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Section 1. GENERAL INFORMATION

1.1. Introduction

The Stalker rigid wing is an advanced product of Aeros Ltd and Aerola Ltd. It is aimed at improvement of modern competitive glider with very high performance combined with maximum safety and comfort.

Please read and be sure you thoroughly understand this manual before flying your Stalker. Be sure you are thoroughly familiar with the setup, breakdown, preflight inspection and maintenance procedures as described in this manual.

In case of any doubts or questions contact your local dealer or Aeros.

1.2. Main data

The Stalker is a high-performance rigid wing glider designed for foot-launching, soaring and cross-country flights

Table 1.2.

Stalker	
Sail area, sq.m.	13.5
Wing span, m	12
Aspect ratio	10.7
Nose angle,	146
Max take of weight, kg (lb)	140(309)
Weight (without bags), kg (lb)	39(86)
Breakdown length, m	5.8
Min sink rate(max take of weight, m/sec	0,65
Max glide ratio	19

U. Operation limitations

Table 1.3.

Stalker	
Operation load	+4/-2G
Wind speed max, m/sec (mph)	12 (27)
Take off altitude, m	2000
Permissible temperature range, °C	-15 /+40
Stall airspeed (straight flight), km/h	31 (19)
Maximum airspeed, km/h (mph)	110(68)
Minimum pilot weight, kg (lb)	50 (110)
Maximum pilot weight, kg (lb)	90 (198)

After structural, aerodynamic and flight tests, the Stalker has been shown to comply with DHV requirements (DHV certificate No. for Stalker).

ATTENTION ! We do not recommend to use Stalker for motorized and aerobatic/lights. Stalker requires a pilot's proficiency not less than Safe pro 4 (club pilot + 60 hours).

NOTE: manufacturer and _____ can in no way be responsible for safety of your flight in case of exceeding operation limitations stated above in the present manual.

1.4. Flight tests

Your rigid wing glider Stalker (serial No ____) was tested _____

"The rigid wing glider is airworthy according to the present manual".

Test pilot _____ I _____ I

Section 2. SET UP PROCEDURE

The set up procedure should be carried out on a clean, non-abrasive surface.

ATTENTION: *After each set up procedure you must perform a preflight inspection of the glider.*

2.1. Take the speedbar out of the bag, spread the uprights. Install the speedbar. Fix the speedbar using the quick-pins. Pass the flap-rope through the stopper. (Fig. 1).



2.2. Rest the glider on the control bar, hook front wire, pull tips out of D-spar, take out pin of nose hardware, take stinger out, spread wings (don't take the bags off the D-spar ends).



2.3. For one side at a time:

2.3.1. Take the bag off the D-spar end, put tip on.



2.3.2. Unroll sail



2.3.3. Connect the tip rib to the trailing edge tube.



2.4.Repeat steps 2.3.1 through 2.3.3 for another side

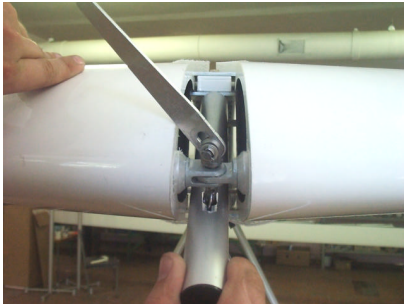
2.5.Open wings as far as possible – hardware at nose must join



2.6. Insert nose pin. To do this, stand at the keel beam side, moving the keel beam slightly.



Insert safety ring into the nose pin. Insert nose tube and secure it with the nose pin ring.



2.7. Install trailing edge tube on the keel tube.

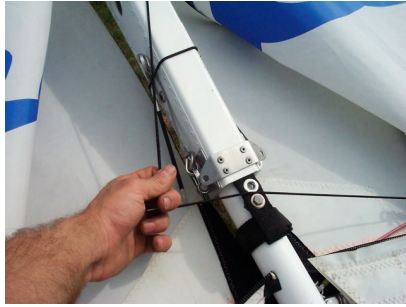


2.7. For one side at a time:

2.7.1.Set ribs to the trailing edge (don't lock on center yet).



Hook rubber of the ribs wire to the safety wire holder.



Pull aileron rod out of the sail and push it on as far as possible.



Make sure that each rib end is properly installed into the trailing edge tube. The tube must be placed between the limiting plates on the rib fork (end).

2.7.2. Fasten root zippers on the upper and lower sail by 1/3 of their way.

2.7.3. Attach sail at tip, put the tip strut on the trailing edge tube, lock the tip strut.



2.7.4. Attach the lever for rib tensioning to the ribs cable and lock it. Tightening force should appear when the lever is parallel to the keel beam. If the tightening force appears from the very beginning, it means that either the rib tips were not placed on the trailing edge tube or the rib tensioning wire is jammed. It is necessary to check and correct all irregularities, and after that to tension ribs.



2.7.5. Attach rib safety wire to the keel beam.



2.8. Repeat steps 2.7.1 through 2.7.4 for another side
2.9. Connect flap controls to the flaps.



2.10. Attach aileron levers to the ailerons.



2.11. Install SPADD.



2.12. Hook side wires.



Section 3. PREFLIGHT INSPECTION

3.1. Do complete preflight inspection of the glider. Check all parts and all assemblies of the glider. Beginning at the nose go around the glider, check all details of the construction. Finish inspection by checking the keel tube and control frame.

The less you hurry the more you'll inspect!

3.2. Check nose junction.

- ? The wires must be hooked in and secured.
- ? All bolts must be screwed and secured.
- ? The T-lever inside the keel beam must have no bends
- ? Ends of the central control rods must have no bends and secured.

Insert the nose tube and fasten the nose cone on the sail.

3.3. Check the tip area.

- ? The sail corner should be properly attached at the tip. Protecting cap must be installed on the quickpin at the rear edge corner.
- ? The Velcro around tip strut must be fixed properly.
- ? The SPADD must turn easily, it should be impossible to remove the quick pin without pushing the button.

3.4. Check ailerons

- ? Ailerons must turn easily, without extra efforts (to check this, unhook side wires, turn ailerons holding them by the lever, to avoid damaging them).
- ? Turn the aileron with side wires unhooked, till the side edge is aligned parallel with the mark line on the tip rib plate (the aileron lever must be attached). Aileron side edge on the other wing must be aligned with the mark line, too.

3.5. Check aileron rod

- ? The end of the aileron rod must be locked.
- ? The place of attachment of the aileron rod to aileron lever must be locked.
- ? The quick pin connecting the aileron lever to the aileron should not be removable unless the button is pushed.

3.6. Check the rib N5 junction. Open the zipper at bottom surface.

- ? The aileron rod must be fixed at the control quadrant (sector) and secured (locked)
- ? Control wires must go through the slots of the sector.
- ? Control wires must go through the turn pulley slots in the front part of the rib N5

3.7. Check rib tips position

Walk along the trailing edge and check rib tips position.

- ? The trailing edge tube must be supported at tip rib pulleys

3.8. Check the flaps deflection.

- ? They must turn easily, without extra efforts.
- ? After unfixing flap control rope flaps must go up easily and quickly.

3.9. Check the root area.

- ? The trailing edge tube pins must be secured
- ? The bolt fixing the downtubes to the keel tube must be screwed

Open the bottom and top root zipper by two thirds of its travel.

- ? The ribs tensioning wire must be stretched and secured.
- ? All control cables must be placed in slots of the control pulleys.
- ? Control cables must not be jammed.
- ? The stopper rope and rubber on the stopper rope must not be broken.
- ? Hang in belt must be secured by the bolt, the nut should be locked, the belt should have no damages.

3.10. Check side wires attachment.

- ? The shackles on the side wires must be locked.

3.11. Check aileron control system.

Take the glider as before take off, move control frame right and left.

- ? The control frame must move easily, ailerons and SPADD must move properly.

Section 4. PERFORMANCE AND FLIGHT CHARACTERISTICS

Check and adjust your harness. We strongly recommend that you hang as low as possible (as close to the speedbar as possible). Be sure that no part of the harness touches the speedbar while pilot moves over the whole range as he or she will move in flight.

4.1. Take off

Make sure you are hooked in and check your position hanging in the control bar.

If the wind is more than 8m/s (18 mph) or is gusty, you have to have at least one wire assistant on the nose wires and side assistant. The Stalker has a slight tail heavy static balance, which does not take effect during take off.

When you hold the glider prior to your take off run, you should keep the nose slightly up and wings level.

The glider takes off easily in zero winds as well as with strong winds and does not require any special methods of handling.

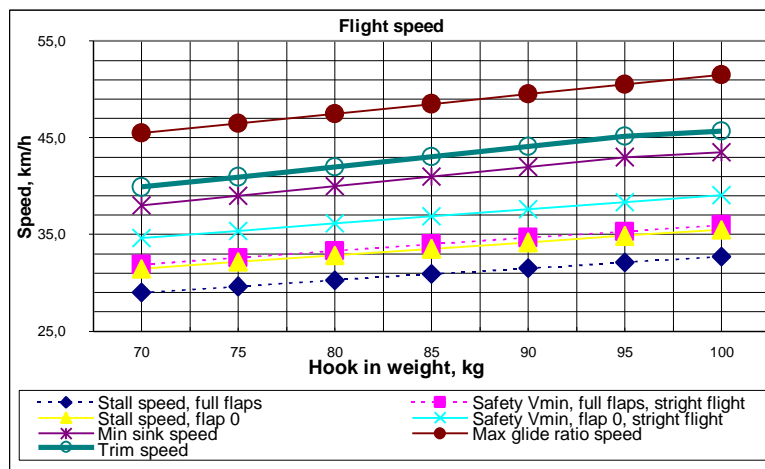
3.2. Flying

At first handling performances of the Stalker seem to be different from those inherent in other gliders. The reason is that Stalker handles easily at any speed. Don't worry, you'll soon get used to it. Make your first flight in easy flying conditions.

4.3. Flight Speed

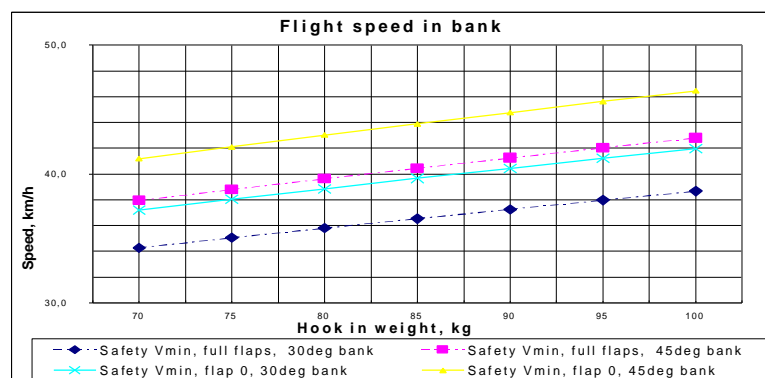
Remember that the range of flight speed depends on the wing load. If you have big wing load and you fly at minimum speed for the small wing load, you can get a stall.

Refer to the diagram below to determine trim speed that corresponds to your hook in weight, and adjust hook in point in order to achieve this trim speed. Trim speed must be a little higher than minimum sink speed.



So, in thermals when you want to fly at min. sink speed, you should feel small negative bar pressure.

Don't fly in turns at speed less then min. Safe bank speed. See diagram below.



At speed over 90-100km/ in gusty and bump conditions you can get a non-periodical hits on the wing, which appear due to turbulence.

4.4. Turning

Stalker responds quickly to any bar movement, control efforts are small. The glider turns easily and quickly at speed a little higher than the trim speed. As the glider begins to turn, you may push the bar out a little for making the turn faster, and then move it back. **Don't do this at low speed.** You must keep the speed corresponding to the bank angle. Stalker is stable in multiple 360-degree turns in both directions and has no sideslip.

4.5. Using flaps

The Stalker has flaps deflection range 0~55deg. After full flaps deflection trim speed is decreased by 7~9 km/h and speedbar moves backward by 150 mm.

The 0 deg. flaps is the best glide ratio configuration.

The 10 deg. flaps is the min sink ratio configuration.

Big flaps deflection angles are not recommended for climbing due to substantial increase in sink speed and decrease in glide ratio. These big angles can be used for landing and quick descent.

4.6. Landing

As the Stalker is a high performance glider, you should land only up the wind and avoid going downhill. Stalker requires thorough handling during landing.

For landing it is recommended to use from half flap up to full flap configuration.

Keep the wings level, speed the glider up slightly and fly right down till the altitude is 0,5 - 0,8 m from the ground to the speedbar. At this altitude decrease descent rate by pushing slightly on the control bar.

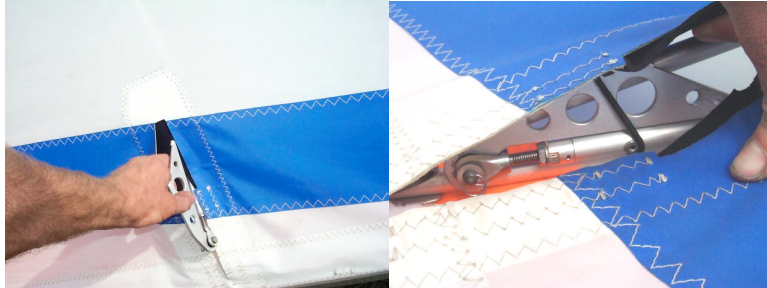
When you feel the glider unresponsive to the bar movement, quickly ease the bar out all the way before your feet touch the ground. With a good sharp final thrust, the sudden increase in drag will slow the glider very suddenly and you will land softly.

Do not ease the bar out with surplus speed! It leads to sudden flare up and falling. It is much better not to move the bar out at all, than move it too early.

We wish you soft landings !

Section 5. Breakdown

1. Remove nose cone.
2. Unhook nose wires and side wires
3. For one side at time:
 - 3.1. Remove SPADD
 - 3.2. Detach ailerons lever from ailerons
 - 3.3. Put aileron rod into the sail and fix it with a rubber ring



- 3.4. Detach flap control from the flap
- 3.5. Ease ribs off
- 3.6. Detach the trailing edge tube from the keel beam
- 3.7. Fold ribs down, pulling by the cord at the tip of the ribs wire



4. Repeat steps 3.1 through 3.8 above for another side.
5. Disconnect stinger
6. Disconnect nose tube and nose pin.
7. Detach the tip rib from the trailing edge tube
8. Wrap sail around the D-spar, trying to avoid wrinkles
9. Disconnect tips and put covers on the D-cell ends.



10. Fasten flaps and ailerons on the D-cell by Velcro.
11. Ensure that the zippers in the center are folded correctly and the sliders do not go between the keel beam and the D-cells.
12. Put protective covers on the keel beam as follows:
 - One big cover – at the place of attachment of the trailing edge tube and ribs wire, wide part backwards;
 - Smaller cover – at the place of attachment of rear wires;
 - The smallest cover – at the end of tail tube.



13. Fold wings in.
14. Hide wingtips into the D-cells.
15. Slightly strap the D-cells together at the tip.
16. Put the glider cover on.
17. Put the glider down, upper side down.
18. Disconnect the speedbar, fold downtubes in, put protective cover on the downtubes end, hide the downtubes between the D-cells.
19. Tighten Velcro at the end of the glider, the one that draws D-cells together.
20. Fasten the zipper.
21. Always put the packed glider on earth or on the car with the zipper upwards.

Section 6. Maintenance

6.1. Tuning

A correctly tuned glider is comfortable and has good handling in all allowed flight modes. Stalker has a number of adjustment points that can be used for changing its performance.

6.1.1. Hang point.

Trim speed should be different for different hook in weight. The more the weight, the higher speed you'll have (see Flight Speed). Adjust hang point, in order to achieve trim speed corresponding to your weight. If the glider has already been tuned for lower weight, move the hang point backwards for a heavier pilot.

6.1.2. Ailerons position

Ailerons in the neutral position must be placed in accordance with the mark lines on the tip ribs (see Preflight Inspection. Ailerons check). If they are not placed correctly, that can mean that something is wrong inside the wing (for example the wire does not go through the sector or pulleys slot, or the rib is bent, or something in your glider has been broken. So you have to check everything first. If everything is OK, ailerons position can be adjusted by the aileron rod length. Undo the locking nut, tighten or ease the rod fork off and again check the ailerons position.

6.2. Regular inspections of the glider

It is necessary to check your glider regularly for damages, possible structural deformations, wear and tear, tuning. You have to inspect frame (D-spars, ribs, keel, A-frame), wires, all hinges and fittings, bolt connections, sail, control system tuning.

6.2.1. Instruments and facilities

- Four supporting struts for proper setting up the glider relatively to the ground level;
- An electronic inclinometer for measuring aileron setting up angle and the angle of the control surfaces deflection;
- A lamp or a lighter for searching cracks in the D-spars;
- A ruler and a slide caliper;
- A set of spanners and other bench tools.

6.2.2. Inspection intervals

- ? Before the first use;
- ? After each rough landing, in order to find any possible structural deformations;
- ? After every 100 hours of flight or annually, whatever comes earlier.

6.2.1. Frame inspection

- ? Inspect D-cells with the view to find any distortions, damage, cracks, especially at root fitting area, spar belt area. If you've discovered any cracks on the outer surface of the D-spar skin, use the lamp for checking if this crack exists on the outer skin – light the crack zone and look inside the D-spar. If you see the light inside the D-spar, that means you have a crack on the outer skin. If any D-cell damage is detected, seek advice and assistance in its repair from your local dealer. Don't make repair yourself, unless you have experience with repair of carbon plastic structures.
- ? Inspect control frame wires and all control system wires, looking for broken threads, tear and signs of corrosion and replace them if you find any.
- ? Check all bolting. Bolts should be tightened and locked. Where self-locking nuts are used, not less than 2 thread coils should be visible.
- ? Check the keel beam and ribs, looking for permanent deformation, dimples, signs of corrosion, cracks, especially near bolts and rivets.
- ? Check rib hinges. Axial play must not allow the rib end to move more than 3mm. If the rib end travel is bigger, you have to bush the hinge hole for preventing such axial play.

6.2.2. Check the wing anhedral angle. Put the glider on the supporting struts – One strut on the nose, another on the keel near the rear wire fixing point, the other two on the left and right side of the wing in the middle of the D-spar span. Align the keel tube with the horizon level. Measure the anhedral angle with the electronic inclinometer. Put it on the top surface, align with the spar. Anhedral has to be 1.3-1.7deg.

6.2.3. Check the aileron position. Fix the central lever in the middle position. Measure the ailerons neutral setting up angle. In the neutral position they have to be placed at 0.6-0.8 deg angles from the keel level.

6.2.4. Check the ailerons deflection angle. Maximum deflection angle up is 30deg, down – 17deg.

6.2.3. Check the hooking strap for wear. Replace it if discovering even the slightest symptom of wear.

6.2.4. Inspect the sail.

Thoroughly inspect the sail, looking for tears, torn threads at the seams, especially along the rear edge and in the root part of the wing. Contact your local dealer or the manufacturer if the sail is damaged, and you'll get professional repair.

6.3. Maintenance

You should keep your glider in good condition, to ensure it has optimum performance for a long time.

Don't put the glider in the cover down on an uneven surface with sharp edges. This can cause damage to the D-cells.

Don't transport your glider in a car without soft pads on the roof rack. This can cause damage to the D-cells.

It is not recommended to leave your glider under the sun longer than it is necessary.

Don't leave the glider resting on the control frame long when strong wind is blowing. This decreases lifetime of the sail.

Don't pack the glider if its sail is wet. If necessary, spread the sail and let it dry as soon as possible.

It is allowed to wash the sail with pure water only, without any soap or washing-powder.

When setting up and breaking down the glider, take care not to allow sand or dirt into the glider bag.

Keep the telescopic connections thoroughly clean, as their dirtying will make set up and break down difficult or impossible.