ring is fitted. Note that the clevis pin and step down ring adjuster screw are on different planes.

Step down ring orientation. Standard setting are shown on the rear leading edge sticker. Note that the 13.5 and 14.5 have different positions i.e. the 14.5 more di-hederal
The velcro supplied should be used to cover the screw once it is secured in the correct position.

(Note: photo shows Right Side Leading Edge)

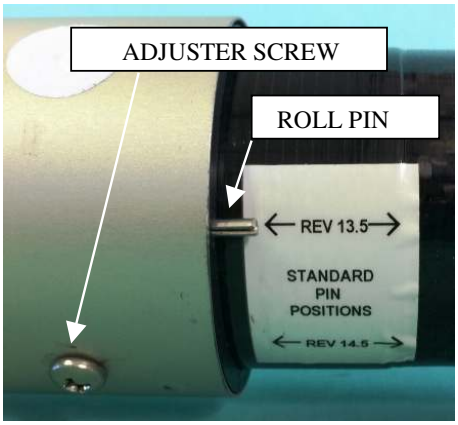
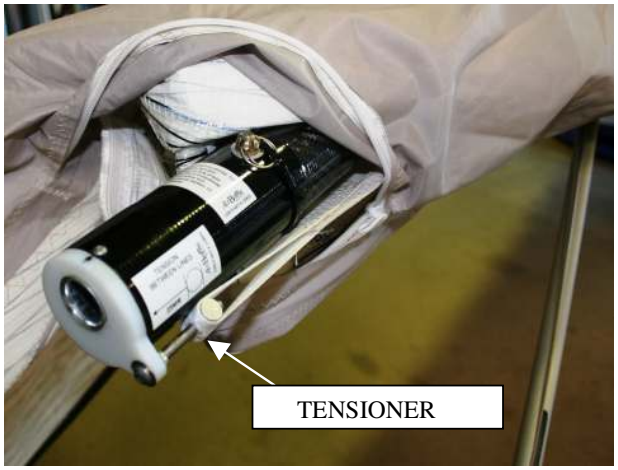


Figure 14 Step Down Ring Orientation



Tension Sail. The sail is now tensioned. The sail dowel adjuster is unscrewed from the M5 bolt and then positioned in the sail loop to allow the bolt to pass through the webbing and inserted into the thread of the dowel.
Note: Routing of the sail webbing is from front of tube then underneath.

(Note: photo shows Left Side Leading Edge)

Figure 15 Tension Sail

Adjust sail tension. An M3 allen key is used to adjust the sail tension so that the dowel is located between the marks on the placard on the rear leading edge. Once the tension is correct the M5 lock nut should be tightened to secure the fitting and maintain correct tension

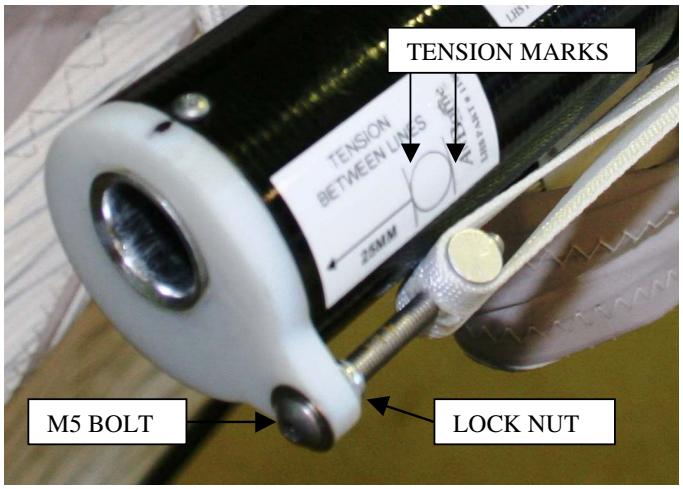


Figure 16 Adjust Sail Tension

The glider can now be assembled as outlined in section 5 of the manual. A thorough pre-flight inspection should be undertaken as per section 6 of the manual. Particular attention should be made to the rear leading edge and sail attachment assemblies during the pre-flight inspection

Section 11 FLIGHT TECHNIQUE

TAKE OFF ..DON'T FORGET TO HOOK IN...

The VG should be in the full off position for launching. The Rev has a slightly tail heavy static balance and is very easy to launch. Hold the nose in a slightly elevated position, approximately 20 degrees to the slope with the wings level; accelerate smoothly to a hard run, keeping the nose at the same angle.

It is important that the pilot accelerates smoothly during the launch run. Taking increasingly larger steps until lift off is the preferred method. Too fast an acceleration will cause the nose to rise rapidly with the risk of stall on launch.

TURNS

The REV can be easily directed into a turn even at slow speeds, however for a fast roll rate and easier handling, it is best to pull on a little extra flying speed.

The REV will maintain a turn until the turn is removed by pilot input. Allow yourself plenty of margin for safety.

Don't fly too slowly when flying close to the hill or other aircraft.

STALLS

When practising stalls make sure you have sufficient altitude. Start with VG off and push out slowly (approx 1 mph per sec. speed reduction), the glider will tend to mush without dropping a wing. The sink rate will increase in this mush mode more than two fold.

If you push out faster the nose will pitch higher, a gentle pitch down follows until the glider regains flying speed and recovers from the stall. A stall at full VG will result in a much more rapid pitch down and possible tip stall. This should be avoided.

Never stall the glider with the nose pitched up too high. This is a dangerous manoeuvre and can result in a tail slide and severe tumble. As a guideline, the angle at which the glider stalls results in a similar negative angle to recover.

If you push out too much in a turn the glider will turn tighter unless you are flying very slowly, in which case you may tip stall. So keep on a little extra speed in turns until you get used to the glider.

SPINS

As with all recent gliders the REV will resist spinning. If you do stall a wing in a turn and enter the initial stages of a spin, move your weight forward and to the high side of the rotation and the glider will recover.

THERMALLING

The optimum speed for thermalling is a little above stall speed; it may be necessary to fly faster than this in rough conditions to maintain good control. Depending on the nature and area of the thermal a bank angle of between 10 and 50 degrees can be used.

LANDING

Landing is easy in the REV. Your final approach should be a straight glide into the wind with airspeed at faster than trim speed. You will feel positive (nose up) bar pressure. The VG should be in the off position.

Reduce air speed slowly by relaxing the bar pressure smoothly. Keep wings level whilst looking straight up your runway.

When the glider reaches trim speed a full flare is required. Flare aggressively in light or no wind, holding the uprights out and up.

It is important that the pilot does not swing the legs forward whilst flaring. This results in the pilot's centre of gravity moving forward which will cause the nose to drop.

Upon touchdown the pilot's legs must provide a gentle deceleration, coasting to a stop (no aircraft lands well with the brakes locked on!).

In strong wind it is possible to fly the glider onto the ground slowing up gradually. Be careful not to flare too aggressively in windy conditions.

Section 12 PITCH STABILITY SYSTEM

PITCH STABILITY

Stability in the pitch axis is provided by maintaining twist outboard of the cross bar leading edge junction. Internal washout struts (sprogs) are used to maintain a minimum amount of twist, which is required to achieve an acceptable level of pitch stability. Correct attachment and adjustment of the sprogs is essential for stability.

Do not lower your sprogs below the factory standard settings. Lowering your sprogs will result in reduced pitch stability.

Alterations to the lengths of rigging, airframe or adjustments to the airfoil can also have adverse effects on pitch stability.

CHECKING THE REV STABILITY SYSTEM

The REV has a compensated internal sprog. As the VG pulls the sail flatter the inboard sprog automatically lowers with the trailing edge.

The method described here is used to check the sprog angle relative to the keel angle of the glider.

CHECKING THE WASHOUT STRUT (SPROG) ANGLES

Angles may be measured using one of the following tools:

1. Protractor with built in spirit level (these are available from Airborne, part number 108624)
2. Digital level. iPhone and other android phones have spirit level applications available
3. Protractor with plumb bob

Inspection steps:

1. Fully assemble the glider ready for flight.
2. Pull the VG on full, until the restrictor wire from the nose plate to the cross bar is tight.
3. Place the protractor/level on the rear of the keel as shown in the following photograph. Do not move the glider from this position.
4. Raise the rear keel to horizontal as 0° is a convenient reference point.

Figure 17 Setting Reference Keel Angle with protractor

Figure 18 Setting Reference Keel Angle with phone

5. Sit protractor on sprog to check the measurement. Ensure that it is flat on the tube and not hitting any hardware or the zip as this will cause error in the reading. Measure and record at each of the washout strut locations as described in the table below.

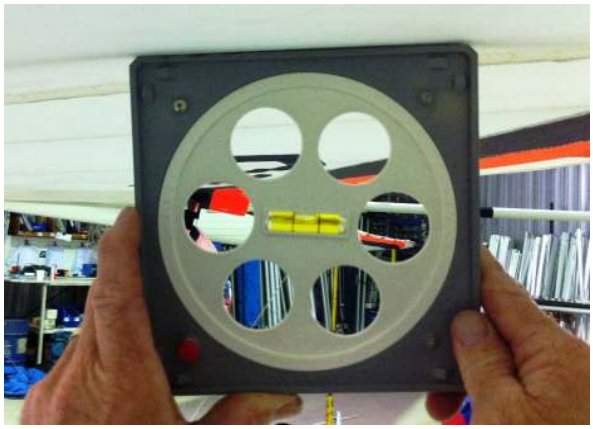


Figure 19 Measuring Washout Strut Angle with protractor

Figure 20 Measuring Washout Strut Angle with phone

The table below indicates the minimum differential angle for each of the washout struts referenced to the keel. Compare the measurements taken to the certified angles in the applicable table. Make adjustments as required. See the following section for detailed instructions

As a guide for the magnitude of adjustment:

- the **inboard** struts change approximately **0.5° per revolution** of the threaded strut cone.
- the **outboard** struts change approximately **1° per revolution** of the threaded strut cone.

	SPROG	
	Inboard	Outboard
Glider model	VG on	VG on
REV-13.5	5.5°	9.0°
REV-14.5	5.5°	8.0°

Table 4 Washout Strut Angles, All Models

ADJUSTING WASHOUT STRUTS

To increase strut angle the strut or front cone is rotated anticlockwise. To decrease strut angle rotate clockwise. This assumes viewing from the trailing edge

Aluminium Struts

1. Unzip and swing the strut out from the sail.
2. From the front of the tube remove the clevis ring and the clevis pin.
3. Adjust as required to achieve the correct settings.
4. Replace the clevis pin and clevis ring.
5. Replace the strut in the sail and capture it by doing the zipper up.
6. Tap the sail from above to position the strut into its flattest position. The strut angle is now ready to be re-measured and test flown (as appropriate).

Carbon Struts

1. Unzip and swing the strut out from the sail.
2. Remove the clevis ring and the clevis pin from the alloy lug at the centre of the tube
3. Adjust as required to achieve the correct settings.
4. Replace the clevis pin and clevis ring.
5. Replace the strut in the sail and capture it by doing the zipper up
6. Tap the sail from above to position the strut into its flattest position. The strut angle is now ready to be re-measured and test flown (as appropriate).

When making strut adjustments for a turn, it is wise to visually sight the trailing edge to check for gross variations before test flying. To sight for asymmetry of the trailing, stand in front of the glider with the keel horizontal & holding the nose wires. Slowly rotate the nose forward and backward, notice when the trailing edge of each of the strut locations comes into and out of view.

SIGHTING TRAILING EDGE

If one side of the trailing edge comes into view earlier than the other side it indicates a higher sprog settings. The sprog angles should be checked and re adjusted to specifications.

Figure 21 Symmetry of Sprog Adjustment

SPROG ADJUSTMENT FOR SYMMETRY

Sprog adjustment may be required to remedy a turn when flying at tight VG settings approaching full on at higher speeds. The following adjustments should only be made once sprog angles and symmetry has been confirmed as outlined in the previous section

Adjustments should be made to the glider in the sequence as listed. The glider should be tuned firstly in the VG off setting as outlined in the following section and then checked with the VG ½ and then full on.

NOTE: We refer to the fast wing as the wing on the high side of the turn i.e. The right wing is the fast wing if the wing is turning left and vice versa.

ADJUSTMENTS WHEN THE GLIDER IS CONFIGURED **VG 1/2 ON TO FULL ON**			
	ADJUSTMENT METHOD	**Remedy for left turn**	**Remedy for right turn**
MILD TURN VG ON	OUTBOARD SPROG ADJUSTMENT. The glider should be assembled with the VG off. Unzip the outer sprog and fold forward. Make appropriate adjustment and reinstall sprog.	Raise the right sprog by rotating the cone anticlockwise by 1/2 turn.	Raise the left sprog by rotating the cone anticlockwise by 1/2 turn.
	OUTBOARD SPROG ADJUSTMENT. If the glider still turns the opposite sprog can be lowered as described.	Lower the left sprog by rotating the cone clockwise by 1/2 turn.	Raise the left sprog by rotating the cone anticlockwise by 1/2 turn.

Table 5 ***Tuning Matrix – Sprogs***

SECTION 13 TUNING SUMMARY

Your REV was test flown and delivered to you in good trim by either your dealer or by factory pilots. If however, any adjustments are made to your glider, we recommend that they be recorded in your maintenance log at the rear of this manual.

If you feel that the glider requires adjustment to trim in the roll or pitch axis you should check that the problem is not caused by something asymmetrical in the frame or battens. In order of priority, check the following:

Ensure that the wires are correctly routed.

Check the battens against the profile.

Check that the battens have the same tension on both sides.

Check tip rods are loaded correctly.

Check that the keel is straight.

Check that the sail is correctly mounted on the leading edges and within the adjustment lines.

Check that all sprog assemblies are not damaged.

Check leading edges are straight and the rear leading edges are located correctly.

Check that the tip lever is positioned so the sail at the tip is on the same plane as and not causing distortion at the attachment point

PITCH TRIM

To make the glider trim faster move the suspension point forward, and to trim slower move the suspension point rearward. The hang loop pillar should be adjusted one hole at a time.

A heavier pilot may make the glider trim slower than a lighter pilot. The heavier pilot causes an increase in twist through extra leading edge flex. Minor changes in suspension point should be used to fine-tune the glider for the particular pilot.

A glider can have a tendency to turn either to the right or the left. The Rev is very tuneable and can be easily tuned to correct a turn. Tuning for spiral stability is also possible.

The following tables have been developed as a Matrix to allow quick access to the tuning technique required to remedy a turn. Using the table assumes that the adjustment techniques are understood.

Section 14 - Tuning Details outlines more specific details of the various tuning options available on the Rev.

ROLL TRIM ADJUSTMENTS

The following tables show a summary of the tuning methods available on the Rev.

More detailed explanation of the various tuning methods are further explained in the following section**.**

ADJUSTMENTS WHEN THE GLIDER IS CONFIGURED VG OFF TO 1/2 ON			
	ADJUSTMENT METHOD	**Remedy left turn**	**Remedy right turn**
LIGHT TURN VG OFF	**DIFFERENTIAL BATTEN TENSION – See figure 22** If the turn is mild, then increasing and decreasing the batten tension on either side can adjust it. If you increase the tension on the slow side you are effectively putting more camber in the airfoil therefore creating more lift on that side. If you decrease the tension on the fast side you are decreasing the camber and reducing the amount of lift. The batten hinge clip can be rotated clockwise to decrease tension or anti-clockwise to increase tension.	**Increase tension** on last 5 battens **on left side by 1 turns at a time.** **Decrease tension** on last 5 battens on **right hand side by 1 turn at a time.**	**Decrease tension** on last 5 battens **on left side by 1 turn at a time.** **Increase tension** on last 5 battens on **right hand side by 1 turns at a time.**
MILD TURN	**TIP BUNG ADJUSTMENT (TIP UP) - See figure 23** The tip wand angle can be adjusted to vary the washout at the tip of the wing. An increase in the tip wand angle (upward tip wand) will increase washout and therefore reduce lift on that wing **Note:** Standard setting for the tip wand is zero degrees relative to the rear leading edge. If more than a 2 turn adjustment is required the Outer Ring Adjustment should be used.	**Increase Tip Wand angle** on **right side.** Rotate nut side of bolt assembly anticlockwise 1 complete turn	**Increase Tip Wand angle** on **left side.** Rotate nut side of bolt assembly anticlockwise 1 complete turn
MILD TURN	**TIP WAND ADJUSTMENT (TIP DOWN) – See figure 23** The tip wand angle can be adjusted to vary the washout at the tip of the wing. A decrease in the tip wand angle (downward tip wand) will decrease washout and therefore increase lift on that wing. **Note:** Standard setting for the tip wand is zero degrees relative to the rear leading edge. Do not reduce the tip angle more than 1 turn negative as pitch stability will be affected.	**Decrease Tip Wand angle** on **left side.** Rotate nut side of bolt assembly clockwise 1 complete turn	**Decrease Tip Wand angle** on **right side.** Rotate nut side of bolt assembly clockwise 1 complete turn
MORE SIGNIFICANT TURN	REAR SECTION ADJUSTMENT. **– See figure 24** If the turn still persists after the tip wands have been adjusted the outer step down eccentric ring can be adjusted. The angle that the rear section protrudes from the front section can be altered by rotation of the outer eccentric (plastic) ring. The location of this ring is fixed with a small screw. Remove screw and reinstall once adjustment is made.	Use the "Y" tool to rotate the **right** step down ring **anti-clockwise** one hole, as viewed from the rear of the leading edge. This raises the RHS rear leading edge. The adjustment causes dihedral of the rear leading edge	Use the "Y" tool to rotate the **left** step down ring **clockwise** one hole, as viewed from the rear of the leading edge. This raises the LHS rear leading edge. The adjustment causes reduction in anhedral of the rear leading edge

Table 6 Tuning Matrix - Frame

HANDLING AND PERFORMANCE TUNING

The following table is designed to allow a pilot to reference methods of tuning the Rev to suit the individual. Varying wing loading will affect the way the glider behaves in pitch and roll trim. For example, a heavier loaded glider will tend to increase the flex in the leading edge tube causing more washout. This increase in washout will tend to make the glider more spirally stable. A lightly loaded glider will tend to be less spirally stable requiring more high siding from the pilot.

Adjustments are described assuming that the glider is straight and all adjustments are standard and symmetrical.

More detailed explanation of the various tuning methods is further explained in the following section.

TUNING	HANDLING	PERFORMANCE	BAR PRESSURE
SUSPENSION POINT Move rearward to reduce trim speed. Move forward to increase trim speed.	Increase in pitch pressure when CG moved rearward.	No change.	Increase in pitch pressure when CG moved rearward.
	Decrease in pitch pressure when moved forward.	No change.	Decrease in pitch pressure when moved forward.
WAND ANGLE ADJUSTMENT – See figure 23 Varying the tip wand angle to adjust washout	Increasing the tip wand angle reduces high siding	Slightly reduced performance.	Increase in bar pressure.
	Decreasing the tip wand angle increases high siding	Slightly better performance.	Reduction in bar pressure.
INNER RING– See figure 24 Rotating the inner rings down results in an increase in the leading edge dihedral	Rotating the **inner ring down** (dihedral) reduces high siding on a bank. Roll rate is slower	Does not affect performance.	No change with small adjustments.
	Rotating the **inner ring up** (anhedral) increases the amount of high siding required. Roll rate is faster	Does not affect performance.	No change with small adjustments.
LEADING EDGE TENSION STRAP - See figure 26 Typical variation is +/- 3mm from standard settings	**Increase** in leading edge tension will cause a reduction in roll rate	A small increase in performance can be gained	No change with small adjustments.
	Decrease in leading edge tension will cause slight improvement in roll rate	Slight loss in performance as the tip wands carry more load and are forced upwards	Slight increase in pitch pressure.

Table 7 Handling and Performance Tuning

Section 14 TUNING DETAILS

BATTEN TENSION ADJUSTMENT

Over tensioning of battens will cause degradation of handling. A mylar sail tends to shrink as it ages so checking of the batten tension periodically is required. The correct tension is applied to the batten when loading with minimal pressure applied an angle of 30° is achieved (See diagram). The last tip batten should be approximately 45° (More tension).
To decrease tension the fitting is rotated clockwise. To increase tension the fitting is rotated anticlockwise

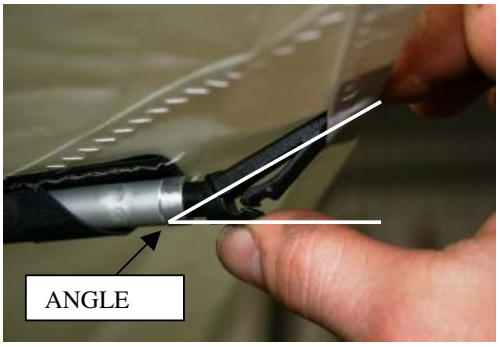
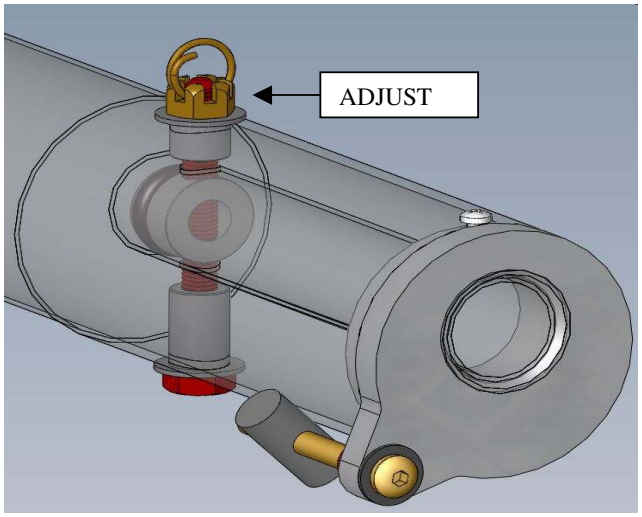


Figure 22 Standard Batten Tension

TIP WAND ADJUSTMENT



The factory standard tip wand angle setting is zero degrees. To obtain a zero tip angle the nut on top of the tube (with ring) should be rotated anticlockwise until the wand receptacle hits the lower stop. A rotation of 4 full turns clockwise results in zero tip wand angle
An adjustment of one full rotation will result in a tip wand angle change of 1 degree.

Do not lower the tip wand by more than 1 turn below zero

Figure 23 Tip Wand Angle Adjustment

OUTER RING ADJUSTMENT

Standard Setting

The photo below shows a right side leading edge with ring settings in the standard configuration. Once set in this configuration line up the hole until the self-taping screw can be installed. A retaining adhesive sailcloth or Velcro patch should be installed over the screw.

Figure 24 Outer Ring Standard Setting (Dihedral)

Adjusting Dihedral

The outer ring can be adjusted to achieve an increase or decrease in the dihedral of the rear leading edge. The photo shows a right side leading edge. Remove the screw and use the "Y Tool" to move the adjuster pin.

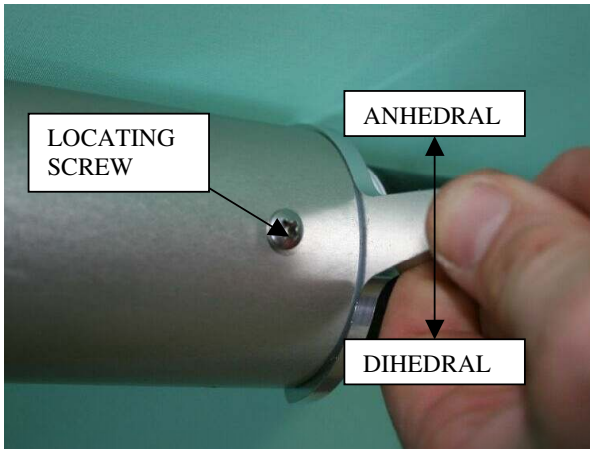


Figure 25 Outer Ring Dihedral Adjustment

SAIL TENSION ADJUSTMENT

The standard sail tension is set when the adjuster dowel is set 25mm from the outside end of the dowel to the end of the tube (See sticker on rear leading edge).
As the sail ages shrinkage occurs so a reduction in tension (dowel towards nose) is required
To adjust, loosen locking nut using a 8mm open-end spanner. Adjust the allen headed screw to achieve correct setting then lock the nut.
If the main sail tension is changed the tip lever tension should be reduced to achieve the same differential setting ie if the main sail is reduced 4 mm the tip lever should be reduced the same amount. (See following for tip lever details)

Figure 26 Sail Tension

TIP LEVER ADJUSTMENT

FIGURE 1

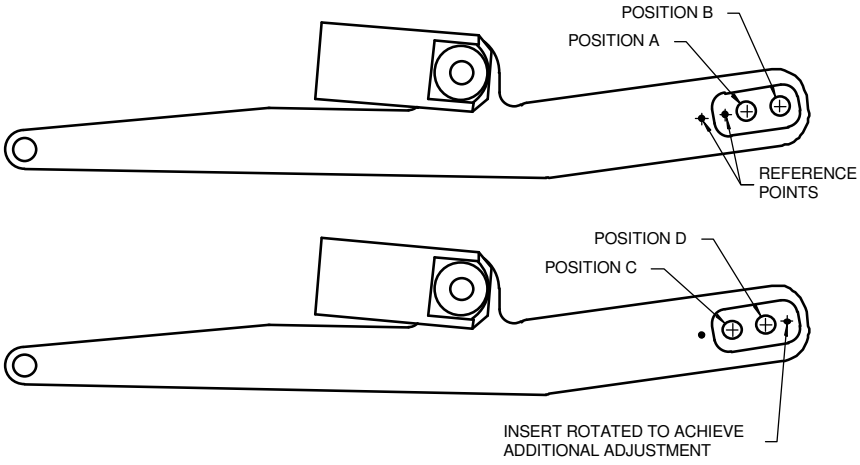


Figure 27 Tip Lever Adjustments

The following table shows standard sail position and variations to the standard setting. Rotation of the insert allows for finer variations of tension

APPLICABLE GLIDER	STANDARD POSITION	ADJUSTMENTS (setting and distance from standard position D)
Rev Series	Position D	Position C +7mm (slacken) Position A +4mm (slacken) Position B -3mm (tighten)

Table 8 Tip Lever Adjustments

Section 15 PERIODIC INSPECTIONS and MAINTENANCE

MAINTENANCE SCHEDULE

1 – Clean and service, 2 – Check as directed, 3 – Check for security, cracks, wear and faulty operation, 4 - Remove, inspect and replace if necessary, 5 - Recommend replacement or overhaul.								
MAINTENANCE REQUIREMENT	**Maintenance Period**							
	Period >	Daily	Monthly	Three Months	Six Monthly	Every Year	Every 2 Years	Every 4 Years
	Flying Days >	1	10	30	50	100	200	400
Wing fabric deterioration and tears			2	2	2	2	4	5
Wing fabric stitching			2	2	2	2	2	5
Wing fabric attachment points			3	3	3	3	3	5
Batten clip fittings and tension adjustment			3	3	3	3	4	4
Check battens against template supplied				2	2	2	2	2
Wing wires and attachment fittings, including sprog wires		2	3	3	4	5	5	5
Check leading edges, keel & A frame for straightness, dents and corrosion		2	2	2	2	4	4	4
Check leading edges, keel & A frame structural members and check for fatigue cracks radiating from drilled holes.		2	2	2	2	4	4	4
Check centre junction and carbon spars (See notes)		2	2	2	2	4	4	4
Check cross tube leading edge junction (Remove hinge bolt and inspect bushes, bolt and hole)		2	2	2	2 4	3 5	3 5	3 5
Check sprog assemblies including rod ends, clevis pins etc		2	2	2	2	2	2	2
Check inspection zips			2	2	2	2	2	2
Check variable geometry, pulleys and cleats		2	3	3	3	4	4	5
All bolts, nuts, washers & safety pins. At least one thread showing outside each nut.		2	2	2	2	2	2	2
Check hang straps and karabiners for wear or damage		2	2	2	2	4	5	5
Check saddles and fittings for cracks			2	2	2	4	4	5

Table 9 Periodic Maintenance

It is recommended that:

- Items marked 1,2 and 3 should be performed by the owner of the glider;
- Items marked 4 be performed by the owner in conjunction with another pilot; and
- Items marked with a 5 be performed by AIRBORNE or an accredited AIRBORNE service agent.

LOG BOOK

When maintenance is performed always check the appropriate square and make an entry in the maintenance log at the rear of this manual.

NOTES ON PERIODIC INSPECTIONS

AIRFRAME TUBING

Installation & Removal
When removing tubing do not bend or force tubes. If resistance is encountered stop and check for the cause. Do not force the tube.

Inspection
Inspect tubing for cracks, damage from abrasion, elongated holes or distortion in tube surface. Never attempt to repair tubing, always replace with new part. Inspect tubing for corrosion inside and out. If corrosion is present the component should be replaced.

Replacement
Aluminium tube comes in many different sizes and grades. It is important that the correct replacement parts are used.

CARBON CROSS TUBES

Installation & Removal
To comprehensively check the carbon spars and junction, the sail should be removed from the airframe.

Inspection
The carbon cross tubes should be thoroughly inspected for cracks. The aluminium plug, which is bonded into the carbon tube at the centre section, should also be thoroughly checked for damage or cracking at the bond line. A torch should be used to check that the tubes show no signs of damage on the inside.

CARBON SPROGS

Installation & Removal
The carbon sprog tubes should be thoroughly inspected for cracks. The aluminium plug, which is bonded into the carbon tube at the front section, should also be thoroughly checked for damage or cracking at the bond line. The aluminium sprog centre bracket, which is bonded onto the carbon tube should be checked that there is no signs of damage.

BOLTS

Installation & Removal
After tightening, all bolts should have at least one and a half to two threads showing.
All self-locking nuts should not be installed more than two times.
Be sure not to over torque bolts when installing.

Inspection
Check bolts for worn shanks, bad threads or corrosion.

SAILS

Sail Inspection

Check for tears in the sailcloth and or any loose or unravelled seams.
Check all inspection zippers to see that they function smoothly and close completely.
Inspect tip webbing for damage.

Sail may be repaired with appropriate sail tape or a sewn on patch. AIRBORNE or an authorised agent should be consulted about sail repairs. Keep the sail clean of oil and dirt by washing the sail with soap and water. Keep the sail covered when not in use.
Sails shrink over a period of time due to exposure to the elements (approx 5-10mm per year for high exposure wings).
This results in an increase in leading edge tension and a decrease in trailing edge tension. The sail leading edge tension will have to be adjusted over the life of the sail in order to retain its performance.

CONTINUED EXPOSURE TO SUN DRAMATICALLY SHORTENS THE LIFE OF SAILS - possibly to as little as six months.

INSPECTION AFTER HARD LANDING

It is necessary to conduct a detailed inspection following any unusual stressing of the hang glider. This full inspection should include all details listed for the six monthly maintenance.

The inspection should be noted in the logbook, and any replacement recorded.

DEFECT REPORTS

Details of any defect which develops in service and which, if kept uncorrected, would compromise the continued safe operation of the hang glider should be reported to AIRBORNE as soon as practicable.

Section 16 TRANSPORTATION AND STORAGE

Avoid damage to your glider by using well-padded racks. Careless transportation can cause considerable damage to your glider.

We recommend that you support the glider in at least 3 places to spread the load. The glider should be transported with the control frame down to minimise the chance of damage to the cross tubes.

Flat straps should be used for tie downs to avoid damage to leading edge mylar.

Store the glider in a dry room off the ground. Air the glider out regularly to avoid mildew, and never store wet.

Section 17 MAINTENANCE RECORD

Date	Details of Repair or Maintenance	Carried out by:

Table 10 Maintenance Log

Section 18 HANG GLIDER COMPLIANCE SCHEDULES

GLIDER MODEL: Rev 13.5

MANUFACTURED BY: AIRBORNE WINDSPORTS Pty Ltd

NOTE: These specifications are intended only as a guideline for determining whether a given glider is a certified model and whether it is in the certified configuration.

Be aware however, that no set of specifications, however detailed, can guarantee the ability to determine whether a glider is the same model, or is in the same configuration as was certified, or has those performance, stability, and structural characteristics required by the certification standards. An owner's manual is required to be delivered with each certified glider, and it is required that it contain additional airworthiness information.

	Metric	Imperial
Weight of glider with all essential parts and without cover bags and non-essential parts.	33 kg	72 lbs
Leading Edge Dimensions		
Nose Plate anchor hole to crossbar attachment hole	3260 mm	128.34”
Nose Plate anchor hole to rear sail attachment point (tip lever)	5695 mm	224.21”
Outside diameter at nose	60 mm	2.36”
Outside diameter at cross bar	62 mm	2.44”
Outside diameter at rear sail attachment point	12 mm	0.47”
Crossbar Dimensions		
Overall pin to pin length from leading edge attachment point to hinge bolt at glider centre line	2995 mm	117.91”
Largest outside diameter	75 mm	2.95”
Keel dimensions		
The cross bar centre load bearing pin VG On VG off	880 mm 710 mm	34.64” 27.95”
The pilot hang loop Range + or- 20mm (Distance from forward nose plate hole)	1245 mm	49.02”
Sail Dimensions		
Chord length at 3 ft outboard of centre line	1676 mm	65.9”
Chord length at 3 ft inboard of tip	1055 mm	41.5
Span (extreme tip to tip)	10040 mm	395.3 “
Location of Information Placard	Front RHS crossbar centre	
Location of Test Fly Sticker	Front RHS crossbar centre	
Recommended Pilot Hook in Weight Range	70-105 kg	154-231 lbs
Recommended Pilot Proficiency	Advanced	

Table 11 Compliance Schedule Rev-13.5

NB: Conversions * 0.4536 kg/pound * 25.4 mm/inch * 1.609km / mile

GLIDER MODEL: Rev 14.5

MANUFACTURED BY: AIRBORNE WINDSPORTS Pty Ltd

NOTE: These specifications are intended only as a guideline for determining whether a given glider is a certified model and whether it is in the certified configuration.

Be aware however, that no set of specifications, however detailed, can guarantee the ability to determine whether a glider is the same model, or is in the same configuration as was certified, or has those performance, stability, and structural characteristics required by the certification standards. An owner's manual is required to be delivered with each certified glider, and it is required that it contain additional airworthiness information.

	Metric	Imperial
Weight of glider with all essential parts and without cover bags and non-essential parts.	35 kg	77 kg
Leading Edge Dimensions		
Nose Plate anchor hole to crossbar attachment hole	3495 mm	137.59”
Nose Plate anchor hole to rear sail attachment point (tip lever)	5995 mm	236.01”
Outside diameter at nose	60 mm	2.36”
Outside diameter at cross bar	62 mm	2.44”
Outside diameter at rear sail attachment point	12 mm	0.47”
Crossbar Dimensions		
Overall pin to pin length from leading edge attachment point to hinge bolt at glider centre line		
Largest outside diameter	75 mm	2.95”
Keel dimensions		
The cross bar centre load bearing pin VG On VG off	860 mm 680 mm	33.86” 26.77”
The pilot hang loop Range + or- 20mm (Distance from forward nose plate hole)	1310 mm	51.57”
Sail Dimensions		
Chord length at 3 ft outboard of centre line	1900 mm	74.80”
Chord length at 3 ft inboard of tip	1055 mm	41.53”
Span (extreme tip to tip)	10640 mm	418.88”
Location of Information Placard	Front RHS crossbar centre	
Location of Test Fly Sticker	Front RHS crossbar centre	
Recommended Pilot Hook in Weight Range	125 kg	275 lbs
Recommended Pilot Proficiency	Advanced	

Table 12 Compliance Schedule Rev-14.5

NB: Conversions * 0.4536 kg/pound * 25.4 mm/inch * 1.609km / mile