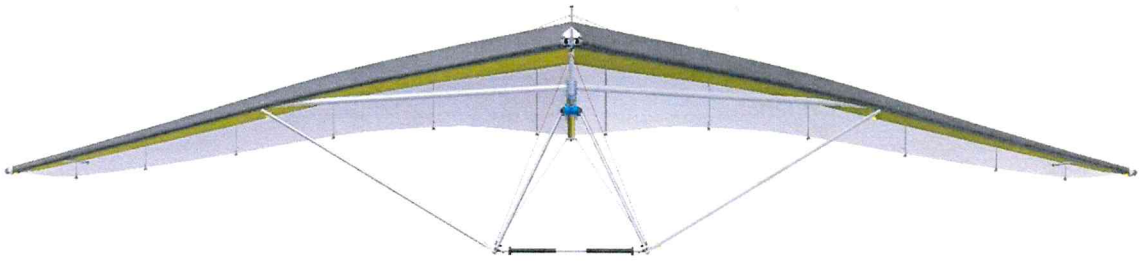
air crēation

Instruction and Maintenance Handbook

Wing type:

iFUN 13 SP



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1 Table of Contents

2 Amendment Record Sheet

2.1 Table of Amendments

Amendment date	Affected sections	Affected pages	Date inserted	Signature

2.2 Amendments

The information in this manual is based on the data that was available at the time of its publication. The latest amendments to this manual will be issued on the Air Création website (http://www.aircreation.fr) in PDF format. This should be printed out and added to the manual. The amendment table should at that time be updated with the appropriate details and date. Therefore it is important for operators to check the website regularly for any amendments that have been made. If any errors or omissions are found in this manual please advise the factory.

3 General

3.1 About this Document

This manual is a legal document which is approved for use with Air Creation iFun 13 SP wing.

It must be used in conjunction with the particular trike's operating handbook.

It must remain with the aircraft, and not be amended or altered without authority from Air Creation.

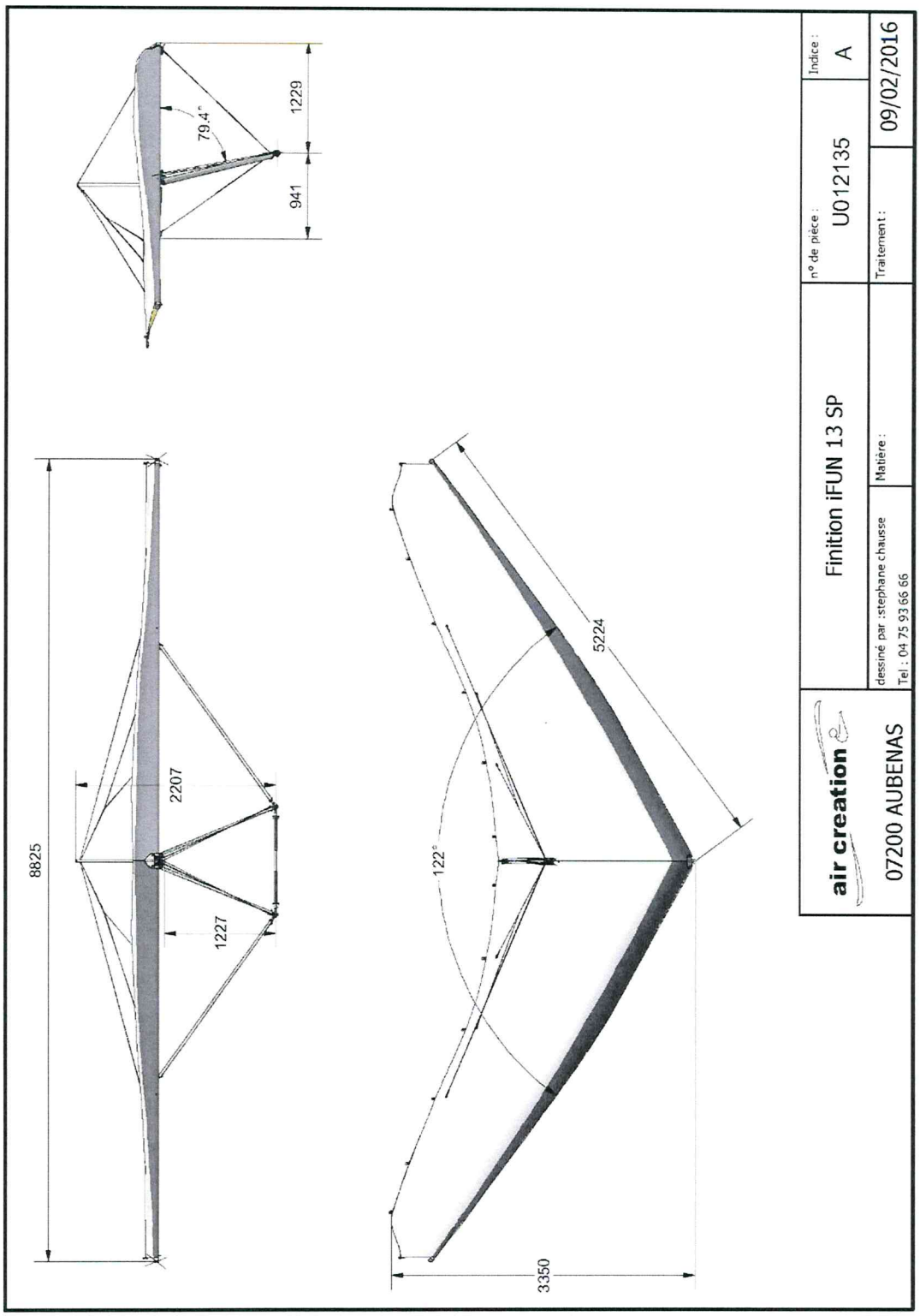
All pilots should read this manual before flying as pilot in command of the aircraft to which it refers.

This manual is not intended to teach you how to fly the aircraft. Learning to fly should be accomplished under the supervision of a suitably qualified flight instructor experienced in flying this type of aircraft.

What this manual will do is provide the information necessary to a qualified pilot for the safe flight of this weight shift aircraft.

3.2 3-Perspective Diagram

Figure 3-1 : iFUN 13 SP in 3 Perspectives



4 Technical Specifications - Performance

4.1 Technical Specifications

Area	13 m^2 (140 sq ft)
Maximum wing loading	19,2 kg/m^2
Airfoil type	Double surface 40%
Span	8,80 m (29 ft)
Nose angle	122°
Aspect ratio	6
Empty weight	35 kg (77 lbs)
Ultimate load factors	+ 6g - 3g
Maximum take-off weight	250 kg (551 lbs)
Limit load factors	+ 4g / 0g (-2g under gust)

4.2 Maximum Load / Trikes Adaptation

The maximum load which may be added under the wing is 215 kg (474 lbs). The following chart defines the useful load of our different trike models.

Trike Type	Maximum useful load
Pixel 250 (MTOW 230 kg -507 lbs)	136 kg (300lbs)

⚠ *Caution: fitting of any equipment or any other change should never lead to exceeding the maximum take-off weight values mentioned above, according to security standards and aircraft conformity.*

It is possible to adapt other trikes than the ones mentioned above. Their maximum weight should be less than 215 kg (474 lbs) fully loaded. *The stability of the trike alone must be absolutely positive in yaw* in order to guarantee the stability at high speed.

Then progressive tests will be performed to check the adaptation wing/trike, especially concerning the position of the control bar and the thrust line height. The necessary engine power for safe flight should be at least 25 HP. *Check during fitting whether the trike propeller stays clear of the lower rear longitudinal cables and the keel. A minimum clearance of 10 cm (4 inches) should be respected when the hang point is set to the front position and the wing is fully nose up and all the way banked on one side.*

4.3 Performance (*)

Trike type	Pixel 250			
Weight	180 kg	396 lbs	Max : 230 kg	Max: 507 lbs
Stall speed	41 km/h	25 mph	44 km/h	27 mph
Take-off run	40 m	131 ft	55 m	180 ft
50 ft clearing distance	90 m	90 m	110 m	360 ft
Climb rate	4 m/s	787 ft/m	3,2 m/s	629 ft/m
Landing distance from 50 ft height	135 m	442 ft	145 m	475 ft
Side wind limits	25 km/h	15 mph	25 km/h	15 mph
V.N.E. (velocity never to exceed)	120 km/h	74 mph	120 km/h	74 mph
V. man (never to be exceeded in very turbulent air)	82 km/h	50 mph	88 km/h	54 mph

(*) The indicated performances were measured with the standard propellers fitted on the trikes. The performances obtained with the optional propellers proposed are at least equivalent.

5 Instructions for use

5.1 Assembly - Disassembly

5.1.1 Assembly

*In **3.8 m** (for a wing folded in **5.3 meters**, disregard the instructions for assembly of the rear parts of the leading edges).*

1. Open the wing bag, make sure that the A-frame is on top, remove fastenings and disengage the rear part of the bag.
2. Take out the rear part of the leading edges, the battens and the tip struts of their bag.
3. Unfold each tip of the sail. Remove all Velcros. Remove foam guards (rear of keel, ends of A-frame, hang block APR).
4. Assemble the control bar on the connector secured to the left A-frame strut by means of the 6 mm CHC bolt, the two stainless steel washers, the two plastic washers, the wing nut and the safety ring (**Figure 5-1**).
5. Assemble the right A-frame strut to the base of the control bar using the push-pin, no cable must pass inside.

Figure 5-1

Figure 5-2

6. Remove the foam guards at the end of the front part of the leading edges (**Figure 5-2**). Store the Velcros and the guards in the wing bag.
7. Slide the rear parts of the leading edge into the sail and into the front part. Observe the right / left indications on the tubes. (**Figure 5-3**)

The two rear parts of the leading edges are not identical. A sticker on the tube indicates whether it is a right (D) or left (G). *An inversion can have serious consequences because it modifies the tip struts angle resulting in negative twisting of the tips and strong longitudinal instability.*

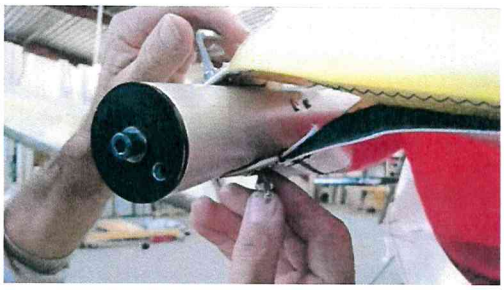
Figure 5-3

Figure 5-4

8. Finish to engage the rear parts of the leading edges in the front part by rotating them to line up the tubes slots and the horizontal bolt connecting the crossbar on the front part of the leading edge. Push them forward as far as possible. Make sure that the plastic lugs and the openings for the tip struts at the rear of the tubes are face-to-face Once installed the rear leading edge slot should be located on the channel horizontal bolt. It should be impossible to rotate the leading edge, if correctly assembled.
9. Remove the plastic caps from the wingtip sleeves. Pull the sail tightly backwards and position the leading edge fabric of each half-wing outward.
10. Install the fastening screw of the sail at each end of the wing using the Allen key placed in the plate close to the head of the screw, on the Right side (Figure 5-4). Insert the screws first through the extrados grommets, then into the drilling of the tensioning bracket and finally into the lower surface grommet (Figure 5-5). A stainless steel washer should be placed under the head of the screw and a second between the intrados eye and the butterfly nut.

Figure 5-5

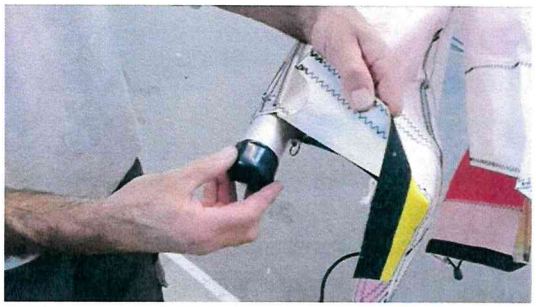
Figure 5-6



11. Tighten the sail on each leading edge by tightening the screw at the sleeve end of 20 turns using the Allen wrench. Replace the plastic caps at the end of the leading edges (Figures 5-7 & 5-8).

Figure 5-7

Figure 5-8



12. Straighten the A-frame by engaging the swan catch of the front longitudinal lower cables on the rail screw at the wing nose **without locking the lever.**
13. Assemble the 2 lateral struts on the shroud base connecting with the crossbars. Position the struts vertically by pushing them with the shoulder to facilitate the installation of the screw. The leading edge of the struts profile must be directed outwards. The screws must be installed with a stainless washer and a plastic washer on each side of the tube. Secure with the split ring.

⚠ *The upper shroud bases must be pivoted in such a way that their connecting screw with the Shroud/crossbar axis is directed with the head on the leading edge side and the nut on the trailing edge side.* ***Otherwise, the leading edge tube will be damaged by the nut when folding the wing. (Figure 5-9).***

14. Assemble the 2 lateral struts on the bases of the control bar by means of the screws, with a stainless steel washer and a plastic washer on each side of the tube. Secure with the split ring (Figure 5-10).

Figure 5-9

Figure 5-10

15. Lift the nose of the wing and tilt it to rest on its A-frame. Remove and store the bag (Figure 5-11).
16. Push the swan catch lever of the front lower longitudinal cables into the nose rail and lock it with the push-pin and safety washer.
17. Open the 2 half-wings to the maximum (Figure 5-12).

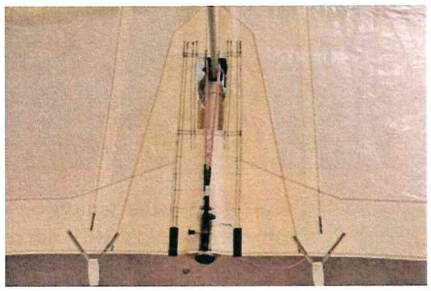
Figure 5-11

Figure 5-12

18. Pull the tensioning lever of the crossbars back from the kingpost foot, taking care not to cross the cables.
19. Insert the nylon head at the top of the kingpost, then the kingpost on the base attached to the top of the keel, between the two tensioning cables (Figure 5-13).
20. Make sure that the struts to crossbars link parts do not block in the openings on the undersurface of the sail and then pull the tensioning lever back towards the trailing edge to hook it onto the screw of the rail at the end of the keel. (Figure 5-14).

Figure 5-13

Figure 5-14

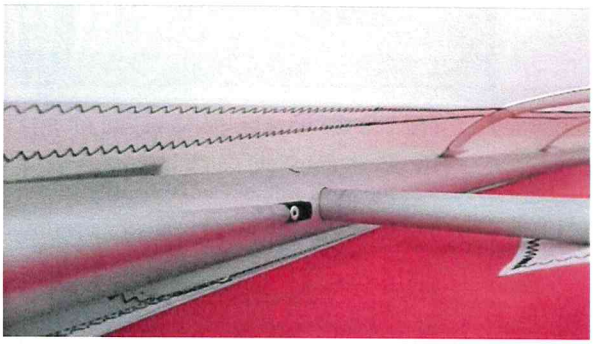


21. Tilt the wing on its nose.
22. Carefully slide the sail bent battens in their respective pockets and tension the sail by fastening the Easyfit tighteners (Battens with red end caps on the Left side and those with Gray-colored ends on the Right side).
23. Lower the swan catch lever of the crossbars tensioning cables and lock it into the rail using the push-pin.

24. Install the tip struts in the appropriate openings on the leading edge. Insert them all the way into their housings and rotate them until they block. Check that they are correctly blocked by pulling them towards the rear. Raise the sail and open the undersurface to upper surface Velcros for ease of access. (Figure 5-15).
25. Place the two straight battens of the wing tips on the plastic lug attached to the tube of the leading edge, and tighten the upper surface with the clasps. (Red end to left side, gray end to right side) (Figure 5-16).

Figure 5-15

Figure 5-16



26. Fit the tensioning bungees of the undersurface twice over the easyfit tensioner of the wing tip batten and close the Velcros between intrados / extrados (Figure 5-17).
27. Close the fabric closures at the tips by means of their velcros.
28. Close the inspection hatches of the leading edges / crossbars links in the undersurface by mean of the zippers.
29. Store foam guards and Velcros in the bag. Keep a small Velcro apart to wrap it later around the front tube of the trike to lock the control bar on it.
30. When assembling the wing on the Pixel trike, slide the safety cable through the strap near the kingpost foot, make a lap behind the kingpost, slide it back into the buckle, and then fasten it to the trike's upper beam. The safety cable must pass under the tensioning cables. This operation secure both the attachment of the tricycle and the crossbars tensioning system. (Figure 5-18)

Figure 5-17

Figure 5-18

31. Before lifting the wing's nose, slide the upper beam foam headrest upward to protect the upper beam from contact with the rear longitudinal lower cables attachment under the keel.

⚠ ***A careful and complete pre-flight check as described in the flight manual is <u>mandatory</u> after wing assembly.*** *Pay special attention to potential transport damage. Carefully inspect all fasteners, cables, proper placement of lateral struts and their fixing screws and nuts, the shape of the leading edge Mylar and the overall symmetry of the wing before flying.*

5.1.2 Disassembly

The disassembly of the wing is carried out by the inverse operations of the assembly, following the reverse order of the instructions.

Begin by removing the tip struts and the last straight battens **before untightening the crossbars tensioning cables**.

Before fully folding the two half-wings, dismount the kingpost and slide the tensioning lever as far as possible ahead of the kingpost foot so that it can not catch in one of the openings of the sail.

Do not forget to place the foam guards provided for the hang point block APR, the rear tip of the keel and the lower joints of the A-frame before closing the bag.

⚠ ***Never attempt to put the wing flat on the ground without first disassembling the lateral struts***. *The connecting parts of the struts would be definitively damagded! If this is done by mistake, a complete disassembly of the struts and of all their connecting parts with the control bar and the leading edges is essential for inspection and replacement.*

5.2 Folding – Unfolding on the Pixel Trike

5.2.1 Folding on the Pixel Trike

⚠ ***Folding should only be carried out after the engine block and exhaust have completely cooled down.***
The sail could be irreparably damaged by contact with a hot part of the engine and its accessories.

1. Place the trike facing the wind.
2. Remove the windscreen, the locking screw of the upper beam on the engine mount and the fixing screw of the front tube on the lower beam.
3. Remove the ignition key, swing the instrument panel backwards and apply the parking brake.
4. Lift the control bar (one hand on the bar and the other on the front tube of the trike) to clear the front tube from the lower beam. Press the top of the brake pedal with the foot to prevent the tricycle from moving backward and tipping over. Lower the wing until the intermediate support of the front tube is fitted to the end of the lower beam. Replace the fixing screw of the support on the beam with its wing nut and its split safety ring (Figures 5-19 & 5-20). Reset the parking brake.

Figure 5-19

Figure 5-20

5. Block the control bar against the front tube, horizontal wing, using one of the small velcros used to join the battens when the wing is folded.
6. Remove the hang point safety cable from the webbing of the central crossbars protection and from the kingpost. Fix it again directly to the upper beam of the trike.
7. Remove the struts at the tips of the wings by turning them on themselves and pulling.
8. Remove the last straight battens at the tips.
9. Raise the crossbars cables tensioning lever at the end of the keel, releasing the push-pin. Replace the push-pin on the rail.
10. Carefully slide all the uppersurface battens out of their pockets, after unlocking the "Easyfit" tensioners, starting with those in the center.
11. Disengage the crossbars cables tensioning lever from the rail at the end of the keel and allow the leading edges to close naturally (Figure 5-21).
12. Clear the kingpost from the lug fixed to the top of the keel, between the two tensioning cables. Place one foot on one of the landing gear legs to facilitate operation, if necessary. Position the kingpost on the sail with its lower end facing forward.
13. Slide the crossbars cables tensioning lever forward of the kingpost foot, then under the sail so that it can not catch in one of the openings of the sail.
14. Place the propeller in a horizontal position.
15. Close the two leading edges against each other by simultaneously pulling the center trailing edge of each half wing and then the wing tips (Figure 5-22).

Figure 5-21

Figure 5-22

16. Slide the sailcloth over the leading edges along their entire length, pulling them outward as far as possible.

For folding in 5.3 meters:

1. Roll the sailcloth parallel to the keel and attach it with Velcros (a large Velcro between the hanging block APR and the attachment of the lower longitudinal cables, a large Velcro behind the struts attachment, a small Velcro on each half-wing towards their rear end).
2. Collect the battens, the kingpost and the tips struts, attach them by a small Velcro, store them in their bag and slip them over the sail under one of the Velcros.
3. Place the wing cover over it and close the zipper from the rear end to the struts attachment.

For folding in 3.8 meters:

1. Roll the sailcloth parallel to the keel in front of the struts attachment, and attach it with Velcros (a large Velcro between the hanging block APR and the attachment of the lower longitudinal cables and a large Velcrojust behind the struts attachment).
2. Remove the plastic caps at the end of the leading edges and slacken the screw at the end of the sleeve to the maximum (20 turns) (Figures 5-7 & 5-8). Use the Allen wrench in the plate close to the screw head, right side (Figure 5-4).
3. Remove the fastening screw of the sail at each wing tip (Figure 5-5) and replace it on the sleeve with the wing nut and split ring after the sail is released.
4. Replace the Allen wrench in its housing and the plastic caps at the end of the leading edge sleeves.
5. Slide the rear parts of the leading edges out of the front parts and out of the sail while pulling backwards (Figure 5-25).
6. Open the undersurface to uppersurface Velcros and the fabric closures at the tips.
7. Place the foam guards on the end of the front parts of the leading edges of the leading edges (Figure 5-23).

Figure 5-23

Figure 5-24

8. Roll each end of the sail at the tips parallel to the leading edge and attach them separately with a small Velcro.
9. Fold over each end of the sail on the front of the wing, taking care not to cause a sharp angle in the mylar of the leading edges. Pull the tips towards the nose of the wing. Attach the whole fabric with the Velcros (Figure 5-24).
10. Slide rear parts of leading edges, kingpost, battens and tip struts into the provided bag. Position the cover forward, over the wing, under one of the Velcros, the widest part facing backwards.
11. Place the "Short Pack" bag on the wing by threading it from the back. Close the zippers.

5.2.2 Unfolding on the Pixel Trike

1. Place the trike facing the wind.
2. Engage the parking brake and lock the control bar against the front tube with a small Velcro.
3. Open the zippers of the bag and disengage it from the wing.

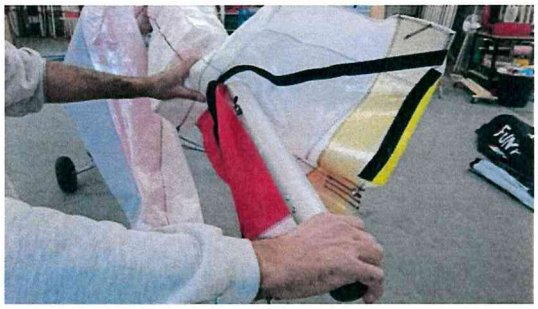
For a wing folded in 5.3 meters, continue the procedure by proceeding directly to instruction No. 14 under asterisk *

4. Remove the rear parts of the leading edges, the kingpost, the battens and the tip struts from their bag.
5. Unfold each end of the sail. Remove all Velcros.
6. Remove the guards at the end of the front part of the leading edges. Store covers, Velcros and protectors.
7. Slide the rear parts of the leading edge into the sail and into the front part (Figure 5-25). Observe the right / left indications on the tubes. (Figure 5-3)

The two rear parts of the leading edges are not identical. *An sticker on the tube indicates whether it is a right (D) or left (G). An inversion can have serious consequences because it modifies the tip struts angle resulting in negative twisting of the tips and strong longitudinal instability.*

Figure 5-25

Figure 5-26



8. Finish to engage the rear parts of the leading edges in the front part by rotating them to line up the tubes slots and the horizontal bolt connecting the crossbar on the front part of the leading edge. Push them forward as far as possible. Make sure that the plastic lugs and the openings for the tip struts at the rear of the tubes are face-to-face Once installed the rear leading edge slot should be located on the channel horizontal bolt. It should be impossible to rotate the leading edge, if correctly assembled. (Figure 5-26).
9. Remove the plastic caps from the wingtip sleeves. Pull the sail tightly backwards and position the leading edge fabric of each half-wing outward.
10. Install the fastening screw of the sail at each end of the wing using the Allen key placed in the plate close to the head of the screw, on the Right side (Figure 5-4). Insert the screws first through the

extrados grommets, then into the drilling of the tensioning bracket and finally into the lower surface grommet. A stainless steel washer should be placed under the head of the screw and a second between the intrados eye and the butterfly nut. Secure with the split ring. **(Figure 5-5 & 5-6)**.

11. Tighten the sail on each leading edge by tightening the screw at the sleeve end of 20 turns (Figure 5-7). Use the Allen wrench fitted in the plate next to the screw on the Right side sleeve (Figure 5-4). Replace the plastic caps at the end of the leading edges (Figures 5-8).

> * **Wing folded in 5.3 meters**

12. Release the pitch lines of any retaining elements and position them on the top of the sail.
13. Swing the instrument panel backwards.
14. Place the propeller in a horizontal position.
15. Sit on the tricycle, open the two half-wings symmetrically, using the struts, until the point of equilibrium is reached where the opening remains stable (Figures 5-27 & 5- 28).

Figure 5-27

Figure 5-28

16. Finish opening each half-wing by pulling alternately on the struts or on the rear ends of the leading edges.
17. Pull the crossbars tensioning cables behind the kingpost foot on the upper surface and fit the kingpost over the lug on the top of the keel between the two tensioning cables, taking care not to tangle the cables (Figure 5-13). Put one foot on one of the landing gear legs to facilitate the operation, if necessary.

Figure 5-29

Figure 5-30

18. Make sure that the struts to crossbars link parts do not block in the openings on the undersurface of the sail and then pull the tensioning lever back towards the trailing edge to hook it onto the screw of the rail at the end of the keel. (Figure 5-29)
19. Carefully slide the sail bent battens in their respective pockets and tension the sail by fastening the Easyfit tighteners (Battens with red end caps on the Left side and those with Black-colored ends on the Right side).
20. Lower the swan catch lever of the crossbars tensioning cables and lock it into the rail using the push-pin. (Figure 5-30).

21. Place the two straight battens of the wing tips on the plastic lug attached to the tube of the leading edge, and tighten the upper surface with the easyfit clasps. (Red end to left side, black end to right side) (Figure 5-16).
22. Install the tip struts in the appropriate openings on the leading edge. Insert them all the way into their housings and rotate them until they block. Check that they are correctly blocked by pulling them towards the rear. Raise the sail and open the undersurface to upper surface Velcros for ease of access. (Figure 5-15 & 5-16)
23. Fit the tensioning bungees of the undersurface twice over the easyfit tensioner of the wing tip batten and close the Velcros between intrados / extrados (Figure 5-17).
24. Close the fabric closures at the tips by means of their velcros.
25. Slide the safety cable through the strap near the kingpost foot, make a lap behind the kingpost, slide it back into the buckle, and then fasten it to the trike's upper beam. The safety cable must pass under the tensioning cables (Figure 5-18). This operation secure both the attachment of the tricycle and the crossbars tensioning system.
26. Tilt the instrument panel backwards, remove the fixing screw from the intermediate support of the front tube onto the lower beam. Lift the control bar (one hand on the bar and the other on the front tube of the trike) to clear the front tube intermediate support from the lower beam. Press the top of the brake pedal with the foot to prevent the tricycle from moving backward and tipping over. Lift the wing until the end of the front tube is fitted to the end of the lower beam.
27. Replace the locking screw of the upper beam on the engine mount and the fixing screw of the front tube on the lower beam with their wing nuts and its split safety rings.
28. Tilt the instrumentation console forward, fit the windscreen, and remove the Velcro blocking the control bar on the front tube.
29. Store foam guards and Velcros in the bag. Keep a small Velcro apart to wrap it around the front tube of the trike to lock the control bar on it.

⚠ ***A careful and complete pre-flight check as described in the flight manual is mandatory after wing assembly****. Pay special attention to potential transport damage. Carefully inspect all fasteners, cables, proper placement of lateral struts and their fixing screws and nuts, the shape of the leading edge Mylar and the overall symmetry of the wing before flying.*

5.3 Pre-Flight Check

⚠ ***A pre-flight check of the wing is <u>essential</u>.*** *Instructions for the pre-flight check of the trike can be found in the user manual of the trike.*

1. Check the camber of the two leading edges.
2. Check the thimbles of the front lower longitudinal cables and the correct fastening of the tensioning device and the push-pin. Slide your hand along the leading edges to check for possible defects.
3. Check the cross-bar/leading edges link by unzipping the lower surface access. Check that the fastening of the lateral struts is correct and the sail is not snagged on a metal part. Check the positioning and tightening of screws, washers, nuts, butterflies and split rings.Close the lower surface access.
4. Check the fastening of the sail at the wing tips, as well as the blockage positioning of the two rotating sleeves by means of the Parker screw and the correct positioning of the tip struts. (Check by pulling the tip struts towards the rear.)
5. Check whether the battens are securely positioned and the closure of the tensioners on the trailing edge.
6. Check the condition of the pitch lines and their fastening to the sail.
7. Check whether any of the upper cables is circled around the king post and that the pitch lines are well placed in the grooves of the king post pulleys.
8. Check the axes of the swiveling piece, its safety pins and the thimbles and Nicopress of the rear lower cables at the keel end.
9. Slide your hand along all the lower cables and struts to detect signs of wear.
10. Check the proper passage of the tensioning cables on each side of the king post. Inspect the tensioning system at the end of the keel, the nuts and bolts, and the position of the push-pin and its safety washer.
11. Check the fastening of the lateral struts of the A frame. Check the nuts, bolts, washers and safety rings, the position of the push-pin and its safety washer.
12. Check the condition of the thimbles and Nicropress of the longitudinal lowers cables. All of the cables should be free to pivot in the direction of tension forces.
13. Check the assembly of the crossbar central junctions, the nuts and bolts, the protection, the retaining straps on the keel, and the fastening of the tensioning cables.
14. Check the condition (possible twists, cracks) and the free movement of the hang point bracket.
15. Check that all zippers on the inspection hatches are closed and that the under / upper surfaces and wingtip closure are correctly positioned with their velcro.

5.4 Flight Specifications

5.4.1 Operational Limitations

⚠ *Warning:*

This wing is not designed for aerobatics.

It is imperative to respect the flight envelope!

- Maximum Pitch attitudes 30° nose up, 30° nose down
- Maximum Bank angle 60°
- Aerobatics and deliberate spinning prohibited
- V.N.E. (never to be exceeded): 75 mph (120 km/h)
- Maximum Take-Off Weight 555 lbs (250 kg) with any compatible trike
  511 lbs (230 Kg) with Pixel 250 trike
- Acceleration limits +4/-0g ; positive "g" at all times
- Stalls authorized only in glide path with a progressive speed reduction and throttle to idle position.

⚠ *Over these limits, stability problems, structural failure or irreversible "tumbling" motions may occur.*

5.4.2 Controls

Control bar :

Pushing the control bar forward causes the wing to pitch its nose up, which increases the angle of attack (causing the aircraft to climb) – primary effect, and a decrease in air speed – secondary effect.

Roll control is effected from lateral movement of the control frame, and follows weight shift convention, i.e. bar right, aircraft rolls to the left.

A separate yaw control is not provided. Like other weight shift aircraft, yaw is provided from the secondary effect of banking.

5.4.3 Flight Techniques

Taxiing :

Avoid turning sharply as this generates large amounts of torque and hence wear, transmitted to the pylon, hang point and keel. Always try to keep the wing aligned with the trike when turning by bracing the control bar. Turning circle is very small, but beware – wing tips stick out and can move around their arc very fast!

Take-off and landing techniques:

Take-off is conventional. Keep the aircraft straight using the nose wheel steering. Allow the bar to float in the neutral position in pitch and keep the wings level. Let the control

bar move forwards to obtain takeoff rotation. As the aircraft rotates, allow the control bar to move back smoothly and allow airspeed to build.

If taking off in calm conditions or from a soft field or from a field with long grass, the minimum take-off roll distance is reached by increasing rpm to full power with brake, then releasing the brake and pushing the control bar fully forward. The control bar should be brought backwards immediately once the wheels are in the air to obtain a climbing speed of 55 km/h (35 mph). If a performance take-off is not required then once the aircraft has rotated allow the bar to move back smoothly, adopt a shallow climb attitude and allow the airspeed to build to a safer low-level climbing speed of around 65 km/h (40 mph).

The landing is conventional. Maintain the approach speed until 8-10 foot height, then flare out to make a smooth touchdown. Braking may be used once all wheels are on the ground. A short landing requires a slow approach speed ranging from 55 km/h to 65 km/h (35 mph to 40 mph). Raise the nose a few meters from the ground, in order to touch down at stalling speed. Brake and pull the control bar to the maximum in order to obtain more aerodynamic braking once the rear wheels have touched ground. If conditions are gusty or a strong wind gradient is suspected, use a higher approach speed value.

Turning:

The iFun wing is very well-balanced in the turn and is capable of high rates of roll with modest control forces. Roll rate is proportional to both airspeed and wing loading. Fastest roll rates will be achieved at light weights and high airspeed. Conversely when flying at high weight and low speed, maneuverability is reduced. Ensure that the runway is long enough for take-off and that no sudden maneuvering is required to avoid obstacles early in the climb, when speed may be low.

Turns at bank angles up to 60 degrees are permitted. To balance the turn at this bank angle, forward bar movement is necessary to generate the required lift for level flight and increased power is required to overcome drag and maintain airspeed. Under these conditions substantial wake turbulence is produced. For turns of over 45 degrees of bank it is recommended that a heading change of no greater than 270 degrees is used, in order to avoid entry into the wake turbulence and a possible excursion outside the permitted flight envelope. The iFun wing has neutral spiral stability at high cruise speed and thus will remain balanced in a turn without any roll control pressure required. With a high loading and low cruise speed adjustment, it may be necessary to increase the speed before the wing is put into banking to avoid stalling the lower wing. An increase in engine power is also advised to maintain the flight level during the turn.

Stalling:

The stalling point is reached more easily with a backward hang point position. Once the stall angle of attack is reached, the control bar starts pushing back forcefully and some pre-stall buffet may be felt in the form of pressure bumps. Avoiding any resistance to this tendency for a short while allows the wing to return to correct speed. In that case, the loss of altitude will be less than 10 m(33 ft). If the control bar remains extended despite the warning signs, the wing will stall and the loss of altitude may easily reach 30 m (100 ft). An asymmetrical start on one wing is possible, particularly during the running in of the sail (first 50 flying hours).

Nose high pitch attitudes generated prior to the stall break will lead to high nose down rotation rates. In common with all flexwing aircraft, extreme examples of this can result in tumbling motions, loss of control and massive structural failure.

⚠ *To avoid risk of tumbling, stalling exercises must imperatively be carried out with the engine at idle, with a very slow decrease in speed (less than 1kt/sec) obtained by progressively pushing the control bar out.*

Pilots should also be aware that as with all aircraft, overloading with baggage/heavy occupants will increase stalling speed, as well as the usual drawbacks of reduced performance, maneuverability and structural safety margins.

Behavior in strong wind:

Once grounded and motionless

Park the aircraft perpendicular to the direction of the wind, with its windward wing lowered and the tip of the leading edge rests on the ground, block the A-frame on the front tube of the trike (using for example the Velcro used for packing the battens of the sail), block the park brake and put chocks under all three wheels. Unfold the wing on the trike and put it windward if the aircraft is not going to be used immediately.

Ground-runs

Keep the sail flat into a headwind. Push the control bar against the trike front strut with a tailwind. This will avoid flipping. With a side wind, be careful to always tilt the wing so that the windward edge is slightly lower than the rest of the wing. It may be difficult to hold the A-frame in its position. Never let the wind lift the wing up.

Take-off and landing

As ground run distances are considerably reduced by strong wind, try to face the wind. Perform take-off and landing maneuvers at greater speed than you would normally do, in order to diminish the drift angle and counter the effects of the gradient.

Crosswind Take-off

Start the take-off run with the windward wing very slightly lowered. Hold the aircraft on the ground by holding the bar slightly back from the neutral position. Keep to the axis of the runway with the front wheel control without considering efforts on the sail. Allow airspeed to build to a higher-than-normal value then rotate positively into a shallow climb attitude. Keep the wings level and allow the trike to yaw into the relative wind. At this point adjust the drift angle if required to maintain runway centerline, and proceed as normal.

Crosswind Landing

Crosswind landing limits are largely dictated by the skill of the pilot. Make sure that you have lots of experience before attempting crosswind landings with components in excess of 8kt.

General technique should be to fly the approach maintaining the runway centerline by setting up a steady drift angle. During the final stages of the approach use a higher-than-normal approach speed to minimize the drift angle. Round out slightly lower than normal and aim for a short hold off, so that the aircraft lands smoothly, back wheels first with the control bar at or only slightly forward of the neutral position. The contact between the back wheels and the ground will then yaw the trike unit towards the runway centerline at which point the nose wheel can be gently lowered to the ground. Once all wheels are down the windward wing can be lowered slightly. To ensure maximum directional control during rollout from a crosswind landing the recommended technique is to move the bar back after landing and apply light to moderate braking. This eliminates any tendency to bounce and ensures good contact pressure between tire and runway surface. This technique of applying aerodynamic loading to increase ground pressure and hence braking efficiency during landing roll is also appropriate for short field landing.

Remember that crosswind landings on grass are slightly easier than on hard surfaces. During crosswind landings a lot of torque is carried through the structure which results in excessive wear to the hang point and attached structure. Always try to land into the wind if possible. If crosswind components are in excess of 15 knots then only a small windward distance will be required for landing – across a large runway could be the best option!

Flight in Turbulence:

Compared to other flexwing microlights, the iFun wing handles turbulence very well. However in common with all microlight aircraft, care must be taken in turbulent conditions, particularly when close to the ground. As previously stated high airspeed will enhance maneuverability in these situations. However if conditions become severely turbulent with hard jolts being transmitted through the aircraft, it is recommended that you do not exceed the maneuvering speed Vman. VNE should only be reached in smooth conditions.

In strong wind conditions, avoid flying on the downwind side of large hills or other obstructions. When landing in strong crosswind conditions, remember that low-level turbulence will be produced by obstructions on the upwind side of the runway. Always try to assess areas of possible lift, sink or turbulence from some distance away so that you can be fully prepared for their effects.

At height the best way to minimize pilot workload and physical fatigue is to fly the aircraft while trying to let the control bar float through turbulence. Use your arms as dampers and try not to rigidly fight the movement. Close to the ground, where accurate control is required, the displacement of the aircraft in turbulence can be reduced by bracing the control bar relative to the structure of the trike unit. This then transmits to the wing the pendulum stability of the trike mass. However the pilot must be ready to make any necessary corrective control inputs.

Smooth flight in turbulence in a flexwing aircraft is a skill that is learned with time and experience. Please remember the old adage: "It is better to be on the ground wishing that you were in the air, than in the air wishing that you were on the ground!"

Rain, ice and snow:

⚠ *Flight in rain increases the stall speed of the aircraft and reduces maneuverability at slow speeds. The simple presence of raindrops scattered on the leading edge of the wing before or during flight increases stall speed by a factor of up to 10%.*

We recommend wiping the fabric of the leading edge with an absorbent cloth if such conditions are observed before flight. During flight, so long as raindrops are present on the windshield of the trike, one must expect a higher stall speed, obtained with the control bar further back than usual. Be particularly careful in landing approach and raise the recommended speeds by 10%, especially if takeoff load is high.

Any other form of contamination of the leading edge, the airfoil, and the upper surface such as ice or snow will result in strongly increased stall speeds and a large reduction in overall aircraft performance. **Never take off under such conditions!** If these conditions are encountered during flight, attempt to escape these conditions as quickly as possible. If this is not possible, the aircraft should make an emergency landing as soon as it is safe to do so. During this process avoid flight at low speed and expect poor aircraft performance.

5.4.4 Adjustments

In General :

Your wing was delivered with the optimum settings.
If you feel that the wing requires adjustment to trim in the roll or the pitch axis you should check that the problem is not caused by something asymmetrical in the frame or the battens. In order of priority check the following:

- Check that the rotating sleeves at the tips are correctly positioned and blocked by means of the self-taping screws.
- Ensure that the wires, especially the reflex bridles are correctly routed.
- Check the battens profile.
- Check that the leading edges are straight and that the rear parts are located correctly.
- Check that the keel is straight.

After checking as outlined at the beginning of this section, an adjustment can be performed by the following methods.

⚠ *Never adjust the length of the reflex lines.*

Never alter batten shape except to match the batten profile drawing.

The reflex lines are designed never to be adjusted, and their primary effect is for stability **outside the normal flight envelope**, so adjustment for flight within the envelope is pointless anyway.

The batten shape is intrinsic to stability, stall behavior and handling. Some aircraft require batten shape adjustment to correct for turns. This is not necessary for Air Creation wings.

⚠. *The tuning of a flexwing requires special training and regular practice. We offer hereunder global effect of the main means of tuning, but their application is delicate. We therefore recommend that you solicit the expertise of an Air Création Technical Station or the factory itself if you wish to modify the tuning of your wing!*

Hang point position

Centering adjustment is done by moving the hang point on the keel. The locking rings of this part should be positioned according to the desired centering (3 positions). The hands off cruising speed increase by about 5 km/h (3 mph) if the hang point is moved forward and vice versa. Each position may be used, the only effect is alteration of the cruising speed once control has been released, without any repercussions on stability and performance.
For the first flights the hang point should be left in its original position, intended for ease of handling.

Warning: Any alteration of centering means a variation of the A frame tilt and therefore modification of the lower longitudinal cables' tension. There are various adjustment holes in the cables fixation rail at the nose of the wing, so as to allow them to keep a correct tension whichever the adopted position of the hang point may be. When the position is in the middle, the blocking screws of the tensioning handle of the cables

should be in the 2nd hole from the back of the rail. The first hole should be used when the position is in front, and the 3rd hole when in rear.

Tension of the sail on the last battens of the wing tips.

It is easy to adjust the symmetry of the wing by differentially adjusting the tension of the sail on the last batten wing tips (those that rest upon the plastic lugs on the leading edge). To do this, simply rotate the plastic tip of the batten which is fitted with a thread. Increased tension raises the trailing edge of the wing tip under consideration and reduces its lift. Decreased tension has the opposite effect. Action should be taken in small corrections (1 turn on the tip batten) and simultaneously applied in opposite directions on each side (+1 turn right, -1 turn left, for example). Check the results and increase the adjustment if necessary.

Symmetric tuning of the tension of the sail on the last wing tip batten leads to a change in hands-off cruising speed. Increasing tension leads to a slowdown, reducing it leads to a speedup. The maximum tension allowed is obtained with 6 turns of tension on the batten tip, the minimum is 0 turns, and standard setting is 3.

Pivoting sleeves at the end of leading edges

The swivel sleeves were preset during the first factory tests of the wing, according to the torque of the trike's engine, and they are locked in position by a Parker screw. This position can be checked by means of the positioning mark on the sleeve, which corresponds to a mark (0, +2.5, +5, -2.5, -5) on the scale stuck on the end of the tube. A further correction is possible if the modification of the tension of the last straight battens wing tips described in the preceding paragraph has not lead to the desired trimming (in case of adaptation to a trike equipped with an engine whose torque is different, for example). Their differential rotation can be used to correct an asymmetry of the wing. The result is comparable to that of the ailerons on a conventional aircraft - lower the trailing edge produces more lift and raising it produces less.

For a wing with a left tendency, dismount the tip fins and the last straight battens of the wing tip, open the Velcro bindings of the lower surface to the upper surface at this level, and remove the self-tapping screws placed on the inside of the leading edge. Turn each sleeve clockwise to achieve the next values (+2.5 on the right, -2.5 on the left) by forcing on the fabric. After the adjustment, reassemble the screws, the battens, and the Velcro. If the correction is insufficient for a perfect tuning of the wing, repeat the process until you reach the correct adjustment (maximum allowed: 10 mm difference right/left). Always rotate to the same value the sleeves of each half of the wing. For effective flight operation do not change the tension of the sail on the last carbon wing tip batten.

If the wing has a right tendency, the left sleeve should be rotated by 2.5 mm counterclockwise (towards +), and the right sleeve by the same value in the opposite direction, 2.5 mm clockwise (towards -).

Pivoting the sleeves can also be used to fine tune the cruising speed with the CORSET tensed or relaxed. A joint rotation of the two sleeves of 2.5 mm upwards (towards +) slows the wing down by 5 kph and speeds it up by 5 kph for a 2.5 mm rotation downwards (towards -). The usable speed range adjustment is limited to +5 and -2.5 mm. Beyond these limits, performance and stability of the wing may be affected and unsightly wrinkles may appear on the fabric of the wing tip

Tension of the Sail

The tension of the sail at the end of the edges may be modified to counteract the effects of aging on the sail, and improve its performance. This action is not to be considered before a minimum of 300 hours of flight.

To make this adjustment, remove the tip fins, battens and the protective cap of the wing tip and rotate the screw at the end of the sleeve with a 10mm wrench. Replace the cap and tip fins, then adjust the tension of the sail on the last straight batten of the wing tip due to changes in the position of the sail on the leading edge tubes (the same value of increase in the length of the batten as the increase in tension on the leading edge). Tighten up to a maximum of 5 turns (5 mm) and check by test flight. The cruising speed will be increased by about 3 kph for 5 mm of additional tension but handling in roll will be slightly reduced. The maximum allowed is 35 turns (35 mm) of total tension. The standard factory set tension of the new wing is 20 turns (20 mm). The minimum allowed is 15 turns (15mm) of total tension.

Tension of the sail on the removable battens of the upper surface

The tension of the sail on the upper surface battens may be modified to counteract the effects of aging on the sail, and improve its performance. This action is not to be considered before a minimum of 300 hours of flight. To adjust the tension, simply rotate counterclockwise the plastic tips of each batten. A retensioning of 2 turns generally provides the desired effect. The cruising speed will be increased by about 1 km/h per tensioning turn but handling in roll will be slightly reduced.

Tension of the crossbar cables

The tension of the crossbar tensioning cables may be modified to counteract the effects of aging on the sail, and improve its performance. This action is not to be considered before a minimum of 300 hours of flight. To do this, just move the screw that positions the tensioning swan catch back one hole on the rail at the end of the keel.
The cruising speeds will not change, but handling in roll will be slightly reduced, while aerodynamic performance will be improved.

6 Maintenance

6.1 Transport

Bumpy and long drives might damage the wing unless it is properly loaded onto the vehicle. Transporting the wing and the trike by road requires that the wing, in particular, is properly braced, cannot shake about and is generally very carefully tied down, so that no hard points can damage tubes and sail. Carry the wing carefully on a ladder covered with foam rubber to avoid precarious overhanging. Avoid bumps and swings.

6.2 Storage

Keep the wing in a dry place.

Clean it with fresh water after it has been exposed to sea air. Any grass stain should be washed out with water and household soap. Open the cover to allow the sail and the structure to dry after transport or use in the rain.

⚠ Ageing of the fabric and seams of the sails may cause an important loss of the wing resistance. The degradation is principally caused through exposure to ultraviolet rays emitted by the sun and the moon. In order to slow down the process, the sail should be stored folded in its cover, or if it stays rigged, in covered premises. Always put it in a sheltered place, shielded from the rays of the sun, even between flights. These measures help to lengthen/sail life.

6.3 Inspections & Scheduled Maintenance

This section sets forth each mandatory replacement time, structural inspection interval, and related structural inspection procedure required.

The time limits and maintenance schedule provided are in addition to any regulation of the governing body where the aircraft is flown.

The pilot of the aircraft must ensure that the required maintenance is carried out and documented in the correct manner.

6.3.1 Time Limits

Extreme operating conditions and any extreme loads will reduce the time limits for components and the fatigue life of the airframe. The fatigue life of these components is dependent upon rigid adherence to maintenance schedules.

Air Creation will from time to time amend these maintenance checks as the service history of the aircraft evolves. It is the responsibility of the pilot to ensure compliance with new directives. (Information is available on the website http://www.aircreation.fr).

The following components are time limited and should be overhauled or replaced as indicated. This table may be updated to include more components in the future as airworthiness directives are amended.

Wing Components Life

Component	Life
Control frame and cross tubes	On inspection, no fatigue limit
Leading edges	900 hrs
Keel	1500 hrs
Rigging wires	600 hrs
Roll bracket	1500 hrs
Bolts/screws	300 hrs
Hang bolt	300 hrs

A strip of identical fabric as the one used for the top sail is stitched to it in the middle and over the keel pocket. The strip is made from two pieces stitched together. During each periodical overhaul, a strip must be cut off, and submitted to a test of wear and tear in the Air Creation factory. The result of the test determine the moment when replacement of the sail becomes essential for reasons of safety.

6.3.2 Safety Procedures

1. Nylstop Nuts

   Nylstop nuts are used throughout the airframe. Nylstop nuts may not be reused.

2. Loctite

   On any bolt that does have or not a Nylstop type locking mechanism, Loctite 243 should be used to prevent premature loosening.

6.3.3 Wing Maintenance Schedule

Item	Maintenance Requirement	Hours of Operation					
		50	100 1 yr	150	200 2 yrs	250	300 3 yrs
Wing Sail	Wing fabric deterioration and tears		2		2		4
	Wing fabric stitching condition and abrasion		2		2		2
	Wing fabric attachments points	2	2	2	2	2	2
	Attachment of the keel pocket and the retaining strap at the rear of the keel		2		2		2
	Straps retaining luff lines on the upper surface		2		2		4
	Condition of tension straps on batten clasps		3		3		4
	Condition of Velcro strip closures at wingtips						4
	Wing fabric sample factory test						2
	Sail removal for general overhaul						4
Wing Frame	Profile of removable battens of the upper surface		2		2		2
	Profile of the central upper surface batten						4
	Batten clasps		3		3		3
	Wires and attachment fittings for tension, corrosion, fraying, kinking or fretting	2	2	2	2	2	4
	Condition and security of all screws, bolts, nuts & washers	2	2	2	2	2	6
	Condition and operation of all push pins	2	4	2	4	2	4
	Outer part of leading edges		4		4		4
	Keel, cross bars, and visible tubing	2	3	2	3	2	4
	Hang bracket for condition, deformation, cracks	2	3	2	3	2	4
	Main hang bolt	2	4	2	4	2	6
	Nose assembly, U-channel and cable gooseneck catch for condition		3		3		4
	Tensioning u-channel and cable gooseneck catch for condition		3		3		4
	Central cross-bar assembly, protection and webbing for condition		3		3		4
	Cross-bars to leading edges and struts assembly for condition		3		3		4
	Struts to Control Bar assembly for condition		3		3		4
	Condition of wing tip tensioning device		3		3		4
	All rig/unrig parts for condition and operation		3		3		4
	All airframe tubing for cracks, dents, deformation, corrosion or fretting						4
	All airframe fittings for cracks, dents, deformation, corrosion or fretting						4

Code:

1. Oil, lubricate, clean and service
2. Check as directed
3. Check for security, cracks, wear and faulty operation
4. Remove, inspect and replace if necessary
5. Recommended replacement or overhaul
6. Mandatory replacement

6.4 Unscheduled Maintenance

6.4.1 General

Unscheduled maintenance is required due to abnormal loads such as heavy landings. If any abnormal loads are encountered during transport or storage then the airframe needs to be checked.

The pilot will be responsible for identification of these extreme operating conditions and identification of the affected components. Where damage is found further checks should be carried out upon areas that may also be affected.

Thorough checks should also be carried out after transportation of the aircraft, and after extended storage periods.

6.4.2 Inspection after Heavy Landing

The main attachment point for the wing to the aircraft base should be inspected carefully for any permanent deformation of the U-bracket, the main bolt or the keel, as well as all of the other effected components. If the landing resulted in a jolt on the ground then a 300-hour overhaul must be performed. The tubing relies on being intact and in perfect condition for full strength. If tubing is bent or kinked in any way then it should be replaced prior to flying.

6.4.3 Inspection after Heavy Turbulence

Turbulence is more likely to structurally affect the wing of the aircraft than the trike.

The main areas that require attention after severe turbulence are the attachment points for structures. These include the front and rear wires, the side struts and the main hang point. The sail should also be inspected for any strain or tearing that may have occurred, though this is very unlikely. All of the tubing should be inspected for bending.

7 Appendix

7.1 Maintenance Operation Board

Wing Type: _____ Serial Number: _____

Date	Hours Flown	Type of Operation Performed	Operator Name, Address, Stamp

Date	Hours Flown	Type of Operation Performed	Operator Name, Address, Stamp

7.2 Wing – Quality Form

Anxious to ensure the perfection of our products, we have set up a sequence of controls covering all steps of production. We are continuously working on their improvement and we are in need of your help.

Please return this reply form accurately filled in if you find any issues or problems concerning your trike that could affect its quality or finish, even if it is a minor matter.

Name
Address
Telephone
E-Mail
Type of Wing & Trike
Delivery Date
Wing Serial Number
Colors of Wing
Distributor
Hours Flown

Problems noticed: (explanations and/or drawing)

Notes

air crēation

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