KRILL AIRCRAFT

ULTIMATE 300KS Mk2 39%

Assembly Guide

Dear customer,

thank you for choosing ULTIMATE 300KS Mk2 39% model airplane.
Original kit Ultimate 300 KS was developed by our team for patern and 3D flying too. Kit has had great flying characteristics, but not sufficient for top competitive flying. We decided to improve it‘s flying characteristic and in cooperation with great Italian pilot Sacha Checconi was created new version Mk2 built on strong base of current kit and test it with our pilot Marek Plichta.
And what are the differencies?
At first, we put close together top to bottom wing and engine axis is now right in the middle of the wings. At second we enlarged ailerons on all wings at depth and lenght too, overall area is now bigger to original more than 60% ! Kit gets uncredible flying agility also during harier tricks. We also decreased overall weight at the same time reinforced wings (new wing spar) for higher drain during aggresive 3D flying . New is fixing of cabane inside the fuselage, new interplane struts , new holder of tanks and already instaled rudder servo tray. Holder of main landing gear is also redesigned, Gabriel horns are used on all control surfaces, as well as new builder friendly servo fixing on the wings.
The ULTIMATE 300KS Mk2 kit is a full composite biplane kit, with main top wing from one piece and bottom wings a horizontal stabilizator spar made from carbon fibre tubes. Both wings and horizontal stabilizator can be easily removed for transporting. Tail control surfaces has central hinges.

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1. Technical data:

Wingspan	2330 mm
Length	2550 mm
Weight (RTF)	15 kg
Wing area	160 dm2
Wing loading	93,75g/dm2
Engine (Gas)	100-130ccm
Minimum RC channels	6

Notice: This Assembly guide only shows how the model could be assembled. According to model specification we expect, that this airplane is assembled by experienced user, which will use his habbits and skills to finish it.

As an accesories (levers, rods, fuel caps and fills, etc.) we recommend Secraft. Sets which you can order as order number:
2051000-50 for Hitec servos
2051000-51 for Futaba servos
2051000-52 for JR servos.

Here is list of Secraft parts for linkage:

Servo arm D40 mm (for aileron and elevator)	6
Double servo arm Offset D90mm (for rudder)	1
Double servo arm D64mm (for rudder)	1
SEC Ball links M3 (10)	1
SEC M3 Push rod of ALU 60 mm (for elevator)	1
SEC M3 Push rod of ALU 70 mm (for aileron and rudder)	3

For rudder is higly recommended SECRAFT rudder pull-pull set BASE No.: 2050130-01
or SPORT set No.: 2010130-02

2. General informations

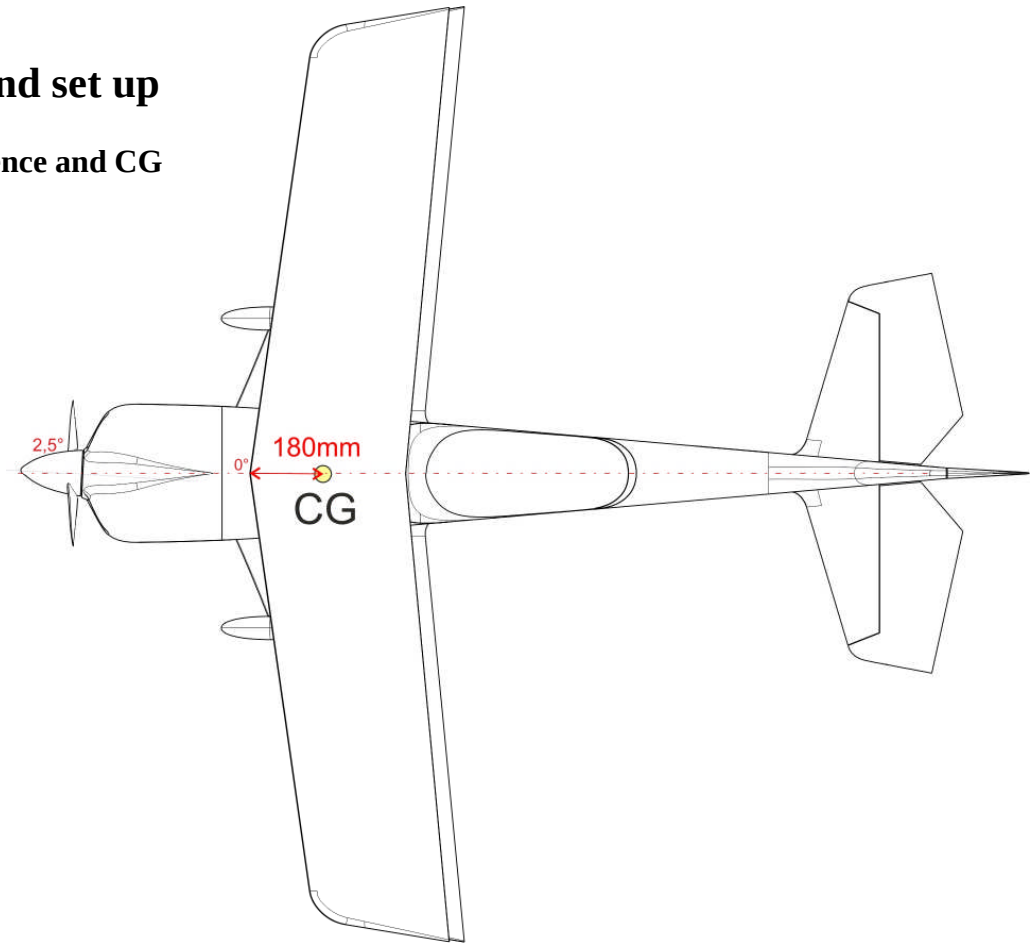
- all nuts should be secured against looseninig (use Loctite 243)
- make sure, that all control surfaces can move freely
- all holes drilled in airplane surfaces, that is not factory made, must be reinforced (with rowing, plywood, etc.)

- protect your airplane against **hot** (it can cause material degradation). Please notice that dark surface can heat up to 90°C/194°F in sunny summer days!!
- use protecting coats (you can order them with kit or separetely via sales@krill-model.com email)
- please take into count that there are a lot of carbon fiber in your model, make sure that your receiver has full signal

KRILL model takes no responsibility for damages incurred during the assemblying, flying, using or transporting this model airplane.

3. Setting and set up

Setting – incidence and CG



Basic setup:
Ailerons deflection 20degrees, expo 40 – 50%
Elevator deflection 30degrees, expo 50 – 60%
Rudder deflection 30degrees, expo 50 – 60%

Idle 1 for 3D:
Ailerons deflection 30degrees, expo 60 – 70%
Elevator deflection 40degrees, expo 60 – 70%
Rudder deflection 40degrees, expo 60 – 70%

Idle 2 for 3D:
Ailerons deflection 45degreess – full, expo 70 – 80%
Elevator deflection 60degrees – full, expo 70 – 80%
Rudder deflection 50degrees – full, expo 70 – 80%

4. Recommended servos:

You can use any strong and fast servos in standard size.
Recommended torque: min 25 kg/cm
Recommended speed: 0,08 – 0,11 s5.

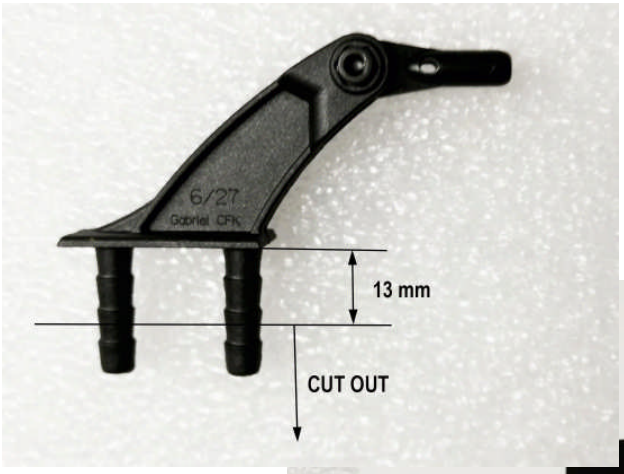
5. Assembly

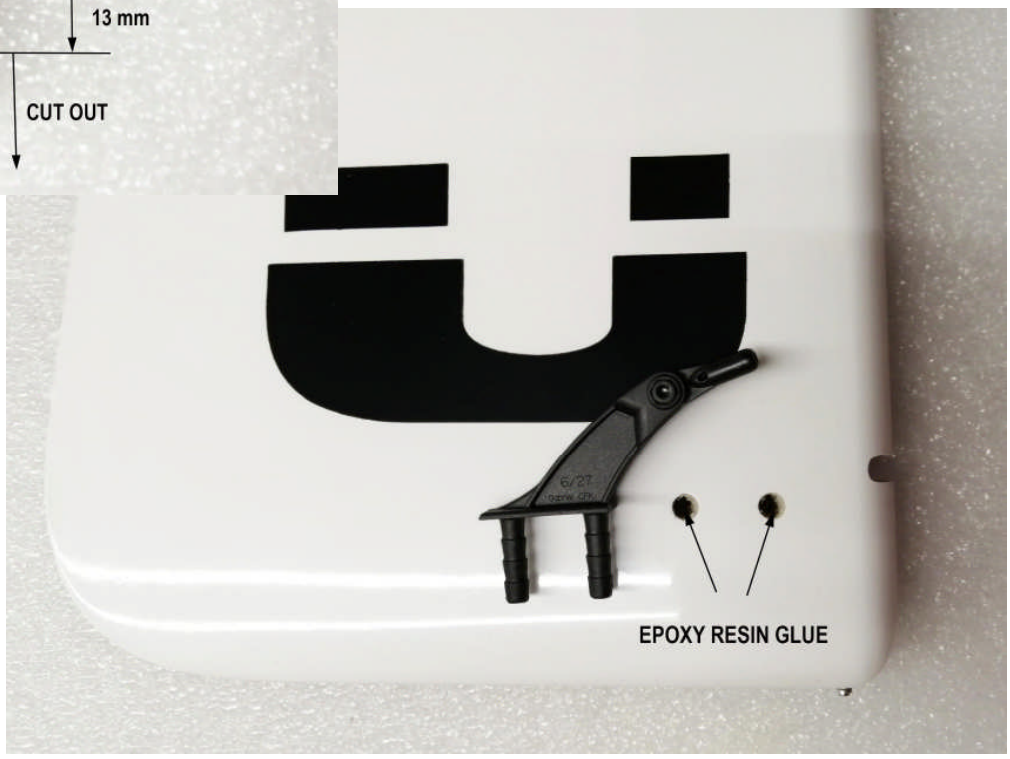
5.1 Empenage

5.1.1 Rudder

Firstly you must shorten the pegs of Gabriel horns 6/27 to the lenght 13 mm.

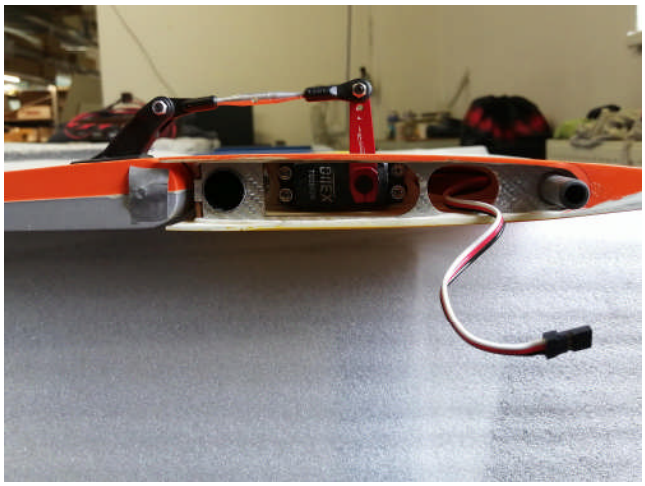
Than glue in horns into the prepared holes using an epoxy resin.

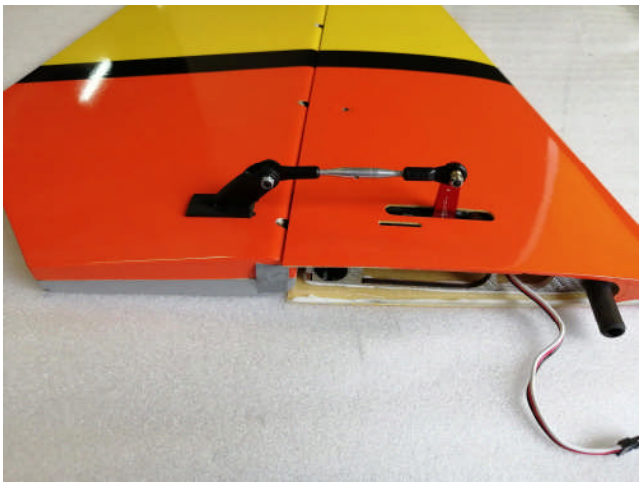




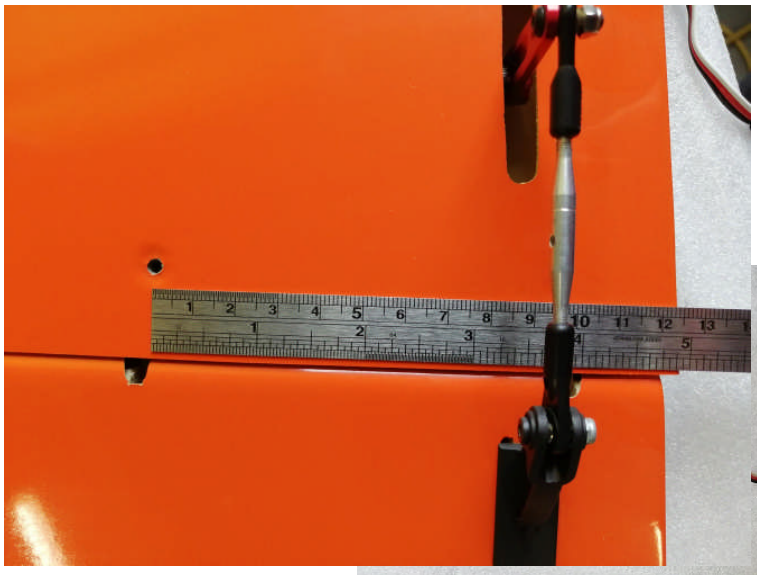
5.1.2 Horizontal stabilizator

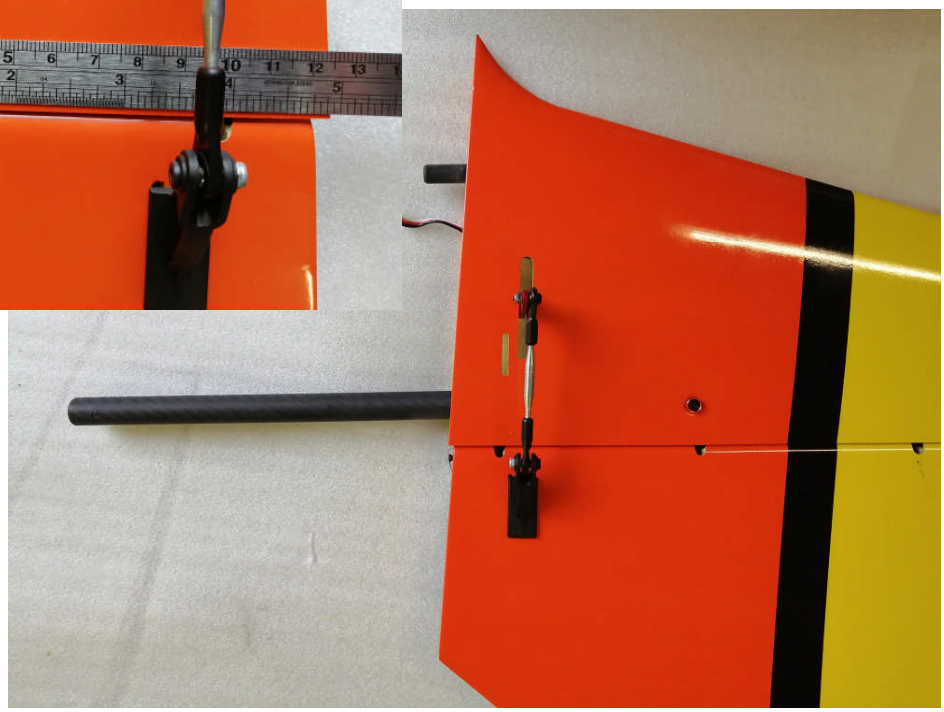
Two operation for horizontal stabilizators is needed. First is to place the servo and drill the hole for servo lever. Make sure that lever has enought space for full movement. Otherwise the lever can damage stabilizator surface!





Second operation is to secure horizontal stabilizator against motion. This can be done two ways. First is to drill hole, which goes throught surface and carbon fiber tube (stabilizator spar). And place a pin (or screw) into this hole. This operation has to be done on both halfs!

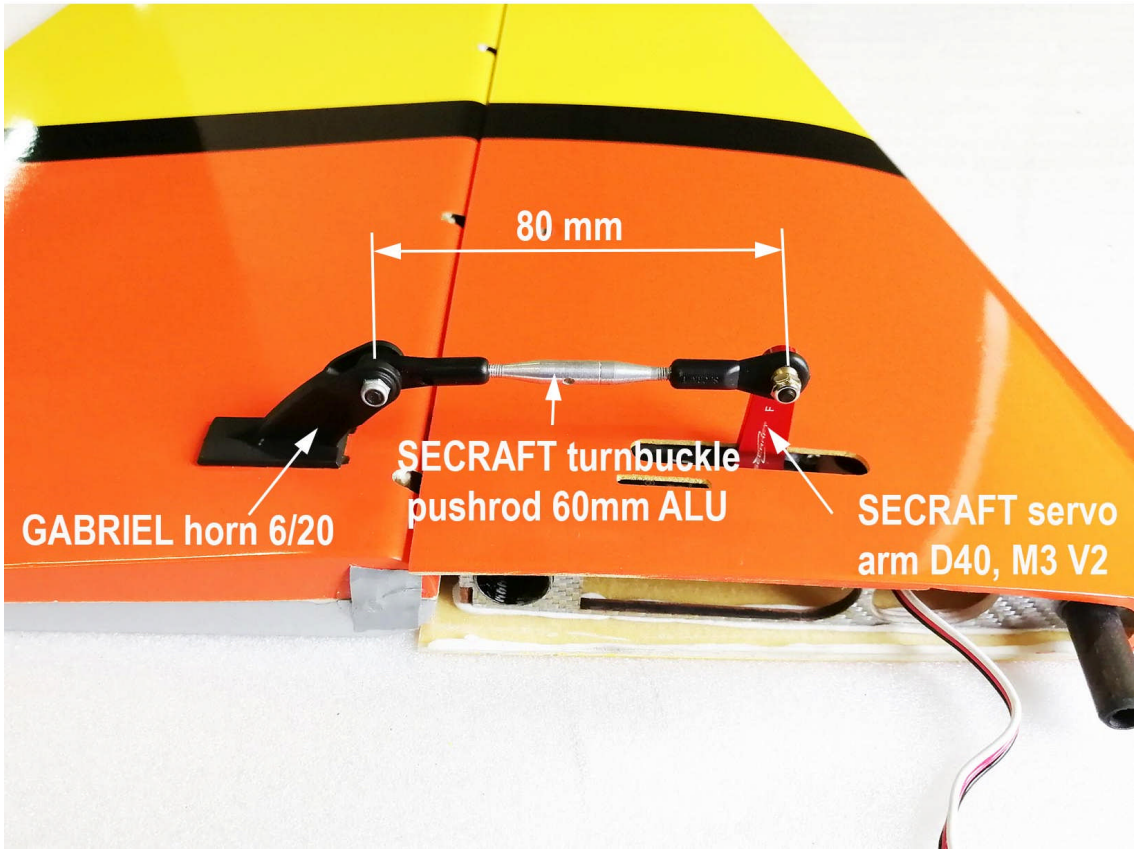




5.1.3 Elevator

Use Gabriel horns 6/20 size from accessories. Glue it to predrilled holes on both elevators.

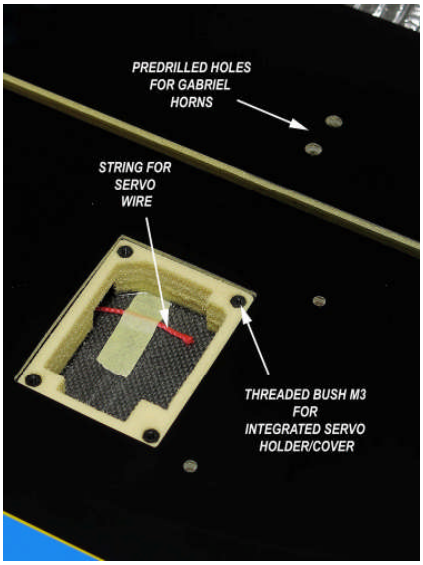
For linkage use Secraft turnbuckle ALU pushrod 60 mm long, from one side is mounted Secraft ball link M3, from second original Gabriel ball link, overall lenght of the link is 80 mm. 40 mm ALU Secraft V2 servo arms is used there.



5.2 Wing

5.2.1 Servo install

First, we will schedule the cables of individual servos of the ailerons to the receiver / central unit. The cable of the servo of the left upper aileron is led through the shaft into the hole in the lower part of the cover in the space of the inter-wing strut (for easier routing of the cable, a string is prepared here).

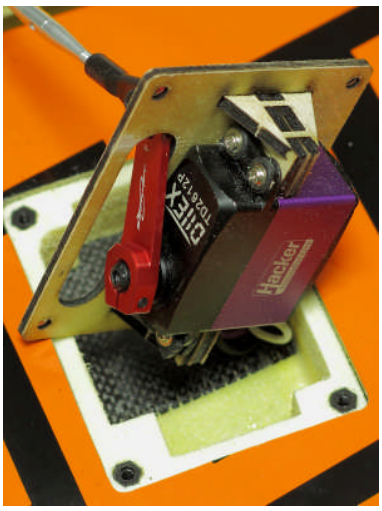


The cable then continues through the interwing strut to the left lower wing, where it continues from the root of the lower wing to the fuselage of the model. The same goes for the right side. To maintain the demountability of the wings and the inter-wing struts, the cable between the wing and the inter-wing strut should be interrupted by connectors.

It is advisable to use PowerBox ONE4ONE cable sets. 2 cables (upper left and lower left aileron servos) protrude from the root of the lower wing. Here it is suitable to use the PowerBox ONE4TWO cable set between the fuselage and the wing.

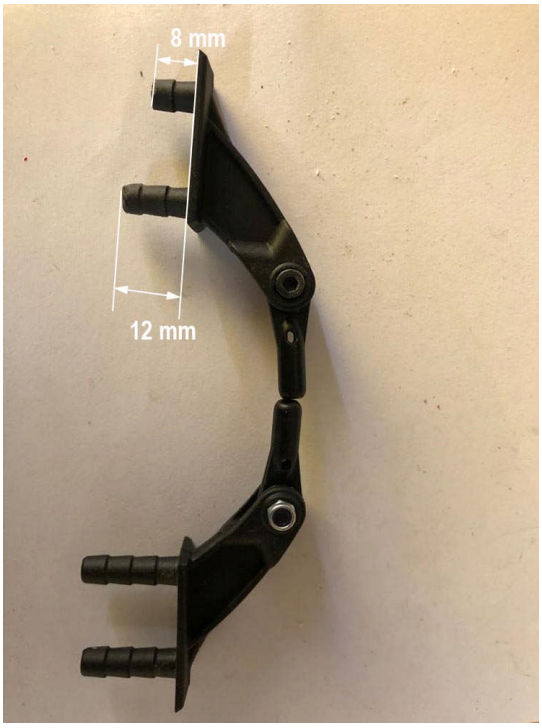
The cable outlet terminated with a connector (ONE4TWO) from the root rib of the lower wing has proven to be fastened by means of a mounting frame.

Installation of servos in the upper as well as in the lower wings is now very simple, thanks to the new servo holder with an integrated servo shaft cover. The servo is first mounted in the individual holders / covers, it is best fitted with a 40 mm long Secraft arm. Center the lever in the middle position. After passing the cables, the whole cover with the servo is then inserted into the shaft and fastened with the enclosed 4 screws.



5.2.2 Linkage

Glue the supplied Gabriel horns size 6/20 into the prepared pair of holes. First, shorten the pins on the horn to 12 and 8 mm according to the picture. Glue the horns into the holes with epoxy resin. Servo arm is connected with the Gabriel horn using a linkage made of a 70 mm long pushrod, terminated on one side by an original ball link from Gabriel horn and on the other side by a Secraft ball link.



5.3 Fuselage

The installation of the internal equipment of the fuselage of the model is very individual, it depends on the habits of the builder, but especially on the equipment used, consider the following lines as informative, what the internal installation of the fuselage may look like.

The model comes standard with a number of accessories that you can use:

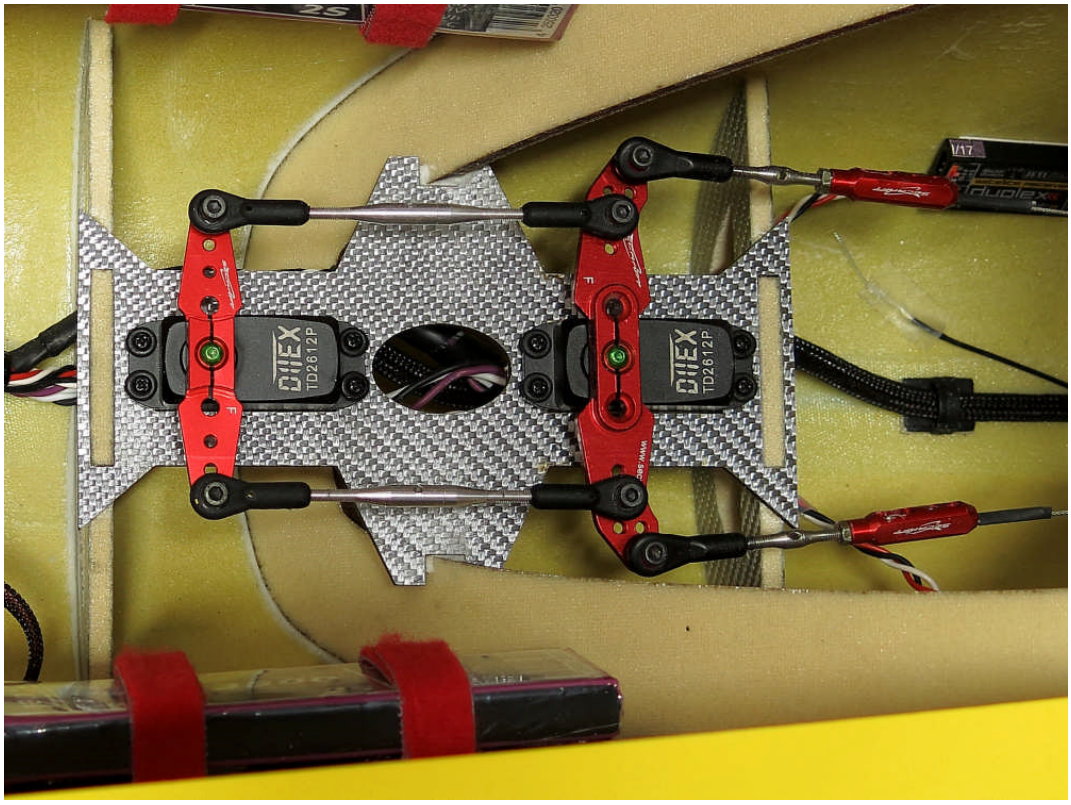
- Exhaust holder

- Tank holder

- Battery holders

5.3.1 Rudder drive linkage

We recommend to use 2 standard servos mounted in the already glued deck to drive the rudder. The rear (end servo) is equipped Secraft double sided offset arm 90 mm, the front servo is equipped with a Secraft double side straightde arm 64 mm, the arms are interconnected by linkages formed by ball links Secraft and pushrods 70 mm. Than the drive itself is solved by a pull-pull drive using a Secraft Rudder pull-pull set BASE or SPORT.

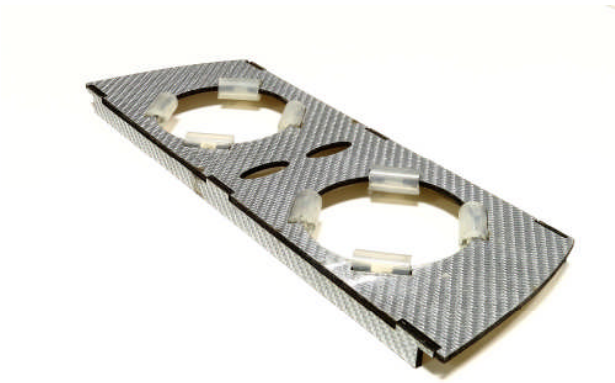


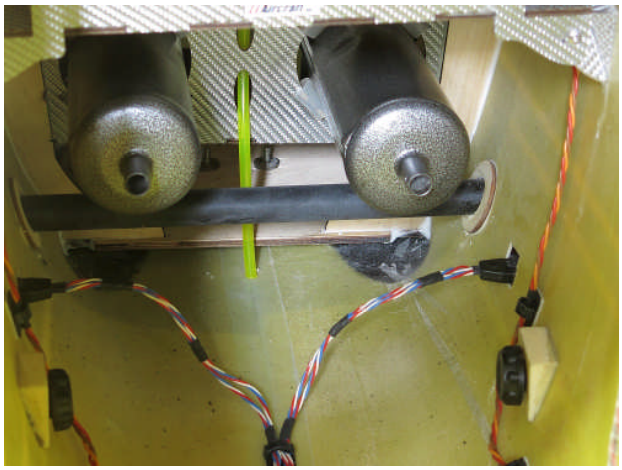
5.3.2 Engine installation

The MVVS116NP engine was used for the model prototype shown. You can use any engine (2-cylinder boxer) size about 100-120 cc. The engine is mounted offset to the right 2.5 degrees, horizontally at zero. It will probably always be necessary to mount the engine using spacers of suitable length so that prop hub plane is about 2-3 mm in front of the engine cover plane and respects the engine misalignment, ie the engine axis at the prop hub level intersects the vertical axis of the model fuselage.

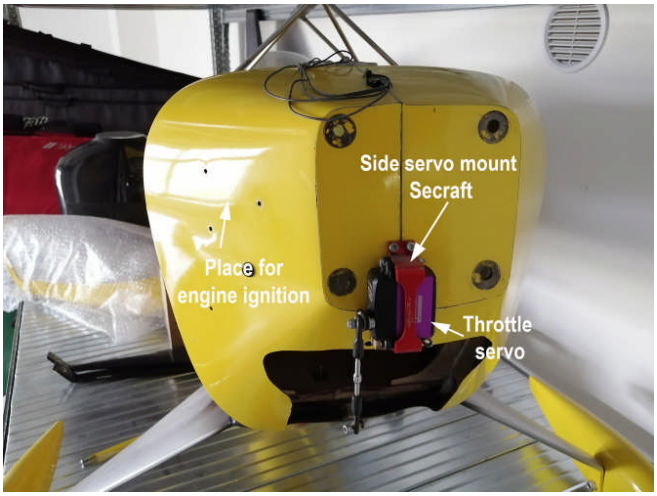
Silencers of any type can be placed on the engine, as often of the cup type, which are standardly supplied with some engines (DLE, etc.), but better, due to the noise limits, by the silencer with headers.

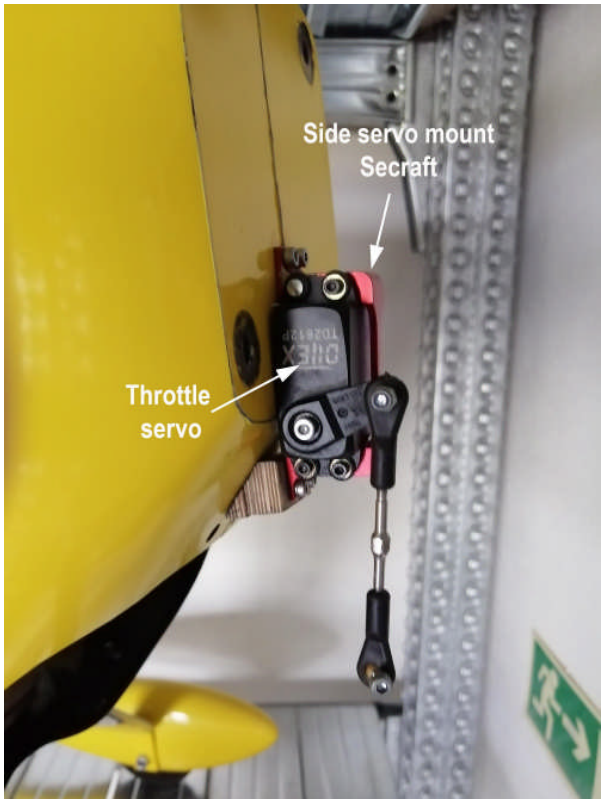
You can use the supplied 60 mm diameter muffler exhaust holder for this exhaust system.





The servo to control the carburetor should be placed under the engine using the Secraft side servo mount - see the picture.

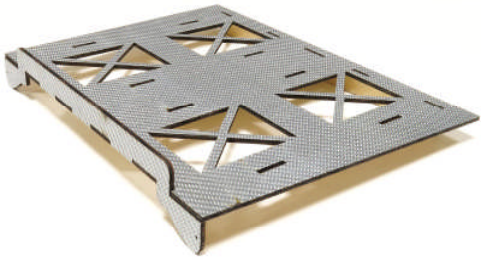




Place the engine ignition on the side sloping wall of the firewall.

5.3.3 Fuel & Smoke Tank installation

To install fuel and smoking tanks, you can use the standard delivered holder designed for use with Secraft square tanks - SE Fuel tank 1000 ml. The picture below shows an installation example. The tanks are attached to the holder with velcro



5.3.4 Equipment installation

No deck is installed in the fuselage to install the electronics inside the Fuselage of the kit. Due to the small dimensions and weight of the receivers, their satellites and powerboxes, it is possible to stick them to suitable places directly on the inner walls of the model using double-sided adhesive tapes and velcro. For batteries (typically 2x RX batteries and 1x ignition batteries) you can then use the standard delivered battery holders.

The pictures below then represent a possible solution for the installation of on-board electronics, here a model equipped with JETI models electronics.

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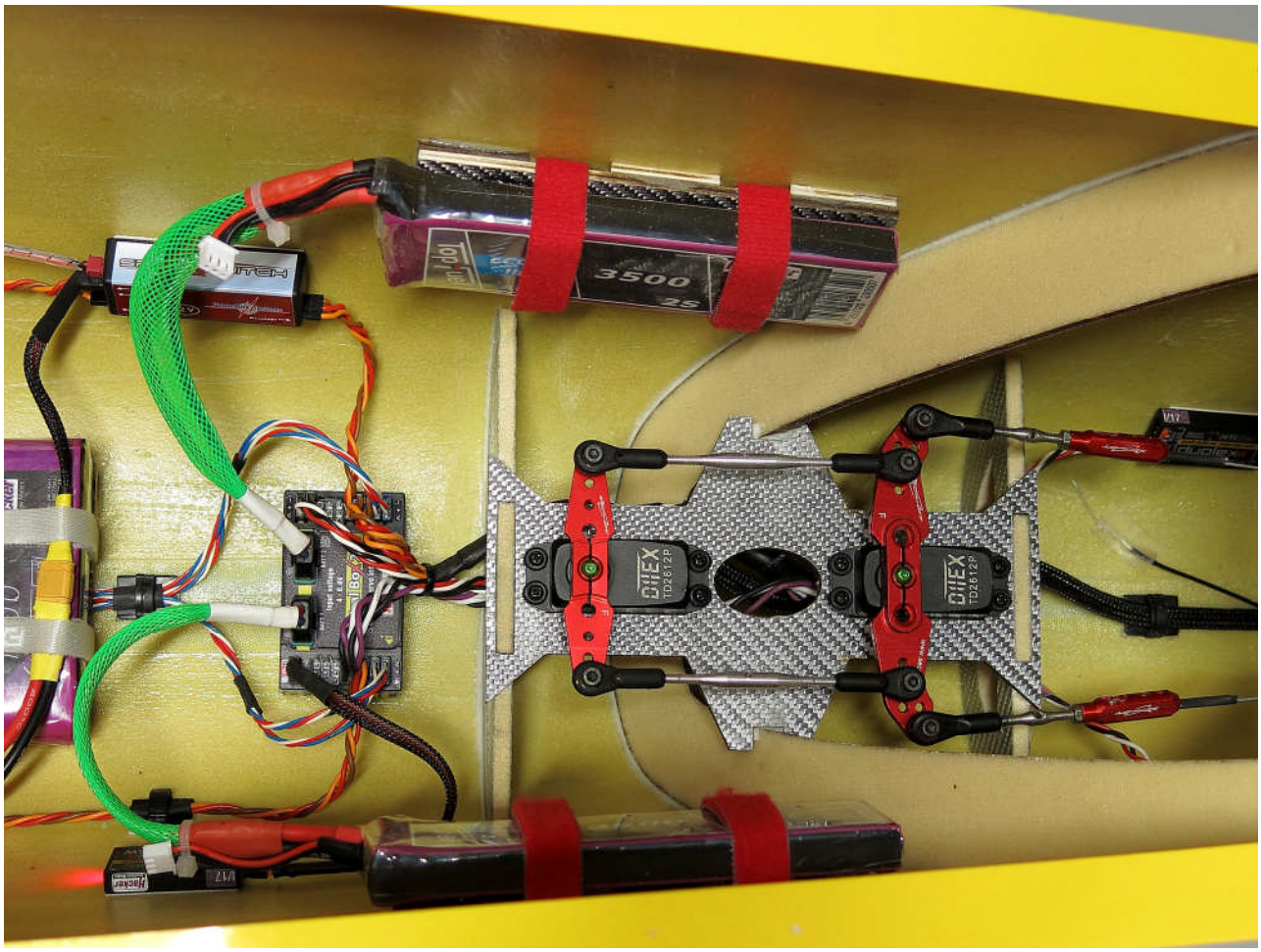


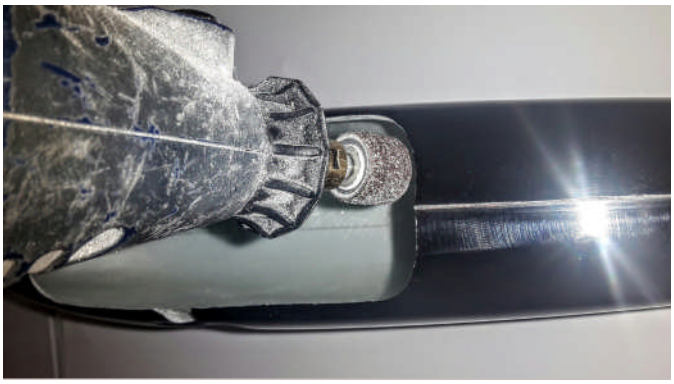
5.4. Landing gear

5.4.1 Main landing gear

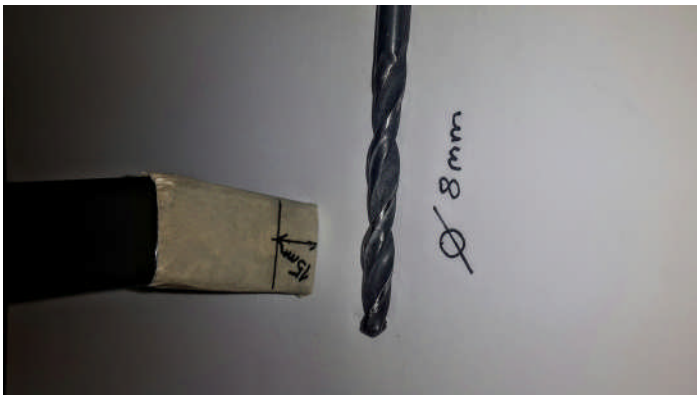
Every kit is delivered with full accessories to instal main landing gear, except wheels. This item should be ordered as optional. We highly recommend using the offered SLH Wheels 100mm on ALU disc with ball bearings.

The legs of the landing gears are delivered already drilled with the fuselage of the model. All you have to do is install the wheel axles and fit them with wheel covers.

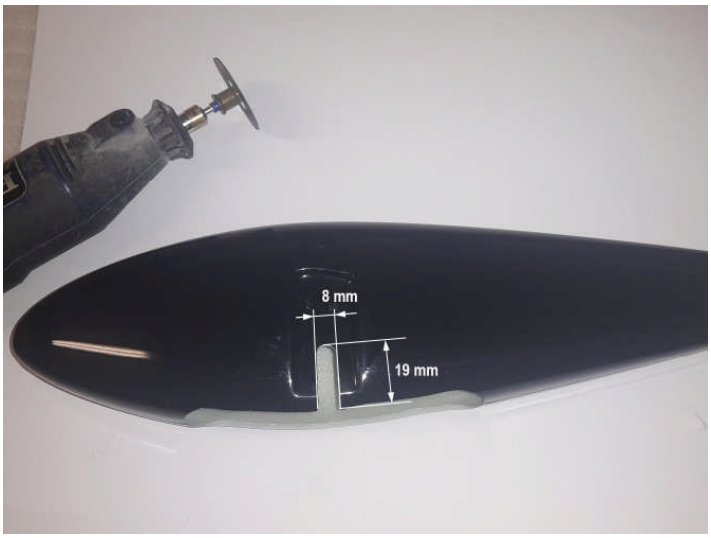
First, make sure that the wheels you plan to use pass through the holes in the wheel cover. If not, you can slightly enlarge the holes.



The chassis leg and the wheel cover fit together exactly at the point of contact. First, drill the holes for the axles in both undercarriage legs as shown.



Make a notch in the wheel cover to slide the cover onto the axle.



When installing, first install the wheel with the axle on the chassis leg and then slide on the wheel

cover before final tightening.

The last operation is to put on the cover of the landing gear leg, the cover should be fixed to the fuselage with a strip of transparent adhesive tape.

5.4.2 Tail wheel assembly

We recommend using our tail wheel 2010300-81 Tail wheel 35% with leg of C / F V2 for the model.

Attach the tail wheel to the tail of the fuselage on a designated area, which is reinforced inside with plywood. Use 2 pieces of M4x20 screws to mount tail wheel, secure the M4 nut inside the fuselage.

Drill 4 mm diameter holes into the CF leg of tail wheel as shown.

Place the tailwheel leg to the surface on the fuselage as shown and drill the fuselage with tail wheel leg.

Notice:

The last pieces of the ULTIMATE 300KS Mk2 models already have pre-drilled holes in the tail section for attaching the tail wheel and nuts installed inside the fuselage to easy assembly.

It is not necessary for the tail wheel to be controlled by the rudder linkage, you can leave them free. It's simple and just as functional as a controlled tail wheel.

5.5 Cowling

The engine cover (Cowling) is delivered in the kit as it is removed from the mold after production. The engine cover is only folded with the fuselage and there are holes for connecting screws to the fuselage.

The picture shows which holes should be made. There are additional holes in the bottom of the engine cover for engine cooling and better air access to the carburetor. Thus, the engine cover was a modification for the used engine MVVS116NP.

For additional information about build you can contact us via sales@krill-model.com email .

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