

# MOYES DELTA GLIDERS PTY LTD

## XTRALITE 137 & 147 OWNER'S MANUAL

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### DESCRIPTION OF DESIGN

The Moyes XTRALITE combines the successful design philosophy of the popular "XS" and "GTR" series with the technology of the future. The XTRALITE has been developed to meet the demand for greater performance in combination with lighter bar pressures in both roll and pitch. This has been achieved without sacrificing the traditional Moyes qualities of stability, structural integrity and sleek finish.

The elliptical shape and thinner profile created by the fiberglass tip reduces wing tip vortices whilst the weight saving results in a lower moment of inertia thus reducing roll pressures.

The large mylar reinforced leading edge and closer batten spacing gives the Moyes XTRALITE a solid, distortion free airfoil while a cunningly enclosed variable geometry system allows the keel pocketless high-tech composite sail to produce an amazing lift/drag performance throughout the entire and extensive speed range.

By the combination of stainless steel reflex bridles\* and composite alloy/fiberglass battens\*, the new Moyes XTRALITE displays excellent pitch stability and dive recovery.

The overall finish and structure of the Moyes XTRALITE is of the usual quality standard.

\* Alteration of these devices in any way may reduce the glider's pitch stability or positiveness.

### MOYES XTRALITE 137 & 147 SPECIFICATIONS

Model / Size	XTRALITE 137	XTRALITE 147
Area	137sqft	147sqft
	12.Smsq	13.7msq

Span	32'3"	9.85 m	33'8"	10.3 m
NoseAngle	130deg	130deg	130deg	130deg
Aspect Ratio	7.6	7.6	7.7	7.7
Glider Weight	68 lb	31 kg	72.5 lb	33 kg
Pilot Hook-in Weight	130-240 lb	59-110kg	160-250 lb	72-113 kg
Optimum (Pilot Only)				
Weight Range	130-165 lb	60-75kg	155-185 lb	70-85kg
Pilot Rating	Adv	Adv	Adv	Adv
Pack-up Length	16'2.112"	4940 mm	16'10.3/4"	5150 rum
BreakdownLength	13'6"	4145mm	14r2r1	4320mm
Short Breakdown Length	12'3.1/2"	3750 mm	12' 3.1/2"	3750 mm
(Unbolt X-bar/L-E Junction)	12'2"	3708 mm	12'2"	3708 mm
CofG-FrontofKeel-Powerib	51.3/4"	1315 mm	52.3/4"	1340 mm
C of 0-Front of Keel-Mylar	52.1/2"	1333 mm	53.3/8"	1355 mm
Number of Battens - Mainsail	18	18	20	20
-Undersurface	8	8	8	8
V.N.E.	53mph	84.8 kph	54 mph	86.4 kph
V.A.	46mph	73.6 kph	47mph	75.2 kph
Trim Speed	21 mph	33.6 kph	21 mph	33.6 kph
Stall Speed	16mph	25.6kph	15mph	24kph
Maximum Speed	62 mph	99.2 kph	62 mph	99.2 kph
Best Glide Speed	26 mph	41.6 kph	26 mph	41.6 kph
Best Glide Angle	13.02/1	13.02/I	13.02/I	13.02/I
Glide Angle 10/I	35mph	56 kph	35mph	56 kph
Sailcloth Panel A	Leading Edge	Scrim		
Panel B	Front Mainsail	4oz Dacron	Option	Mylar
Panel C	Trailing Edge	Powerib	Option	Mylar
Panel D	Front Undersurface	4oz Dacron		
Panel F	Back Undersurface	4oz Dacron		

## OPERATING LIMITATIONS

Your Moyes XTRALITE is a sophisticated, "state of the art" high performance hang glider and if maintained correctly will give you years of safe enjoyable soaring. However, it is important that you display a healthy respect for all aspects of aviation and that you especially understand the increased risks of flying in dangerous conditions or in a manner that exceeds the gliders operating limitations.

Flight operation should be limited to non-aerobatic manoeuvres where the pitch angle does not exceed 30 degrees up or down of the horizon, or bank angles exceeding 60 degrees.

The Moyes XTRALITE has been designed for foot launched soaring flight and should not be flown by more than one person at a time, and should not be flown backwards or inverted.

The recommended minimum pilot skill level is Advanced (Hang 4).

The Moyes XTRALITE should not be flown with auxiliary power.

The Moyes XTRALITE should not be flown in excess of the placarded

air

V.N.E. (maximum speed never to exceed)	OR V.A. (maximum rough
manoeuvring speed)	
XTRALITE 137	XTRALITE 147
V.N.E. 53 mph / 84.8 kph	54mph / 86.4 kph
V.A. 46mph/73.6kph	47 mph/ 75.2 kph

The stall speed with maximum pilot weight is

XTRALITE 137  
26 mph/ 41.6 kph

XTRALITE 147  
29mph/46.4kph

The maximum speed with minimum pilot weight is  
XTRALITE 137                      XTRALITE 147  
44mph /70.4 kph                      44mph / 70.4 kph

The Moyes XTRALITE will resist spinning and will recover quickly if control pressures are relaxed. Recovery from a stalled turn can be achieved without extreme height loss or without extreme attitude change if the angle of attack is reduced. Recovery from such an incipient spin will be achieved within half a turn if this procedure is followed.

These standards require ultimate load tests at:

1. Maximum lift angle of attack at a speed of 65 mph/104 kph.
2. Negative 30 degrees angle of attack at a speed of 46 mph I 73.6 kph.
3. Negative 150 degrees angle of attack at a speed of 32 mph I 5 .2 kph.

3

4. Pitching moment tests at 20/32, 36/57.6 and 53/84.8 mph/kph respectively, (Moyes includes testing to 70 mph/112 kph) to display the gliders inherent positive pitch stability through a broad range of angles of attack.

NOTE: The luff lines on both the Moyes Xtralite 137 & 147 are set tight with the glider's FULL VG 'ON', we suggest you relax the VG by 18 ' or 45 cm when the glider is new . The initial setting of the luff lines is calculated using a glider which has been 'flown in' -

It is recommended that the pilot hold a minimum advanced rating or equivalent, with the following recommended pilot weight range.

	XTRALITE 137	XTRALITE 147
Pilot Hook-in Weight Range	130-240 lbs/59-110 kgs	160-250 lbs/72-113kgs
Optimum Pilot Weight Range	130-165 lbs/60-75 kgs	155-185 lbs/70-85kgs
(Without harness)		

The Moyes XTRALITE 137 & 147 are capable of flying at speeds greater than the V.A. (47 mph) (75.2 kph) and V.N.E. (54 mph) (86.4 kph). We recommend you use an accurate airspeed indicator to familiarize yourself with control bar positions at these speeds and normal flying speeds.

#### DISCLAIMER:

The owner and operator must understand that due to the inherent risk involved in flying such a unique vehicle, no warranty is made or implied of any kind against accidents, bodily injury or death. Operations such as aerobatic manoeuvres or erratic pilot technique may ultimately produce equipment failure and are specifically excluded from the warranty.

This glider is not covered by product liability insurance, nor has it been designed, manufactured or tested to any state or federal government airworthiness standards or regulations.

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## GETTING STARTED - Assembly from 4 Metre Breakdown

If your Moyes XTRALITE was shipped to you in the breakdown form,

you can reassemble your glider to it's full length by following these procedures. You will not need any tools. All references to 'top' & 'bottom' and

'left' and 'right' are referred to with the glider in flying mode.

1/ Check your packing list.

- \* Glider
- \* 2 x Backsection leading edges-Right=Green=1 slot Left=Red=2 slots
- \* 2 x Batten Bags - Right=Green - Left=Red
- \* 1 x Speed Bar
- \* 2 x Tip Bags
- \* 3 x Padding Pieces - Kingpost Top, A-Frame Bottom, Keel
- \* 1 x Batten Pattern
- \* 1 x Snack Pack

2/ Expose the leading edge/cross bar junction through the tip inspection port. Remove the bubble wrap and tape from the leading edge/cross bar junction and the end of the middle sleeve.

3/ Insert the right hand back section of leading edge. The right hand back section is indicated by a green spot and 1 slot in the black eccentric ring.

Ensure that the black eccentric ring is pushed all the way into the middle

sleeve so that the black eccentric ring is not exposed at all.

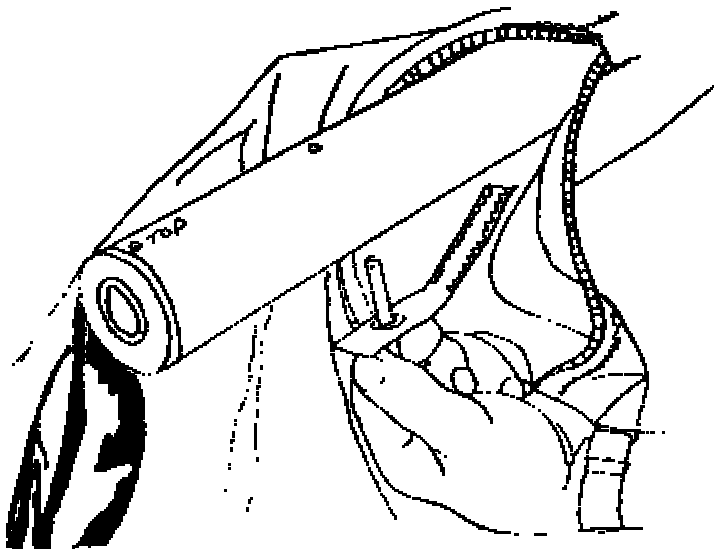
Ensure that the black eccentric ring is located so that the thinner wall of

the ring is on the bottom.

4/ Secure the back section by attaching to the tip webbing using the clevis pin and ring supplied.

Ensure the tip webbing is not twisted, and is on the bottom of the leading

edge, making sure to locate the aluminium fibreglass tip mount tube.

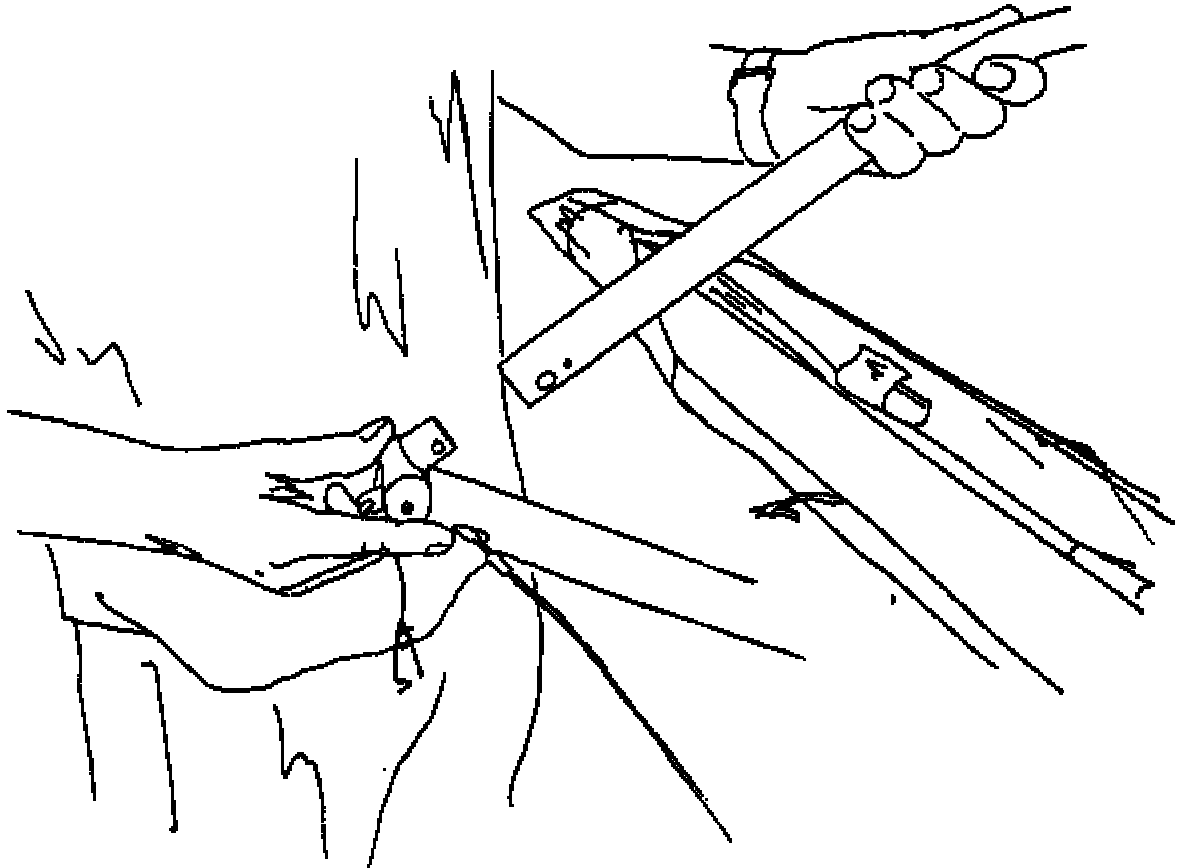


5/ Repeat numbers 2/ - 4/to install the left hand back section of leading edge. The left hand back section of leading edge is identified by a red spot and 2 slots in the black eccentric ring.

## ASSEMBLY PROCEDURES

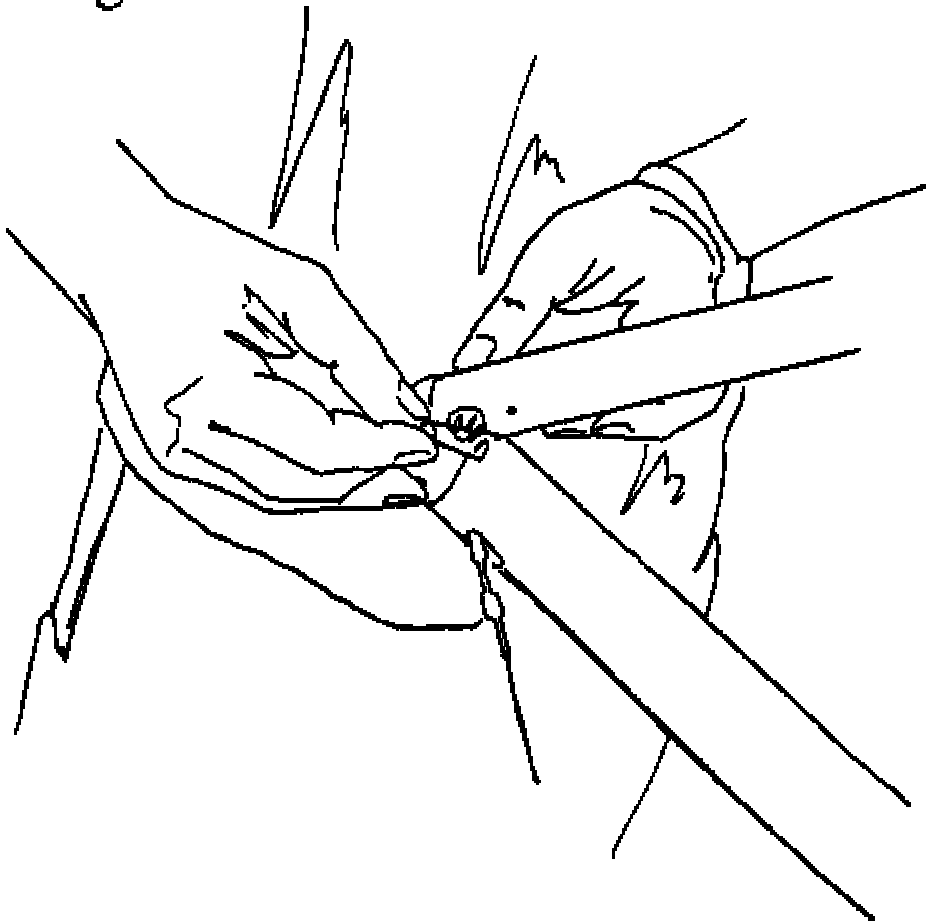
1/ Place the glider on the ground, zipper up. Open the bag, undo ties, remove padding and battens and assemble control frame. Check that no wires are twisted around the control frame. Fig. 1

**Fig. 1**



Check that assembly bolt has actually passed through the basebar and aluminium knuckle and is held with castle nut and safety pin. Fig. 2

**Fig. 2**

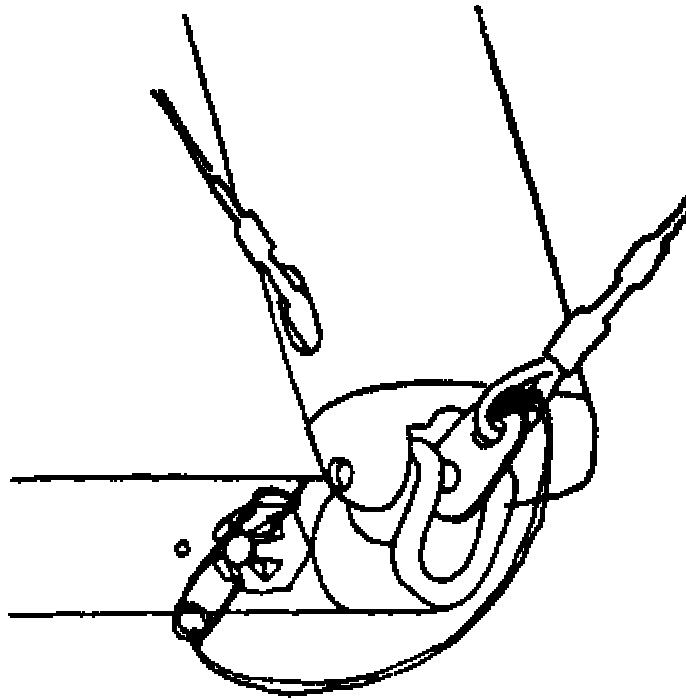


2/ Roll the glider over so that it is standing on the control frame

Special care should be taken, to assure that the control bar top does not damage the leading edges, when turning the glider over and laying flat on the ground.

Check that the control frame is central and that the wires are not kinked or twisted, especially the bottom side wire and tang. Fig. 3

**Fig. 3**



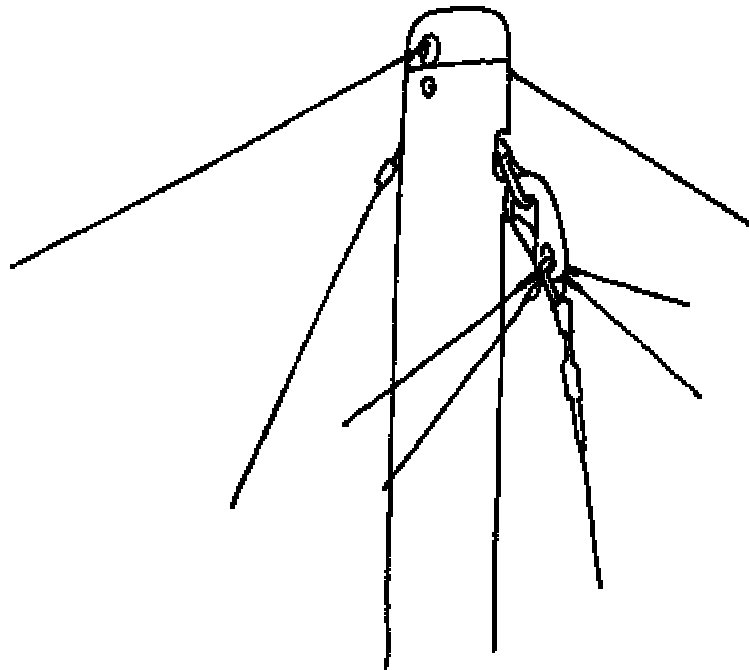
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3/ Remove glider bag and any remaining ties and padding. Carefully spread each wing making sure that you do not raise them above the keel and that bridles or rigging are not snagged around keel or kingpost.

4/ Raise the kingpost and attach rear wire and reflex bridles. Fig. 4

Check that bridles are not twisted on themselves and/or other top wires.

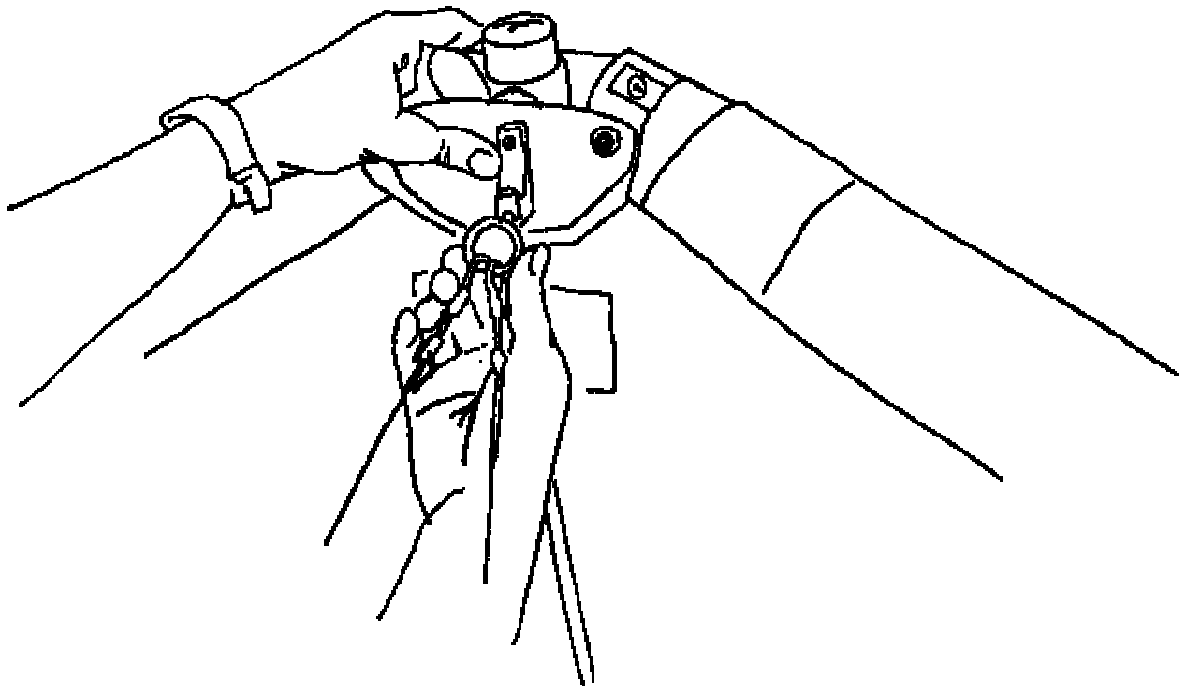
**Fig. 4**



5/ Check that the bottom wires are not twisted or kinked.

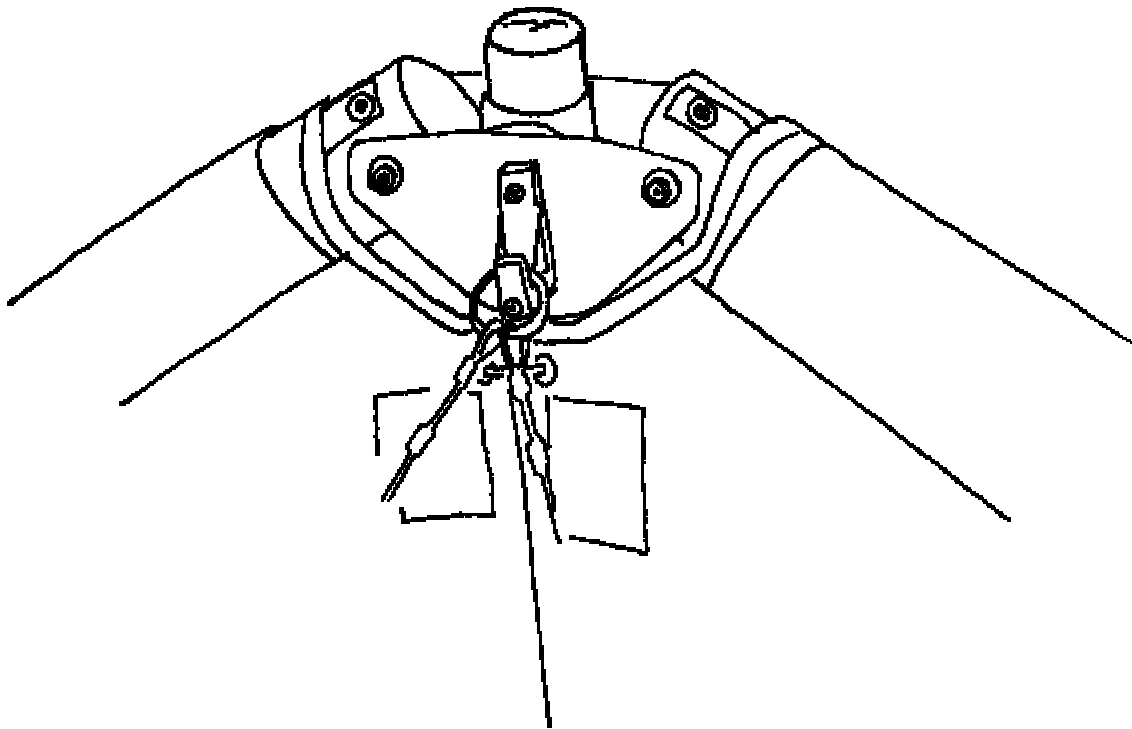
Insert the ring of the lower front wires in the Bailey Block making sure that the spring is firmly locked, and the wires untwisted. Fig. 5 & 6

**Fig. 5**





**Fig. 6**



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6/ Check the battens for symmetry

\* Red tipped numbered battens are for the left wing, green for the right and blue the undersurface.

\* Insert battens from the root out towards the tip, #1 - 6 only. Battens #7 - 10

are best done after tensioning the cross-bar to avoid catching the ground and damaging the sail.

\* Use only gentle pressure when sliding in battens. If resistance is encountered,

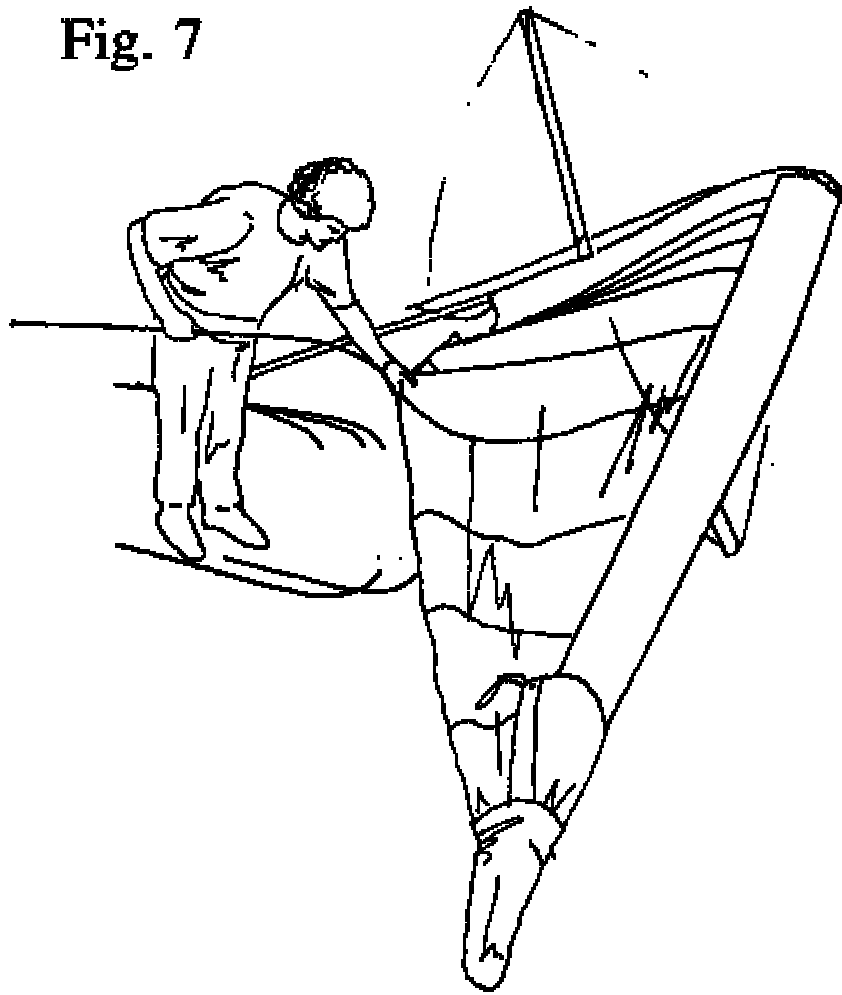
lift trailing edge and flick it up and down gently in order to billow the sail over

the bar that is stopping the batten. Secure the battens with doubled elastic cords.

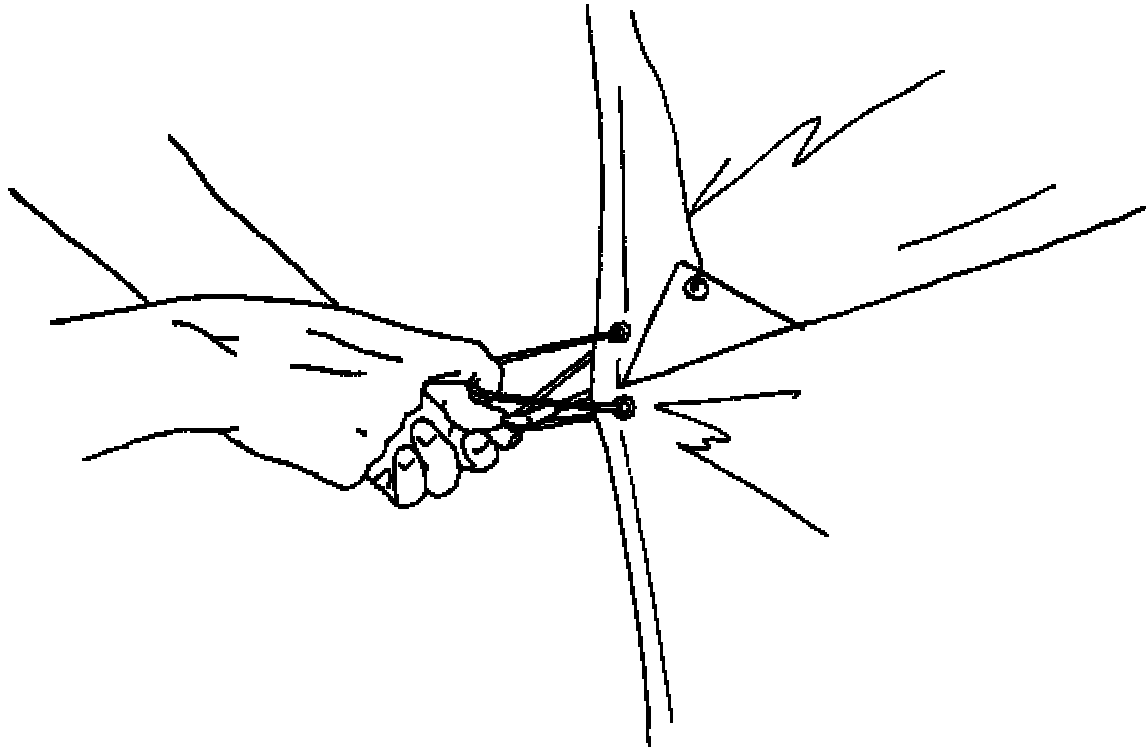
\* Special care should be taken when inserting batten numbers 1-3 so as not to deform their shape. Ensure that the sail is loose enough to allow the battens to

slide in with minimal sail pressure for flat assembly. Fig. 7 & 8

Fig. 7



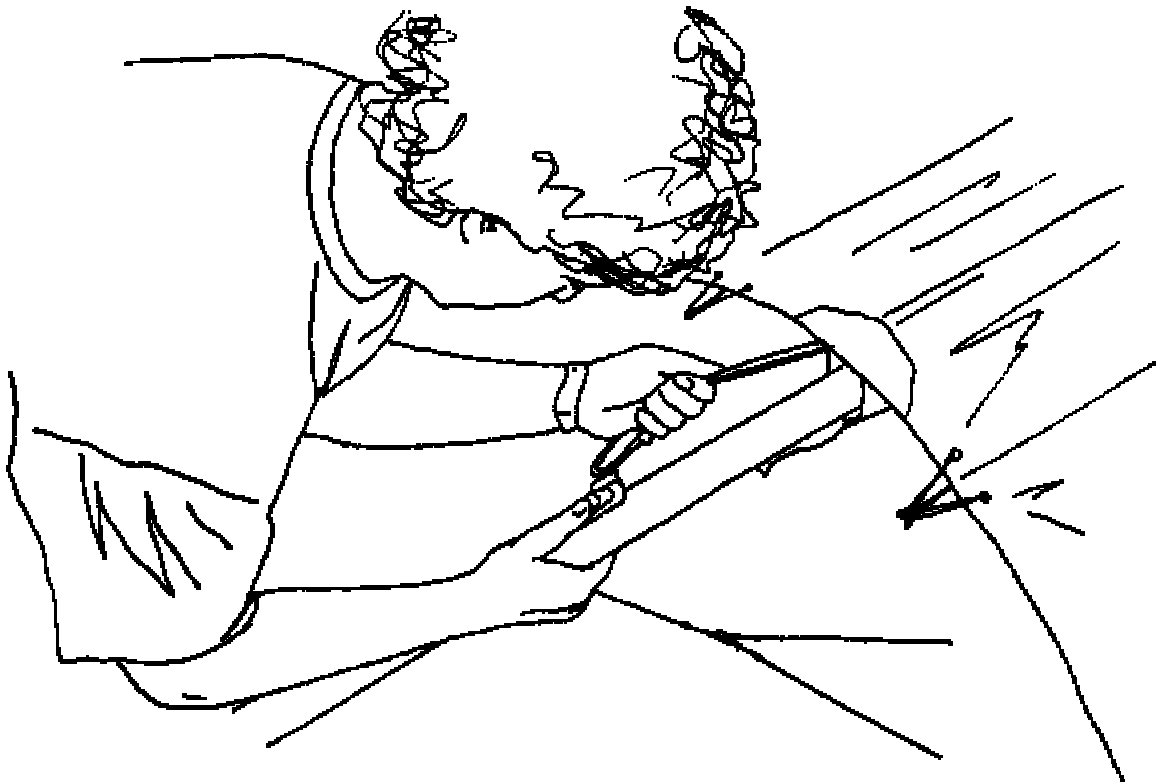
**Fig. 8**



7/ To tension the crossbar pull the cord coming out of the keel aft of the sail until the "U" shackle can be fined over and into the Bailey Block catch on the keel.

Check that the cable and rope are not twisted and that the spring lock is firmly locked. Fig. 9

**Fig. 9**

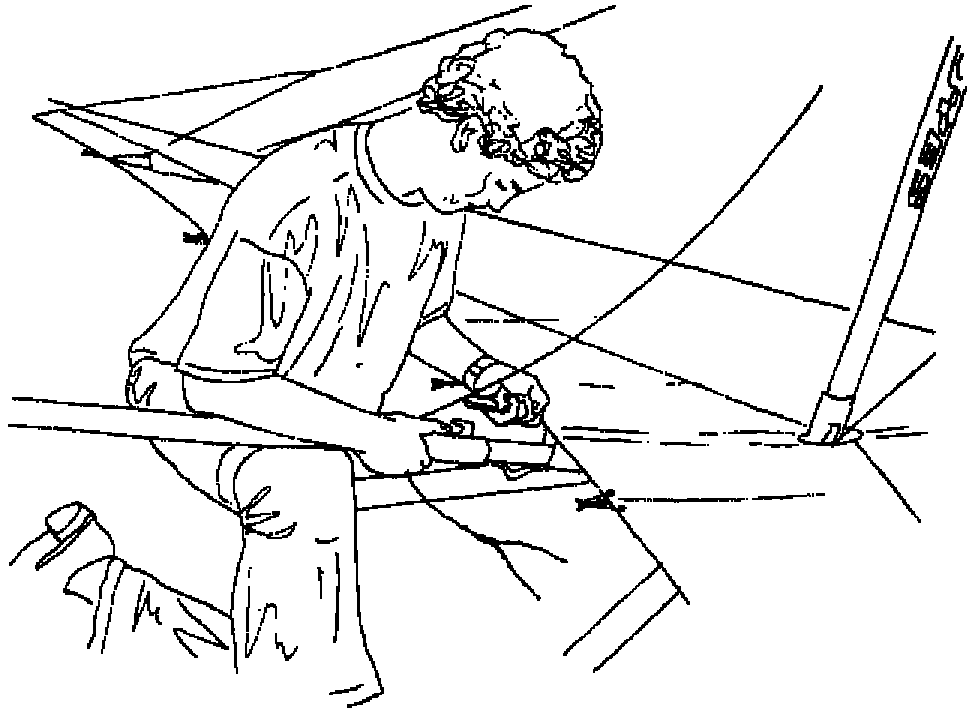


7/F To tension the crossbar for flat on ground set up, raise the keel to rest on your knee. Fig.9F and pull the cord coming out of the keel aft of the sail until the "U" shackle can be fitted over and into the Bailey Block catch on the

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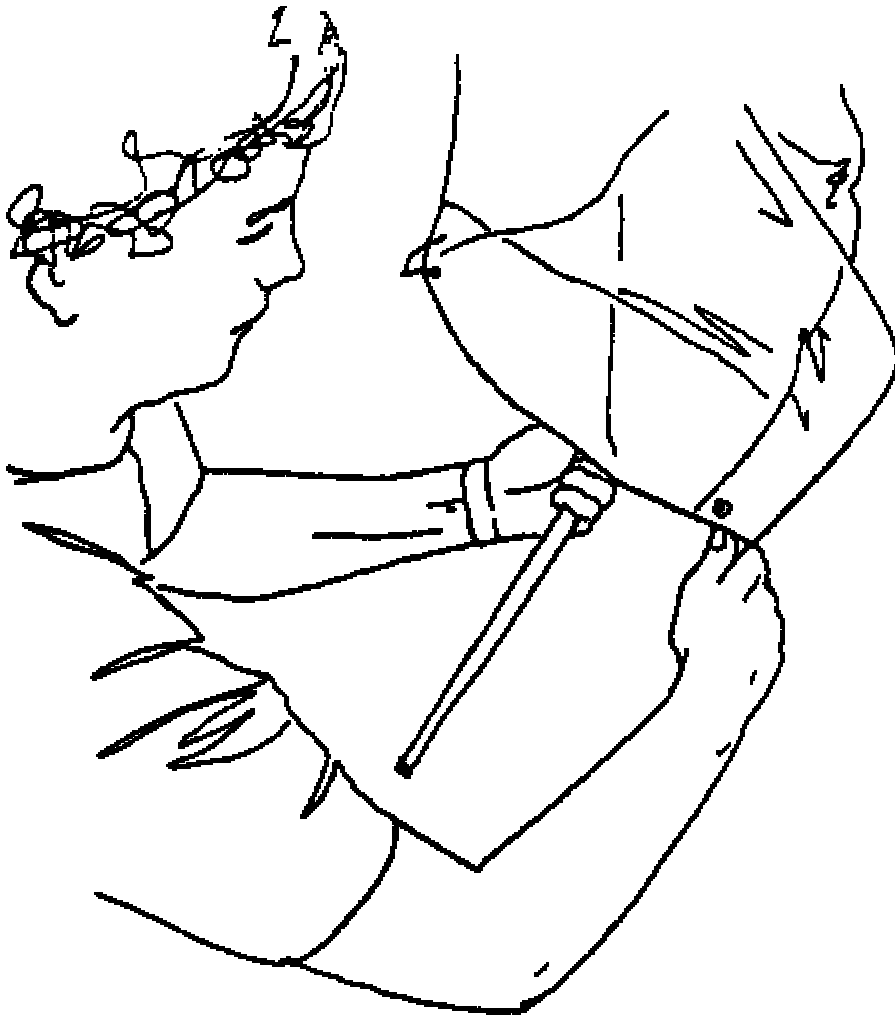
keel. Caution - Do not push down on the keel, leave the keel raised in the air and immediately raise the nose to stand the glider on the control bar. If pressure is placed on the keel, the side wire tension may damage the cross-bars. High side wire tension causes great compression force on the cross-bar tubes and may bend or break them.

**Fig.9F**

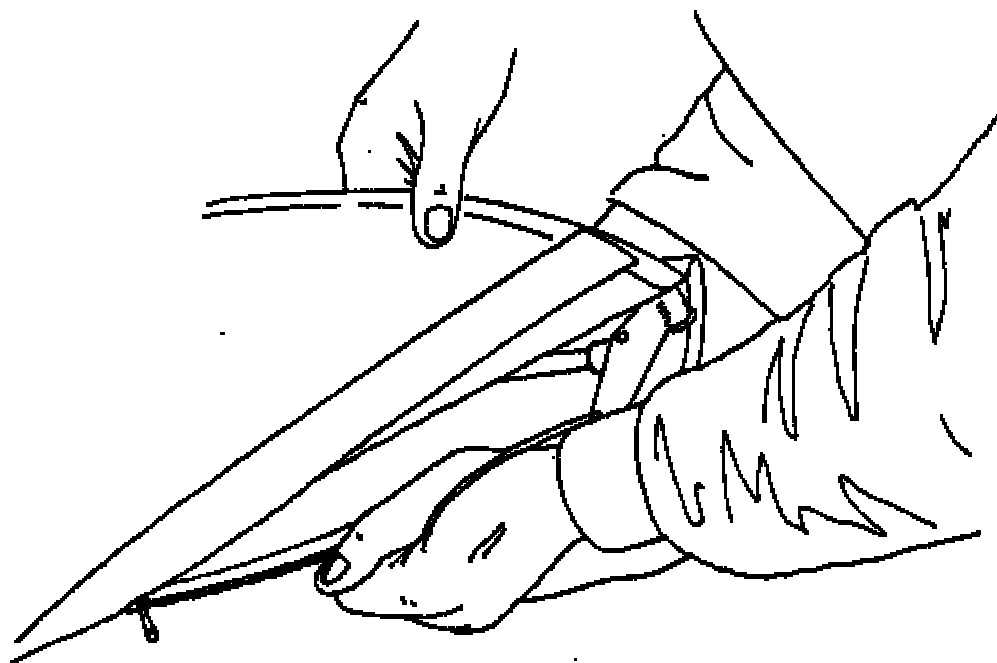


8/ Open zipper at sail tip to allow access to inside of sail. Slide fibreglass rod through end of sail and locate in the end of the leading edge. Ensure that the fibreglass rod is pushed hard against its stop. Fit plastic cup of the tip lever to the end of the tip rod and tension tip by rotating the flat end of the tip lever inboard, for extra leverage, place your thumb through the loop that is attached to the end of the tip lever. Make sure the tip lever is locked against the tip rod. Close zipper. Fig. 10 & 11

Fig.10



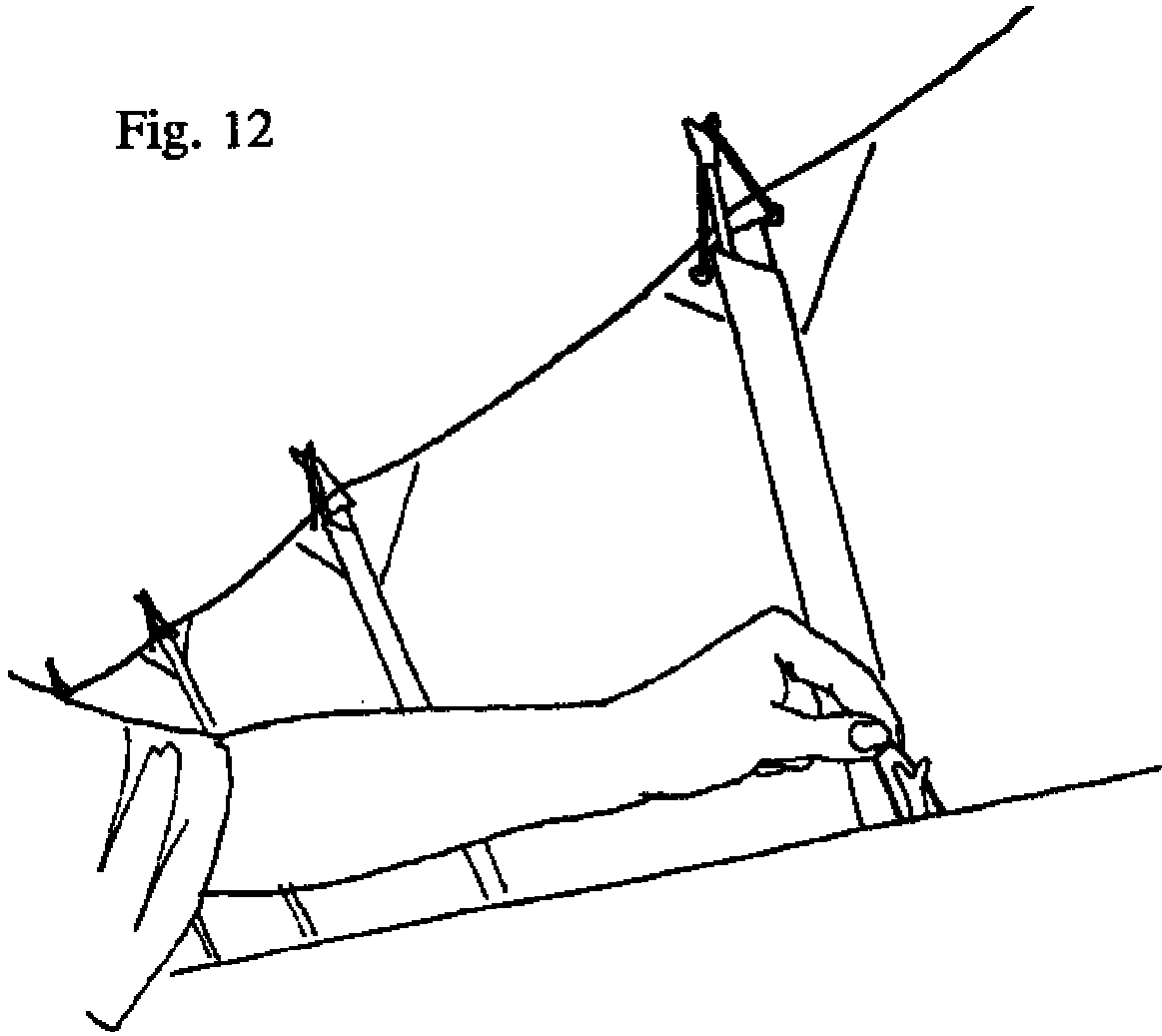
**Fig. 11**



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9/ Insert tip battens and undersurface battens ensuring that the undersurface batten tips rest beneath leading edge. Fig. 12

**Fig. 12**

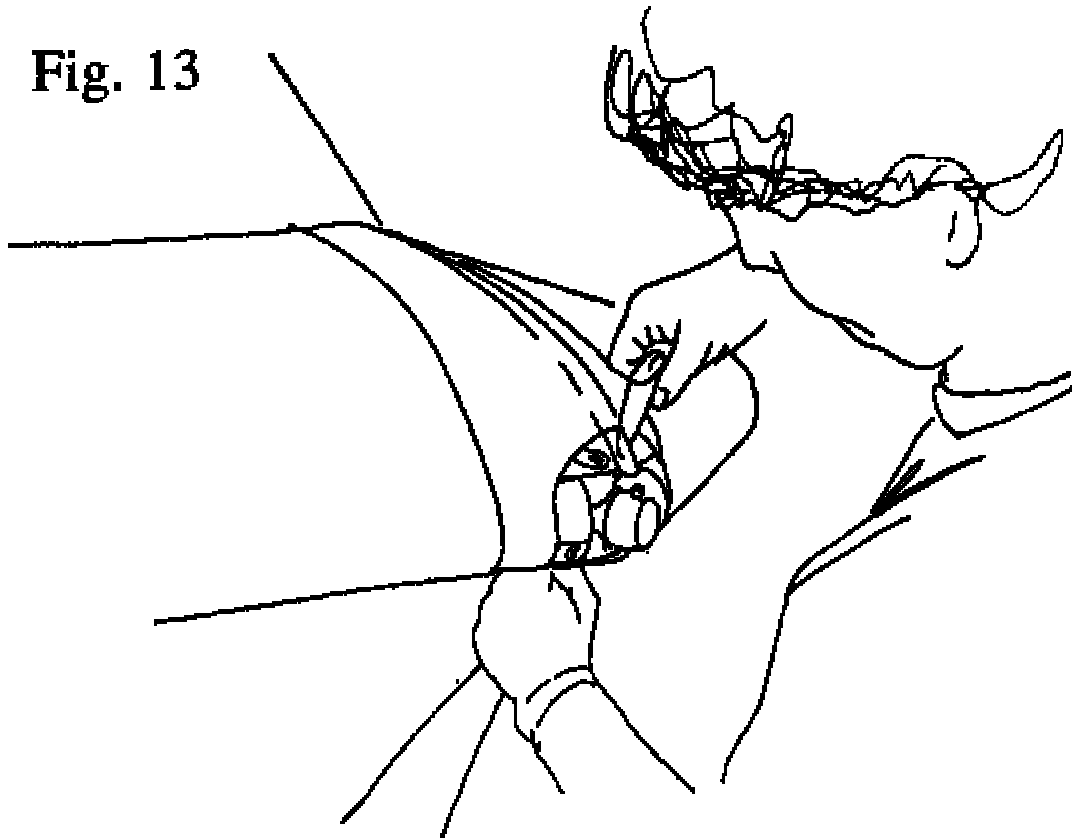


10/ Insert the nose batten. The batten may need some 'feeding" through the sail by pulling the sail forward to r6move any wrinkles as the batten slides into its pocket.

Check that the nose batten sits over the lug on the keel securely. Fig. 13



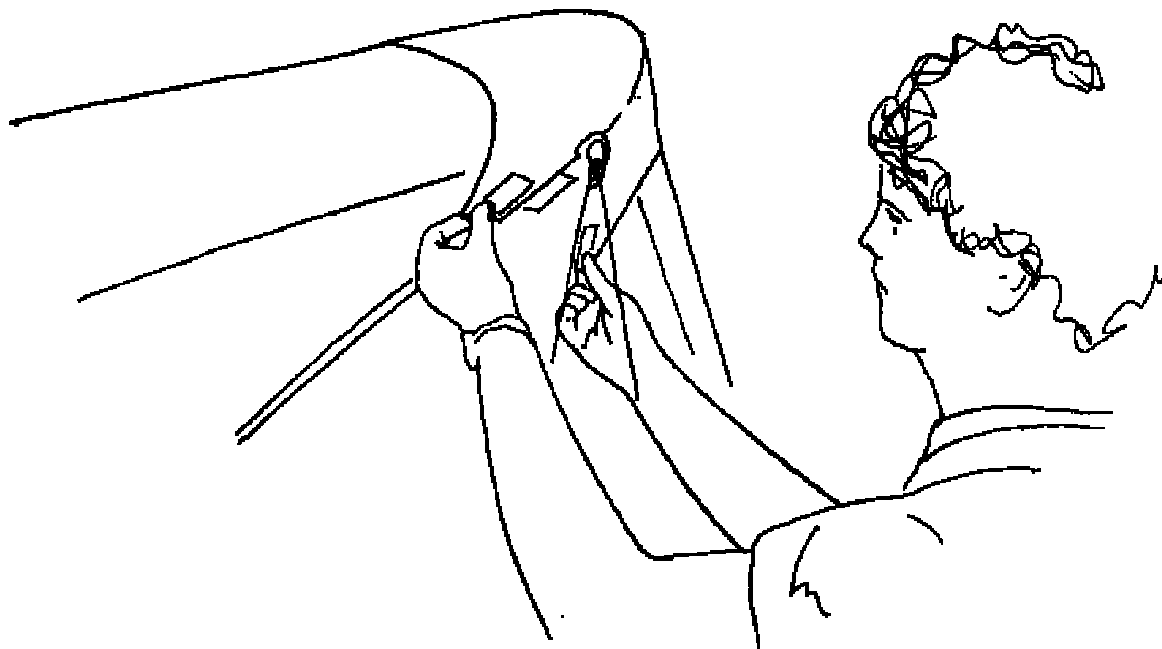
**Fig. 13**



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Fit tile nose fairing using the velcro to keep a clean trim finish. Fig. 14

**Fig. 14**



11/ Check that the variable geometry cord runs freely into the top of the faired upright and is held by the cleat on the base bar.

12/ Check that hang loops are secure and attach harness.

## PRE-FLIGHT CHECK

As with most high performance hang gliders, much of the hardware and structure is well enclosed to give a streamlined finish to the wing. This means that you must look inside the sail to check many of the important structural components.

You should develop a consistent routine that incorporates all the necessary checks. If you are distracted during the routine, you should start again to ensure nothing has been missed.

1/ As you should have already attached your harness to the glider, check that is set up correctly. Ensure that parachute is well maintained and stowed appropriately and the bridle runs cleanly to the carabiner(s) which is attached vertically to the hang loops. If harness height from basebar needs adjustment, it is best to acquire the correct length loop from your Moyes agent.

2/ Move up hang loops and check they are secure and that no trim change can occur in flight. Pull down neoprene cover and check kingpost hang loop bolt is tight and safety ring still in place

3/ Open undersurface zip and inspect the cross-bar safety wire and the compensator cord. Pull V.G. on and off a few times to check that crossbars are moving freely and V.O. system is operating smoothly and is tied firmly to clip. Inspect interior of each wing, looking at the back side of the leading edges, the crossbar and the crossbar junctions.

Close undersurface zip.

4/ Check the base of kingpost and apex of control frame ensuring all nuts are secure and thread is showing beyond nut on bolt end.

5/ Sight along keel and move to the nose section where all nuts and bolts are checked. Test nose catch and ensure keel battens are located correctly. Re-attach nose fairing.

6/ Inspect kingpost top, looking for twisted top rigging or snagged reflex bridles. Sight along each leading edge to confirm a similar amount of leading edge deflexion (curve). Uneven curve will indicate a bent and damaged leading edge.

7/ Move out along the wing looking and feeling for any damage. Open the zip where the side wires enter the sail and check that both top and bottom wires are not kinked, twisted or damaged. Check the cross-bar/leading edge junction bolts and nuts. Close zip on inspection port.

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8/ Continue out to wing tip and make sure the tip levers are properly installed and that the zipper is closed.

9/ Check all battens as you move along the trailing edge and make sure that the reflex bridles are not caught on any batten tips.

10/ At the keel, check the top V.O. rope and the crossbar restraining wire.

Check that top and bottom rear wires are properly secured by the clevis pin, and that the safety ring is installed.

11/ Moving across to the other wing, repeat the process as you work your way back to the nose of the glider. Carefully check the front bottom wires and nose catch before inspecting the base of the control bar. Check bottom side wires for frayed strands between thimble and inner nico, and just outboard of the outer nico.

12/ Ensure that the control frame assembly bolt passes through the base bar and the comer knuckle.

13/ Check that rigging and nuts and bolts are in good order and that V.0. rope is threaded through the jam cleat and is secure.

14/ Check that crossbar ball is centered in its sockets between crossbar halves.  
Close center zipper.

15/ Re-check harness, hang loops and carabiner.

When finally preparing to fly, please do a proper hang check ensuring that legs are through leg loops, that harness zippers work and that all buckles or clips etc. are closed and working. Look again at your hang loops and carabiner(s).

Take your time through these checks, an extra 30 seconds here is well worth a life time of flying enjoyment.

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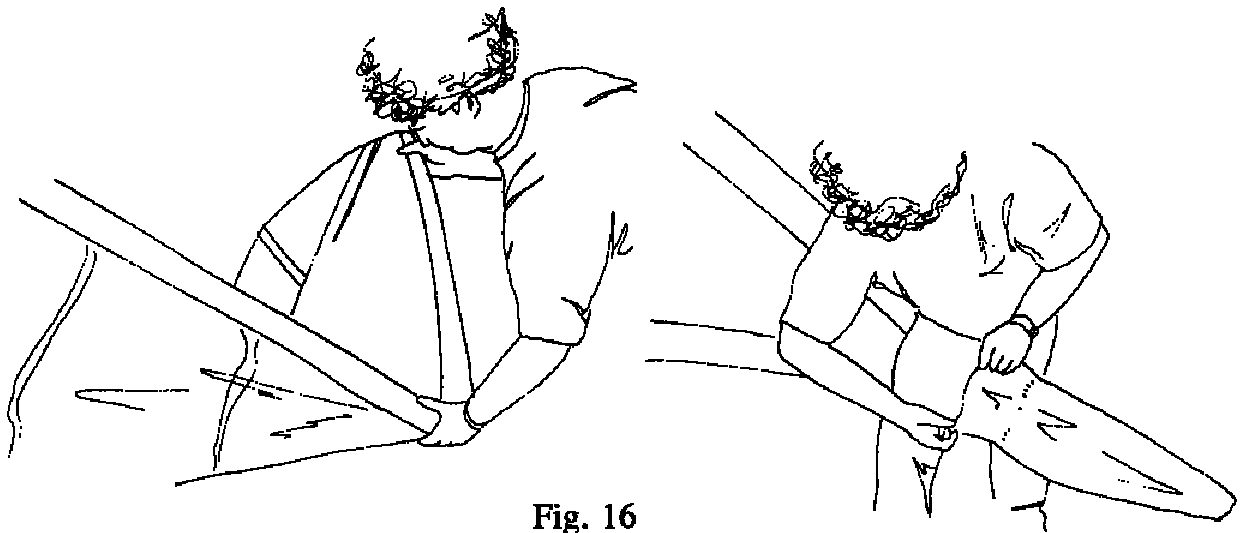
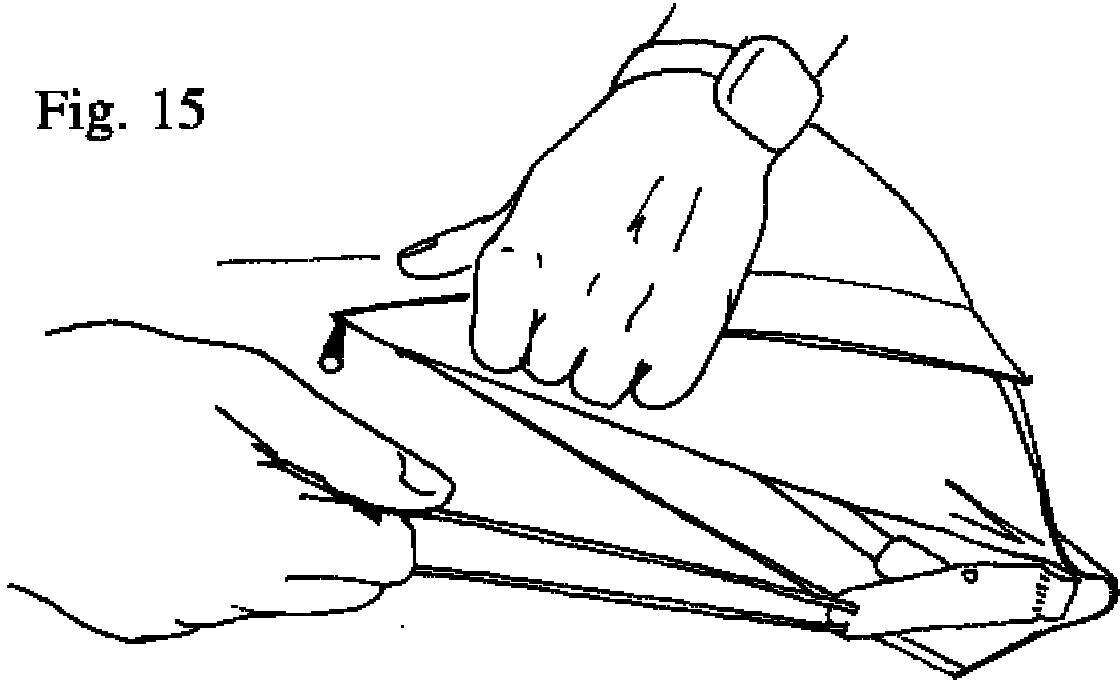
## **DERIGGING THE XTRALITE**

Disassembly of the XTRALITE is virtually an exact reversal of the set-up procedure, however a few important points must be remembered to avoid unnecessary damage.

1/ Remove the nose cone, detach the nose catch and remove nose batten, battens #7 - 10, and the outboard undersurface batten. You should never attempt to remove the battens inboard of #7 without releasing crossbar tension as this will flatten the battens and probably damage the batten pockets in the sail.

2/ De-tension and remove fibreglass tip wands. Fig. 15 Twirl sail tip around leading edge and fit tip boots. Fig. 16

**Fig. 15**



**Fig. 16**

3/ De-tension crossbar.

4/ Once tension is released the remaining top and bottom battens may be removed and all battens carefully stowed in the bags provided.

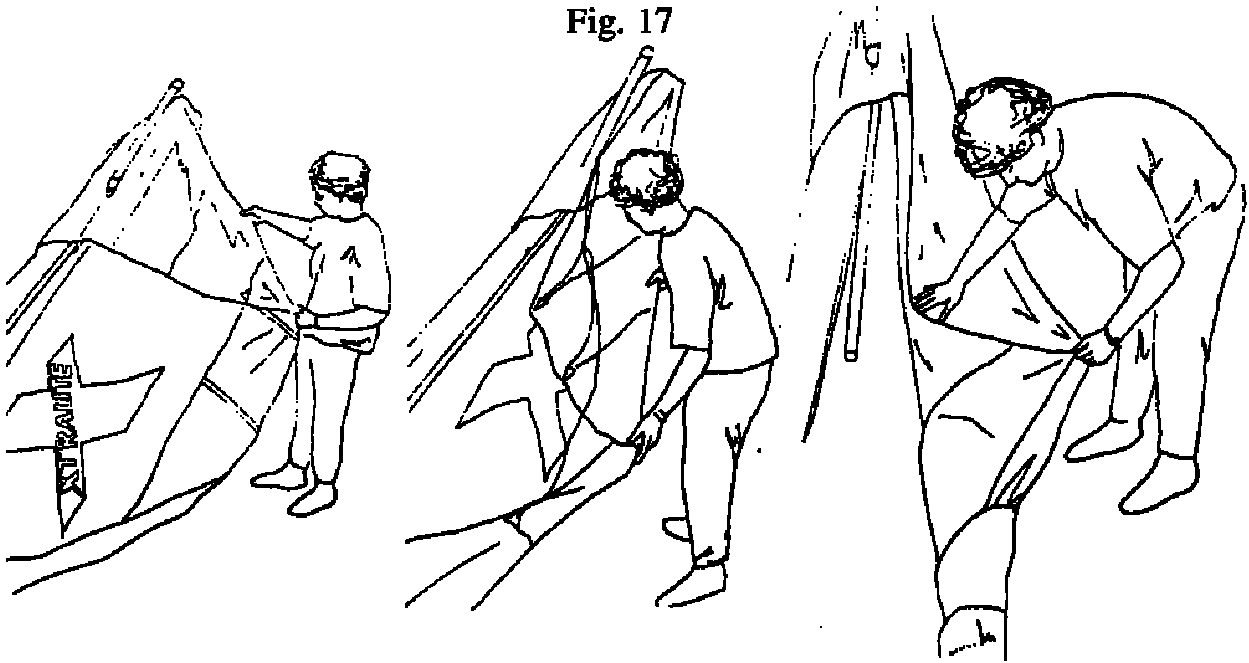
5/ When folding wings, ensure that leading edges and keel remain in the same plane and that no sail has caught between wing and keel.

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6/ Fit rear keel protector sleeve over Bailey Block.

7/ Fold and roll the sail loosely but try to avoid folding the tip in the same place each time. Fig. 17

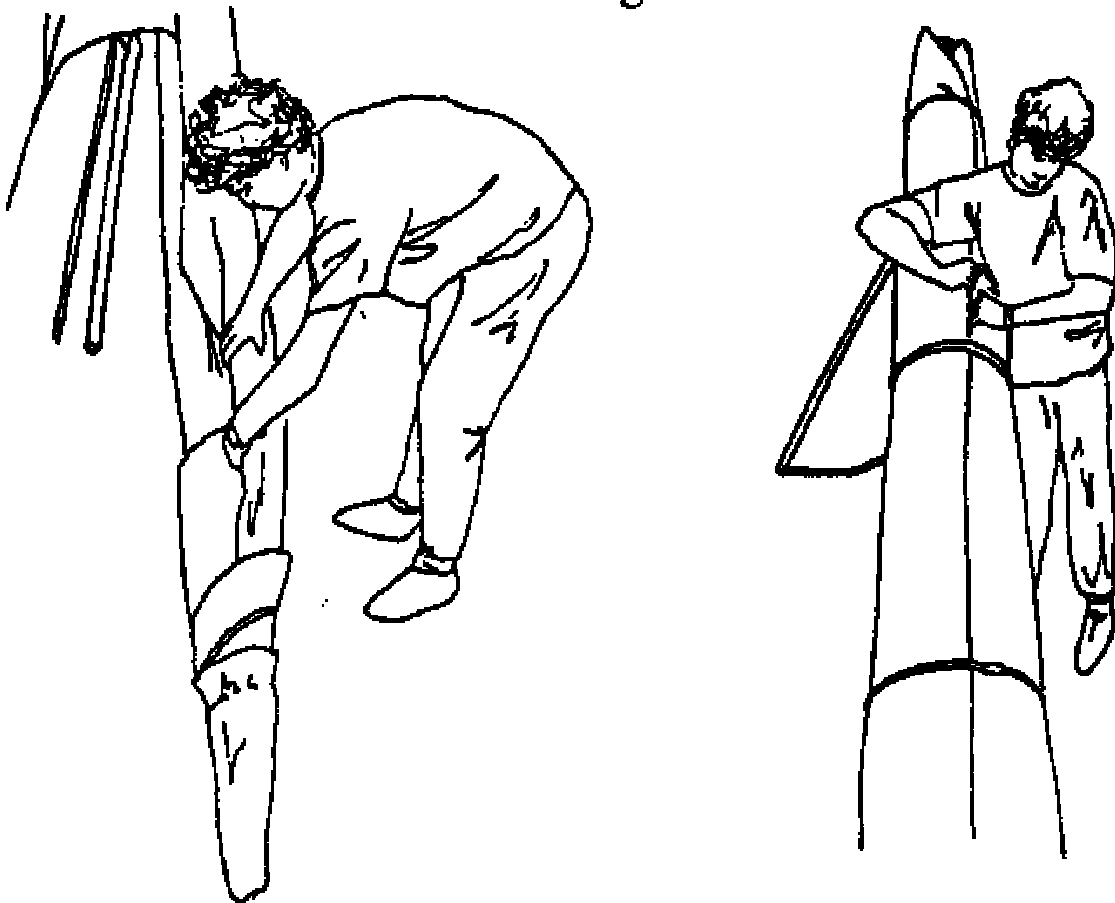
Fig. 17



8/ Disconnect bridle lines and lower kingpost, ensure all padding is in place. Stow bridle lines by hooking to top front wire.

9/ Attach ties loosely around glider, going from wingtip to nose, then tighten the ties, moving from nose to wingtip, adjusting the sail so that the leading edge mylar inserts overlap smoothly with no kinks, as shown. Fig. 18

Fig. 18



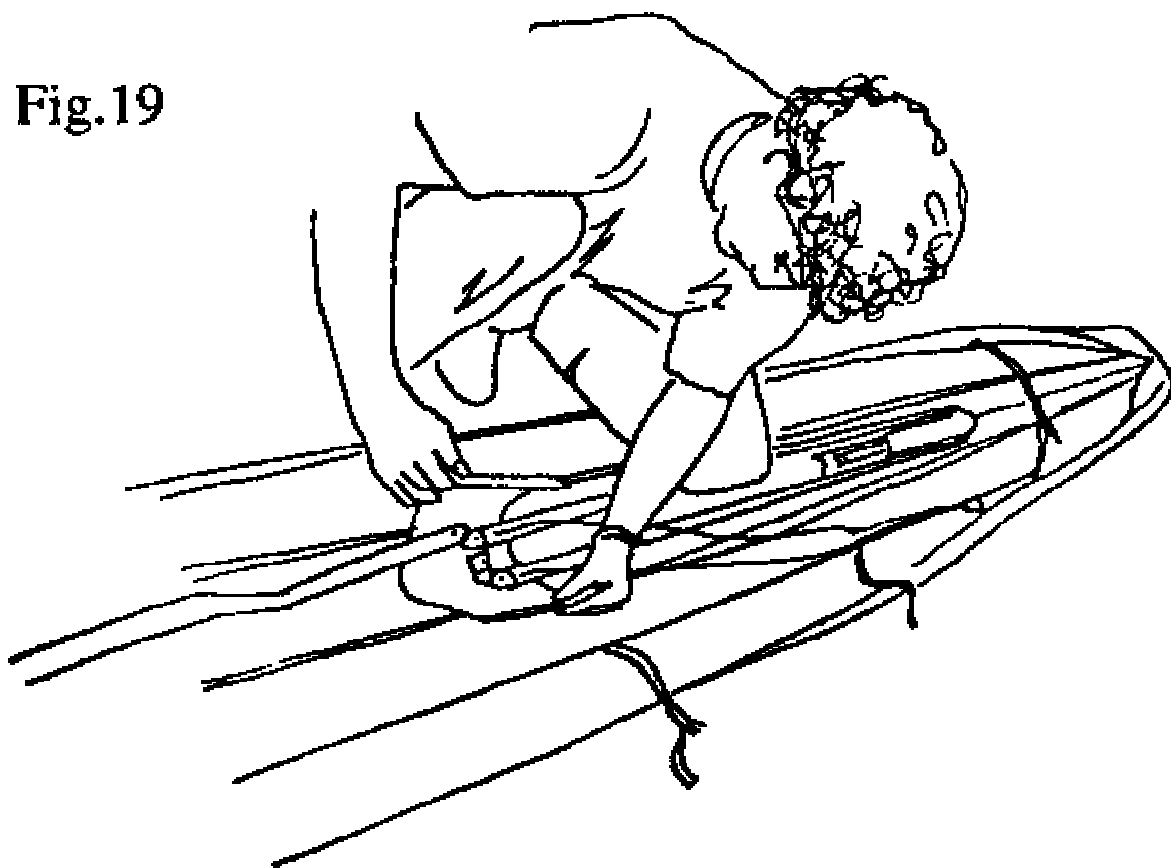
10/ Put the glider bag over the glider, then lay the glider over on its side.

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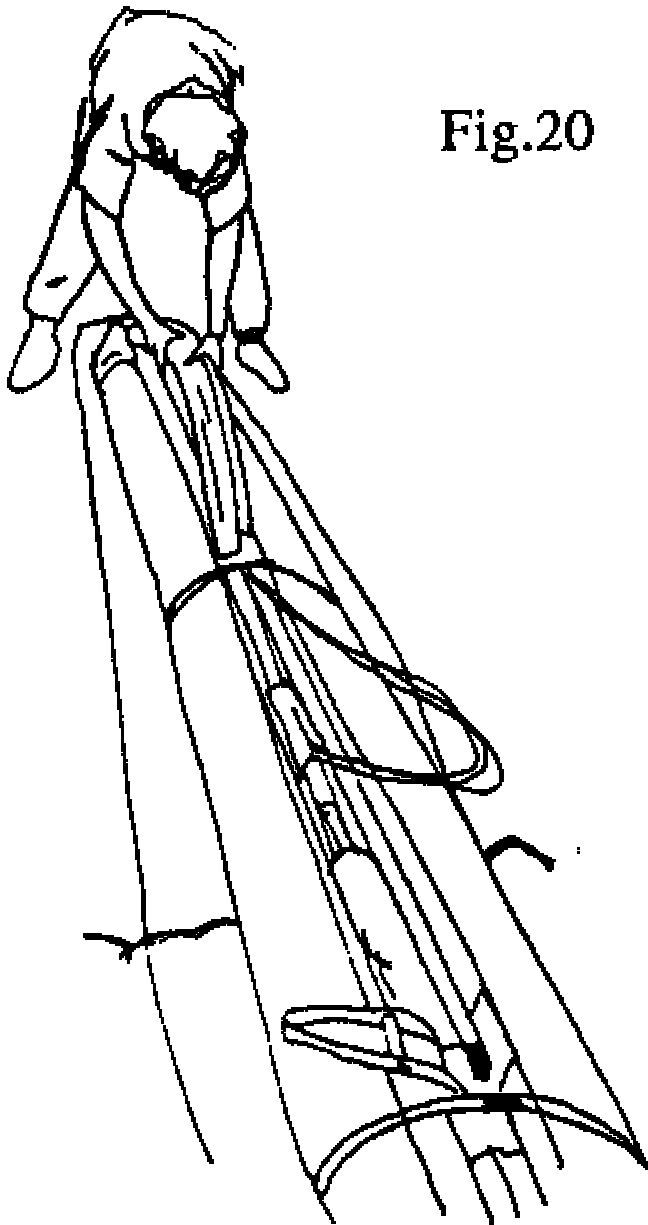
11! Disassemble control frame. Fold base tube out and lay the entire control frame assembly back onto the keel. Open the ties and re-secure them over the control frame, enclosing the frame inside mylar. Fit padding to top and bottom

of control frame Tuck wires and bars neatly inside the sail Fig. 19 Pull the kingpost hangloop from between the uprights so as not to jamb the kingpost hangloop spreader between the keel and leading edge on the 147 or the upright and keel on the 137.

**Fig.19**



12/ Place battens between leading edges with the camber to the tail end, Fig. 20 then firm up all ties and smooth out the rolled sail before closing the zip.



**Fig.20**

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## **FLYING THE MOYES XTRALITE**

### **Take-off**

The Moyes XTRALITE has a very slight tail heavy static balance and therefore is very easy to launch in calm or windy conditions. The nose should be held slightly above horizontal with the wings level. Your run should be smooth acceleration with appropriate pitch control for the situation and once a safe excess of minimum air speed is acquired a slight easing out of the bar will give a smooth lift-off. In winds in excess of 10-15 mph (16-24 kph), some wire assistance may be required.

### **Using the Speed Range**

Even at speeds very close to stall, the Moyes XTRALITE retains an

unusual amount of control-ability for a modem high-performance wing. This, when combined with the excellent sink rate gives some distinct advantages in light lift situations, although you should not fly your glider too slowly when

scratching near hill. . . . leave a margin for error.

The stall characteristics are much the same as for all high performance wings,

although the broad "mush" mode achieved by a gradual push out does end with a fairly crisp nose drop or wing drop if on a bank. Remember that sudden entry to a stall with an excessively high nose is one of the most dangerous and

uncontrollable manoeuvres possible and can result in a tailslide and a possible

severe tumble.

It is important that you develop skill in choosing the optimum speed to fly for

any situation be it turning in lift or maximizing your glide.

At the top of the speed range, the glider becomes quite sensitive to either pilot

input or turbulence, but will track comfortably if you hold your weight steady.

To slow down from a high speed run, release the pressure on the control bar slowly, otherwise the glider will pitch up rapidly and strongly.

Sudden pitch input is not desirable in any glider but the quickness of response

and energy retention of the Moyes XTRALITE makes it important that your control is smooth and precise. The glider will reward you with accuracy and immediate response to your command.

## Turning

Although very controllable at low speeds, the Moyes XTRALITE will return its most snappy performance at speeds between minimum sink and best LID. The bank and radius desired will determine both entry speed and weight shift as well as the amount of pitch input required to coordinate the manoeuvre.

One of the distinct advantages of the Moyes XTRALITE is its ability to be "square" turned, i.e. a constant turn in radius can be kicked through a further 90 degrees without bank angle increase. This is achieved by a combination of controlled yaw input and a quick push out. It is extremely

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bandy when a thermal core is hard to follow and the normal turn radius would take you into sink. Once again be aware of incipient spin developing from too much pitch input in this situation.

If the glider does stall in the turn, quickest recovery is achieved by increasing air speed and rolling in slightly to follow the direction of the turn.

## Landing

It is best to approach your landing at just above trim speed with only a slight increase in speed once on final, dropping through the last of the wind gradient. This little extra air speed should give you positive control and a steady "bleed-off" until it is time to complete the flare. A good flare is best

achieved by moving the hands up to about shoulder height and pushing out and up as soon as the glider fails to respond to the easing out of the bar during "bleed-off". Accurate air speed control and sensitivity are the keys to consistent

good landings in any glider in any situation.

## Variable Geometry



Most modern high performance gliders are built with this system, however its value in "customizing" the gliders performance and handling combinations to suit your particular requirements is often overlooked.

The V-0. should be off for both take-off and landing This mellows the stall and handling characteristics, although in light wind take-offs a little tension may be desirable to firm up the rigging.

Maximum straight-line performance is achieved by pulling on the V.0. You can expect roll response to decrease, and the possibility of spin to increase

When thermalling it is best to fly with the V.0. off.

To get the most out of your Moyes XTRALITE take some time to feel and think your way through the differences. Allow for the fact that your new wing feels and flies differently and will require some adaptation of technique if

you are to utilize fully the potential of the Moyes XTRALITE.

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## TUNING HINTS

### PITCH

If you find it necessary to either continually hold in or push out on the control bar, then the pitch (speed) trim needs adjustment. To adjust for a trimmed-too-slow situation, move the kingpost forward one bolt hole on the keel. Test fly. If further adjustment is necessary consult your Moyes dealer before flying the glider again.

To trim the glider to fly slower, the kingpost is simply moved one bolt-hole toward the rear.

Each hole position is equivalent to approximately 2 mph (3.2 kph).

The glider should fly "hands-off" (i.e. no pilot input) at about 21mph (33.6 kph), and if correctly trimmed should produce bar pressures returning to trim position.

### ROLL

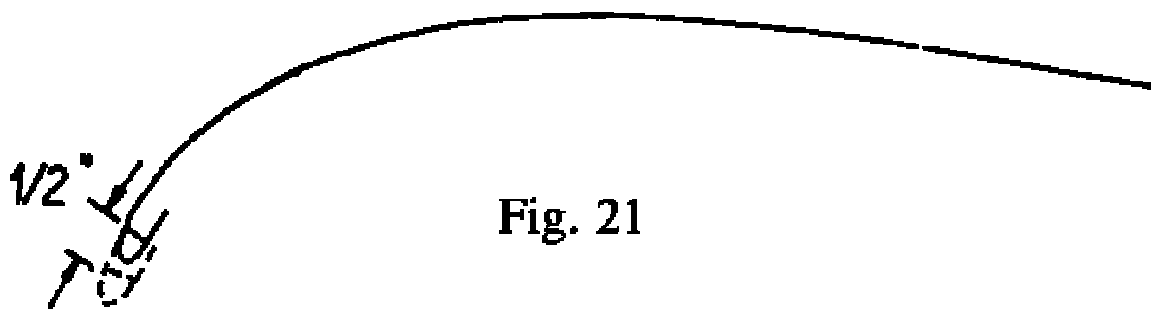
If the glider shows inequality in roll rate, that is, the glider seems to fall into a bank on one wing easier than the other, or if the glider wants to yaw or turn off course when attempting to fly straight, then there is differential lift or drag forces between the wings.

Firstly check your battens against the template. Correct any out of shape battens and test the glider. If the battens are not out of shape, then remove the leading edge from the side to which the glider deviates, that is, remove the right wing bar if the glider turns to the right.

Check to see if the leading edge is bent or damaged. Replace if this is the case. Test the glider.

If no bend or damage is obvious the tip batten cambers may need adjustment. Increase the camber of battens 8, 9 and 10 (of the left wing if there is a left turn, and right wing for a right turn) approximately 1/2 inch (1.25

cm), as shown in the drawing.



**Fig. 21**

A lessening of the camber on the other wing in the same fashion can be tried if this has not solved the problem.

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## **GLIDER CARE**

Your Moyes XTRALITE will require very little in the way of maintenance if you take a little extra time and care with your day to day treatment and use

### **Storage**

- Keep the glider in its bag in a cool dry place. Store the glider off the floor or ground and free from contact with oils, solvents or acidic substances.

Always dry the glider completely before storing. If this is not possible, ensure that the glider bag is off or open and that the sail is loose enough for air to circulate. Dry completely as soon as possible.

### **Sail Care**

It is important to keep the sail clean and free from salt if you fly near the coast. Regular rinsing with fresh water will achieve this but for thorough washing a mild detergent may be used provided it is completely rinsed off the sail. For more serious stains consult your local sail-maker or Moyes dealer.

For small tears apply sail repair tape to prevent fraying. Unless the tear is at a stress point or along the trailing edge it will not tend to run or expand.

Sun and exposure to the elements will deteriorate the sail more rapidly than hours of flying. It is important to carry the glider in its bag on well padded roof bars with at least three points of support. If you take just a little extra care when packing up and transporting the glider, it will maintain its condition and performance for many more enjoyable hours.

### **Battens**

Never force the battens into their pockets. Insert them gently to avoid damage to the sail and wear to the batten ends. Sand in the sail or on the battens will cause abrasion in the pockets . . batten pocket repairs are costly.

Always pack the highly cambered battens (nose to #5) into the batten bag

as a unit, never one at a time. This will avoid flattening the camber. Store the two bags of battens securely between the leading edges with the camber to the very end so that the tie downs for transport do not pull across the camber.

If reshaping is required, take care to avoid over working the tube as this will soften the alloy causing the battens to lose shape more easily in the future.

Never insert or extract battens with the cross-bar tension on . . . tip battens and undersurface battens excepted.

Note: The Moyes XTRALITE has an extremely steep profile for battens numbered 1 ,2, and 3 and extra special care is recommended, that is, do not remove battens while there is tension on the sail.

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### Wires and Attachments

At the first sign of frays or kinks the wire should be replaced.

#### Stainless

steel cable work-hardens from bending, especially where it enters or exits a nico sleeve. The shrink tube covering the nico sleeve should be peeled back periodically to inspect the cable. Constant exposure and set-up on rough and rocky ground and salty sand and sea air will shorten the riggings life. Wires are not expensive and are simple to replace, they also hold your glider together.

### Tubing and Bars

Once again contact or immersion in salt air or water is a major concern and will require removal of end caps and a thorough flushing and drying. Corrosion and electrolysis set in amazingly quickly and will dramatically reduce the strength and life of the parts involved. Follow the maintenance schedule conscientiously. Examine the bars for dents, bends, wear spots and corrosion every pre-flight check. If any damage is noticed, replace the bar, but also determine how that damage was caused and take steps to avoid repeat damage occurring.

### Hardware and Bolts

The bolts can be bent in a crash or hard landing . . . these should be replaced. All bolts should show exposed thread above the locknuts. The fibreglass tip can be broken if you slip or stall onto the wing tip during landing . . . check and replace if delamination of the fibreglass is evident.

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## Maintenance Schedule

Every 10 hours

Check all battens against airfoil template.

Every 50 Hours (or six monthly)

1. Inspect the sail. Check tile stress areas and apply sail repair tape where necessary. Special attention should be directed to the wire slots, kingposts opening and reflex bridle attachments tabs.
2. Inspect all batten elastics and tip cords.
3. Inspect all cross-bar wires, fittings and hardware.
4. Check all bars/tubing for damage or possible wear caused by set-up,

fold-up

or transportation.

5. Inspect all rigging for frays and other signs of damage or deterioration such as rust.

6. Lower side wires must be replaced every 50 hours.

#### Annual Inspection

1. Every 100 hours air time (or every 12 months) the glider should be completely stripped down for a thorough inspection.

2. All rigging must be replaced every 100 hours or at first sign of wear. This can be done by yourself or preferably by your Moyes dealer or agent.

#### Sail Removal

1. Remove sail attachment screws from nose and rear of keel.

2. Remove top side wires from L.E./crossbar junction (5/1611 bolt) and bottom side wires from crossbar plate (1/411 bolt).

3. Remove top front cable from nose plate.

4. Fold kingpost back toward rear of keel.

5. Remove sail attachments clevis pins from leading edge tips.

6. Undo central zipper entirely and remove plastic cable tie at nose of sail.

7. Slide frame forward and out of sail.

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#### General Inspection

\* Check the sail for abrasion and tears. Check all stitching and have any repairs done by a professional sail maker.

\* Replace batten elastics and tip cords.

\* Closely inspect all other glider components and replace any part that is damaged or worn. Pay special attention to reflex bridles, hang loops and rigging. Replace these even if they show only minor wear (Some pilots replace bottom rigging every year (75-100 hours) regardless of wear. Coastal flyers should consider this due to increased contact with salt and corrosive agents.)

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## CHECKING STABILITY SYSTEMS

#### Measurement Procedure

With the glider fully assembled, sitting on the A-Frame, and resting on the keel tube, run a string tautly from the end of the batten tip (see diagram)

across the top of the keel tube to the corresponding batten on the other side

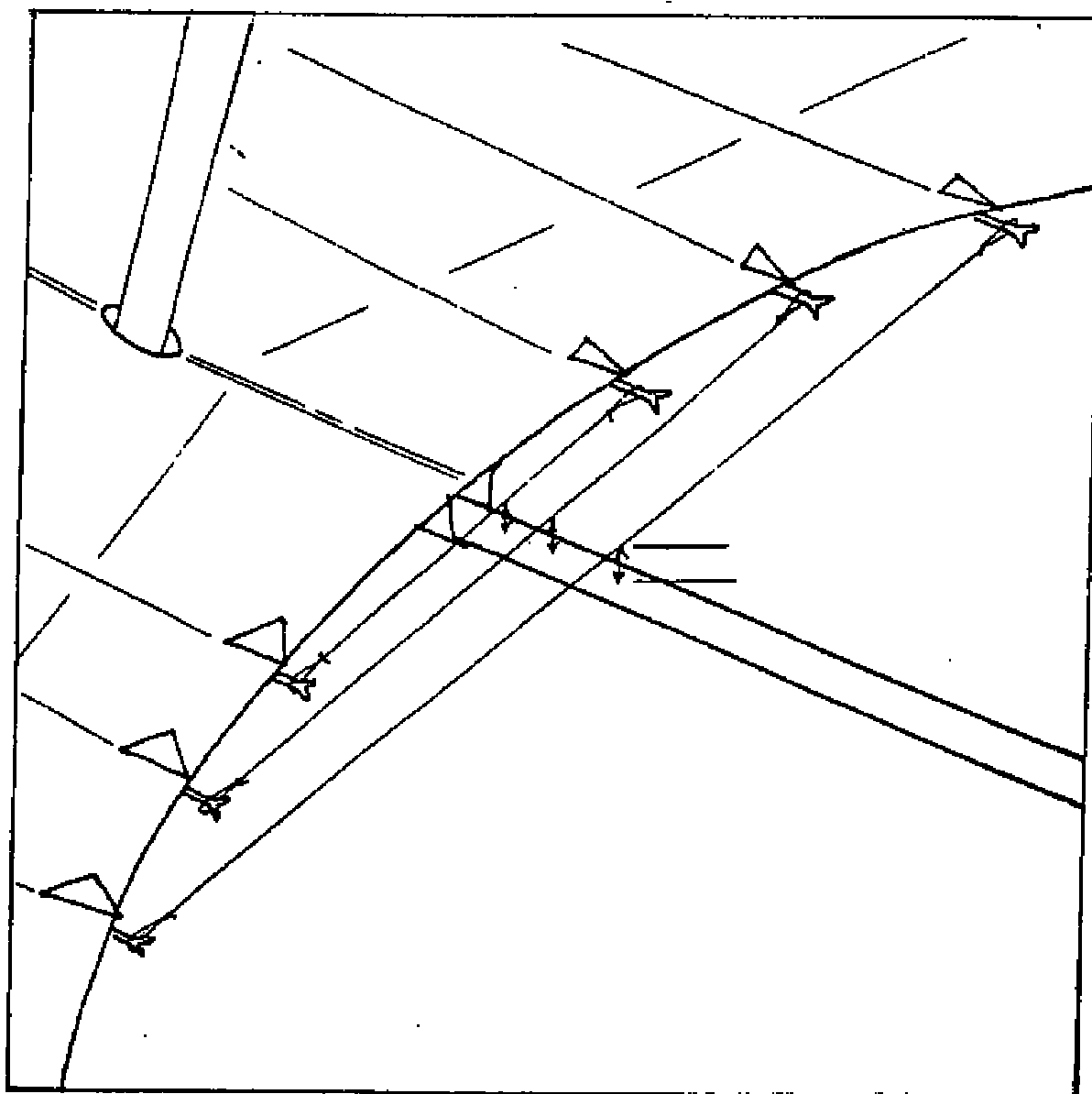
Measure the distance between the string and the top of the keel tube (see diagram). Verify that the distance is within +1-318" of those shown in the chart

below.

Move the string to inspect each luff line, checking both loose and tight settings.

Adjust the luff line height compensator as necessary to get the most

accurate distribution of heights as indicated by the chart.



MODEL-SIZE-SAIL	SETTING	BATTEN NUMBERS				
		4	5	6	7	
XTRALITE 137 POWERIB	LOOSE	3.3/8"	4.5/16"	4.1/8"	2.7/8"	
	TIGHT	1.15/16"	2.5/16"	1.3/4"	7/16"	
XTRALITE 137 MYLAR	LOOSE	3.15/16"	4.3/4"	4.1/2"	3.3/4"	
	TIGHT	1.1/2"	1.3/4"	.7/8"	0	
XTRALITE 147 POWERIB	LOOSE	3.1/8"	2.5/8"	2.7/16"	1/1/4"	
	TIGHT	1.5/8"	1.3/4"	1.1/8"	0	
XTRALITE 147 MYLAR	LOOSE	2.1/2"	2.5/8"	2.1/8"	1/4"	
	TIGHT	3/4"	5/8"	0	-1.3/4"	