Operating manual ATOS VX

Conditions: 22.06.2004

Operating manual

Only read - then start!

Congratulate and cordially welcomely in the ATOS - family! With the ATOS VX you have in high-quality aircraft acquired. So that you your ATOS VX the expected fun is prepared and you above all surely on the way, it is absolutely necessary to study the following manual attentively. For possibly arising difficulties and problems your A. stands for you.I.R. - Team or the ATOS Servicepoint at any time with advice and act to the side, next lain.

Your A.I.R.- Team

Conditions: 06/04

1. Transport

- **with the car**

The carbon fiber cross-beam is sensitive to punctual loads. As edition for autotransport a larger padded surface should serve. This knows z. B. with leader and several padded rungs to be reached. With only two bearing surfaces the cross-beam on a length of at least ever should approx. 20 cm padded rest upon.
The clamping belts should being tightened only as firmly as necessarily and be put better next to each other two belts instead of one above the other, in order to get a larger bearing surface also here. With larger distances possibly. additionally pad. (Pads are available with AIR as accessories.)
On wet roads and particularly with salt on the roads a waterproof packsack is recommended. Otherwise the ATOS VX should be dried as fast as possible, in order to avoid damp stains at the sail and corrosion of the metal parts. Also the cross-beams and ribs can take up, if they are wet longer time, small quantities, humidity and should as soon as as possible are dried.

- **with mountain railways**

To transport with mountain railways in principle the same applies. Punctual loads on the cross-beam should be avoided. Here are z. B. Touch a foam mat useful, between the packsack and z. B. hard metal bases to be put to be able. As accessories a waterproof packsack is available, which contains an appropriate herausnehmbare upholstery, which can be geklettet in the case of transport from the outside to the desired places to the packsack (also to the standard packsack) and be stowed away during the flight in the cross-beam.

2. Structure guidance

1.) The ATOS should not be put directly on stones, since there can be otherwise pressure points in the cross-beam. If this is not to be avoided, then it is advisable to put the ATOS down at a concave land form so that he not in a place in the center separate in front and in the back rests upon. The rear end gets thereby less load, there it is easier and the front is less sensitive to pressure points. With very rough area z can. B. the front part also on the harness to be put.

2.) , Do not leave here the tax handles connect basis with the tax handles inadvertently to fall. Thus could be damaged sails, cross-beam or the rib 1. For installing the basis best behind the tax handle stand.

3.) ATOS VX on the trapezoid place. **Importantly with uneven area**: The wing must stand stably on the trapezoid. If it should tilt, above all the tax handle connection the cross-beam can be damaged above or also.



Picture with Atos standard trapezoid (Atos Airstream coal trapezoid no front Unterverspannung possesses)

4.) All in the cross-beam stowed parts away take out and on the soil put best in such a way that they are reached, if one stands at the cross-beam end. (With the further structure one is behind the wing)

5.) The two construction units of the nose fitting fold up to the right and left (see picture right). **Attention**: If this should be forgotten, so the cross-beam can with the Auseinanderfalten of the wings are damaged.

6.) Wings so far spread to the keel end without extension at the soil line up.

7.) Sail rear edge with the rings at the keel hang up. The keel can be shifted in addition to the right and left. **Attention**: Not too far, since otherwise the flaps can be damaged. The flaps must be before hanging up the rings behind the tax handle (see picture below).

8.) Zipper of the upper gel close.

9.) Nose fitting stretch. In addition only the fitting hook, afterwards with the help of keel Kiel stretch and with the Quick pin behind the aluminum fork secure. Importantly: Keel Kiel must engage with the drilling at the lever. When stretching the pipe must be well led . Best this goes, if one stands behind the wing. **Safety device** do not forget pin at the Quick!

10.) Keel Kiel put in. (With tail unit flown should the tail unit already at the keel end be installed.)

11.) Wing tip edge pipe with rib 9 up to **Notice** push in. Open in addition the Klettverschluss, at sail rear edge, between rib 8 and 9 and sails so far back-invert that the cross-beam end is free.
Importantly: Sail or cross-beam can be damaged, if the wing tip edge is not put in up to the notice. The carbon reinforcement concisely to the rib 9 on the wing tip edge pipe Ankletten.

12.) Wing tip edge staff up to the notice put in. Open in addition Klettverschluss between rib 9 and wing tip edge tension adjuster. The slot at the end of the wing tip edge staff, must stand in approximately parallel to the sail rear edge, in order to be able to hang up the wing tip edge tension adjuster here.

13.) Wing tip edge stretch.

14.) Ribs of the wing tip edge beginning stretch. R9, R8 then the individual Zwischenrippe, R7… after stretching rib 6 the spoiler by means of rubber line with the spoiler lever connect.(Tap: Klettverschluss at the sail rear edge only as far as necessarily open and afterwards again close.)
Attention: The rib clamping lever completely into the associated slot insert and only then with a hand **only** turn with thumbs and index fingers to a complete stop. Not with the second hand on the gilled pipe pull or press (danger of fracture!). One should have problems when stretching can with the second hand when stretching through pressures on the rib end be helped. (Still more easily this goes with rib clamping fixture, which is put on for extension on the rib tension adjuster. This development aid is optionally available). The rib tension adjuster must engage noticeably and may not also not too with difficulty go. If necessary, can be solved for adjusting the tension of the Klettverschluss and again be angeklettet with appropriate disalignment. Placing behind is particularly after approximately. the first 10 flying hours or in extreme weather (damp and cold or drying and hot) necessarily. Particularly thoroughly the rib No. should. 6, at which the spoiler is linked, in this connection to be examined. The ribs 7 and 8 should be as firmly as possible strained thereby the sail also in the high-speed flight well lie.
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15.) Spoiler with safeguard rubber fasten to the spoiler lever

16.) That curve-fold-hurry with the pins at the curving flaps hang up.

17.) Front Unterverspannung hang up and secure. Importantly: The steering rope hang up only if the sail at rib is already strained 6. The spoiler lever could be expenditure-steered otherwise with course at the steering rope and be damaged thus cross-beam or sail.

18.) Fold-hurry into the clamp at the basis contrive.

19.) Lower zipper close.

20.) Nose bullet ankletten. Importantly: Klett must be concise with counterpart.

Check:

Importantly: Lead the pre-flight check after each structure extremely conscientiously through! Even if only one point of check is forgotten, can have this dangerous consequences!
Tap to the proceeding: Best from the nose the aircraft once completely circle. Thus nothing can be forgotten.

1.) Quick pin safety device at the nose fitting examine.
2.) Quick pin' s to trapezoid-hit a corner as well as for the attachment of the Unterverspannung must be so far put in that all balls are visible. The pushbutton may not be imprinted! Particularly dirt or frozen water can lead to the fact that the Quick does not lock pin.
3.) Connecting rubber spoiler lever - spoilers hung up?
4.) Spoiler levers for operation smoothness examine.
5.) Sails between rib 5 and rib 6 open, in order to be able to see from the sail rear edge into the wing. Examine thereby whether the steering rope runs freely. (**Importantly:** The steering rope must run unhindered along the cross-beam. It would know z. B. around a rib bolted its.)
6.) Visual check whether the steering rope wear in the range of the pulleys shows.
7.) Zipper at the sail lower surface open and process of spoiler ILS and interlinking cable control. It is to be made certain that do not spoiler-hurry with the interlinking cable is rotated, and no wear of the ropes or roles are visible. Zipper again close. Particularly the circulation rope should be examined carefully for broken braids. Importantly: With only a broken braid the rope must be exchanged!
8.) Flap in landing setting move and check whether the linking rope wear shows. The rope must run freely in the pulley.
9.) Also the resetting rope, that from the keel comes, for wear check.
10.) Right and left flap should easily pulled the same excursion have and in the 0° position (flaps not deflected) together not push.

- **Disassembly**

1.) Steering rope notices.
2.) Flaps notices.
3.) Ribs of rib 1 beginning open. Rib 8 at cross-beam fold. In addition rib 7 must be expenditure-steered to the keel. Subsequently, fold rib 7 again direction wing tip edge.
4.) Wing tip edge and sticking on rib of the cross-beam take out.
5.) Sails in such a way put that smaller on large spoiler to lie comes. Sleeve attach. Wing tip edge levers thereby in the sail stow away.
6.) Keel Kiel (with tail unit) take out.
7.) Nose bullet remove and nose fitting carefully ease. **Attention**: The keel end must be distant, otherwise the flaps can be damaged.
8.) Upper and lower zipper open. Slidegate valves the sail rear edge withdraw. Note: If this is forgotten, the slidegate valve can be gotten jammed between Kiel and cross-beam.
9.) Sail rear edge with the rings at the keel notices. The keel can be shifted in addition to the right and left. Note: Not too far, since otherwise the flaps can be damaged.
10.) Flaps before the tax handle put.
11.) Zipper of the upper gel turn over, so that it cannot be gotten jammed between cross-beam and Kiel.
12.) Schützer for trapezoid head and tax handles at the keel attach.
13.) Cross-beams together fold. (**Attention**: Make sure before again that the steering rope is put out. Otherwise the spoiler lever folds up and can damage the sail or the cross-beam.)
14.) Separate parts how: Sticking on rib, wing tip edge, keel Kiel and nose spur in the right cross-beam side stow away (cross-beam with interior bag).
15.) Packsack from the front beginning over the cross-beams pack.
16.) Cross-beam turn and on the soil put. In addition with a hand into the cross-beam seize and with the other one to the opposite trapezoid side pipe. (Note: To soft underground pay attention. In stony area the front part of the cross-beam can be put also on the harness.)

17.) Basis in the left cross-beam stow away (cross-beam without interior bag).
18.) Flaps and spoilers flat on the cross-beam put. White side against white side. Note: Spoiler should not project laterally over the cross-beam. The small spoiler must lie on the large one. If this is badly possible, then is possibly. the sail of the wing tip edge range too far and too tautly struck around the cross-beam. Importantly.Before close zipper absolutely situation of the spoilers examine!
19.) Nose bullet on the flaps put. Those carbon-in-corrodes in the wing external area at the cross-beams along also into the sleeve pushes. The profile outline pay attention, top side of the employment to top side cross-beam. Zipper of the packsack close.

1. Flight characteristics

• Start

The ATOS lies statically easily tail-annoyingly on the shoulders. After the first steps it stabilizes however immediately into angle of incidence favorable for taking off. **With the first steps the nose must be actively down held however. In principle, D rather too flat stop the angle of incidence as too steep. h. more easily course at the tax handle.**
With small angle of incidence the Atos is less cross-wind susceptible. Besides the wing ends are clearly further from the soil and the spoilers with the first steps are better flowed against.
Before the first flight it is of advantage to try this out on an even surface. The wing can be stabilized by the strong spoiler effectiveness also with böigen conditions. Also this should be practiced with appropriate wind conditions on an even meadow.
As flap position for the start a flap deflection of approx. has itself. 15° works satisfactorily.
The actual starting procedure corresponds to that of a conventional kite in the substantial one.

• Flight

The ATOS is steered only by Gewichtsverlagerung. The control loads for in and recovery of a curve are however clearly smaller than with a hanging glider. The ATOS possesses a high stability around all axles. Therefore also the tax movements can be accordingly gently implemented . Most simply this goes, if one leaves the body so long in the laterally expenditure-steered position, until the desired inclination is reached and takes then the neutral position. Impulse steering does not point advantages with the agility and has by full-scales of the spoiler a high flow resistance to the consequence. With the excursion of the spoiler a putting up moment develops, therefore must **particularly with the curve change to the necessary Fluggeschwindigkei**t to be respected. During operation of the spoiler should be easily pulled, in order not to fly inadvertently too slowly.
The spoilers have a high yaw moment with over 50% excursion. This is of advantage with fast changes of direction, like z. B. Encircle into the thermionics. In the high-speed flight a full-scale of the spoilers leads to large yaw angles. Particularly during the flight in turbulences a greed oscillation could be induced here by mutual full-scales, which fades away immediately however without tax excursions. Speeds, at which with smaller excursions should be flown, are >65 km/h with flap position 70°, >75 km/h with flap position 0 and 15° (basis position for instance at the belly).
Around the trim speeds and maximum speed (90km/h) to control should **absolutely with an airspeed indicator to be flown.**
The ATOS VX is not suitable for wobbling. Here the structure can be overloaded!
Remedy:
With flow separation beginning in neutral position bring basis or continue to pull to security somewhat. Depending upon body size flow separation

begins, if the basis is pushed before the head. When cranking in calm air the basis is in a position for instance between chin and nose.

- **Thermalling**

When cranking a 15° flap position worked satisfactorily by a high agility and a small minimum airspeed. With spacious or torn thermionics is a smaller flap deflection with smaller roll agility of advantage, since here best sinking is reached . With turbulent air position should be flown the wing more easily with the appropriate, for the turbulence to be forced here there, passage flown can with 5°.
At speeds over 65 km/h the sliding achievement with the 5° flap position is better than with another flap position. Best sliding becomes with this flap position with approx. 50 - 55 m/h reaches. Only off approx. the sliding achievement decreases 60 km/h somewhat, so that it recommends itself not to fly when easy sinking more slowly.

- **Landing**

For landing the flap should have deflected always fully, since here the smallest stable speed is reached and the ATOS VX best „to express “leaves itself.
The adjustment of the glide path is to be obtained most simply also fully deflected flap under variation of the airspeed. Particularly with the first landings it is advisable to bring and a long final part fly the flap in over 50m height into the landing setting. The period for discharging is large. For the indulgence of the wing tip edges it recommends to express itself however late and strongly, in order to prevent way pastes.
Possible errors: To fast approach in combination with large tax excursions and craving. Adjust the flap deflection during the Landevolte without view to the focused set-up point.
To small airspeed when embracing at the tax handle. Is important, after embracing to be able to pull not more highly than 1/3 of the tax handle length to seize over still sufficiently. After embracing should be slipped with the hands not further as up to the tax handle center upward. Absolutely seize carbon fiber trapezoid below the break section with the Airstream!
Importantly: Around fold-hurry reliably to lock must the rope after stretching over the basis be thrown in front, since it cannot separate in this position also with inadvertent course at the rope.

- **Best Glide**

The ATOS VX will glide best with a flap position by 15°, since in this position the speed can be better controlled than with smaller flap deflection. With this flap position can be also more slowly flown than with smaller flap deflection. This affects with head wind favorably the releasing height and facilitates the start. During the Schlepps is absolute on sufficient travel to respected (basis approx. on addendum). Too slowly fly means power loss and **less security reserve!**

- ***More***

Also with the UL drag should with zero wind because of the smaller stable speed with 15°Klappe be started. Otherwise is rather a smaller flap position (5°) of advantage, since thereby the trim speed can be adapted to the speed of the UL `s, and the directional stability of the ATOS continues to increase still. Compared with a hanging glider it can occur rather that the basis must be pressed also times , in order not to fly too fast.
Importantly: It must be absolutely avoided to fly more deeply than the UL since the ATOS abnickt when flying into the descending wind of the UL' s very strongly!

General to drag

- Rope tear can be landed also with flap in Startstellung well, there usually sufficiently expenditure guidance distance present is. Absolutely first on it it respects that sufficiently travel is present and remainder-hurry thrown off becomes.

- **Attitude the trim speed**

The optimal trim speed lies between the speed of smallest sinking and the speed of best sliding. With 0° flap position should the trim speed between approx. 45 and 50 km/h lie. That at slow trim speed the danger exists, by only low pressing the equipment is to be considered to stables (see also under flight characteristics/ flight). In order with the equipment to make itself familiar is therefore first a higher trim speed recommended.
The packsack in the wing leading edge transported increases the trim speed over approx. 5 km/h. This corresponds to a change of the hanging up position of 10-15mm forward.
Solve and to new place fasten Klett for changing the trim. Importantly: Never more than approx. 10mm with a change adjust. The Klettband should itself after repeated new Ankletten easily solve are absolutely a new suspension and a new Klettverschluss to be used.

4. Characteristics for starting and flying as Doppelsitzer

Fundamental:

The Atos VX is sketched and outstanding for it been suitable as Doppelsitzer. Flies too secondly however a special technology, care in the preparation, choice of the takeoff and landing strip requires and a perfect controls the equipment apart from the special training.

Foot start

Not everywhere where alone can be started, can also with the Doppelsitzer are started. This has two reasons. The surface loading and thus the taking off speed are usually higher than z. B. those of the Atos V in the solo enterprise and substantially high as those of the VX in the solo enterprise. This has the consequence that only one launch site is applicable that is very steep and sufficiently head wind present is. The flatter the area is the stronger, should be the wind. A strong laminar wind is ideal like it at the coast or with dynamic flies in the low mountain range the case often is.
The second reason is that pilot and passenger obstruct themselves always more or less mutually when starting. Around starting and the course of motion and Timing one on the other to co-ordinate nevertheless as without reservation as possible to be able common run exercises should be accomplished before. The hanging up heights must be one on the other co-ordinated. Worked satisfactorily if the pilot as deeply as possible hangs and the passenger approx. 15-20cm more highly in an own hanging up loop fastened to the keel. **Attention**: Pilot and passenger in the same suspension hung up is reduced the freedom of movement.
The takeoff run should be begun by the passenger with the right and by the pilot at the same time with the left leg or in reverse. Thus by passenger and pilot standing legs with the first steps are in the same direction moved together. It is best if pilot and passenger before the start in step position waits and the feet of passenger and pilot in the center in front next to each other.
With passenger tax corrections can be accomplished during the takeoff run only limited. Therefore it is to be selected essential the start conditions in such a way that the start is steep enough, sufficiently wind present is and wind force and direction during the takeoff run only small changes.
Ex.: To the Emberger Alm can be started at the steep main starting point with ideal conditions. The upper flat starting point is unsuitable. Z are unsuitable.B. also firebreaks with no even incident flow is ensured.
While the start is on it to respected that the passenger by wrong movements not outside of the trapezoid to lies comes. Thereby steering is strongly impaired . The passenger should straighten up then as fast as possible once again over beside the pilots to come.

Flight

When steering is on it to respected that the opera body is not only shifted. Bodies always in flight direction align. With large excursions possibly. Legs outward continue to shift.
More place and tax comfort is given if the passenger over the pilot lies side by side diagonally than as.

Landing

Only on smooth underground and gemähter meadow landing. It is very important that before that put the basis on scarcely over the soil maximally one expresses. In the rule to second faster one

approaches. The expenditure guidance distance is longer thereby. On distance it should only go who sufficiently knows the area.
From standing landings to secondly we advise against. The clearance to the rausdrücken is small. And the risk of an injury must be very strongly pressed is high.

UL-dragging

In UL-dragging the launch car must be laid out for the higher load. The angle of incidence must voices (approx.12° at the keel end). And the landing flap should approx.15° deflected its. The front wheels launch car must possess a wake those the cars to stabilize without into a natural oscillation to turn out.
As break section 100kp at the side of the pilot is recommended and/or. 120kp to the Trikeseite.
A rope tear must be able to be always taken into account. D. h. even if the drag UL in a flat angle rises should at each time one level Rollstrecke with gemähter meadow or similar condition to be achieved be able.
The passenger should hold on to the pilot, so that he does not oscillate to the rear. Pilot and passenger together do not bind are necessary possible however.
After the start the trim with the flap position can be adapted depending upon airspeed
Importantly: Particularly in may no play double seat-inherit-rubbed in the control be, D. h. Moves one one Wings lower themselves downward the spoilers of a side, as soon as the spoilers at the sail must rest upon the spoilers of the other side with the excursion to then begin. This is not the case must the length of the steering rope at the spoiler lever at the rib 6 be readjusted.

Hoist-drag

Here the harness of the passenger should be connected with that of the pilot. The forces with those the passenger to in front hold must are otherwise too large. If the harnesses are not connected, the passenger oscillates to the rear and the pilot cannot fly perhaps any longer fast enough. Note: Flow separation danger!
Note: Since pilot and passenger with connected harnesses only very badly to run to be able should be started only with launch car.

5.Maintenance

The ATOS is mostly made of GRP components materials. These materials show another breaking behavior contrary to aluminum and steel. Most metallic materials permit a damage recognition due to their duktilen behavior by deformation. With dynamic loads it can lead however also here to a cracking which can be recognized with difficulty.

With GRP components materials a damage cannot be usually determined by a lasting deformation. Here other methods must be used for damage recognition, like z.B. by control of the rigidity, by cracking in places with stress concentrations of a gluing, one Delamination in the laminate or sand-yielded, (only with GRP laminate visibly to recognize with CFK among other things by rigidity control).
For these reasons should after a possible damage to critical places
(S. and.) an equipment check of a ATOS Dealer to be accomplished.
A first check by the dealer is after approximately. 200 flying hours or 2 years necessarily. Up to then it is however essential to accomplish the following maintenance work itself. Here if ambiguity should develop, contact with the manufacturer or a ATOS dealer is to be taken up.

After the roofridge flying hours the knots and thus the rope sit down acres slightly strained. The thereby developing play into the control has however NO effect on flight safety, should more however, if it more largely than approx. 20 mm for each side is, for a more direct handling at the soil and in the flight, to be placed behind.
Accordingly adjust for this the knurled thumb screw at the spoiler lever. Subsequently, the play of spoiler ILS at the trapezoid examines.
After adjusting the spoiler hurry **must** also the attitude of stopper ILS to be examined (S.and.).

- **Attitude and function of stopper ILS**

In order to keep small the loads spoiler rib and at the spoiler lever, has spoiler-hurry a notice. With full-scale of the spoilers or with a hard landing, with which the trapezoid is laterally expenditure-steered, the maximum excursion is limited by a rope connection between the steering rope and the keel.

• Attitude of stopper ILS

By course on spoiler-hurry must it possible be, the spoiler lever approx. to move 80°. In this position must stopper-hurry to be tightened.
Should stopper-hurry to be to short, then the excursion of the spoiler is limited prematurely, which affects the wheel hours negatively.
Stopper-hurry by adjusting the knots on appropriate length bring.
The maximum spoiler excursion should be controlled before each flight.
The examination takes place similarly as control of the spoiler play. The wing leading edge is raised and the trapezoid maximally to each page is expenditure-steered. With a hand it can be examined whether and when stopper-hurry is tightened.

• Exchange the spoiler hurry and the circulation rope

The spoiler hurry should approx. all 200 flying hours or after statement by wear to be exchanged immediately. The circulation rope (front Unterverspannung) **must be exchanged all 100 flying hours and be examined before each flight for wear**.

• Examine the pulleys

The pulleys are to be checked for wear. The pulleys must be low-friction and the rope may from the guidance to be brought not be able, so that blocking of the rope is laterally possible for the role (approx. all 50 flying hours control!).

• Control of the ribs and rib connections

The ribs can be examined optically and mechanically. If one tries to squeeze the gilled pipe together by hand with thumbs and index fingers easily a defective, soft place of the laminate can be determined. A further sign for a weak point is a cracking noise when loading.
Special attention is to be given also to the connections of the gilled pipes to the cross-beam.
Weak points with the rib connections can be best discovered, by upward and down loading the rib in the folded up condition at its end (approx. 50N at the rib end), in order to be able to determine so a possible cracking in the transient area to the cross-beam at the connecting plates.
Particularly carefully the rib 6, to which the spoiler lever is fastened, should be controlled.
Additional also the binding of the joint for the spoiler lever is to be examined here.
The ribs approx. all 50 flying hours or after larger loads at the soil control.

• Ribs and wing tip edge

After a landing, with which a wing end affected the soil, absolutely the wing tip edge and the outside ribs are to be controlled .

• Main pin and belt bridges

The main pins should approx. all 100 flying hours or approx. after 50 flights to be dismantled and regreased, since they serve as joint.

• D-cross-beam

The D should - cross-beam larger local loads such as z. B. by stony structure places or inappropriate transport suspended its, then these setting to damage are to be examined. Within the range of the nose this can by scanning sand-yielded with the thumbs to happen. If a serious damage should be present, then this can be determined by a soft place or by a depression.
This applies however only to the range of the nose, at which no belt and no loop connections are. The belts run above and underneath the bar as well as from the nose loop approx. 1.5m direction outerwing. A damage should have to be recognized optical or mechanical is , absolutely the next ATOS dealer for advice ask in this range whether the cross-beam must be repaired or

exchanged. The same applies also, if within this range strong mechanical loads occurred like z. B. inappropriate transport or Crash with nose tubing break and at first sight no damage to be determined could.

- **Rope and/or. Belt connections on Wing tip edge and ribs**

The tension should be to small with the structure (z. B. Fold in the sail within this range), then those know linen wing tip edge and/or. the Klettverbindungen at the ribs to be placed behind accordingly. This can be necessary before everything after the first flying hours.
Should with the up and/or. Dismantling a damaged rope coat or belt to be determined, then absolutely the rope must and/or. Belt to be exchanged. Special control requires the attachment at rib No. 6 (rib with spoiler lever) and the wing tip edge.
The Klettverbindung, with which the rib tension adjusters are fastened, diminishes after frequent adjusting in its Haftkraft and must be exchanged. This connection is suitable compared with the Klett at the sail rear edge only for few openings.

- **Rope connection sail/Kiel**

The belts, which connect sails and Kiel, must be taut in the developed condition. If this is not the case, then the wing in the flight has less sweep. The flight characteristics and flight safety one affects thereby negatively. The tension can be affected by change by humidity or temperature.
It should be stated that the tension changed in the belt, is recommended it to control the sweep-angle. For this a line at the rib tension adjuster of the outermost rib from one becomes to the other side strained. If one keeps the keel horizontal, then the line should lie over the marking attached at the keel pipe (hole to the Kielobersite). If the distance is more largely than 15mm forward and 25mm to the rear, then the belts must be placed behind.

- **Rope connection at the flap**

The line is particularly exposed to pin strong mechanical loads at the binding to the Quick. Here and in every other place the coat may not show wear.
Control: Approx. all 10 flying hours.

- **Resetting rubber of the flap**

If the flap should not reset up to the notice at the keel pipe, then the resetting rubber must be exchanged.
Another cause for this can however also be that inadvertently the mushroom catch between flap bag and Untersegel was solved and the Untersegel is angeklettet also too much tension. If by loose Ankletten no remedy is to be created, additionally the rubber at the front keel end can be placed behind.

- **Sail**

At the sail should be examined after stronger use all seams , eyes and belts. The zipper must be able to be closed low-friction. For a long durability are above all dry storing and a small UV load of advantage.
The belts, with which the sail is fastened to the keel, must be taut; if necessary place behind!

6. Storage

With the storage it is, as also in the case of transport to make certain that the cross-beam rests upon laminar. The Atos should be supported thereby in two places at least. It should be as freely as possible stored and z. B. not directly on the soil to be put condensation to form here there can, which leads to damp stains in the sail and to corrosion of the metal parts. For the drying process of wet equipment it is not sufficient to open only the zipper. For this the packsack must be removed and the sail be unfolded.

UV light shortens the life span of the sail (very small also those of the GRP components materials of the cross-beam, the ribs, the spoiler and flaps). The Atos therefore only as long as necessarily direct sun exposure suspend.

7. Operation limits ATOS VX

max. permissible speed of flap 0 15° 90 km/h
max. permissible speed of flap 70° 90 km/h
safe load factor +4 g
permissible takeoff weight 120-227kg

8. Technical data

Span: 14 m
Wing aspect ratio: 12.6
Flap positions 0 70°
Wing area inclusive. Tail unit 16m^2
Equipment weight approx.46 kg
Note: By use of GRP components construction units Gewichtsänderungen can occur.
With questions we help ourselves to be pleased gladly and about Tipps and suggestions about Atos we. Further information as well as safety reports are on our homepage.
Your AIR team wishes you many beautiful and above all accident-free flights.

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