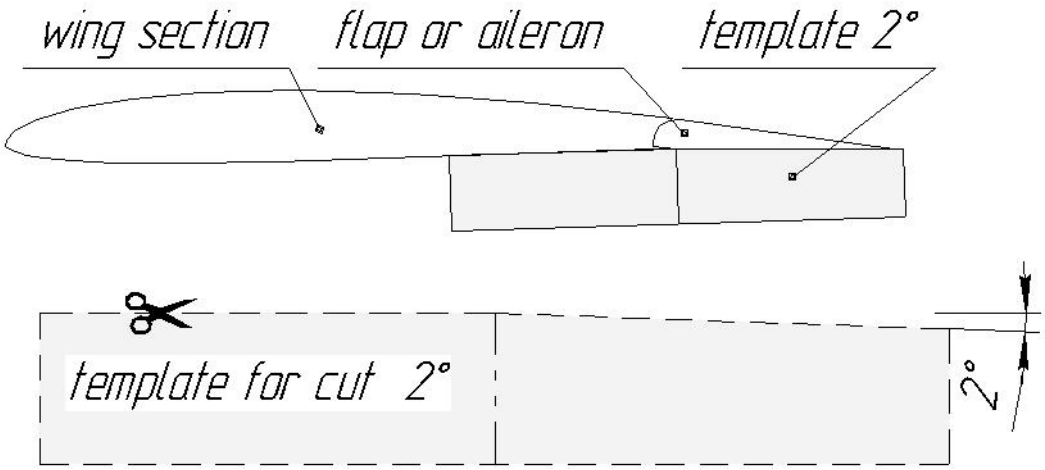
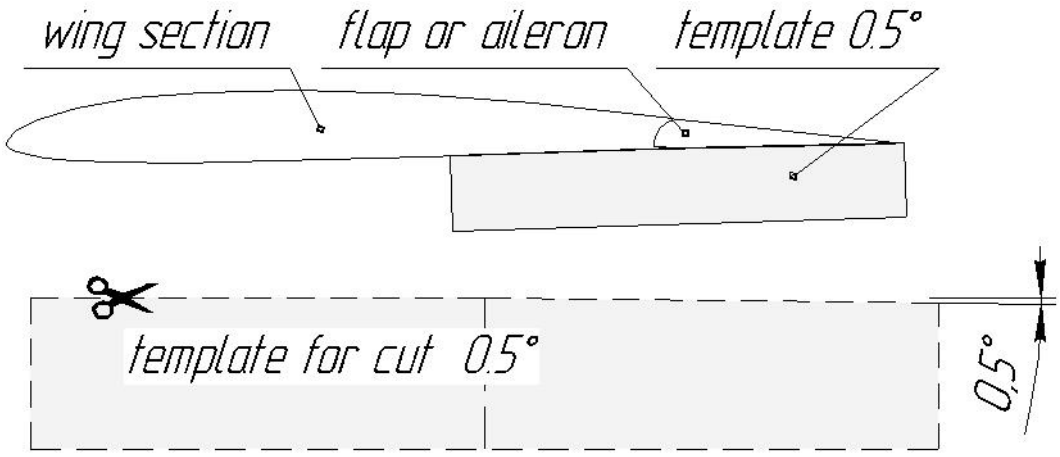
WING SETTINGS FOR SPRITE, SUPRA, BLASTER

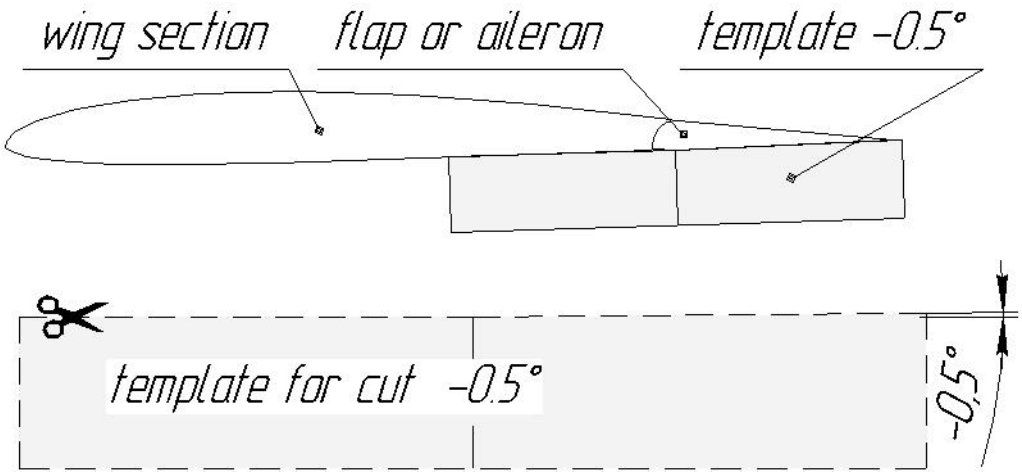
1) CRUISE flight mode



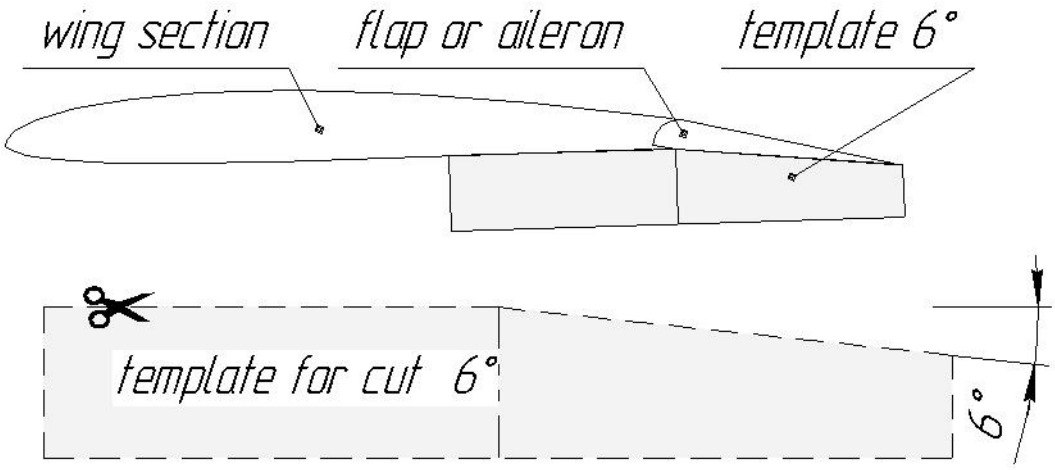
2) SPEED flight mode for best wind penetration



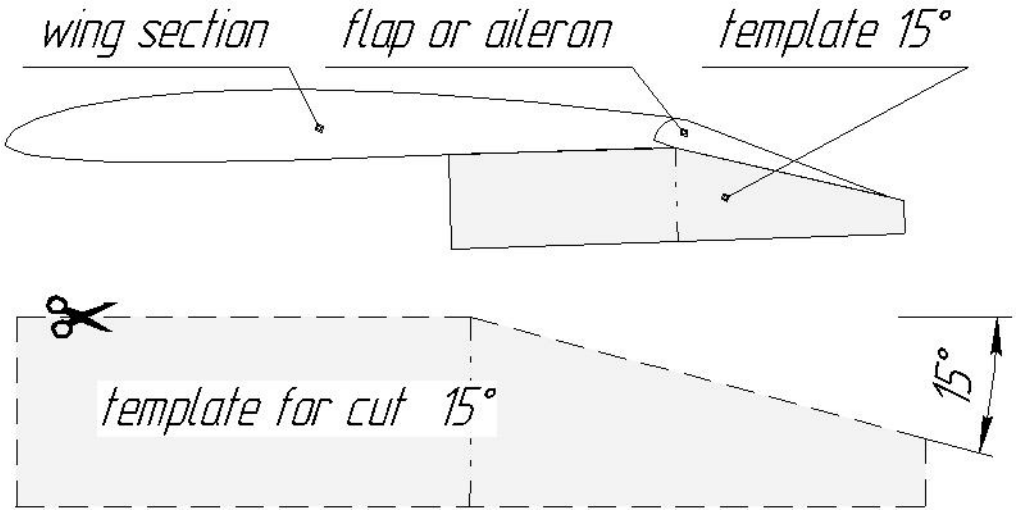
3) SPEED flight mode after a tow launch, Blaster LAUNCH mode



4) Maximum THERMAL flight mode, ailerons position for LANDING mode



5) F3j LAUNCH mode



Setting Up SUPRA and SPRITE

The following set up procedures are based on the experience of the Ukrainian F3J national team.

All deflection angles are greatly affected by the model CG location, air density, temperature, and pressure. The following information should be considered only as a guidance and should be complemented by your own knowledge.

Supra CG location: 101...103 mm (approx. 4") from the wing's leading edge near the fuselage.

The main principle of the switching between the flight modes, SPEED, CRUISE, and THERMAL, is not changing the airfoil, but changing the model reaction time. Only in the SPEED mode the airfoil is changed, as this mode is switched for short time and the airfoil is always the same.

1) F3J LAUNCH mode

In this mode, you should choose the most comfortable position of the hook, flaps, and elevator, which would result in the fastest and highest launch. It is advised to use an altimeter while training.

The hook: the center of the ring should be 218 mm (8.6") behind the rear edge of the nose cap. The hook location should be as rear as possible. Try moving it aft until you can still keep the plane straight during the launch.

When you launch the plane with a rubber high start, move the hook forward!

The maximum flap deflection is 15 degrees, while the elevator stays at neutral position. This is best suited for the highest but not very fast launch.

To increase the launch speed, reduce the flap deflection. You can increase the line tension using the elevator.

Control surface	Deflection up, mm	Deflection down, mm
Ailerons	+10	-2
Rudder	+30	-30

Mixes	Ratio, %
Aileron/Rudder	200%

Aileron differential	80...90%
Elevator/Flaps	0%

In this mode, ailerons are rarely lowered. Aileron deflection causes additional drag, thus reduce the speed, while we are trying to increase the launch speed. Instead of ailerons, use the rudder, which is very effective while the plane is being launched.

2) Overshoot after the launch (SPEED 2 mode)

Use the +0.5 degree template to set up the flap deflection.

Disable the slider (usually, the 5-th channel) to suppress the flap rate control.

Try lowering the elevator by about 1 mm.

We feel that the rudder input is not needed in this flight mode.

Overshoot usually happens at high speed, so, the ailerons become very effective--reduce the aileron travel volume or increase the exponent.

Control surface	**Deflection up, mm**	**Deflection down, mm**
Ailerons	+10	-5
Rudder	+20	-20
Elevator	+5	-5

Mixes	**Ratio, %**
Aileron/Rudder	0%
Aileron differential	40...50%
Elevator/Flaps	0%
exponent	Up to 50%

3) CRUISE mode (the normal flight)

Set up the flap deflection for the neutral Slider of the flap rate position using the 2 degree template.

In this mode, the upper surface of the airfoil is smooth, while the lower surface has a crease. Ideally, the optimal geometry of the airfoil should be 2.5 degree flap deflection, which corresponds to the two degree deflection of the airfoil center line. But we like 2 degree deflection better.

Adjust the slider (flap rate) so that you can control the flap deflection from -0.5 to +4 degrees, which can be used to adjust the airfoil from flying in a thermal or for covering the distance at high speed.

The plane is very controllable in this mode.

Control surface	**Deflection up, mm**	**Deflection down, mm**
Ailerons	+12	-7
Rudder	+20	-20
Elevator	+8	-8

Mixes	**Ratio, %**
Aileron/Rudder	50%
Aileron differential	40...50%
Elevator/Flaps	Optionally, up to 3 mm
exponent	Up to 20%

4) THERMAL mode

In the neutral Slider of the flap rate position, the airfoil may be the same as in CRUISE mode.

In this mode, you should mostly use the rudder while keeping the aileron deflection minimal. This mode is preferable for weak thermals early in the morning and late in the evening.

The plane should be very "dull" but controllable enough for you to level it after a bank.

It is not advisable to use this flight mode near the ground. In strong and turbulent thermals, this mode is also not needed.

Use Slider to control the airfoil: set it up so that you can control the flap deflection from -0.5 to +4 degrees, depending on the flight conditions.

Control surface	**Deflection up, mm**	**Deflection down, mm**
Ailerons	+8	-4
Rudder	+30	-30
Elevator	+8	-8

Mixes	**Ratio, %**
Aileron/Rudder	200%
Aileron differential	40...50%
Elevator/Flaps	Optionally, up to 3 mm
exponent	Up to 40%

5) SPEED mode for covering the distance

You can use CRUISE or THERMAL flight mode and lower the flaps according to -0.5 degree template.

The choice of the mode is made based on the desired control authority.

If you'd like, you may increase the flight speed by raising the flaps and turning the elevator up by 0.5...1 mm.

6) LANDING mode

You can activate the landing mode by 5% air brake deflection or by any other means you are accustomed to.

The Slider (flap rate) should be disabled, this will prevent mistaken airfoil correction while landing.

Control surface	Deflection up, mm	Deflection down, mm
Ailerons	+12	-7
Rudder	+30	-30
Elevator	+8	-8

Mixes	Ratio, %
Aileron/Rudder	200%
Aileron differential	40...50%
Elevator/Flaps	0%
exponent	Up to 20%

Note: The aileron differential should be disabled when the ailerons are at their highest up position.

The following table gives the control surface deflections for different air brake positions:

Air brake deflection	Flap deflection, degrees	Aileron deflection, mm	Elevator deflection, mm
0%	0	0	0
12.5%	5	1	
25%	15	2	1
37.5%	25	3	2
50%	35	4	3
62.5%	45	5	4
75%	60	5	5
87.5%	85 max	5	5
100%	85 max	-18 max	5

The elevator deflection should be adjusted for each airbrake position, based on the plane behavior.

For better jaw control on landing, you may consider not using ailerons for braking or deflecting ailerons up by 2 mm, when the air brake travels from 0 to 87.5% (this is a little more than in SPEED mode).

Tip: In order to ensure the 85...90 degree flap deflection, you should initially move neutrals of the flap servos in the opposite direction almost to their maximum. Then, their servo arms would be deflected by 10...15 degrees in the direction opposite to the flap lowering.

The last line in the above table, when the ailerons are raised up, is optional--in this mode, the plane parachutes vertically. I rarely use this mode myself.

I will greatly appreciate your input on further improvements of our planes.

Sincerely,

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