

THE
Sting by Airborne

OWNER and
SERVICE MANUAL, Rev3



AirBorne
AUSTRALIA

PO Box 7042, REDHEAD, NSW 2290 AUSTRALIA

E-mail fly@airborne.com.au

www.airborne.com.au

Phone (02) 4944 9199 Int +61 2 4944 9199

Fax (02) 4944 9395 Int +61 2 4944 9395

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Section 1 DESIGN FEATURES

Designed and manufactured by **AirBorne Windsports**, the Sting is the latest and most advanced recreational glider on the market.

The idea behind the development of the Sting was simple. The glider had to be quick to set up, fun to fly and it had to look good.

The Sting is an all rounder, designed for the pilot who enjoys a combination of coastal and inland flying. Launch and landing is easy due to the glider's excellent static balance. Even scratching is made easy because of the Sting's light handling and small turning circle.

The Sting airfoil design is unique, giving a gentle stall with positive feedback to the pilot. The glider has unsurpassed stability with a strong tendency to return to trim. This leaves the pilot feeling secure even in the roughest turbulence.

The Sting may be set up on the A-Frame or laid flat, thereby accommodating for personal preference or site characteristics and restrictions.

The Sting has a minimum number of battens, whilst maintaining solid airfoil definition. This, coupled with the quick clips, pip pins and airframe geometry has resulted in an extremely fast set-up. The Sting was engineered so that it was of minimum weight with maximum strength.

In an effort to set the glider apart from the rest, we have paid careful attention to it's finish. The Sting's quality fittings and bright silver airframe are second to none.

AirBorne's well-developed quality assurance program, which is unique to the industry, ensures that every glider is built in accordance with the standard it was designed to. This gives even the most experienced pilot a sense of security when flying an AirBorne glider.

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

	STING II118/118X		STING II 140 / 140X		STING II 154 / 154X & 154XC		STING II 175 / 175X & 175XC	
	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL	METRIC	IMPERIAL
SAIL AREA	11.0 sq meter	118 sq ft	13.03 sq meter	140 sq ft	14.33 sq meter	154 sq ft	16.28 sq meter	175 sq ft
WING SPAN	7.9 m	25.9 feet	8.5 m	27.7 feet	9.1 m	29.8 feet	9.8 m	32.1 feet
ASPECT RATIO	5.5		5.5		5.7		5.9	
NOSE ANGLE	121 degrees		121 degrees		121 degrees		121 degrees	
DOUBLE SURFACE %	70%		70%		70%		70%	
BATTENS	15		19		19		23	
GLIDER WEIGHT	20 kg	44 pound	24 kg	53 pound	26 kg	57 pound	30 kg	66 pound
ASSEMBLY TIME	6 min		7 min		7 min		8 min	
PACK UP LENGTH	4.8 meter	15.8 feet	5.2 meter	17.1 feet	5.5 meter	18.1 feet	6.0 meter	19.7 feet
SHORT PACK LENGTH	3.4 meter	11.5 feet	3.6 meter	11.8 feet	3.9 meter	12.8 feet	4.2 meter	13.8 feet
RECOMMENDED PILOT HOOK IN WEIGHT RANGE (Includes Equipment)	45-60 kg	99-132 pounds	50-75 kg	110-165 pounds	60-90 kg	132-198 pounds	80-135 kg	176-298 pounds
VNE (Velocity Never to Exceed)	85 km/h	53 mph	85 km/h	53 mph	85 km/h	53 mph	85 km/h	53 mph
VA (Maximum rough air manoeuvring speed)	74 km/h	46 mph	74 km/h	46 mph	74 km/h	46 mph	74 km/h	46 mph

Note: The stall speed of the Sting II at maximum recommended wing loading is less than the minimum requirement of 25 mph (40 km/h). The maximum or steady state speed is at least 35 mph (56 km/h) for a prone pilot with correctly adjusted harness.

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

- $V_a = \text{Test speed} \times 0.707$ * $V_{ne} = \text{Test Speed} \times 0.816$

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 placarded 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 basebar of the control frame. During your initial flights on the glider it is recommended that you fly with an airspeed indicator until you are able to recognise the control feel that produces the airspeeds shown.

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 which cannot by law be excluded.

We hope that your new glider will provide you with many hours of safe flying.

AIRBORNE.

Section 4 WARRANTY STATEMENT

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 notwithstanding 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 its 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.

Signed for and on behalf of AIRBORNE WINDSPORTS _____

Section 5 ASSEMBLY PROCEDURE

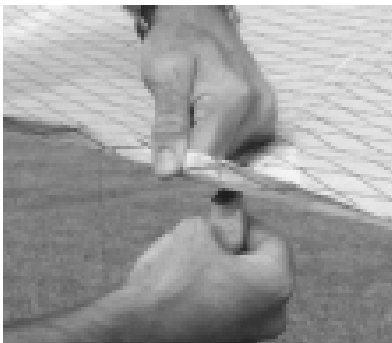
The wing can be assembled in two positions, either lying flat or standing on the control frame. Assembling the Sting on the control frame is the most popular method of assembly in light winds. This method is preferable as the sail is less prone to being soiled or damaged during assembly. In higher winds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

Our suggested sequence is as follows:

- **UNZIP THE BAG.** Lay the wing down with zip up and the nose facing approximately 120 degrees from the wind direction. The nose should be facing into the wind when assembling flat. Unzip the bag and unclip centre ties
- **ASSEMBLE CONTROL FRAME.** Spread the control bar down tubes out and insert the base bar. The pip pin is then inserted with the cover firmly secured. 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. If assembling flat ensure that control bar is central and the wires are not tangled.
- **REMOVE BAG.** Remove the glider bag and unclip all of the ties.
- **SPREAD LEADING EDGES.** Carefully spread both leading edges out half way then spread leading edges to their approximate flying position.

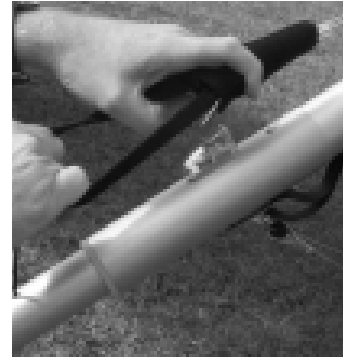
IT IS ESSENTIAL THAT THE KEEL AND THE LEADING EDGES ARE KEPT IN THE SAME PLANE OR DAMAGE WILL RESULT.

- **RAISE KING POST.** Raise the kingpost and attach the reflex bridles.



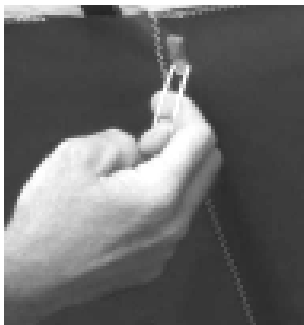
- **INSERT MAINSAIL BATTENS.** Remove the battens from the bag. The red battens are for the left side and the green for the right. Insert the battens from the centre to the tip with gentle pressure, until the batten meets resistance. Shake the sail at the trailing edge whilst maintaining gentle pressure on the batten to allow the batten to be inserted over the cross bar. **DO NOT FORCE THE BATTENS!** When securing the bungie battens place the bottom loop on first and tension by placing the top loop into the batten end fitting. Spring battens should be located in the sail pocket.
- It is advised not to insert the last cambered tip batten and tip strut until the cross bars are tensioned.

- **TENSION CROSS BARS.** The cross bars are now tensioned by pulling the webbing loop 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 REAR TOP WIRE.** The rear top wire should now be attached to the rear Quick Clip block.

- **INSERT TIP STRUTS.** Insert the tip battens and tip struts. The tip strut should be located on the nylon hook, which is attached to the leading edge. The tip strut is secured with a double bungee as outlined previously.



- **INSERT UNDER SURFACE BATTENS.** The under surface battens are inserted and pulled back into the rear of the batten pocket.

- **ATTACH FRONT FLYING WIRES.** The ring on the front flying wires can now be inserted in to the Quick Clip Block. Ensure that the catch is

positively locked. If the glider has been assembled flat it should now be lifted on to the control frame. Be aware of the tip battens! Make sure you have a firm grip on the keel when raising the nose from the flat position in strong winds.



- **INSERT NOSE BATTEN.** Insert the nose batten tail end first and locate it on the fitting on the front of the keel.



- **INSTALL NOSE FAIRING.** Attach the nose fairing applying the top velcro first then gently tension over the nose plates and attach the velcro to the undersurface.

- **PREFLIGHT 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 parasitic drag would be kept to a minimum. This means that most of the pre flight check points 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 bolts
- 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 king post wire is not kinked. 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 through the zipper access.
- Check sail tip webbing is undamaged and is located properly in the slot.
- Crouch down and lift tip to eye level to inspect that the tip strut is properly located and that the rear leading edge is undamaged.
- Walk towards the keel checking all battens are secured.
- Check reflex bridle attachments are in order and **not caught under any battens.**
- Check that the cross bar retaining shackle is secured on the quick clip.
- Check the rear top rigging and that the reflex bridle carabina is properly closed.
- Check king post base.
- 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 in place.
- Ensure hang loops are correctly positioned and in good order.
- Check control bar top assembly and ensure that the down tubes are straight.

- Unzip undersurface and check cross bar hinge and restraining strap. In the case of a Sting XC 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 carabina is locked.

HANG GLIDER DAILY INSPECTION

Inspection of the following items after every assembly of the glider is required:

- Check for bends, dents, scratches in all tubes;
- Check wire ends for bolt and/or other fastener security;
- Check wires for twisted or jammed thimbles;
- Check wires are free of kinks, frays, abrasions, broken strands etc;
- Nose plate connections;
- Tips secure;
- Battens and bungies;
- A-frame connections at the top and base on both sides;
- Variable geometry operation (full and free movement);
- Rear keel connections;
- Cross-bar tension wire;
- Cross-bar operation (free floating);
- King post connections;
- Reflex bridles - attached and tension correct;
- Sail condition;
- 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 Sting, 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 batten in during daily operations!

- Remove nose fairing.
- Remove tip battens.
- Let off the sail tension and pull each wing in slightly.
- Pull out all the battens.
- Attach top control bar padding.
- Disconnect reflex bridle and attach rear quick clip padding.
- Fold both wings in symmetrically, bringing both leading edges back at the same time.
- Roll the sail up from the last reflex bridle. Roll the bridles into the sail. This will avoid tangling of the bridles during the set up procedure. One tie should be wrapped around the keel and leading edge to hold them together whilst the other side wing is rolled.
- Place padding over the keel end.
- 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.
- Place glider bag in position.
- Roll glider over, undo control bar pip pin. Fold base bar rearward. Attach base bar padding around down tube base. Place padding over the end of the speed bar. Undo the two centre ties and fold the control bar down between the leading edge pockets. Secure the centre ties and zip up bag.

For de-rigging flat, attach top control bar padding. Undo nose wires and pull wing forwards then follow steps as above.

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

Section 8 ASSEMBLY FROM SHIPPING LENGTH

If your Glider was delivered to you in the short pack form the following procedure should be used.

- Unzip bag and remove ties. Remove all padding from the tube ends.
- Assemble the control frame as described in the **set up procedure section**. Rotate the glider on to the control bar, lying flat on the ground.
- 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.
- Check rear leading edges for **R** (right) and **L** (left). This is stamped on the rear of the leading edge. Insert rear leading edges in the appropriate side of the front leading edge with the slot on the rear leading edge facing upwards. Push on the leading edge and rotate slightly to ensure it is located correctly. It should be impossible to rotate the leading edge if correctly installed.
- You are now ready to tension the sail. There are two webbing loops on the tip of the sail. The inside loop is for the sail tension and the outward loop is used to apply tension to locate the primary sail tension loop. A glider tie should be passed through the outward loop. Place one hand on the rear of the leading edge and the other through the tie. Pull sail firmly until the inside loop is located on the end of the leading edge. Rotate sail until the webbing is correctly located in the slot. Repeat for the other leading edge.

If you find the above technique to tension the sail difficult the following method can be used:

- Remove the sail webbings from the front leading edge bolts.
- Locate the tip webbing in the slot on the rear leading edge.
- Slowly spread the leading edges out. Ensure the sail is able to move forward as the leading edges are spread and is not caught on the front wire tang or damage will result.
- The cross bars can now be tensioned. Check once again the sail is OK at the nose.
- Insert nose screws then let cross bar tension off.
- Your glider can now be fully assembled as outlined in the Set Up Procedure

BREAKDOWN FOR SHIPPING

Reverse the procedure above ensuring that all possible wear points are padded.

Be sure to remove the nose batten from the sail and place in batten bag. Be careful when folding the sail as the mylar leading edge insert may be damaged.

When you have finished packing the glider, place the front of the glider bag over the rear of the short packed glider. Zip up bag carefully and place the rest of the bag inside the package. (The bag is installed back to front because it is tapered and the glider is bulkier at the rear when short packed.)

Section 9 FLIGHT TECHNIQUE

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

The VG should be in the full off position for the XC Sting. The Sting has a slightly tail heavy static balance and is very easy to launch. Hold the nose in a slightly elevated position with the wings level, run hard keeping the nose at the same angle.

It is important that the pilot accelerates smoothly during the launch run. Too fast an acceleration will cause the nose to rise rapidly with the risk of stall on launch.

TURNS

The Sting 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 Sting 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 scratching close to the hill.

STALLS

When practising stalls make sure you have sufficient altitude. 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.

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 the later design gliders the Sting 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 Sting.

Your final approach should be a straight glide into the wind faster than trim speed, approx 25 mph (40 km/h). The VG should in the off position in the case of the XC Sting.

Reduce air speed slowly keeping wings level.

When the glider reaches trim speed a full flare is required. Flare aggressively 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.

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

Section 10 TUNING

Your Sting was test flown and delivered to you in good trim. 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 batten bungies have the same tension on both sides. Spring battens should be checked for normal operation;
- Check that the keel is straight;
- Check that the sail is correctly mounted on the leading edges.
- Check leading edges are straight and the rear leading edges are located correctly;

PITCH TRIM

To make the glider trim faster move the main hang strap forward and to trim slower move the hang loop rearward. The hang loop should be adjusted a maximum of 15 mm at one 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 hang loop position should be used to fine tune the glider for the particular pilot.

PITCH STABILITY SYSTEM

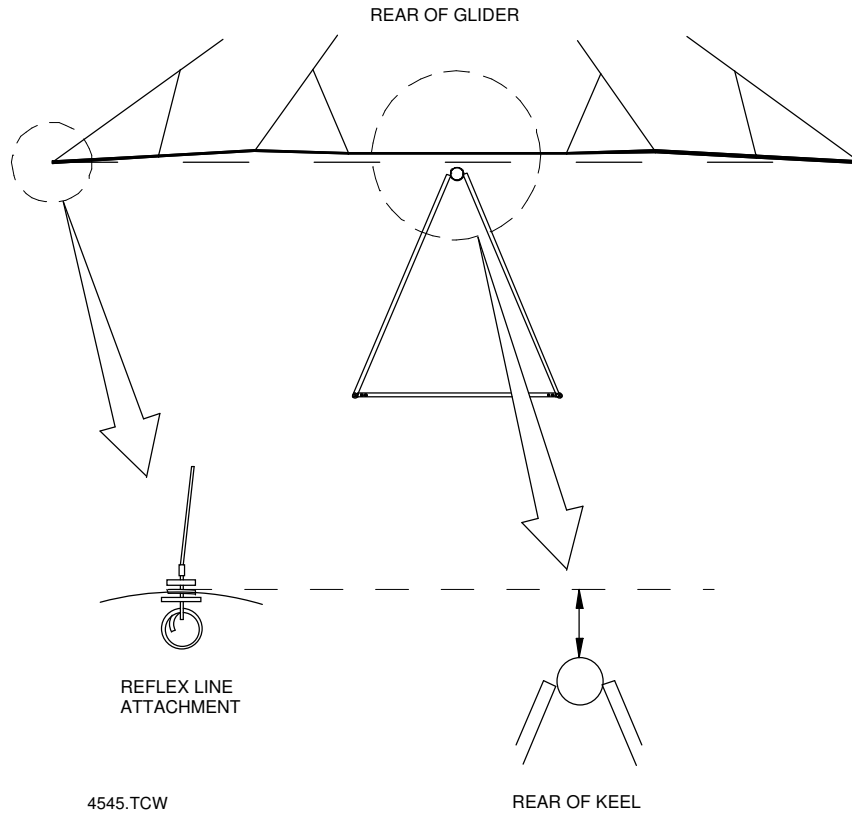
Stability in the pitch axis is provided by reflex in the root section. Alterations to the lengths of rigging, airframe or adjustments to the airfoil can have adverse effects on pitch stability.

Reflex bridles provide pitch stability at low angles of attack. Correct attachment and adjustment of the reflex bridles is essential for maximum stability.

A string line can be used to check the reflex bridles are correct. The line should be firmly stretched between the reflex bridle attachment eyelet on corresponding battens on the right and left side of the glider. Check the measurement from the string line to the top of the keel. **The glider should be standing on the control frame. It is important to support the keel off the ground from the rear flying wire attachment point otherwise the keel will flex and the measurements will be incorrect.**

String tension and measurement technique will cause variations of +/- 10 mm. This tolerance should be considered when checking against the following chart.

BRIDLE CHECKING SPECIFICATIONS



Batten #	Sting 118		Sting 140		Sting 154		Sting 175	
	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial
1	55 mm	2.2 "			50 mm	1.9 "		
2	150 mm	5.9 "	90 mm	3.5 "	90 mm	3.5 "	80 mm	3.1 "
3	220 mm	8.7 "	155 mm	6.1 "	110 mm	4.3 "	105 mm	4.1 "
4			120 mm	4.7 "	125 mm	4.9 "	155 mm	6.1 "
5							120 mm	4.7 "

ROLL/YAW TRIM

Through time and use it is possible that your glider may become “unbalanced”. The glider may turn one way or roll into a bank easier in one direction than the other. It is possible that the cloth may stretch asymmetrically if the pilot, over an extended period of time, consistently thermals in one direction. Hard landings or high “G” loads may also cause abnormal cloth stretch.

There are a couple of techniques, which can be used to remedy a turn in your glider. It is important that you check the points 1 to 6 at the beginning of this section before attempting the following adjustments.

- **DIFFERENTIAL STRUT BATTEN TENSIONING.** The tension can be increased on the elastics on the tip strutt to remove a mild turn. This increase in tension flattens the sail slightly at the tip which causes more lift. This should be attempted on the slow wing.
- **TIP PLUG ADJUSTMENT.** The tip plug can be rotated to increase or decrease lift on either wing. The fast wing should have the tip fitting rotated upward to decrease the lift on that side. To remedy a left-hand turn, for example, rotate the right hand tip fitting clockwise if viewed from the rear of the leading edge. The tip fitting should be rotated a maximum of 5 mm.

NB If the glider turns to the left we refer to the left wing as the slow wing.

Section 11 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	Monthl y	Three Month s	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	
Wing Fabric attachment points			3	3	3	3	3	3
Batten Elastics			3	3	3	3	4	4
Check Battens against template supplied			2	2	2	2	2	2
Wing wires and attachment fittings		2	3	3	4	4	5	5
Check leading edges, keel & A Frame for straightness, dents and corrosion			2	2	2	4	4	4
Remove leading edges, cross bar, keel & A Frame structural members and check for fatigue cracks radiating from drilled holes.					2	4	4	4
Check reflex bridle luff lines for kinks		2	2	2	2	2	2	2
Check Inspection Zips			2	2	2	2	2	2
Check Variable Geometry and compensator ropes, 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
Check hang straps and karabiners for wear or damage			2	2	2	4	5	5
Check Saddles and fittings for cracks			2	2	2	4	4	5

It is recommended that:

- (a) those items marked 1,2 and 3 be performed by the owner of the glider;
- (b) those items marked 4 be performed by the owner in conjunction with another pilot; and
- (c) those items marked with a 5 be performed by **Airborne** or an accredited **Airborne** service agent.

LOG BOOK

When maintenance is performed always check 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. When installing do not distort tubing from its original shape.

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 in 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.

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 or any loose or unravelled seams.
- Check all inspection zippers to see if 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.

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 do a detailed inspection following any unusual stressing of the Hang Glider this full inspection should include all details listed for six monthly maintenance.

The inspection should be noted in the logbook, and any replacement to be 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 12 TRANSPORTATION AND STORAGE

Avoid damage to your glider by using well padded racks.

We recommend that you support the glider in at least 3 places to spread the load.

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.

SAFE FLYING

TEAM AIRBORNE

Section 14 HANG GLIDER COMPLIANCE SCHEDULES

STING 118

GLIDER MODEL: Sting 118 & 118X

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 HGMA certified glider, and it is required that it contain additional airworthiness information.

	Metric	Imperial
Weight of glider with all essential parts and without coverbags and non essential parts.	20.0 kg	44.0 lbs
Leading Edge Dimensions		
Nose Plate anchor hole to crossbar attachment hole	2730 mm	107.48"
Nose Plate anchor hole to rear sail attachment point	4710 mm	185.43"
Outside diameter at nose	47 mm	1.85"
Outside diameter at cross bar	45 mm	1.77"
Outside diameter at rear sail attachment point	45 mm	1.77"
Crossbar Dimensions		
Overall pin to pin length from leading edge attachment point to hinge bolt at glider centre line	2345 mm	92.32"
Largest outside diameter	52 mm	2.05"
Keel dimensions		
The cross bar centre load bearing pin	1150 mm	45.27"
The pilot hang loop	Fwd Rear	1410 mm 1440 mm
		55.51" 56.69"
Sail Dimensions		
Chord length at 3 ft outboard of centre line	1765 mm	69.49"
Chord length at 3 ft inboard of tip	1000 mm	39.37"
Span (extreme tip to tip)	7880 mm	310.24"
Location of Information Placard	Cross Bar	
Location of Test Fly Sticker	Front Keel	
Recommended Pilot Hook in Weight Range	45-60 kg	99-132 lbs
Recommended Pilot Proficiency	Nov/Int	Nov/Int

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

STING 140

GLIDER MODEL: **Sting 140_& 140X**

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 HGMA certified glider, and it is required that it contain additional airworthiness information.

	Metric	Imperial
Weight of glider with all essential parts and without coverbags and non essential parts.	24.0 kg	53.0 lbs
Leading Edge Dimensions		
Nose Plate anchor hole to crossbar attachment hole	2895 mm	113.98"
Nose Plate anchor hole to rear sail attachment point	5080 mm	200.00"
Outside diameter at nose	45 mm	1.77"
Outside diameter at cross bar	45 mm	1.77"
Outside diameter at rear sail attachment point	45 mm	1.77"
Crossbar Dimensions		
Overall pin to pin length from leading edge attachment point to hinge bolt at glider centre line	2485 mm	97.83"
Largest outside diameter	52 mm	2.05"
Keel dimensions		
The cross bar centre load bearing pin	1155 mm	45.47"
The pilot hang loop	Fwd Rear	1560 mm 1590 mm
		61.41" 62.60"
Sail Dimensions		
Chord length at 3 ft outboard of centre line	1960 mm	77.16"
Chord length at 3 ft inboard of tip	1070 mm	42.13"
Span (extreme tip to tip)	8450 mm	332.68"
Location of Information Placard	Cross Bar	
Location of Test Fly Sticker	Front Keel	
Recommended Pilot Hook in Weight Range	50-75 kg	110-165 lbs
Recommended Pilot Proficiency	Nov/Int	Nov/Int

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

STING 154

GLIDER MODEL: Sting 154, 154X & 154XC

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 HGMA certified glider, and it is required that it contain additional airworthiness information.

	Metric	Imperial
Weight of glider with all essential parts and without coverbags and non essential parts.	26.0 kg	57. lbs
Leading Edge Dimensions		
Nose Plate anchor hole to crossbar attachment hole	3097 mm	121.92"
Nose Plate anchor hole to rear sail attachment point	5420 mm	213.39"
Outside diameter at nose	47 mm	1.85"
Outside diameter at cross bar	47 mm	1.85"
Outside diameter at rear sail attachment point	45 mm	1.77"
Crossbar Dimensions		
Overall pin to pin length from leading edge attachment point to hinge bolt at glider centre line	2680 mm	105.51"
Largest outside diameter	62 mm	2.44"
Keel dimensions		
The cross bar centre load bearing pin	1190 mm	46.85"
The pilot hang loop	Fwd Rear	1635 mm 1665 mm
		64.37" 65.55"
Sail Dimensions		
Chord length at 3 ft outboard of centre line	2095 mm	82.48"
Chord length at 3 ft inboard of tip	1070 mm	42.13"
Span (extreme tip to tip)	9090 mm	357.87 "
Location of Information Placard	Cross Bar	
Location of Test Fly Sticker	Front Keel	
Recommended Pilot Hook in Weight Range	60-90 kg	132-198 lbs
Recommended Pilot Proficiency	Nov/Int	Nov/Int

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

STING 175

GLIDER MODEL: Sting 175, 175X & 175XC

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 HGMA certified glider, and it is required that it contain additional airworthiness information.

	Metric	Imperial
Weight of glider with all essential parts and without coverbags and non essential parts.	30.0 kg	66.0 lbs
Leading Edge Dimensions		
Nose Plate anchor hole to crossbar attachment hole	3370 mm	132.68"
Nose Plate anchor hole to rear sail attachment point	5908 mm	232.60"
Outside diameter at nose	50 mm	1.97"
Outside diameter at cross bar	52 mm	2.05"
Outside diameter at rear sail attachment point	50 mm	1.97"
Crossbar Dimensions		
Overall pin to pin length from leading edge attachment point to hinge bolt at glider centre line	2905 mm	114.37"
Largest outside diameter	62 mm	2.44"
Keel dimensions		
The cross bar centre load bearing pin	1340 mm	52.76"
The pilot hang loop	Fwd Rear	1715 mm 1745 mm
		67.52" 68.70"
Sail Dimensions		
Chord length at 3 ft outboard of centre line	2225 mm	87.60"
Chord length at 3 ft inboard of tip	1070 mm	42.13"
Span (extreme tip to tip)	9800 mm	385.82 "
Location of Information Placard	Cross Bar	
Location of Test Fly Sticker	Front Keel	
Recommended Pilot Hook in Weight Range	80-135 kg	176-298 lbs
Recommended Pilot Proficiency	Nov/Int	Nov/Int

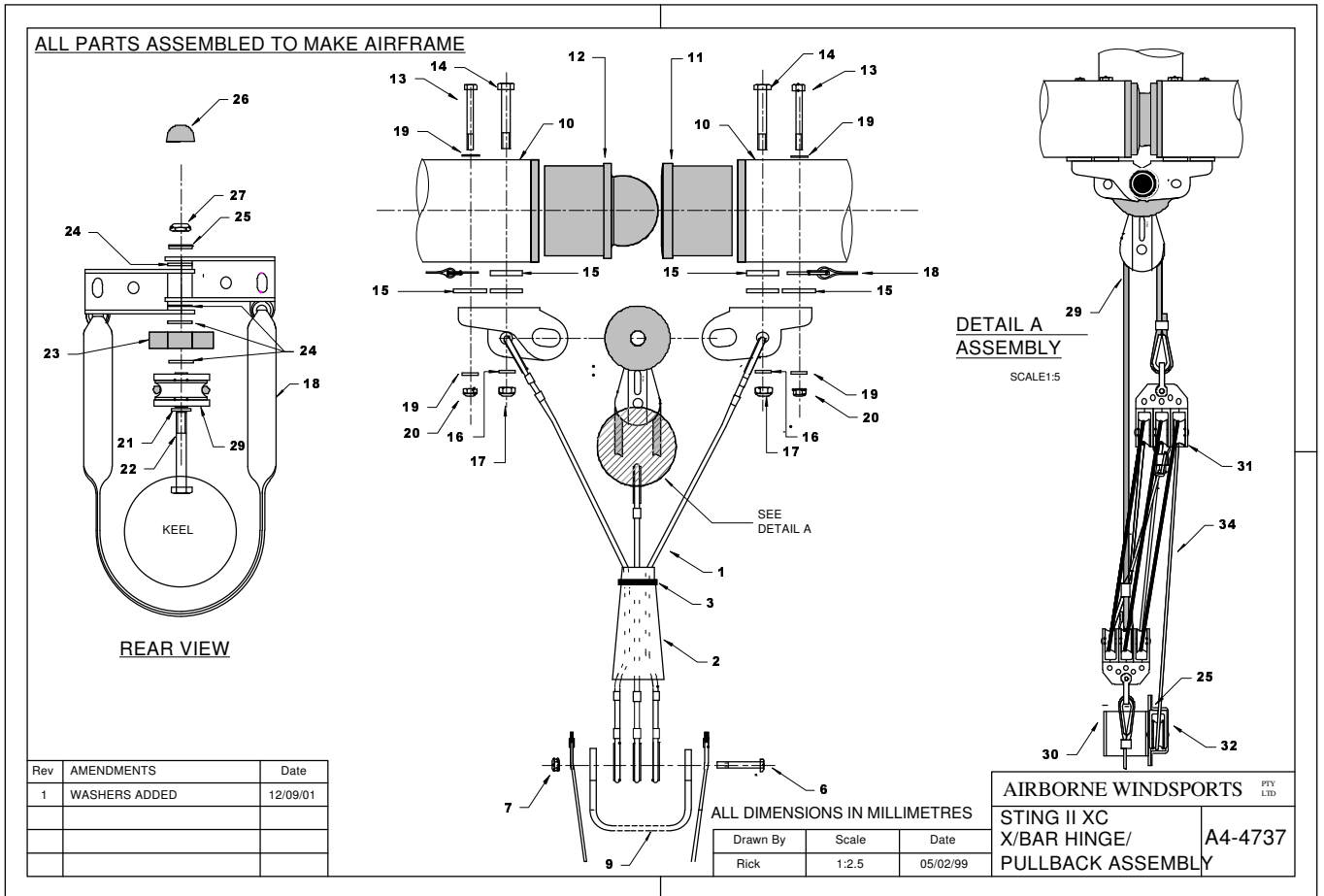
NB: Conversions * 0.4536 kg/pound * 25.4 mm/inch * 1.609 km/mile

Sting II X/Bar & VG Assembly

Sting II X/Bar & VG Assembly				
Dwg No A4-4737 20/09/2001				
Id	Part No	Details	S2154XCFRA	SII175XCFR
1	103503	PULL BACK WIRE 1425 SII 154	2	
	103839	PULL BACK WIRE 1480 SII175		2
2	101900	PULL BACK COVER NEOPRENE	1	1
3	101192	CABLE TIE (SHORT) 98MM	1	1
6	101333	AN4-13A	1	1
7	100035	AN4 NUT HALF NYLOC	1	1
8	101765	PULL BACK STRAP HANDLE 305	1	1
9	102021	SHACKLE PULL BACK	1	1
10	103529	X/BAR SII 154	2	
	103727	X/BAR S175		2
11	102449	X/BAR BALL SKT TYPE 2	1	1
12	102409	X/BAR BALL TYPE 2	1	1
13	100629	AN3-30A BOLT	2	2
14	100011	AN4-30A	2	2
15	103961	NYLON WASHER 1/4" OBA THIN	6	6
16	100042	AN4 WASHER	2	2
17	100034	AN4 NUT FULL NYLOC	2	2
18	103626	X/BAR STRAP TANG 230	1	1
19	100049	AN3 WASHER	4	4
20	100051	AN3 NUT FULL NYLOC	2	2
21	102332	WASHER SS 5/16 X 3/4"	1	1
22	101244	AN5-17A	1	1
23	103701	X/BAR BOLT COVER - 19MM SLOT	1	1
24	100595	NYLON WASHER M 8 STD	4	4
25	100604	CAP WASHER BASE CLIP 5/16	1	1
26	100603	CAP WASHER COVER BLACK M8	1	1
27	100037	AN5 NUT HALF NYLOC	1	1
29	103712	X/BAR ROPE SII-154/175XC	1	1
30	103984	K/POST BRKT SS T2 FOR VG	1	1
31	102023	PULLEY VG BLOCK 3P RF20312	1	1
32	104215	PULLEY CHEEK BLOCK RIVET MNT	1	1
33	102417	POP RIVET 5/32 LONG(5-8)	2	2

Section 15 ASSEMBLY DRAWINGS

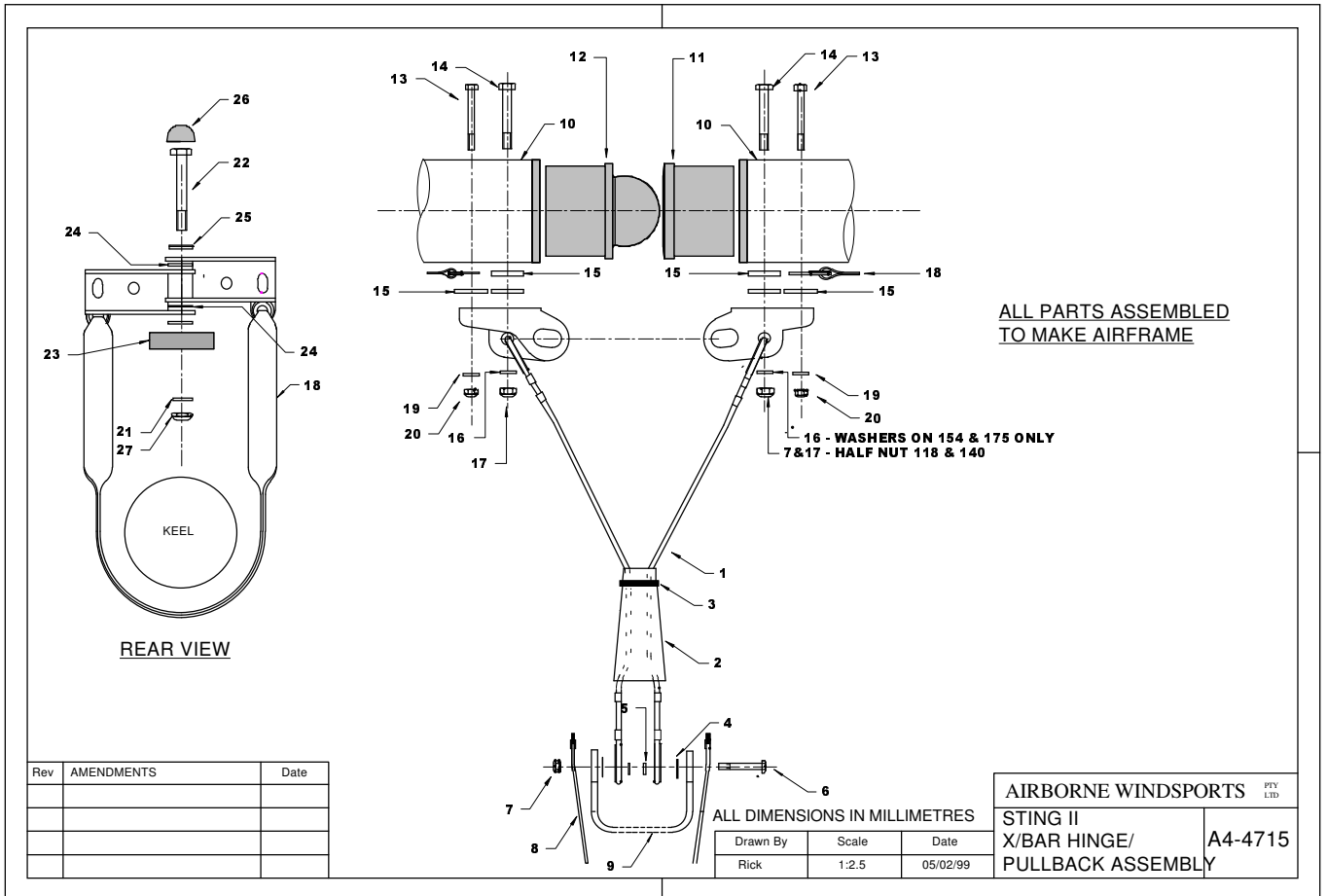
STING II VG ASSEMBLY A4-4737



Sting II X/Bar Hinge Pull Back Assembly

Sting II X/Bar Hinge Pull Back Assembly						
Dwg No A4-4715 20/09/2001						
Id	Part No	Details	S2118 FRAME	S2140 FRAME	S2154 FRAME	SII175 FRAME
1	102450	PULL BACK WIRE 1340 S&SII 140		2		
	103501	PULL BACK WIRE 1235 SII 118	2			
	103503	PULL BACK WIRE 1425 SII 154			2	
	103839	PULL BACK WIRE 1480 SII175				2
2	101900	PULL BACK COVER NEOPRENE	1	1	1	1
3	101192	CABLE TIE (SHORT) 98MM	1	1	1	1
4	102018	WASHER SS 1/4 X 3/4"	2	2	2	2
5	101055	NYLON WASHER M 6 XOD	2	2	2	2
6	101333	AN4-13A	1	1	1	1
7	100035	AN4 NUT HALF NYLOC	3	3	1	1
8	101765	PULL BACK STRAP HANDLE 305	1	1	1	1
9	102021	SHACKLE PULL BACK	1	1	1	1
10	102182	X/BAR S & SII 140		2		
	103528	X/BAR SII 118	2			
	103529	X/BAR SII 154			2	
	103727	X/BAR S175				2
11	102449	X/BAR BALL SKT TYPE 2	1	1	1	1
12	102409	X/BAR BALL TYPE 2	1	1	1	1
13	100558	AN3-23A BOLT	2	2		
	100629	AN3-30A BOLT			2	2
14	100011	AN4-30A			2	2
	100587	AN4-24A	2	2		
15	103961	NYLON WASHER 1/4" OBA THIN	6	6	6	6
16	100042	AN4 WASHER	2	2	2	2
17	100034	AN4 NUT FULL NYLOC			2	2
18	103626	X/BAR STRAP TANG 230	1	1	1	1
19	100049	AN3 WASHER	2	2	2	2
20	100051	AN3 NUT FULL NYLOC	2	2	2	2
21	100043	AN5 WASHER	1	1	1	1
22	100015	AN5-15A	1	1	1	1
23	100804	X/BAR BOLT COVER - NO SLOT	1	1	1	1
24	100595	NYLON WASHER M 8 STD	3	3	3	3
25	100604	CAP WASHER BASE CLIP 5/16	1	1	1	1
26	100603	CAP WASHER COVER BLACK M8	1	1	1	1

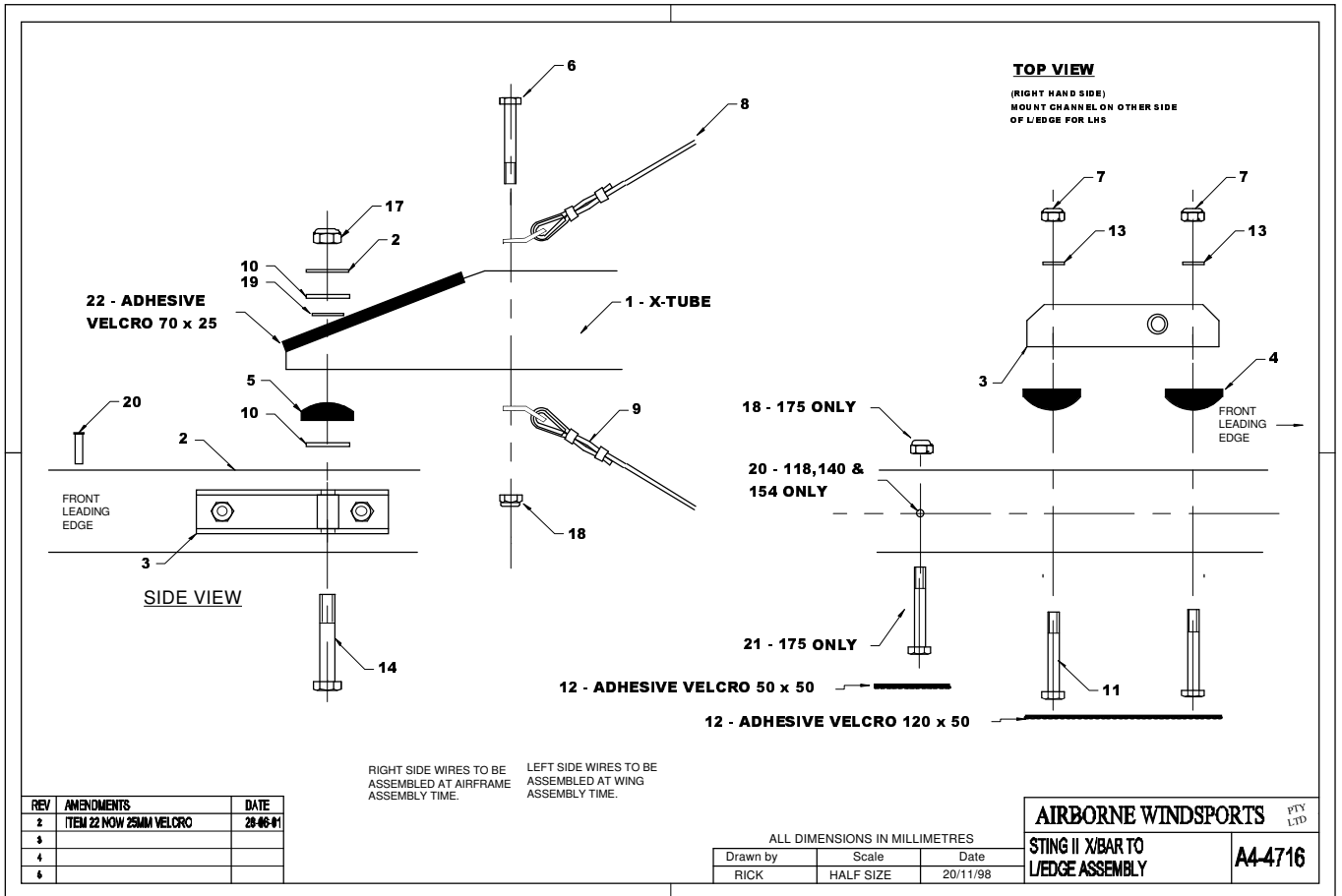
STING II X-BAR HINGE PULL BACK ASSEMBLY A4-4715



Sting II X/Bar to L/Edge Junction

Sting II X/Bar to L/edge Junction								
Dwg No A4-4716 20/09/2001								
Id	Part No	Details	S2118 FRAME	S2140 FRAME	S2154 FRAME	S2154XC FRAME	SII175 FRAME	SII175XC FRAME
2	101338	L/EDGE FRONT S118	1					
	101569	L/EDGE FRONT S154&XC BZ154			1	1		
	101570	L/EDGE FRONT S/BZ140		1				
	103725	L/EDGE FRONT S175					1	1
3	102006	X/BAR MOUNT CHANNEL	2	2	2	2	2	2
4	102271	SADDLE TO SUIT 45MM TUBE	6	6	4	4	4	4
5	100080	SADDLE TO SUIT 60MM TUBE			2	2	2	2
6	100010	AN4-27A			2	2	2	2
7	100034	AN4 NUT FULL NYLOC	4	4	4	4	4	4
8	101469	TOP SIDE WIRE HG 2785 S154XC				1		
	101470	TOP SIDE WIRE HG 2470 S118	1					
	101547	TOP SIDE WIRE HG 2770 S154			1			
	102165	TOP SIDE WIRE HG 2600 S140		1				
	102761	TOP SIDE WIRE HG 3050 SK156 S175XC						1
	103943	TOP SIDE WIRE HG 3040 S175					1	
9	101524	SIDE BOTT WIRE HGT 2335			2	2		
	102608	SIDE BOTT WIRE HGT 2035	2					
	102609	SIDE BOTT WIRE HGT 2120		2				
	103942	SIDE BOTT WIRE HGT 2575 1/8"					2	2
10	100820	NYLON WASHER M 8 XOD	4	4	4	4	4	4
11	100009	AN4-26A					4	4
	100587	AN4-24A	4	4	4	4		
12	104447	VELCRO 25MM LOOP/BLACK ADHESIVE	0.34	0.34	0.34	0.34	0.34	0.34
13	100042	AN4 WASHER	4	4	4	4	4	4
14	101244	AN5-17A	2	2	2	2	2	2
15	100714	WASHER SS 5/16 X 1" X 16G	2	2	2	2	2	2
17	100037	AN5 NUT HALF NYLOC	2	2	2	2	2	2
18	100035	AN4 NUT HALF NYLOC	4	4	4	4	6	6
19	100595	NYLON WASHER M 8 STD	2	2	2	2	2	2
20	102205	POP RIVET SS 3/16	2	2	2	2		
21	100549	AN4-22A					2	2

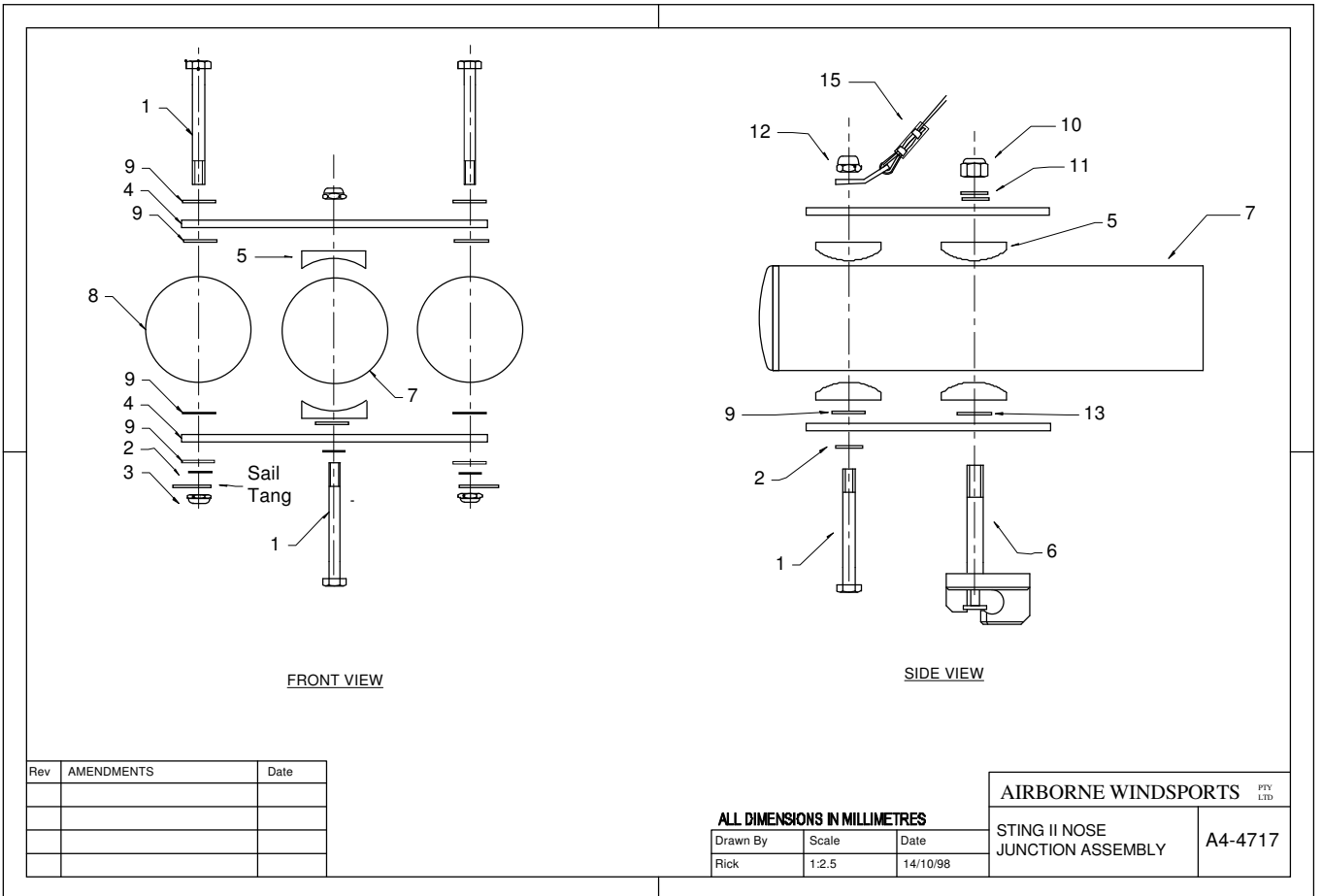
STING II X-BAR LEADING EDGE JUNCTION A4-4716



Sting II Nose Junction Assembly

Sting II Nose Junction Assembly						
Dwg No A4-4717 20/09/2001						
Id	Part No	Details	S2118 FRAME	S2140 FRAME	S2154 FRAME	S2154XC FRAME
1	100009	AN4-26A	3	3	3	3
2	100042	AN4 WASHER	3	3	3	3
3	100035	AN4 NUT HALF NYLOC	3	3	3	3
4	102460	NOSE PLATE HANG GLIDER 3MM	2	2	2	2
5	102271	SADDLE TO SUIT 45MM TUBE	4	4	4	4
6	106152	QUICK CLIP ASM 75MM	1	1	1	1
7	102168	KEEL TUBE ASSEM S140		1		
	103531	KEEL TUBE ASSEM SII 118	1			
	103532	KEEL TUBE ASSEM SII 154			1	1
8	101338	L/EDGE FRONT S118	2			
	101569	L/EDGE FRONT S154&XC BZ154			2	2
	101570	L/EDGE FRONT S/BZ140		2		
9	101055	NYLON WASHER M 6 XOD	8	8	8	8
10	100915	NUT NYLOC M 8	1	1	1	1
11	100043	AN5 WASHER	1	1	1	1
12	100034	AN4 NUT FULL NYLOC	1	1	1	1
13	100595	NYLON WASHER M 8 STD	2	2	2	2
15	101550	TOP FRNT WIRE HGWR 3425 S154			1	1
	101552	TOP FRNT WIRE HGWR 3205 S118	1			

STING II NOSE JUNCTION ASSEMBLY A4-4717



Rev	AMENDMENTS	Date

ALL DIMENSIONS IN MILLIMETRES

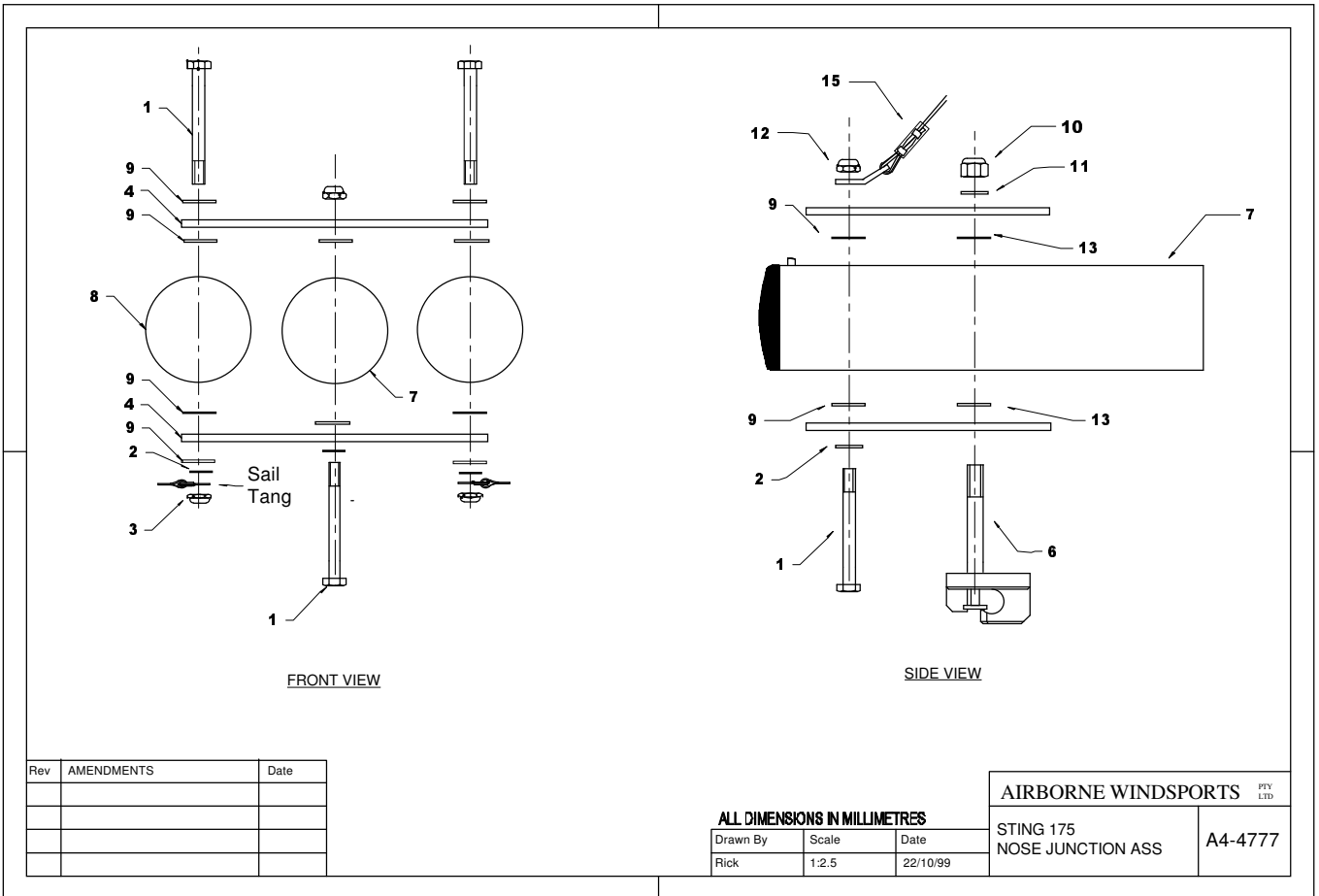
Drawn By	Scale	Date
Rick	1:2.5	14/10/98

AIRBORNE WINDSPORTS <small>PTY LTD</small>	
STING II NOSE JUNCTION ASSEMBLY	A4-4717

Nose Junction Assembly 50mm Keel and L/Edges

Nose Junction Assembly 50mm Keel and L/Edges				
Dwg No A4-4777 20/09/2001				
Id	Part No	Details	SII175FRAM	SII175XCFR
1	100009	AN4-26A	3	3
2	100042	AN4 WASHER	2	2
3	100035	AN4 NUT HALF NYLOC	3	3
4	102460	NOSE PLATE HANG GLIDER 3MM	2	2
6	106152	QUICK CLIP ASM 75MM	1	1
7	103726	KEEL TUBE ASSEM SII 175	1	1
8	103725	L/EDGE FRONT S175	2	2
9	101055	NYLON WASHER M 6 XOD	10	10
10	100915	NUT NYLOC M 8	2	2
11	100043	AN5 WASHER	1	1
12	100034	AN4 NUT FULL NYLOC	1	1
13	100595	NYLON WASHER M 8 STD	4	4

STING NOSE JUNCTION ASSEMBLY A4-4777



Rev	AMENDMENTS	Date

ALL DIMENSIONS IN MILLIMETRES

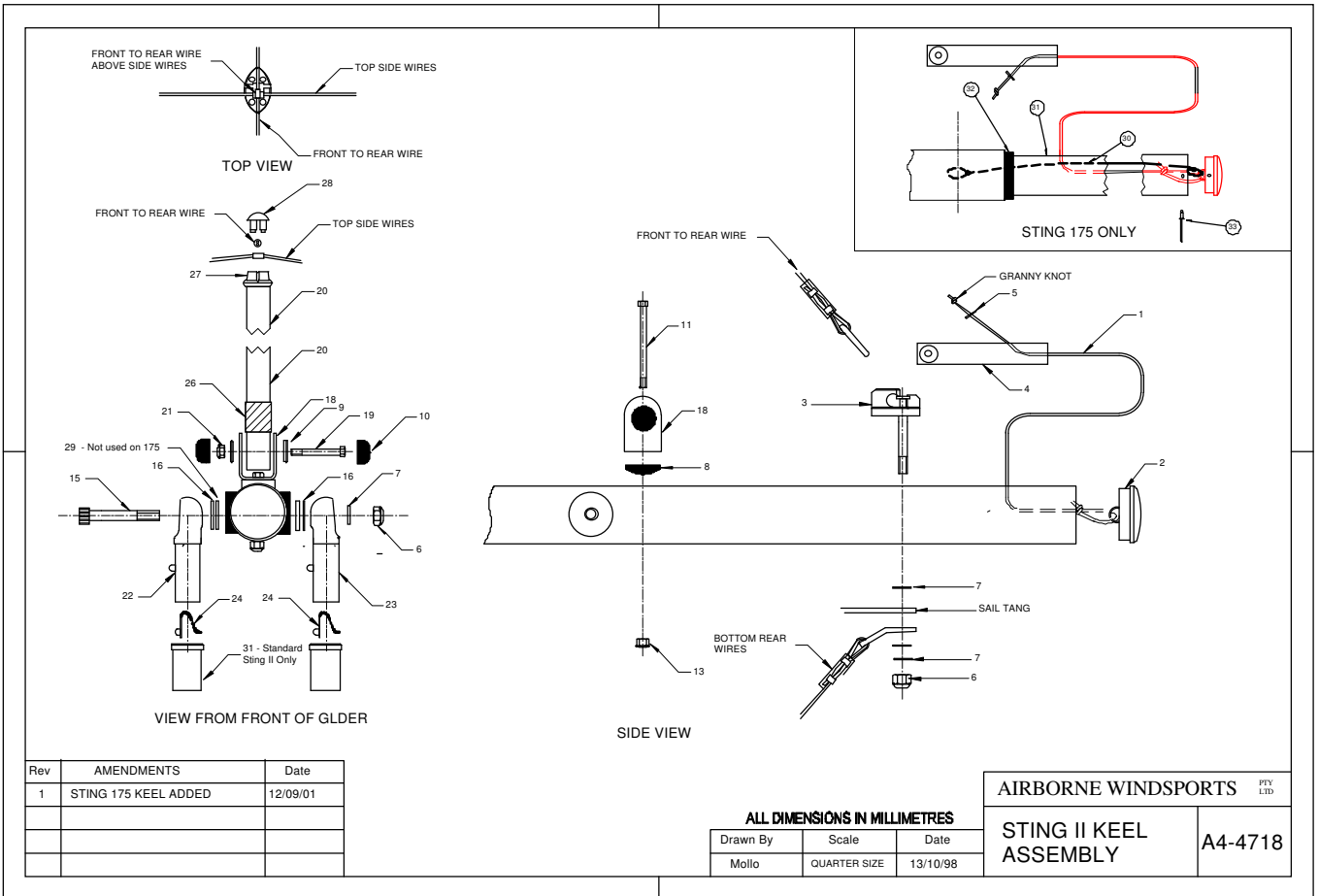
Drawn By	Scale	Date
Rick	1:2.5	22/10/99

AIRBORNE WINDSPORTS <small>PTY LTD</small>	
STING 175 NOSE JUNCTION ASS	A4-4777

Sting II Keel Assembly

Sting II Keel Assembly														
Dwg No A4-4718 20/09/2001														
Id	Part No	Details	S2118	S2118 FRAME	S2140	S2140 FRAME	S2154 FRAME	S2154XC	S2154XC FRA	S2175	S2175XC	SI1154	SI1175 FRAME	SI1175XC FR
1	100310	SHOCK CORD 4MM		0.8		0.9			1.15				1.15	1.15
2	102379	ENDCAP FOR 42MM TUBE LUG WITH HOLE		1		1	1		1				1	1
3	103278	QUICK CLIP ASM 65MM		1		1	1		1				1	1
4	101765	PULL BACK STRAP HANDLE 305		1		1	1		1				1	1
6	100915	NUT NYLOC M 8		2		2	2		2				2	2
7	100043	AN5 WASHER		4		4	4		4				4	4
8	102271	SADDLE TO SUIT 45MM TUBE		2		2	2		2				2	2
9	100604	CAP WASHER BASE CLIP 5/16		1		1	1		1				1	1
10	100603	CAP WASHER COVER BLACK M8		1		1	1		1				1	1
11	100549	AN4-22A		1		1	1		1				1	1
13	100034	AN4 NUT FULL NYLOC		1		1	1		1				1	1
15	101326	BOLT M8 A/FRAME TOP HG 90MM		1		1	1		1				1	1
16	100045	WASHER SS 5/16 X 1-1/4 304 FLAT		2		2	2		2				2	2
17	100820	NYLON WASHER M 8 XOD		2		2	2		2				2	2
18	103365	K/POST BRACKET SS TYPE 2		1		1	1						1	
	103984	K/POST BRKT SS T2 FOR VG							1					1
19	100967	AN4-15A	1		1			1		1	1	1		
20	103527	K/POST HG 1030 TYPE 2	1		1			1		1	1	1		
21	100035	AN4 NUT HALF NYLOC	1		1			1		1	1	1		
22	103999	D/TUBE TOP KNUCKLE FAIRED HG TYPE 2		1		1	1		1				1	1
23	103999	D/TUBE TOP KNUCKLE FAIRED HG TYPE 2		1		1	1		1				1	1
24	102015	SPRING CLIP 1 PIN TYPE 1		2		2	2		2				2	2
26	102020	NEOPRENE D/TUBE CVR	1		1			1		1	1	1		
27	106047	K/POST HEAD PLUG	1		1			1		1	1	1		
28	106138	K/POST HEAD COVER	1		1			1		1	1	1		
29	100820	NYLON WASHER M 8 XOD		2		2	2		2					
30	101064	SHOCK CORD 3MM								2.6	2.6			
31	104609	KEEL EXTENSION STING 175								1	1			
32	104313	KEEL BUNG CLIMAX								1	1			

STING II KEEL ASSEMBLY A4-4718



HG AFrame Faired Corner Unit Assembly Type 2

HG AFrame Faired Corner Unit Assembly Type 2								
Dwg No A4-7237 21/09/2001								
Id	Part No	Details	S2118X	S2140X	S2154X	S2154XC	S2175X	S2175XC
1	100776	D/TUBE A/FOIL SILVER 1485	2	2				
	101339	D/TUBE A/FOIL SILVER 1700					2	2
	300010	D/TUBE A/FOIL SILVER 1650			2	2		
2	101743	D/TUBE BTM KNUCKLE FAIRED AB LHS	2	2	2	1	2	1
3	101742	D/TUBE BTM KNUCKLE FAIRED AB RHS				1		1
4	101713	C/BAR KNUCKLE HG TYPE 2	2	2	2	2	2	2
6	101745	BOLT M6 D/TUBE BOTTOM KNUCKLE	2	2	2	2	2	2
7	102010	VG ROLLER				1		1
8	101746	VG ROPE 5000				1		
13	102015	SPRING CLIP 1 PIN TYPE 1	2	2	2	2	2	2
14	101055	NYLON WASHER M 6 XOD	4	4	4	4	4	4
16	103488	FRNT FLYING WIRES HG 1865 NO THIMBL	1					
	103489	FRNT FLYING WIRES HG 1910 NO THIMBL		1		1		
	103490	FRNT FLYING WIRES HG 2095 NO THIMBL			1			
	103837	FRNT FLYING WIRES HG 2215 NO THIMBL					1	1
17	103493	REAR FLYING WIRE HG 1960 NO THIMBLE	1					
	103494	REAR FLYING WIRE HG 2000 NO THIMBLE		1				
	103495	REAR FLYING WIRE HG 2145 NO THIMBLE			1	1		
	103838	REAR FLYING WIRE HG 2240 NO THIMBLE					1	1
18	106172	SKT BUTTON SCREW M5 X 10	4	4	4	4	4	4
19	100055	WASHER SS 3/16 X 7/16" 304 FLAT	4	4	4	4	4	4
20	106171	A FRAME LOCK SHAFT 20MM	2	2	2	2	2	2
21	100035	AN4 NUT HALF NYLOC	1	1	1	1	1	1
22	100042	AN4 WASHER	1	1	1	1	1	1
23	101757	SPEED BAR TYPE 2 1400 WITH CLEAT				1		1
	102736	SPEED BAR TYPE 2 1340 W/OUT CLEAT	1	1				
	102737	SPEED BAR TYPE 2 1400 W/OUT CLEAT			1		1	
24	101333	AN4-13A	1	1	1	1	1	1
25	106050	PIP PIN 33 WITH CAP	1	1	1	1	1	1

FAIRED DOWN TUBE CORNER ASSEMBLY A4-7237

ALL PARTS ASSEMBLED TO MAKE WING

LEFT HAND SIDE KNUCKLE

RIGHT HAND SIDE KNUCKLE

NOTE: CLEVIS PIN AND RING USED ONLY ON TANDEM GLIDER

NOTE: TYPE AB FAIRED CORNER UNITS HAVE AIRBORNE ON CASTING

NOTE: MATERIAL LIST ITEM 32 CLIMAX STREAMLINE OPTION

CLIMAX ONLY

ASSEMBLY DETAIL

1. THE WIRES ARE FITTED INTO THE FAIRED KNUCKLES FIRST WITH THE LOCKING SHAFT.
2. WASHERS & 2 SCREWS HOLDING THEM IN PLACE (NOTE : USE LOCTITE 262)
3. THERE IS A LEFT & RIGHT HAND SIDE KNUCKLE AND WHEN
4. THE KNUCKLES CAN BE FITTED TO THEIR DOWNTUBES.
5. FIT THE A-FRAME CORNER KNUCKLES & SIDE WIRES TO THE FAIRED KNUCKLES.
6. THE SOCKET SCREW HOLDS THESE COMPONENTS IN PLACE.

NOTE: GUIDE THE V.G ROPE THROUGH THE V.G PULLEY OPENING
REMEMBER TO INSERT THE V.G ROLLER IN TO THE PULLEY. (NOTE : USE LOCTITE 262).

ALL DIMENSIONS IN MILLIMETRES
UNLESS STATED OTHERWISE

Drawn by	Scale	Date
JADY	HALF SIZE	28-5-91

AirBorne WindSports PTY LTD

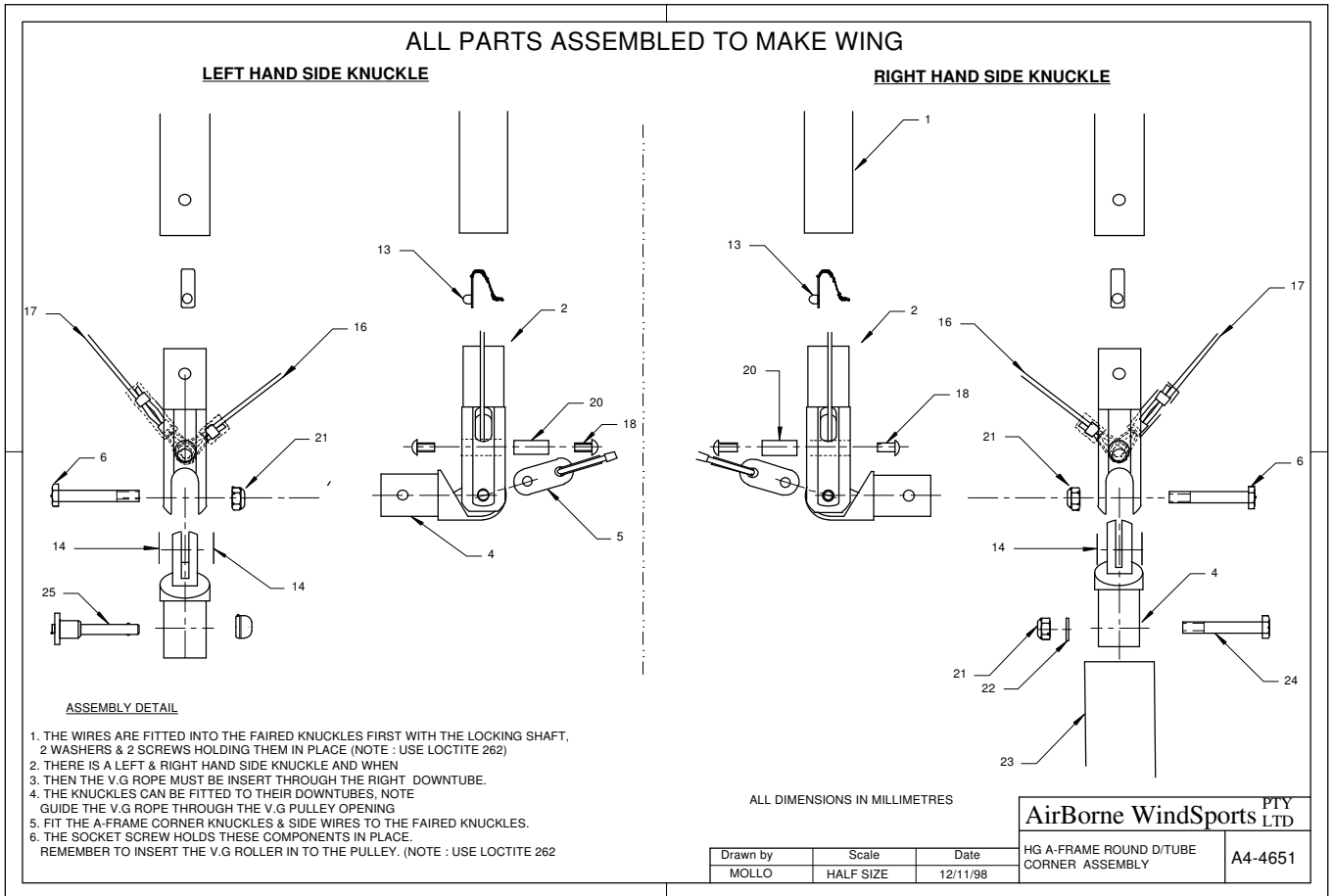
HG A-FRAME FAIRED CORNER
UNIT ASSEMBLY TYPE AB

A4-7237

HG SA Frame Corner Unit Assembly Round Type

HG SA Frame Corner Unit Assembly Round Type						
Dwg No A4-4651 20/09/2001						
Id	Part No	Details	S2118	S2140	S2175	SII154
1	103401	D/TUBE ROUND TYPE 2 28X2 1645				2
	103402	D/TUBE ROUND TYPE 2 28X2 1695			2	
	103524	D/TUBE ROUND TYPE 2 28X1.6 1480	2	2		
2	103391	D/TUBE BTM KNUCKLE FOR 28X2 TUBE			2	2
	103629	D/TUBE BTM KNUCKLE FOR 28X1.6 TUBE	2	2		
4	101713	C/BAR KNUCKLE HG TYPE 2	2	2	2	2
6	100547	AN4-12A	2	2	2	2
13	102015	SPRING CLIP 1 PIN TYPE 1	2	2	2	2
14	100624	MYLAR WASHER	4	4	4	4
16	103488	FRNT FLYING WIRES HG 1865 NO THIMBL	1			
	103489	FRNT FLYING WIRES HG 1910 NO THIMBL		1		
	103490	FRNT FLYING WIRES HG 2095 NO THIMBL				1
	103837	FRNT FLYING WIRES HG 2215 NO THIMBL			1	
17	103493	REAR FLYING WIRE HG 1960 NO THIMBLE	1			
	103494	REAR FLYING WIRE HG 2000 NO THIMBLE		1		
	103495	REAR FLYING WIRE HG 2145 NO THIMBLE				1
	103838	REAR FLYING WIRE HG 2240 NO THIMBLE			1	
18	106172	SKT BUTTON SCREW M5 X 10	4	4	4	4
20	103403	A FRAME LOCK SHAFT 24.5MM	2	2	2	2
21	100035	AN4 NUT HALF NYLOC	3	3	3	3
22	100042	AN4 WASHER	1	1	1	1
23	101440	C/BAR STRAIGHT 28X2 INC GRIPS 1400			1	1
	102210	C/BAR STRAIGHT 28X1.6 INC GRIPS 134	1	1		
24	101333	AN4-13A	1	1	1	1

ROUND DOWN TUBE TYPE 2 CORNER ASSEMBLY A4-4651



STING HANG LOOP ASSEMBLY A4-4796

170 STING ASSEMBLY

680 HANG LOOP 630 HANG LOOP 220 RETAINER

164 STING ASSEMBLY

600 HANG LOOP 550 HANG LOOP 200 RETAINER

140 STING ASSEMBLY

480 HANG LOOP 410 VELCRO LOOP GRIP TAPE

110 STING ASSEMBLY

480 HANG LOOP 410 HANG LOOP

NOTE: STANDARD LOOP LENGTHS SHOWN

Rev	AMENDMENTS	Date

ALL DIMENSIONS IN MILLIMETRES

Drawn By	Scale	Date
Rick	HALF SIZE	29/05/00

STING II HANG LOOP ASSEMBLY

A4-4796
SHEET 1 OF 1