Optimus wing assembly

Optimus wings assembly required:

– typical set of tools;

– spatula;

– epoxy;

– micro balloons;

– CA;

– knife;

– calipers;

– scotch

Pic. 1 Traction and pushers

1) Assemble push rods as it is shown on picture 1.

2) Adjust push rods length as it is shown on Pic.2 –Flaps push rods picture 2 and picture 3:

– Flap's push rods to ~82 mm.

– Aileron's push rod to ~71 mm.

Pic. 2 Flaps push rods

3) Cut servo's control horns as it is shown on picture 4 and picture 5:

Pic. 4 Ailerons horns

Рис. 5 Flap's horns

Pic.3 – Aileron push rods

4) Prepare servos for installation as it is shown on picture 6.

Note: It is highly recommended to isolate servos from bonding material by film material (such as scotch) for easy removal, exchange and service.

Pic.6 – Preparing servos for wing

5) Control rod length before glueing of servos as it is shown on picture 7 and picture 8. That is necessary in order to prevent the horns from overhanging above the level of wing cover. Flat surface without horns being overhung improves wing aerodynamic quality.

Pic. 7 Aileron control rod length

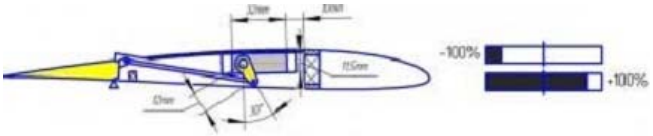
Pic.8 – Flap control rod length

6) Adjust servo's control horns neutral position.

The main goal is to achieve maximum flaps deployment on braking (up to 85 deg.) with the smallest arm of servo horn. (Arm is the distance between the axes of horn). It'll minimize servo loading, increase accuracy of adjustment and allow to use flat hatch without shroud. It is necessary to achieve such condition that full travel of the flap down would be equal to almost full travel of servo; and up – would be the travel necessary for speed mode of profile and work together with aileron (6°) or 10% of servo travel.

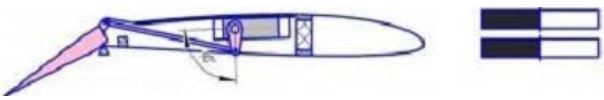
a. Adjust servo's control horns neutral (central) position (150 ms) utilizing servo tester, or any unused radio channel with zero subtrim/trim Control horn should be normal to servo installation surface.

b. Lock control horns to servos shafts.



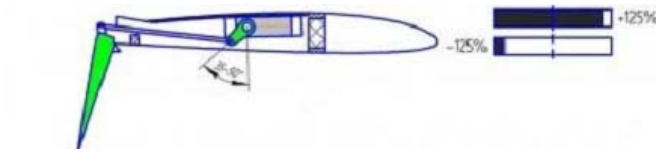
Pic.9 – Neutral position of the flaps

c. Connect flap's servos to allocated radio channels. Adjust control horns to ~30 deg. angles utilizing subtrim/offset or similar your radio specific function (in Futaba you can do it in the menu «flapsettings» establish there required value «offset» (nearly 65-75), in Graupner – menu «Model type» - «Brake Offset»+95%)



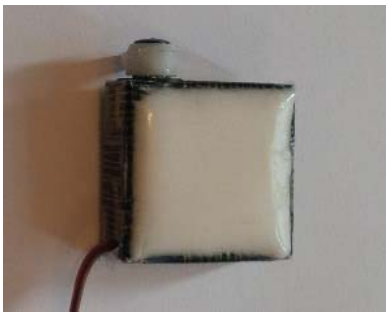
Pic.10 – Intermediate of the flaps

d. Extend servo's range of motion/travel to maximum.



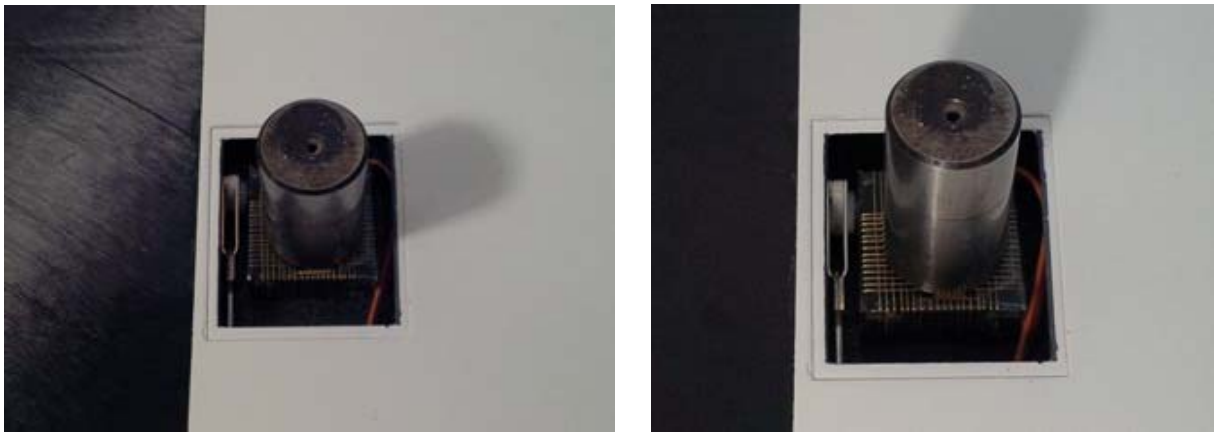
Pic.11 – Maximum of the flap (position "brake")

7) For your convenience we have sandpapered all surfaces for servos to be glued. Mix epoxy with micro balloons and apply it to servo frames (as it is shown on picture 12).



Pic.12 – Epoxy on servor

8) Fix flaps and ailerons in neutral position. Place servos (in neutral position), apply weights as it is shown on picture 13.



Pic.13 – Bonding of servo

9) If you would like to reduce chance of flatter at start of your model, you may connect servos to wing's bottom skin to remove bending load on wing top panel, as shown on picture 14.

Рис.14 – Gluing flat servohatch Fix

10) To archive symmetrical flap's deflection adjusted by radio's subtrim function.

11) If flaps work perfectly, apply CA to push rods at the clevis-rod junctions.

12) In the end glue the flat servohatch with scotch (picture 15)

Pic.15 – Gluing flat servohatch Fix

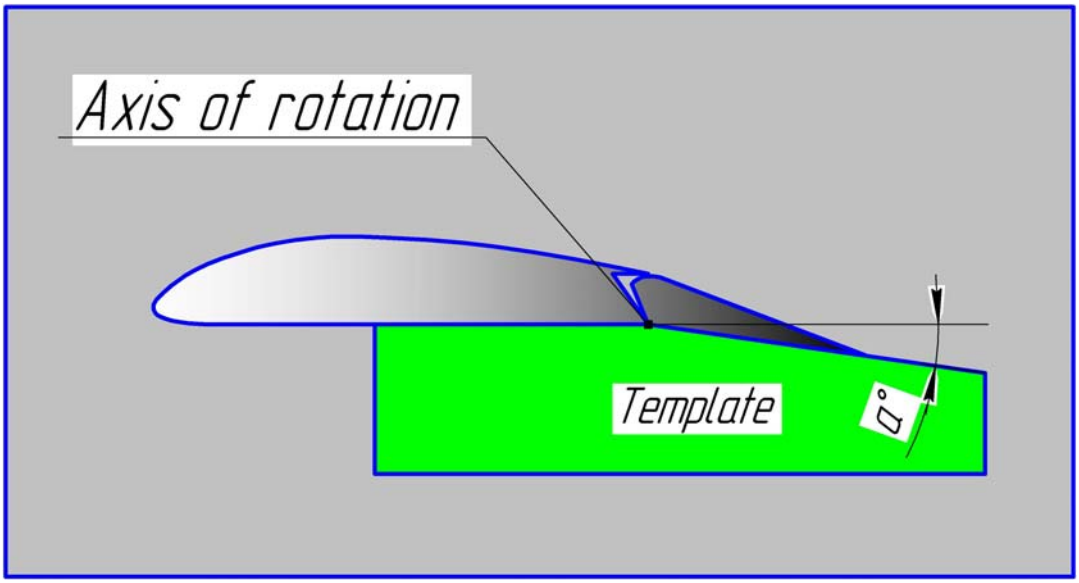
13) In some cases the push rod clevises may interfere with servo control horn or servo shaft. In that case make a round cutoff in clevis as it is shown on picture 16.

Pic.16 – Round cut in your plug

14) Adjust proper flaps and aileron deflection angles utilizing specific templates.

Templates for Optimus wing setup (1:1 scale)

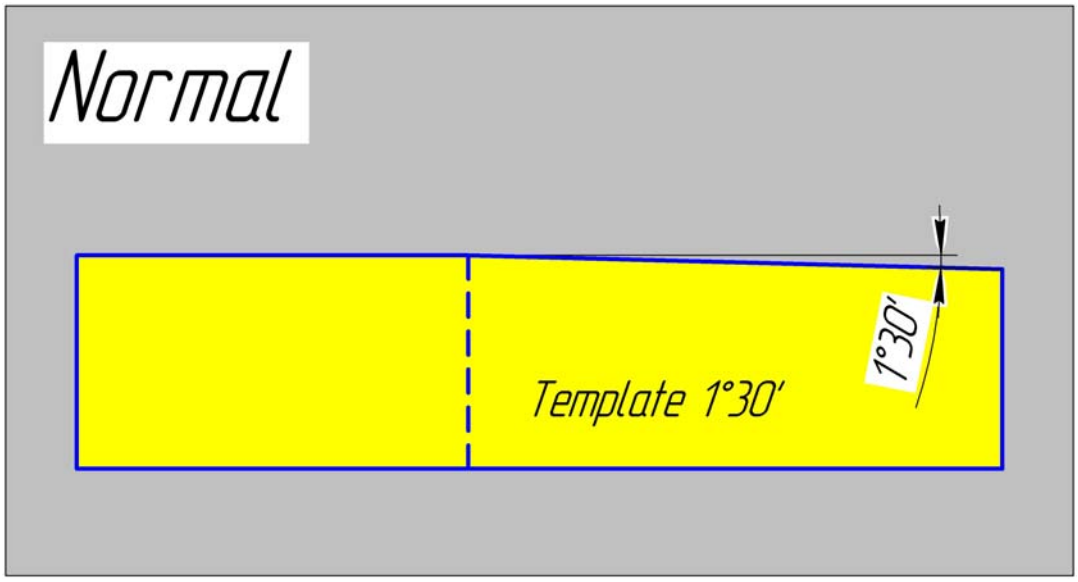
We are recommending the following Optimus wing trilling edge setups, and providing corresponding templates. Templates should be applied as shown on the following picture. Front template section should be aligned with fix part of the wing. Aft template section should be aligned to the aileron/flap by two points at the axis of rotation and trilling edge of the aileron/flap.



Optimus's trilling edge control is essential to achieve high performance flying in different flying modes and flying conditions/environments.We recommend to control wing trilling edge by flight modes/switches, or/and by dedicated slider. Pilot should choose how to control trilling edge based on his personal preferences and transmitter capability.Provided templates are examples for initial Optimus setup. Templates should be applied at the center panel – wing tips junction. Templates names are provided for reference only, and could be different from flight modes (flight phases).

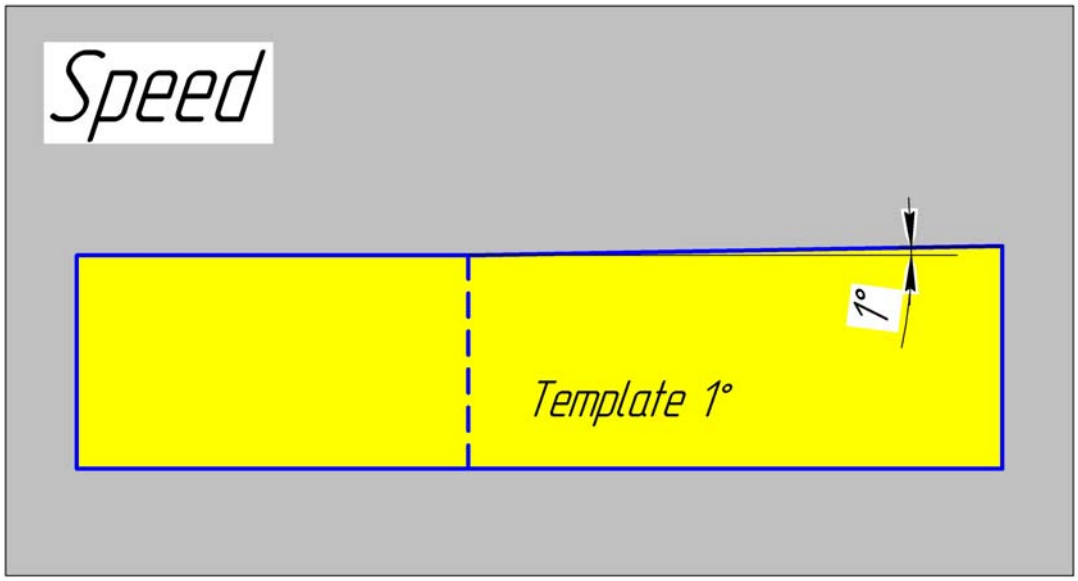
CRUISE template

That template is for pure theoretical Optimus wing airfoil



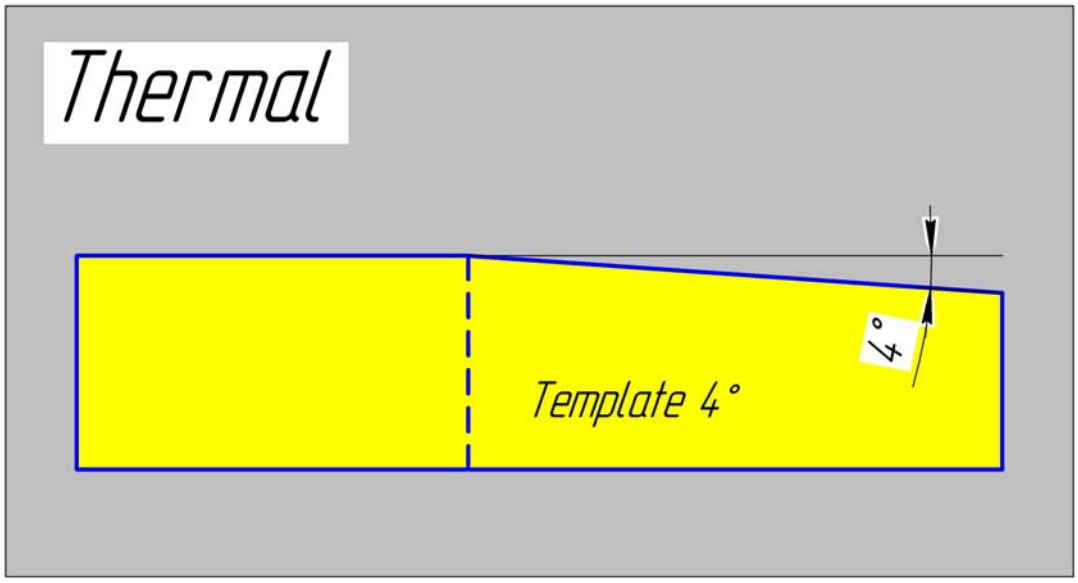
SPEED template

That template is for transition flying from one lift to another, for returning from distant lift back, or for flying in high wind conditions/environments. Speed setup could be applied by slider first extreme position, or/and by assigned switch. For best zoom performance we recommend to add 0,5 mm more up settin.



THERMAL template

That template is for maximum wing airfoil cumber. Thermal setup could be applied by slider second extreme position, or/and by assigned switch. Thermal maximum wing airfoil cumber setup may significantly reduce plane flying stability. If you found that plane control become too difficult, reduce wing cumber. Maximum wing cumber / flying stability are highly depending on plane's CG location.



LAUNCH (START) template

That template is for launch setup. Amount of the wing cumber in Launch mode depends on tow hook position, current wind conditions/environments, power capability of the tow source (winch or towers).