

NOTE: This page valid for gliders with the tail installed at the factory only.

COMBAT 09 13.7, COMBAT 09 13.2 WITH THE TAIL

Your Combat 09 13.7 (Combat 09 13.2) features the tail installed on the glider, therefore pitch stability of your glider significantly increased. To achieve best flight characteristics of your glider with a tail Aeros has made necessary adjustments:

1. The shorter side wires are installed (length is 2615 mm), (the standard side wires enclosed into the glider bag).
2. All sprogs are set 1 degree lower.
3. The plastic caps of both leading edge tubes # 3 are rotated one hole down.

ATTENTION! IT IS PROHIBITED TO FLY THE GLIDER IN SUCH CONFIGURATION WITHOUT THE TAIL. THE GLIDER WITH LESS ANHEDRAL AND SMALLER WASHOUT IS EXTREMELY DANGEROUS TO FLY.

Before flying the Combat 09 13.7 (Combat 09 13.2) without the tail it is necessary to adjust it back to its standard tailless configuration:

1. The standard 2625 mm side wires have to be installed.
2. The sprogs have to be set 1 degree higher.
3. The plastic caps of both leading edge tubes #3 have to be rotated one hole up.

COMBAT 09 12 WITH THE TAIL

Your Combat 09 12 features the tail installed on your glider, therefore pitch stability of your glider significantly increased. To achieve best flight characteristics of your glider with a tail Aeros has made necessary adjustments:

1. All sprogs are set 1 degree lower.
2. The plastic caps of both leading edge tubes # 3 are rotated one hole down.

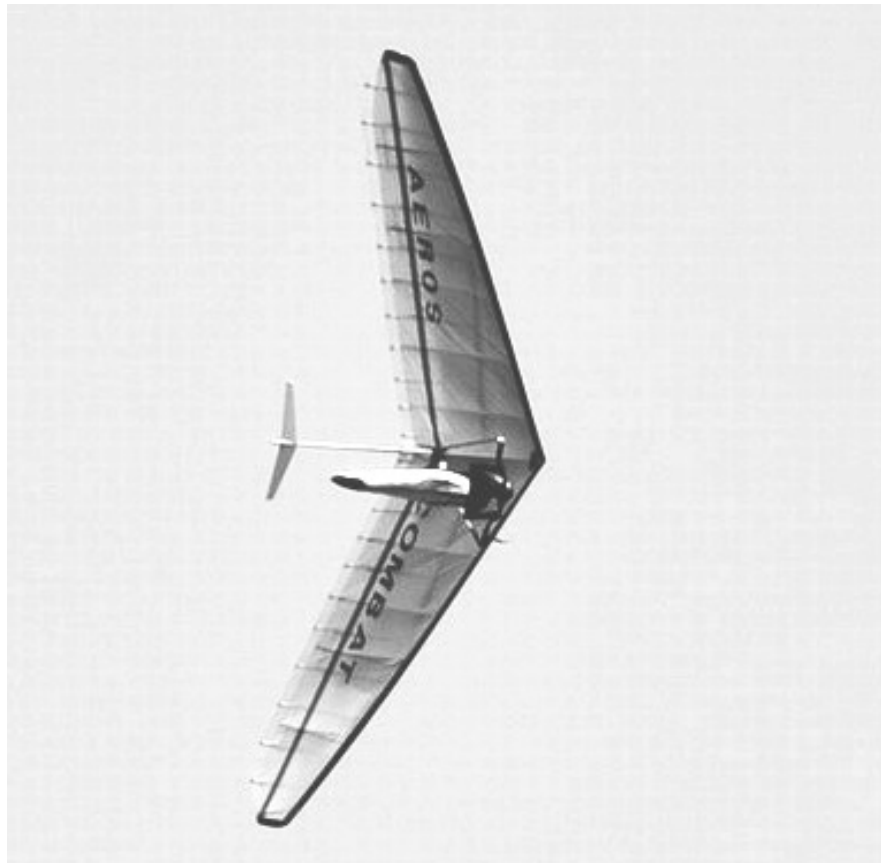
ATTENTION! IT IS PROHIBITED TO FLY THE GLIDER IN SUCH CONFIGURATION WITHOUT THE TAIL. THE GLIDER WITH LESS ANHEDRAL AND SMALLER WASHOUT IS EXTREMELY DANGEROUS TO FLY.

Before flying the Combat 09 12 without the tail it is necessary to adjust it back to its standard tailless configuration:

1. The sprogs have to be set 1 degree higher.
2. The plastic caps of both leading edge tubes #3 have to be rotated one hole up.

HANG GLIDER STABILIZER

MANUAL



Manufactured by:

*AEROS Ltd.
Post-Volynskaya St. 5
Kiev 03061
Ukraine*

*Tel: (380 44) 4554120
Fax: (380 44) 4554116
E-mail: aerosint@aerosint.kiev.ua,
[http:// www.aeros.com.ua](http://www.aeros.com.ua)*

Please read and be sure you thoroughly understand this manual before installing your tail. Be sure you are thoroughly familiar with the tail and the contents of this manual before initial operation.

It is important that you visit us regularly at <http://www.aeros.com.ua>

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

We wish you a safe and enjoyable flying career.

Aeros Ltd.

DEFINITIONS

Definitions used in this Manual such as WARNING, CAUTION and NOTE are employed in the following context:

WARNING: OPERATING PROCEDURES, TECHNIQUES, ETC. WHICH IF NOT FOLLOWED CORRECTLY, MAY RESULT IN PERSONAL INJURY OR DEATH.

CAUTION: OPERATING PROCEDURES, TECHNIQUES, ETC. WHICH IF NOT STRICTLY OBSERVED, MAY RESULT IN DAMAGE TO THE AIRCRAFT OR ITS INSTALLED EQUIPMENT

NOTE: Operating procedures, techniques, etc. which considered essential to highlight.

CONTENTS

1. General Information	3
2. Technical Information	3
3. Tail Installation	3
4. Glider Adjustments	7
5. Maintenance and Storage	7

GENERAL INFORMATION

The horizontal stabilizer (the tail) is designed to increase the hang glider pitch stability. Although it was designed and tested for Aeros hang gliders, but can be easily mounted to any other hang glider as well (in this case it may require additional tests to find out the optimal mounting angle of the tail).

After numerous flight tests and tests at the DHV vehicle it was determined that the tail greatly increase the pitch stability, allowing flying with lower sprogs settings keeping DHV required pitch-up moment. Properly adjusted hang glider with the tail retains the same good handling, but the tail adds the directional stability and makes the glider pleasure to glide at higher speed in turbulent air without decrease in performance. Surprisingly enough, the glider with a tail is more comfortable to land than the tailless glider.

The tail has symmetrical low drag profile and is rigidly mounted at 5 deg. negative angle of attack to the slightly extended keel tube. The tail consists of three parts: the center tail section and the left and the right outer tail sections. It is made of stiff light weight carbon fiber and strong enough to withstand a point loading and can be easily stored when de-rigged and packed in a glider bag or in a harness bag.

TECHNICAL INFORMATION

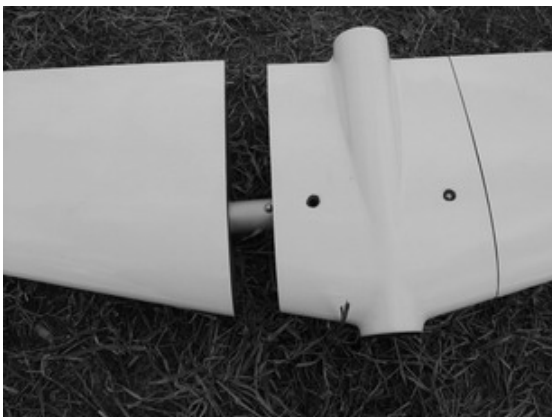
Span 1600 mm
Tail area 0.25 sq. m
V-angle +4 deg
Mounting angle -5 deg
Weight 750g

TAIL INSTALLATION

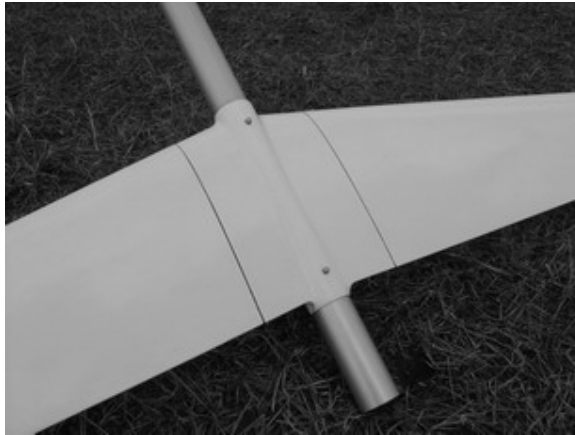
IF YOUR GLIDER COMES WITH A TAIL

To install the tail on the glider proceed as follows.

1. Set up a glider completely.
2. Take the tail out of the bag. Connect the outer tail sections with the center tail section, installing the spar of the outer tail first and then the pin at the trailing edge of the outer tail in to the corresponding holes in the center tail. Make sure that button springs of the outer tail sections spars are fully engage into the holes in the undersurface of the center tail section.



3. Slide the tail onto the keel tube until the button pins on the keel engages securely into the holes in the center tail section.



WARNING! THE TAIL SHOULD BE INSTALLED SO THAT ITS DEHIDRAL IS POINTED UP AND ITS SWEEP POINTED BACKWARD. INSTALLING THE TAIL THE OTHER WAY AROUND WILL WORSEN THE GLIDER FLIGHT CHARACTERISTICS AND THE GLIDER WILL BECOME DANGEROUS TO FLY.

NOTE: If there is a slack between the keel and the tail we recommend to wrap the keel around with a tape or sticky Dacron as shown on the photo.

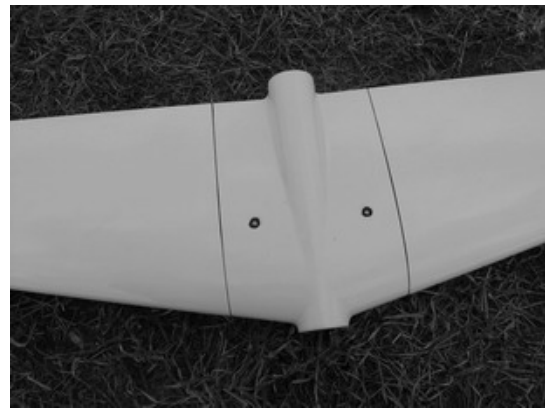
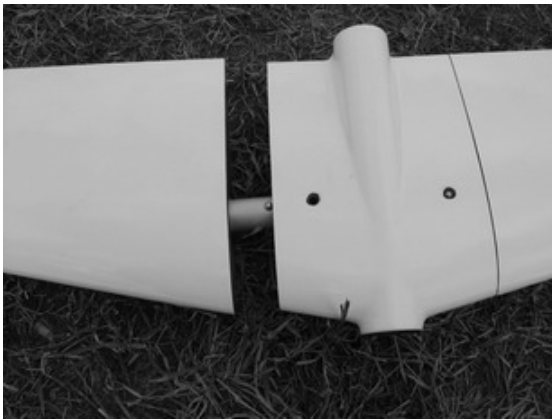


IF YOU RETROFIT YOUR GLIDER WITH THE TAIL

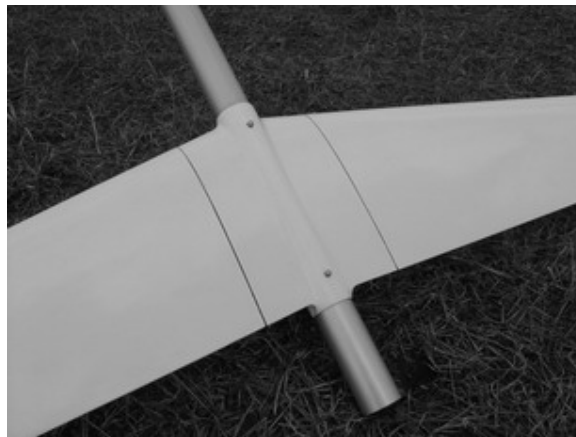
The tail is easy to install on all Combat series gliders provided that the glider is prepared for that. The following items should be done to prepare the glider for the tail installation.

1. Set up the glider.
2. Remove the keel tube #2 from the glider: using an undersurface batten push the end cap off the keel tube #2, undo the knot of the rubber cord and remove the keel tube.
3. Install the new lengthened keel tube, which comes with the tail as a retrofit kit: pass the rubber cord through the keel tube, attach the end cap to the rubber cord, install it in the keel tube and install the keel tube # 2 in the keel tube # 1.

4. Take the tail out of its protection bag. Attach the outer tail section to the center tail section and secure it with a push pin.



5. Attach the tail to the keel tube as shown on the photo.



6. Place two equal supports, about 1.7 m long under each leading edge tube / cross bar junction and one support under the keel tube so that the side cables are tight and the wing is positioned at positive angle of attack.

7. Set the VG full tight.

8. Looking from behind and exactly at the center of the wing, project the tail on the trailing edge or at the leading edge of the glider. Rotate the keel tube # 2 with the tail as necessary to make it level with the wing.



9. When the tail is level, grip the rear part of the keel tube # 1 with a holdfast as shown on the photo to fix the keel tube # 2 with a tail in position.



10. Drill a 6 mm diameter hole through the corresponding hole in the rear part of the keel tube # 1.

11. Remove a holdfast, and install a push pin in the front part of the keel tube # 2.



Now, when the tail is installed, your glider may require few adjustments for better comfort and performance.

GLIDER ADJUSTMENTS

It is possible to lower the sprogs settings of your glider without compromise safety (see the table below for the sprogs angles). All figures in the table are given after DHV tests.

Sprog angle	Combat 12.8 GT	Combat 13.2 GT	Combat 13.5 GT	Combat 13.7 GT	Combat 14.2 GT	Combat 14.9 GT
Main sprogs, deg	5.3	3.6	3.5	4.6	3.8	3.8
Outboard sprogs, deg	7.4	5.9	4.5	7.2	5.8	5.8

The glider with a tail becomes more stable in roll, you may feel that the roll rate is higher than without a tail. To improve the roll rate of the glider with a tail and decrease the pitch bar pressure we recommend rotating both LE #3 plastic caps one hole down. Changing the side wires for shorter ones (after consulting with Aeros only) will help to improve the roll rate.

MAINTENANCE AND STORAGE

The tail does not require special maintenance. Although it looks rather strong, special care should be taken to avoid point loading of the tail. Clean the tail with a soft rag from the moisture and dirt before storage.

NOTE: The storage bag for the tail allow storing the tail with one outer section and central section assembled in one compartment and with another outer section in the second compartment.

The tail must not be subjected to load during storage or transportation. Make sure it is protected from mechanical damage, soiling or moisture during storage or transportation.

WARNING: USING CERTAIN TROLLEYS FOR TAKE OFF DURING AERO TOW WITH A TAIL MAY LEAD TO POTENTIAL DANGER. THE MATTER IN QUESTION – TROLLEYS WITH A DEAP V-SHAPED KEEL SUPPORT.

When the keel tube goes too deep in the V-shaped support, the support upper points may (most probably will) catch the tail during take off.

The keel tube rises from the support at the same time with the glider lifting off the trolley. Large deepening in the support will lead to the tail catching the upper points of the support and the glider pitching nose down and crash right after departing from the trolley. We have never discovered this problem because we are using different trolleys where the keel tube of the glider doesn't go deep inside, the deepening for the keel tube is no deeper than the keel tube diameter. Having discovered this potential danger, we recommend to pilots when aero towing with tails to use only trolleys, where the deepening for the keel tube in the keel support is no bigger than the keel diameter.