Delta Trikes Aviation

WING INSTRUCTION

AND MAINTENANCE MANUAL

DYNAMIC 450

Wing n° .....
Model : .....
Year : .....

SECTION 0 / PREAMBLE – PAGE INDEX

Symbols

⊗	**DANGER**	**Identifies an instruction which, if not observed, can cause damage having fatal consequences.**
⇨	**ATTENTION**	Identifies a significant instruction which, if not followed, can cause very serious damage.
Rappel, Note:		Underlines a useful instruction which must be observed for the proper use and operation of this DYNAMIC 450 Wing
GMP		Group – Motor/Propeller
CF		See

Warning

The information and the descriptions contained in this Handbook correspond to the current design. It is in no case exhaustive.
DTA improves its production constantly, and reserves the right to modify the specification, the drawing, the characteristics, the model and/or the equipment, in the interests of Quality Assurance, without incurring obligation.

The specifications are given in the metric system.

Note:

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Index des pages

SECTION 1 / GENERAL

This Maintenance and Instruction manual is supplemented by the Users and Maintenance Handbooks specific to the airframe, the engine and, if fitted, the parachute.
These handbooks define the conditions of use, as well as the maintenance regime required to maintain the airworthiness and serviceability of this aircraft.

The Pilot-in-Command (PIC):
- will use this aircraft (ULM) for sport, leisure and air work only
- is responsible for the state of airworthiness of the aircraft (ULM) which he pilots
- is holder of a valid current certificate and/or license, necessary to the particular activity
- is the holder of an endorsement for this type of aircraft
- will abide by the Regulations and Rules pertaining to Aviation in the country of use and/or registration.
- will conform to the recommendations stated in the Maintenance and Instruction manuals relating to this aircraft (ULM), relating to, amongst other things, the flight envelope, the flight and weight limitations and maintenance requirements
- will make sure that the aircraft (ULM) is used in conformity with its identification card and that it has not been modified (it is forbidden to modify a whole or a part of the elements composing the aircraft or to add elements by modifying the estimate of weight)
- will check that the identification/registration card is valid and that the identification markings (a minimal height of 50 cm for France), attached to the under-surface of the aerofoil, are easily readable
- will observe the elementary rules of flight safety: a thorough PRE-FLIGHT, PRE-TAKEOFF, PRE-LANDING and PRE-MANOEVER procedures and fly always with reference to the 'CONE OF FLIGHT SAFETY', etc….

This document was drawn up in accordance with the current French Regulations, relating to ultra/microlight (ULM) aircraft.

Note: Be aware of the Regulations regarding the maintenance of Microlight (ULM) aircraft and the responsibilities of the Pilot in Command and/or owner of a Microlight (ULM) in the country of registration of the Aircraft. DTA SARL will NOT be held responsible.

Be aware that Microlights (ULM) in France are not, subject to certification.

Safety

⊗ **The information given by the instrumentation can be erroneous. The engine can break down. The movement of air by nature is unpredictable. It can be sudden and violent and thus compromise the safety of the aircraft.**
To pilot an aircraft (ULM) is an activity which can involve dangers and which requires adequate training.

Address

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Adaptation to other Airframes:

The DYNAMIC 450 Wing can be adapted for use on other airframes (trike base) than those manufactured by DTA SARL (a limited liability company) subject to the compliance with the following points:

- The Maximum Take-Off Weight of the wing is observed (including wing weight).
- the engine power rating is at least 37 kW minimum required for safe two-seater flight.
- **The flight tests are progressive and MUST be carried out SOLO, in stable conditions and without wind, on a large/long runway with ample emergency egress.** This will make it safer to adapt the wing to the trike-body.
- Complete wing and keel clearance is essential, both in pitch and roll, "Control Bar full back" and "Control Bar full forward".
- **The minimum safe distance from the propeller arc to the wing keel, from the lower rear longitudinal cables and at the trailing edge of the wing MUST be at least 10 cm, this MUST factor all possible wing positions and include flight positions.**
- In flight - position of the control bar at cruise speed with maximum loading: at least 20 cm from the belly of the pilot in fast flight, and 30 cm from the front strut in slow flight. in hang bracket position n°2 (CF section 3 – 03).

Note: The person/s who choose/s to use a non-DTA airframe will assume ALL the responsibilities related to the adaptation for the non-DTA airframe to the DTA wing as well as the flight testing**.**

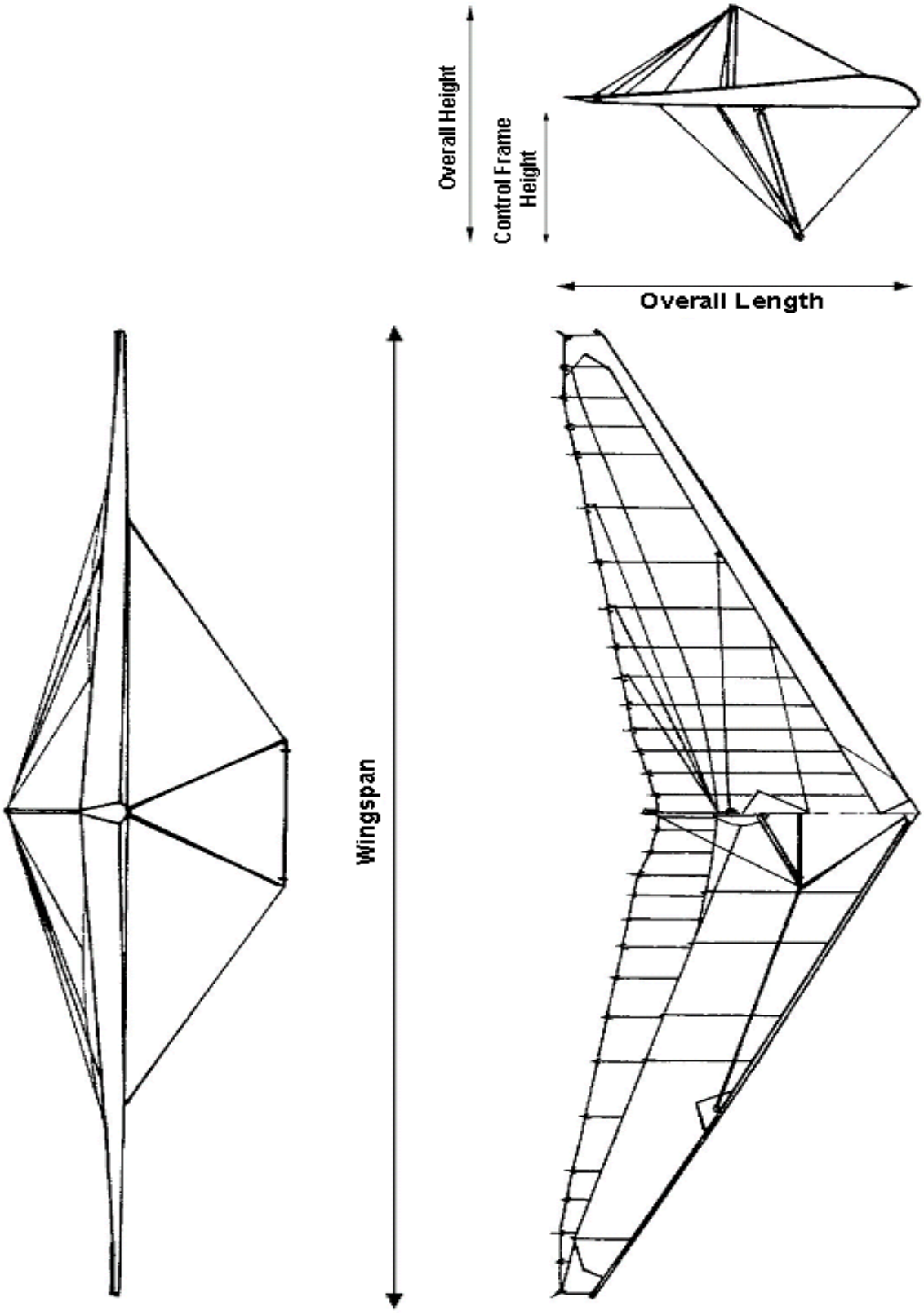
Attention: poorly mounted powerful engines, the fitting of badly dimensioned or badly positioned fairing can cause interaction between the wing and the airframe which can cause the flight behaviour of the aircraft to change abruptly and render it uncontrollable.

Description

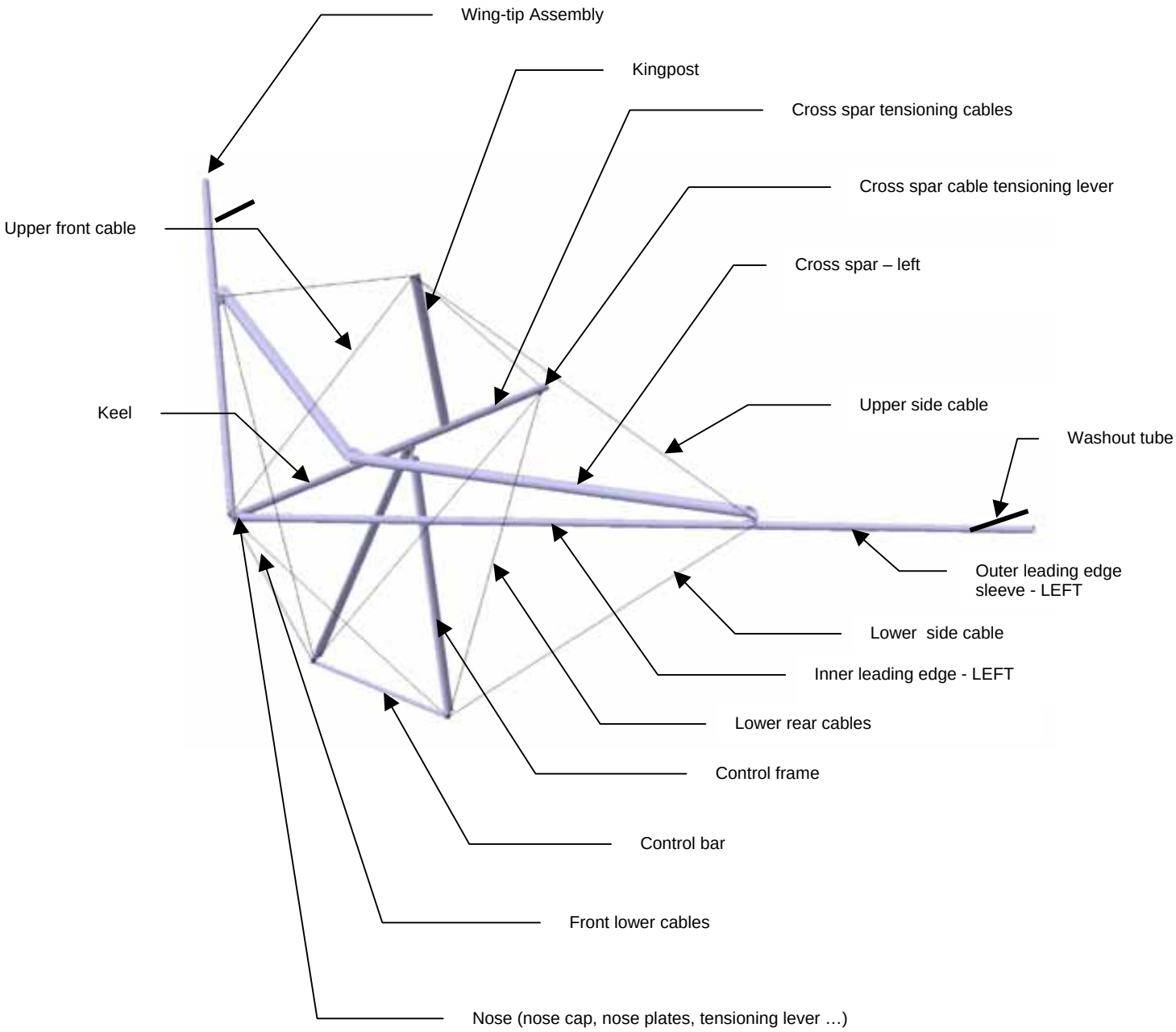
DYNAMIC 450:
Delta-wing billow shift aerofoil, double surfaced with integrated transverse partitions

Surface:	15,50 m²
Type of profile:	80%double surface (enclosed cross spars)
Wingspan:	10,20 m
Nose Angle:	125°
Aspect Ratio:	5,40
Overall length:	3,00 m
Height of Control Frame:	1.54 m
Overall height:	2.70 m
Upper Battens:	30
Lower Battens:	08
Empty weight	59 kg
Acceptable maximum weight in flight :	450 kg (472.5 kg with parachute)
Acceptable Max. weight suspended under wing :	391 kg (413.5 kg with parachute)
Wing load with the maximum weight :	29 kg/m² @ 450 kg (30,48 kg/m² @ 472.5 kg)
Max. Empty Weight (Wing + Airframe):	260 kg
Operational Load limit to 450 kg :	+ 4g - 0 g (- 2 g in turbulence)

3 Plan Views


Overall Height
Control Frame Height
Overall Length
Wingspan

Structure


Wing-tip Assembly
Kingpost
Cross spar tensioning cables
Cross spar cable tensioning lever
Upper front cable
Cross spar – left
Keel
Upper side cable
Washout tube
Outer leading edge sleeve - LEFT
Lower side cable
Inner leading edge - LEFT
Lower rear cables
Control frame
Control bar
Front lower cables
Nose (nose cap, nose plates, tensioning lever …)

SECTION 2 / PERFORMANCE

At the MTOW (Maximum Take-Off Weight) of 450 kg

DYNAMIC 450 Wing

Standard Conditions 15°C - 1013,2 hPa					
Engine Type	Rotax 503	Rotax 582	Hirth 3701ES	Rotax 912	Rotax 912S
Rated Engine Power	37 kW	48 kW	74 kW	59,6 kW	73,5 kW
Maximum Weight	**450 kg**	**450 kg**	**450 kg**	**450 kg**	**450 kg**
Stalling speed (VSO)	62 km/h	62 km/h	62 km/h	62 km/h	62 km/h
Maximum Shown speed	177 km/h	177 km/h	177 km/h	177 km/h	177 km/h
Maximum speed Never exceed (VNE)	160 km/h	160 km/h	160 km/h	160 km/h	160 km/h
Maximum speed of operation (VA)	110 km/h	110 km/h	110 km/h	110 km/h	110 km/h
Maximum speed in turbulent air (VC)	110 km/h	110 km/h	110 km/h	110 km/h	110 km/h
Horizontal maximum speed (VH)	115 km/h	126 km/h	138 km/h	130 km/h	138 km/h
Landing distance	70 m	70 m	70 m	70 m	70 m
Landing distance from 15 m	190 m	190 m	190 m	190 m	190 m
Minimum rate of fall	3 m/s	3 m/s	3 m/s	3 m/s	3 m/s
Speed of minimum rate of fall	70 km/h	70 km/h	70 km/h	70 km/h	70 km/h
Glide ratio	6,5	6,5	6,5	6,5	6,5
Take-off Roll	85 m	80 m	70 m	75 m	70 m
Take-off Distance to 15 m	210 m	190 m	170 m	180 m	170 m
Rate of rise at 75 km/h	2,5 m/s	3,5 m/s	4,5 m/s	4 m/s	4,5 m/s
Roll Rate (45°/45°) at 75 km/h	3,5 s	3,5 s	3,5 s	3,5 s	3,5 s
Roll Rate (45°/45°) at VA	3 s	3 s	3 s	3 s	3 s
Cross-wind Limit	20 km/h	20 km/h	20 km/h	20 km/h	20 km/h

The performance data indicated are average performances. The model of airframe and the presence of fairing can modify the data slightly.

At the MTOW (Maximum Take-Off Weight) of 472.5 kg (with parachute - French regulation)

DYNAMIC 450 Wing

Standard Conditions 15°C - 1013,2 hPa					
Engine Type		Rotax 582	Hirth 3701ES	Rotax 912	Rotax 912S
Rated Engine Power		48 kW	74 kW	59,6 kW	73,5 kW
Maximum Weight		**472,5 kg**	**472,5 kg**	**472,5 kg**	**472,5 kg**
Stalling speed (VSO)		64 km/h	64 km/h	64 km/h	64 km/h
Maximum Shown speed		177 km/h	177 km/h	177 km/h	177 km/h
Maximum speed Never exceed (VNE)		160 km/h	160 km/h	160 km/h	160 km/h
Maximum speed of operation (VA)		110 km/h	110 km/h	110 km/h	110 km/h
Maximum speed in turbulent air (VC)		110 km/h	110 km/h	110 km/h	110 km/h
Horizontal maximum speed (VH)		126 km/h	138 km/h	130 km/h	138 km/h
Landing distance		75 m	75 m	75 m	75 m
Landing distance from 15 m		195 m	195 m	195 m	195 m
Minimum rate of fall		3,2 m/s	3,2 m/s	3,2 m/s	3,2 m/s
Speed of minimum rate of fall		70 km/h	70 km/h	70 km/h	70 km/h
Glide ratio		6	6	6	6
Take-off Roll		85 m	75 m	80 m	75 m
Take-off Distance to 15 m		195 m	175 m	185 m	175 m
Rate of rise at 75 km/h		3 m/s	4 m/s	3,5 m/s	4 m/s
Roll Rate (45°/45°) at 75 km/h		3,5 s	3,5 s	3,5 s	3,5 s
Roll Rate (45°/45°) at VA		3 s	3 s	3 s	3 s
Cross-wind Limit		20 km/h	20 km/h	20 km/h	20 km/h

The performance data indicated are average performances. The model of airframe and the presence of fairing can modify the data slightly.

Limits of the flight envelope

Maximum Angle of Bank NOT to exceed: 60°

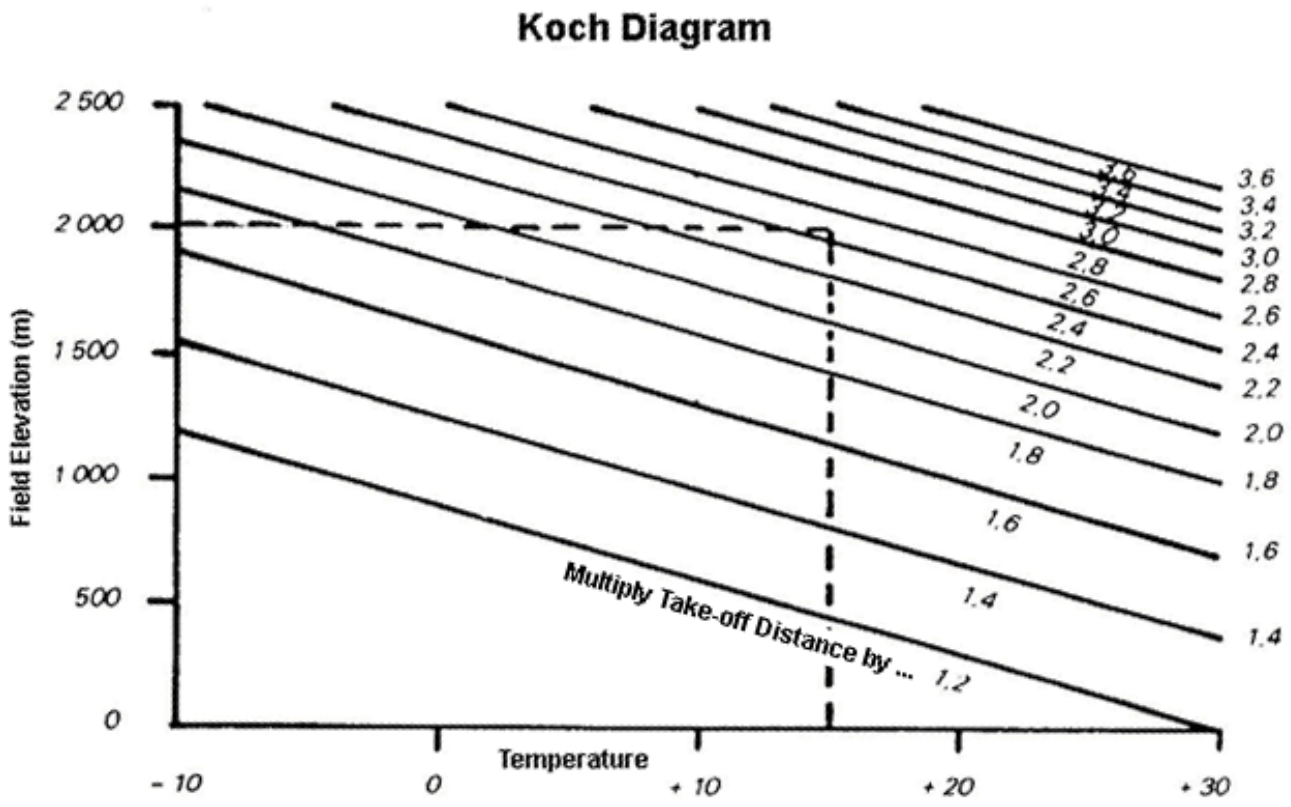
Maximum Pitch Angle NOT to exceed: + / - 45°

The observation of the limits if the flight envelope is imperative. This Aircraft (ULM) is NOT designed for Aerobatic flight. Inverted flight is completely prohibited.

Beyond these limits (Bank 60° - pitch ± 45°), the loss of stability or of control, structural failure, or tumbling could occur.

Koch Diagram

The higher the elevation and/or an increase in ambient temperature, the greater the takeoff distance required for your aircraft (ULM).



SECTION 3 / USAGE

Wing Assembly (Rigging)

The wing assembly is the start of a thorough PREFLIGHT. The assembly operation must be carried out unhurriedly, without using force and methodically:

- position the wing nose into wind, open the cover
- Turn the wing over, Control frames on the ground (on canvas, grass, a smooth surface)
- remove the cover
- fit the king-post to the keel, between the cross spar tensioning cables (2)
- hang the upper-longitudinal rear cable near the king-post, without crossing the cables

Note: the part small diameter of the hook will be directed upwards (3)

- position the nose batten on the head of the CHC 6 front screw
- pull the leading edges outwards, grasping them in the middle, without raising or forcing them (1)
- pull the control frame outwards, checking that no cable passes inside the frame
- fit the control bar using the M8 bolt (wing nut + safety ring)

Note: preferably position the wing nut towards the nose of the wing so as not to tear the front seat cover when the control bar rests against it

- slide upper wing surface battens into their respective sleeves

Note: the leading edge batten ends are 'colour-coded', red for the port (left) side and black, green or white, for the starboard (right) side

- check the position of the side and longitudinal cables
- pull on the cross spars tensioning cables

Note: to facilitate this operation, raise the tip of one of the leading edges to knee height (i.e. give the wing a little dihedral)

- lock the tension lever (or goose neck) using the pit-pin (2).

Note: the end of the tension lever is divided, lock it immediately. On the level of the king post, the left tensioning cable of must be higher than that located on the right.

- tighten the upper surface battens, pass the shock-cord in double (4, 5).
- raise the wing by the back of the keel, by making it swivel on its bar of control
- tension the front cables and lock the tension lever using the pit-pin.
- place the nose of the gently on the ground, nose into wind
- slip the under-surface battens into their respective sleeves (6, 8).

Note: the batten tip is spoon shaped, with the hollow side, cupped towards the leading edge (7). Red tip to the left; black, white or green, to the right

- insert the washout tubes (dive sticks) in the leading edge
- close the wing ends
- attach the nose cap.

Note: the absence of the nose cap creates an internal pressure variation in the wing which causes fundamental changes in the wing profile and makes the wing heavier to control.

Note: in moderate or strong winds secure the wing by its nose.

Attaching the wing to the Airframe

See the Airframe Instruction manual.

Wing Disassembly (De-rigging)

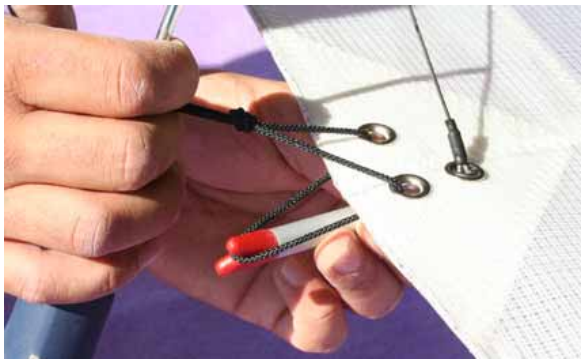
Follow the Wing Assembly procedure, except in reverse. Before placing the wing on the ground, the hang bracket protection on the top of the control frame must be fitted to the keel and the under-surface battens and the hang block remove (10). Before folding up both sides of the wing, to withdraw the washout tubes from their sockets and fold back them along the leading edge.

1

2

3

4



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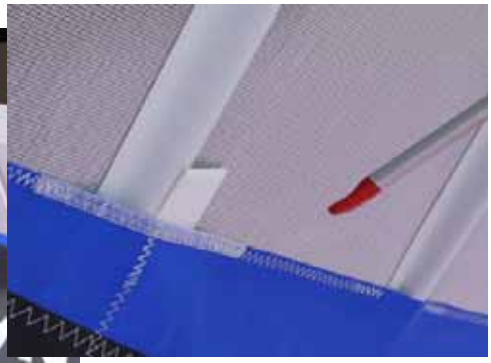
6

7



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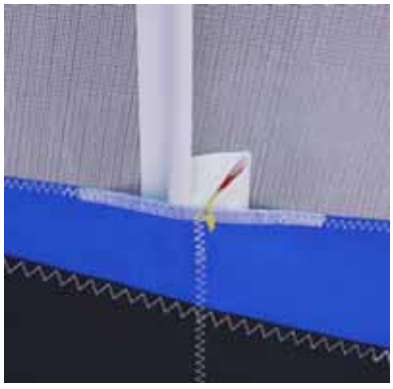


9

10

Adjustments – Hang Bracket Position :

Hang Bracket Position: there are 4 hang bracket positions:

- The wing becomes faster « brisk » by moving the wing hitching cubes forward. In flight, the control bar, hands free (neutral bar position), will tend to move back from 3 to 5 centimeters per adjustment step. Position 4 (closest to the front) is the fastest. While parked, the control bar rests against the pilot seat.

- The wing becomes slower, more « placid» by moving the wing hitching cubes backwards. In flight, the control bar, hands free (neutral bar position), will tend to move forwards from 3 to 5 centimeters per adjustment step. Position 1 (closest the rear), is the most sedate. While parked, the control bar rest against the wing stop on the top of the mast/pylon.

- Two sets of horizontally drilled holes, spaced at 28 mm centers, allow 2 hang positions, positions 1 and 3. The other two hang positions are obtained (2 and 4) by turning the two keel blocking rings 90°. The two nylon blocking rings restrict the forward/aft movement of the hitching cubes. The blocking ring drill holes are spaced at 14 mm centres. The M6 Nylock self-locking nuts MUST be changed after each use.

- Each position change will increase or decrease the “hands free” speed by 5 km/h to 7 km/h.

- **Position n° 2 is the standard position** (i.e. the position where roll and pitch is most consistent.)

Address

- It is not recommend that the Aircraft be flown at MTOW in position n°1, because the ‘hands free’ speed will be very close to the wing’s stall speed. Control deflections must be subtle. The effort required to pull the control bar in will be more significant than in hang position n°2.

- At MTOW in position n°4, full front, the effort required to push the control bar out will be more significant than in position of centering n°2. This effort MUST especially be taken into account during takeoff and landing.

Washout: the wing tip assembly is restrained using a screw. This adjustment is carried out during the wing flight tests before delivery. It does not have to be changed.

Tension: to correct a slight tendency of the wing to fly to the right or the left in flight, it is only necessary to modify the tension of the shock cord of the upper-surface wing battens. Work on the first 8 battens from the keel, by 2 battens at a time, conduct a flight test after each batten re-tension.

- Tighten the inside wing (the wing which is lower in a turn).

- Loosen the outside wing (the wing which is higher in a turn)

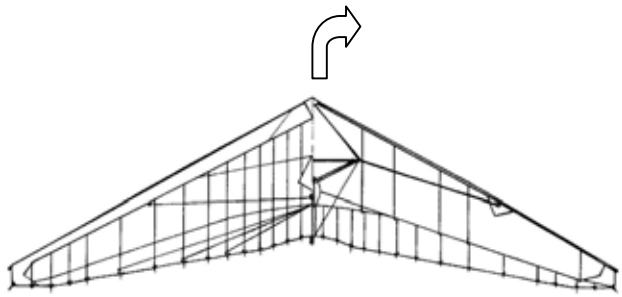
Tightening the shock-cords causes the batten to compress, which increase the thickness of the wing profile, increasing lift and therefore correcting the tendency to turn.

The tension of the shock-cords of the three last (outboard) upper surface battens, as well as the batten at the wing tip (thicker cord), must be tight and identical on both the right and the left. (CF Vibration).

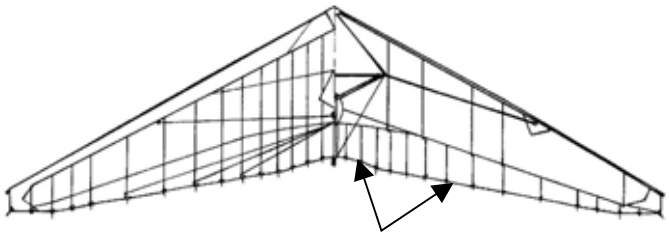
Tension adjustments to the end of the leading edges (CHC 6 Screw) must be carried out identically on both the right and on the left, at scheduled maintenance times (CF section 4 –01).
Note: the influence this these adjustments on flight symmetry is unimportant.

Non-Symmetrical Flight: correction example

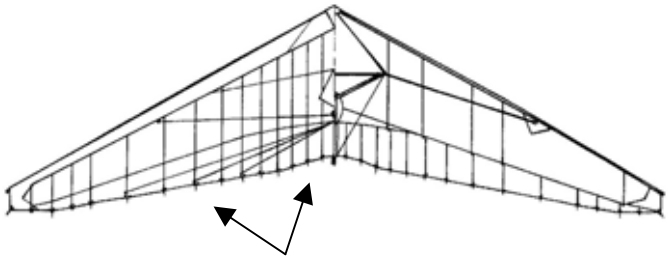
If your wing tends to fly to the right →



You could tighten the shock cord on this side →



or you could slacken the shock cord on this side →



Vibration: the appearance, at high speed, of a vibration of the wing trailing edges is a result of insufficient tension on the shock cord of the battens where the vibration occurs.

Modification: No modification should be undertaken on the wing. The batten profile (curve) should not have to be modified.

PREFLIGHT INSPECTION: A Pre-flight inspection must be done before each flight, without haste and methodically.

Any Microlight (ULM) Flight Training Course teaches that the beginning of Flight Safety is a good and thorough PREFLIGHT. You must apply this teaching.

Note: the cables should be checked by sliding your hand along them; also turn the swaged cable end hearts to detect signs of wear.

- Start at the nose of the wing.
- Raise the nose cap and check the security of the connection of the upper and lower cables
- Verify the security of the tension lever, the pit pin and its safety cap.
- Replace the nose cap.
- Move towards the end of the wing sliding you hand along the leading edge to check that it is not deformed, and that the leading edge fabric does not show any trace of impact, of tears or non-standard wear. **In the event of abnormal wear or of impact marks, the tubes of leading edge MUST BE CHECKED. The wing MUST be disassembled.**
- Check the sail is securely fastened at the wingtip (2 countersunk M6 bolts + 1 CHC 6 bolt which is protected by a cap rubber)
- Open the hatch at the wing tip and verify that the washout tube/dive stick is correctly inserted in the leading edge tube then immediately close the hatch again
- Walking towards the keel and visually check the batten position and the shock cord (5).
- Open then close under-surface hatch to verify the condition of the leading edge / cross spar connection, upper and lower side cables, the protection.(9)
- Check the state of the luff cables et their position on the trailing edge and at the head of mast. The larger diameter end of the hook of the luff lines should be downwards (3).
- Check that no cables are entangled or around the mast.
- At the back of the keel, check that the upper cable and the lower cables, the two cross spar tensioning cables, the security and the position of the tensioning lever, the security of the pit pin and the safety cap (2),
- Check the airworthy condition of the keel pocket of skittle and the safety strap
- Check that the mast is properly seated, positioned in the middle of the 2 cross spar tensioning cables.

Note : the right cable is lower than the left.

- Slide your hand along the lower rear stay cables to the control bar
- Check the control bar knuckles and their airworthiness
- Slide your hand along the lower front stay cables to the nose of the wing
- Check the other wing in an identical manner.

- Check the control frame side tubes.
-
- Check that the upper surface retension strap, in front of the top of the control frame, is slipped between the fabric of the under-surface and keel tube. Only this section of the strap will be visible.

- Check the state of the cross spar safety strap on the keel.

- Verify the base/wing connection (hang bracket) (CF MAUT – EN – of Airframe)

Wing Use

Pitch : when the pilot pushes on the control bar, it raises the nose of the wing what increases the incidence and involves a reduction in speed. When the pilot draws the control bar towards them self, the nose of the wing lowers, which decreases the angle of incidence and increases speed.

Roll: when the pilot pushes the control bar laterally, it moves the airframe under the wing, initiating a rolling movement (Control Bar of operated towards the right → centre of gravity moved towards the left => roll towards the left).

Yaw : the yaw is induced by the roll action caused by the pilot's roll input. When the aircraft is placed in a turn a light thorough progressive increase in pitch must be initiated. (The control bar pushed out by approximately to 5 to 8 cm), in order to balance the turn. An increase in engine power is necessary to maintain the altitude. The increase in pitch and engine power will be more pronounced as the angle of bank of the turn increases.

Reminder: Angle of Bank of 60° increases the load factor to 2 g

Takeoff : the wing held horizontal with a very slight pitch angle. When airspeed reaches 50 km/h, increase the angle of incidence of the wing gradually. As soon as the wheels leave the ground, draw the control bar back (towards the pilot) in order to preserve a trajectory parallel with the runway. Let the Microlight (ULM) accelerate up to 80 km/h before climbing out. The climb out airspeed should not be lower than 75 km/h. When entering Straight and Level flight, power reduction should be progressive. Avoid any brutal reduction in power or engine shutdowns whilst on climb out: the alteration of course will be a function of the pitch of the aircraft.

Reminder: pitch maximum + / – 45°

Cruise: bar neutral, the wing flies at a speed which is a function of the hang point on the keel, weight in flight and of the state of the air (CF Hang-Bracket Positioin section 3-03 as well as the wing Test Form). The VNE is fixed at 160 km/h. The manoeuvring speed or in turbulent air MUST not exceed 110 km/h.

Landing: the approach should take place with an idling engine, at a speed equal to 1.3 the VSO, approximately 85 km/h. as the ground approaches push the control bar incrementally forward to decrease speed by increasing the angle of incidence of the wing. The wheels will touch down at less that 65 km/h. The wind conditions (gradient), turbulence, altitude, the temperature (variation in temperature), the load, are some of the many factors which will lead the pilot to increase the approach speed.

Short takeoffs and landings: The techniques are overall identical to that which is explained above. On takeoff, apply maximum power before releasing the brakes then gradually increase pitch until at maximum.

With the landing the approach speed will be reduced and the round-off begun earlier in order to touch the aft wheels in a full pitch-up position, at the stalling speed. Pull the control bar in to the maximum, while decelerating; which will make it possible to benefit from aerodynamic braking.

Stalls : The stall will be all the more easy to reach when the hang position of the wing is in back position and with significant load. The onset of a stall appears as an intensification of the effort required to push the control bar out and some jolts/bumps. It is enough to decrease the pressure on the control bar so that the wing gains airspeed. The loss of altitude will be limited to a few tens of meters.
If the bar pressure is maintained throughout the stall, the stall can become a more pronounced manoeuvre. A non-symmetrical (wing drop left or right) is possible.

⇨ All stall practice should be carried out with a minimum of 1500 ft altitude (AGL), in a gentle descent, engine power reduced, with a gradual and controlled reduction in speed, with a simultaneous and progressive outward pressure on the control bar.

Violently pulling the control bar towards oneself during a stall or attempting an aggravated stall during a climb increases the risk of tumbling, this is due to the poor pitch damping effect of the weight shift delta wings.
NOTE: It is PROHIBITED to undertake a series of connected stalls.

Load: Any increase of load will increase the effort required to pilot the aircraft, as well as an increase in stalling speed. The control bar neutral position will be slightly forward.

Rain, dew, frost, ice: any layer water on the leading edge and the upper wing surface disturbs the air flow.
⊗ **The stall angle of the wing will be decreased. The associated stall speed will increase by approximately 10 km/h. If you wipe the leading edges before the flight, wipe both sides of the wing (right and left).**

Strong wind: when taxiing into wind hold the wing flat, control bar drawn slightly towards the pilot. When taxiing with the wind: push the control bar forwards in order to avoiding having the aircraft being blown over. Crosswind: lower the into-wind wing slightly. Grip the control bar firmly: it may be necessary to exert significant force to maintain control of the wing.

Tie-down:

- Gentle breeze: it is possible to leave the wing on the airframe, lowering a wing into the wind, or face the Microlight, with the control bar secured to the seat, into wind (the angle of attack will therefore be nil). The control bar is secured by fastening the control bar against the front seat using the seatbelt.
- Moderate wind: it is preferable that the wing be lowered and to place the control bar on the ground close to the front wheel. (Nil angle of attack). The wing should be secured to the ground at both ends of the keel and by the outside cross spars, which are accessible through the hatches in the wing's under-surface. The control bar should be secured to the the nose wheel, and the keel behind the mast/pylon.
- In the event of seriously degraded weather conditions: the wing should be lowered to the ground, facing into wind, battens removed, sail de-tensioned. Weighted down or firmly secured to the ground.

SECTION 4 / MAINTENANCE - GUARANTEES

Maintenance

⊗ **Caution: the two outer sections of the leading edge are not identical. They must be attached to their correct leading edge tube. If they are reversed it will modify the angle of the washout tubes ("dive sticks"), possibly making the wing uncontrollable.**

Transport: one of the principal causes of wear on the wings is vehicle transport. To minimize this risk, use the provided protective padding during the disassembly and folding of the wing, use a ladder (or similar) sufficiently padded, and avoid having the wing overhang the ends.

Maintenance: cleaning is done with mild soap and water.

- Regularly wash the wing in fresh water if you fly at the seaside. In this case the frequency of the periodic maintenance must be increased.
- In tropical regions, it can be useful to clean with a liquid fungicide.
  After cleaning, the wing must be allowed to dry. It MUST NEVER placed in its cover when it is wet.
- Glue spots, of an old registration marking, for example, can be effectively removed by using a rag soaked in trichloroethylene.

Storage: in a dry dark area, or safe from the light (heat and UV), after making sure that the the wing is completely dry.

Ageing: exposure to ultraviolet radiation emitted by the sun and reflected by the moon, cause the ageing of the fabric and the seams. As far as possible, park your aircraft under shelter, out of the sun, between flights.
Four upper-surface fabric samples, composed of two fabric parts joined by a seam, are stitched into the trailing edge, on both sides of the center of the wing. These bands can be cut out, if necessary, during periodic maintenance in order to carry out resistance tests.

Periodic Checks:

Every 50 hours you must visually check:

- The luff lines, the mast attachment hook and the trailing edge connections
- All wing cables, the stainless swages and hearts
- The nose plates
- The upper-surface and keel-pocket (center of the wing) seams
- All articulation and attaching bolts
- The batten shock cord
- The tension (very firm) of the outboard battens

After any violent or « heavy » landing, it is imperative that you check:

- The nose plates
- ⇨ the straightness of the leading edges (a disassembly is necessary)
- The straightness of the keel
- The straightness of the control frame riser tubes
- The straightness of the control bar,
- The straightness of the cross spars
- The profile of the battens (between right side and left side)
- The nuts and bolts
- The absence of any deformation thimble hearts of all the cables
- The seams of the sail, in particular at the center of the wing
- The hang assembly

Revision:
The complete revision wing is MANDATORY every 200 hours of flight or every 2 years.

The side cables * MUST be changed every 400 hours or 6 years.
The revision is carried out by a complete disassembling of the wing structure, the replacement of all nuts and bolts *, a check of all the different components: straightness of the tubes, the state of the cables, checking of the batten profiles, etc.

*** Nuts, bolts, cables, tubes, plates, knuckles, sail, MUST be replaced by original parts sold by DTA SARL, and refitted in an identical manner.**

Any used NYLOCK self-locking nut must be replaced and be fitted using standard Loctite.

Guarantee

The guarantee of DTA SARL on the wing is limited to a duration of one (1) year starting from the date on the commercial invoice. During the delivery, the delivery documentation must be filled out and signed by the customer.

The guarantee only applies if the use of the aircraft conforms to the instructions stated in the User's manuals or any technical document stating the conditions of use of the aircraft given to the purchaser.

The breaking of any regulatory provisions of the Civil Aviation Code or any related legislation of the country of registration of the aircraft, having as a consequence an accident or incident, exonerates DTA SARL (a limited liability company) of any guarantee with respect to the operator/owner/pilot infringing said Civil Aviation regulations or provisions.

Normal wear of renewable components is not included in any guarantee.

Any modification of the aircraft by the purchaser, as well as the replacement of parts by parts not being original, will involve the forfeiture of the guarantee by DTA SARL unless the modification has been approved, in writing, by DTA SARL.

The guarantee is limited to the replacement or repair in the workshops of DTA SARL or by a workshop approved by DTA SARL.

The guarantee covering the engine and its accessories, the propeller, the accessories not built by DTA SARL, will be guaranteed by the conditions and limits fixed by the manufacturers of those products.

The obligations of DTA limited liability companies stated above constitute the limit of the granted guarantees.

SECTION 5 / ADDITIONAL DOCUMENTS

Nomenclature

Item	Description	Item	Description
	Cables		**Bolts, shackle, carabinier**
E1030	CROSS SPAR WIRES 450 (2)	E7013	25 MM LENGHT Ø 6 STAINLESS PIN CRS CHANNEL
E1031	CROSS SPAR WIRES 450	E7014	W STAINLESS STEEL TENSIONNING SHACKLE
E1032	UPPER FRONT WIRE 450	E7021	RUBBER EXTENSIBLE SPRING FOR WHASHOUT TUBE
E1033	UPPER REAR WIRE 450	E7025	KINGPOST CARABINIER
E1034	SHORT LUFF LINE 450	E7026	LM SHORT STAINLESS STEEL SHACKLE
E1035	MIDDLE LUFF LINE 450	E7029	LM MIDDLE STAINLESS STEEL SHACKLE
E1036	LONG LUFF LINE 450	E7040	22 MM LENGHT STAINLESS STEEL PUSH-PIN
E1037	LOWER FRONT WIRE 450	E7160	FHC 8X100/12 CRS / CRS JUNCTION
E1038	FRONT LOWER SIDE WIRE 450	E7161	FHC 6X78/9 REAR NOS PLATE/KEEL TUBE
E1039	REAR LOWER SIDE WIRE 450	E7162	FHC 6X76/10 FRONT NOS PLATE / KEEL TUBE
E1159	LOWER REAR WIRES 450 (2)	E7163	FHC 6X85/11 OUTSIDE CROSS SPAR SLEEVE
E1194	CROSS SPAR WIRE 450	E7164	FHC 6X65/25 TENSIONNING CHANNEL / KEEL TUBE
	Tubes	E7165	FHC 6X70/12 CHANNEL/KEEL/UPPER REAR WIRE
E2080	CONTROL FRAME BASE TUBE	E7166	FHC 6X70/25 SAIL / TIP LEADING EDGE
E2091	OUTSIDE KEEL SLEEVE	E7167	CHC 6X42/10 CTR KNUCKLE/LOWER SIDE WIRE
E2092	KEEL 450	E7170	CHC 8X98/13 CROSS SPAR PLATE
E2093	LEFT CROSS SPAR 450	E7171	CHC 8X78/12 NOSE PLATE / LEADING EDGE
E2094	RIGHT CROSS SPAR 450	E7172	CHC 6X34/11 MANILLE / COL DE CIGNE NEZ
E2095	RIGHT LEADING EDGE FRONT SECTION 450	E7173	CHC 6X73/12 L.E / CROSS SPAR CHANNEL
E2096	LEFT LEADING EDGE FRONT SECTION 450	E7174	CHC 10X80/24 RCROSS SPAR / LEADING EDGE JOINT
E2097	TIP LEADING EDGE 450	E7175	CHC 6X38/13 SHACKLE / CROSS SPAR LOCK
E2100	WHASHOUT TUBE 450	E7176	CHC 6X80/25 PLASTIC CENTERING RING / KEEL
E2195	RIGHT LEADING EDGE REAR SECTION 450	E7177	CHC 6X80/12 CONTROL FRAME CHANNEL / KEEL
E2196	LEFT LEADING EDGE REAR SECTION 450	E7178	CHC 6X37/8 CONTROL FRAME SIDE / UPPER KNUCKLE
E3210	TIP TENSIONNING RIB	E7179	CHC 10X90/14 CTR FRAME / CTR FRAME CHANNEL
E3211	LOWER RIB N°	E7180	CHC 8X38/12 CTR FRAME BASE / LOWER KNUCKLE
E3213	NOSE RIB	E7181	CHC 8X38/12P. CTR FRAME BASE / LOWER KNUCKLE
E3214	UPPER RIB N°	E7182	CHC 8X62/12 CTR FRAME SIDE / BASE TUBE KNUCKLE
E4090	KINGPOST 450	E7183	CHC 6x57/13 CTR FRAME SIDE / LOWER KNUCKLE
E4101	CONTROL FRAME SIDE	E7184	CHC 6X80/36 TIP LEADING EDGE TENSIONNING
	Hard ware		**Sail, strap, plastic parts**
E5121	CROSS SPAR PLATE	E8043	CROSS SPAR SAFETY STRAP
E5122	SPAR PLATE COUNTERSINK	E8218	NOSE CONE
E5125	CROSS SPAR TENSIONNING CHANNEL	E8221	JOINT CROSS SPAR PROTECTIVE FABRIC
E5126	NOSE PLATE 450	E8222	JOINT LEADING EDGE / CROSS SPAR PROTECTIVE
E5128	SHORT LOCK	E8225	CROSS SPAR / KEEL STRAP
E5131	LOWER FRONT WIRES CHANNEL	E8232	SAIL 450
E5134	CONTROL FRAME CHANNEL	E8601	LEADING EDGE RODHOID
E5137	LEADING EDGE / CROSS SPAR CHANNEL	E9061	PLASTIC KINGPOST UPPER
E6103	CONTROL FRAME SIDE LOWER KNUCKLE 450	E9062	PLASTIC KINGPOST LOWER
E6130	ALUMINIUM WING TIP PLUG	E9064	CONTROL FRAME SIDE FITTING
E6132	25X10/28 CONTROL FRAME CHANNEL SPACER	E9065	RUBBER CONTROL FRAME BASE TUBE SHOE
E6133	10X8/7 LOWER FRONT / REAR WIRES SPACER	E9066	HANG BLOCK
E6135	CONTROL FRAME SIDE UPPER KNUCKLE	E9067	NEVERKING
E6136	ALUMINIUM 10/50 L.E / CRS SADDLE WASHER	E9072	TUBE Ø 25 MM PLASTIC SADDLE WASHER
E6138	25X10/23.7 L.E / CRS CHANNEL SPACER	E9075	TUBE Ø 48 MM WRAPING END PLUG
E6139	10X8/48 CRS/CRS SPACER	E9079	TUBE Ø 50 MM PLASTIC SADDLE WASHER
E6141	CONTROL FRAME BASE TUBE KNUCKLE 450	E9102	PLASTIC CENTERING RING
		F0186	CONTROL FRAME BASE TUBE SLEEVE

Maintenance Log

Date	Hours	Operations carried out	Sign