ELF – Assembly Guide

999 mm
39.33 inch

CG 75

256 mm
10 inch

156,5 mm
(6.161 inch)

682 mm
26.85 inch

114 mm
4.48 inch

65 mm
2.56 inch

158 mm
6.22 inch

11°

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Vladimir's Model

ELF

Elf Manual 2e   06/01/2012

What is the ELF?

ELF - a low weight mosquito class 1m span discus launched glider.

The ELF allows the pilot to soar in small places as never before.

ELF's high tech construction makes the model stronger and lighter.

High prefabrication allows the model to be assembled in one evening.

The ELF gives a lot of fun in a small package!

Ready to fly weight of only 95 grams!

(Dependent upon R/C, battery and construction.)

HyperFlight Notes

If you don't want to use the SmartLipo shown in this manual we have sourced some alternative batteries. Don't worry about a switch, just plug in the battery when flying.

If using 2.4GHz RC use the **Elf 2S 180 LiPo** battery and SD100 servos. No voltage regulator is required because all modern receivers and these servos can work fine on this voltage (8.4V). This will give over 2.5hrs RC duration on one charge.

If using 35MHz RC use the **Losi 150 NiMH** battery, and any suitable servos, though we would highly recommend the SD100 or the Nuke 3 - the only servos with the good centring required by this high performance model. This will give about 2hrs duration.

Parts key & required materials

The ELF kit includes these parts

1) Wing

2) Boom, pod, pushrods, V mount

3) Sheath nosecone

4) Tailplane (hoz stab)

5) Fin & rudder

6) Wing attachment bolts (front-long, rear-short)

7) Heat shrink tubing

8) Rudder horn

9) V mount
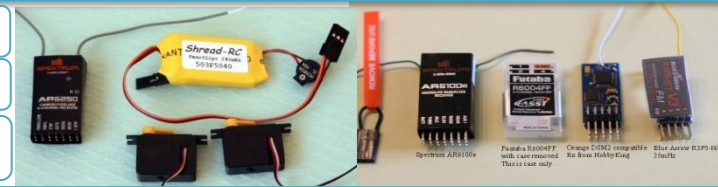
10) Winglets (2)

11) Z shaped wire servo connectors (2)
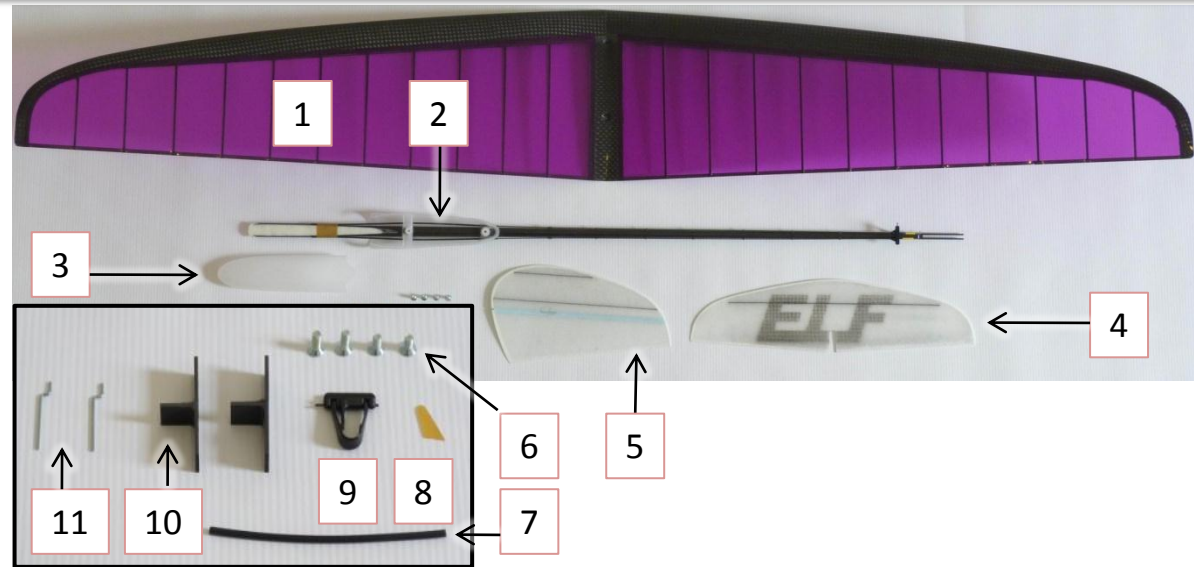
Recommended Radio Equipment

Battery: SmartLipo 240, Elf 180 LiPo, Losi 150 NiMH

Servos: Diamond D47, Ripmax SD100, Logic RC LSX110, MKS Nuke 3

Receiver: Spektrum AR6250, AR6255*, AR6100e, Futaba R6004FF*, Orange DSM2 compatible, Jeti Duplex R4 & R5, Multiplex Mlink RX-6 Light & RX-5 Light*, Schulze Alpha-535 *case removed

Required Building Materials

Medium & thick cyanoacrylate glue (CA) -not foam safe
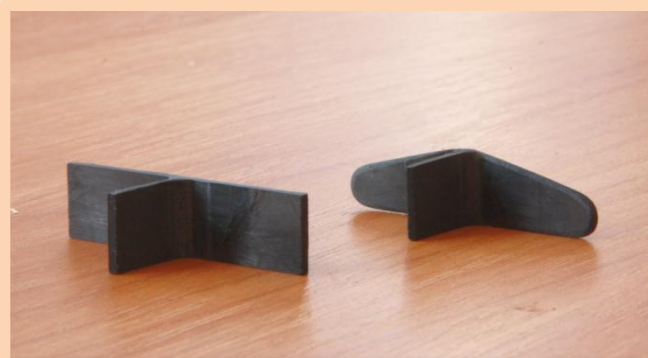
Craft knife

Pen

Ruler

Masking tape

150 sandpaper
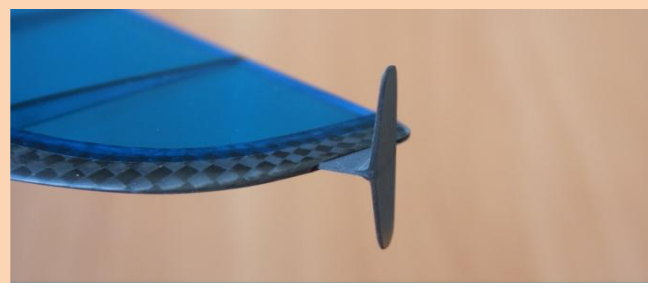
Pliers

Desire ☺

Bonding the throwing winglet

1

Cut and sand the throwing winglet so it is comfortable for you.

2

Identify the winglet tip – the left wingtip if you are right handed, or vice versa.
Fill the wing tip slot with thick CA.

3

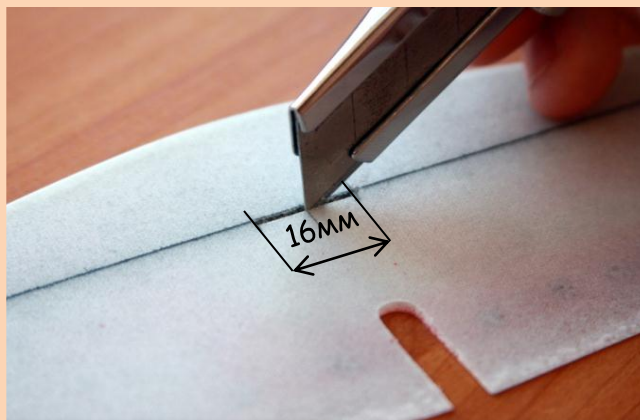Quickly slide in the winglet and fill any gaps with more thick CA.

4

Fill in the slot on the other wing with thick CA. Optionally add a little weight to balance. Or fit the other winglet so everyone can enjoy flying your Elf!
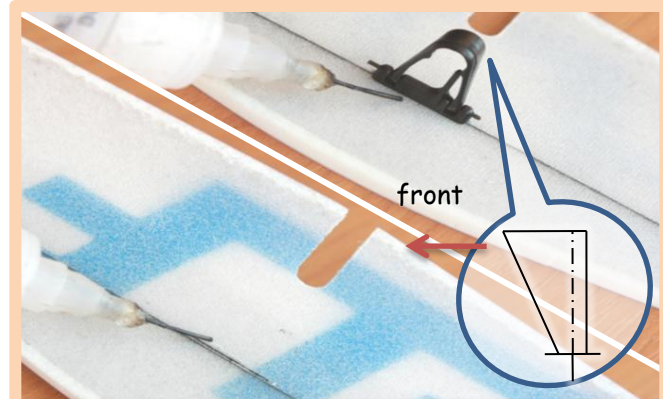
Gluing rudder horn and V mount top

1

Cut a groove in the center of the stabilizer just behind the spar. Do not cut into the carbon!

2

front

Remove the V-mount top from the base. Glue the top to the stabilizer. Do not refit the wire axle.

3

Mark 50mm from the bottom of the rudder. Cut a groove for the horn. If using Nuke 3 servos drill horn nearer hinge to inc throw.

4

Fit the rudder horn in place and glue. Then glue the rudder into the slot in the boom.
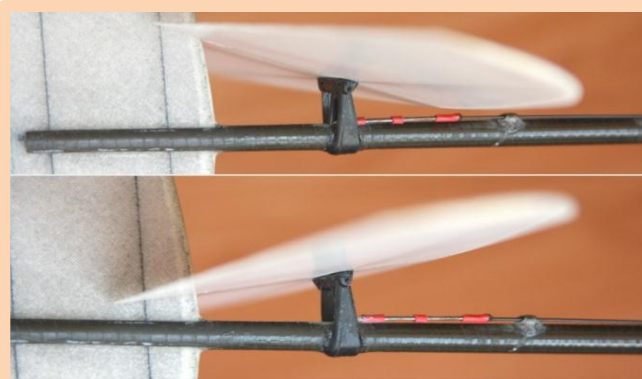
Installing the pushrods

5

Attach the pushrod to the rudder horn. Disregard the photo, use a wire-in-tube pushrod fitting for the rudder.

6

Attach the stab pushrod. The pushrod outer guides will keep it in place.

7

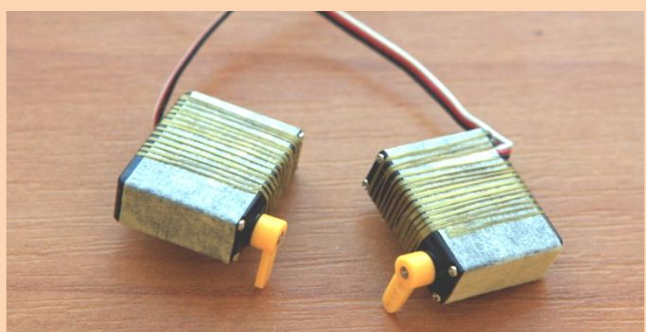Check the stab can move to max angle without fouling.

8

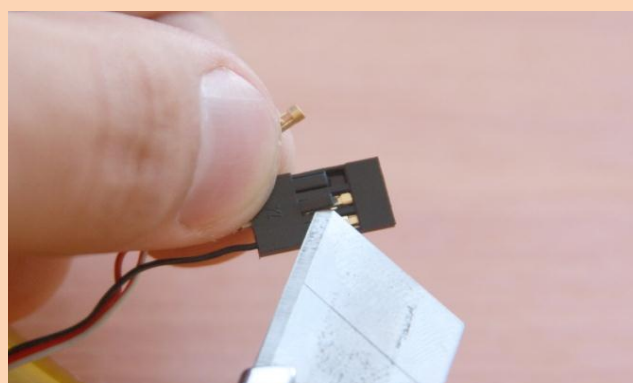Fit long guides inside the pod and shim them with scrap balsa or foam.
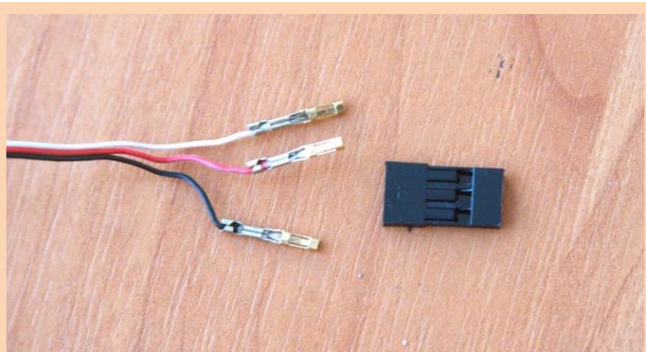
Installing the RC equipment

1

Remove the servo mounting lugs and wrap the servos with masking tape. Optionally wrap them with Kevlar thread to increase case rigidity.
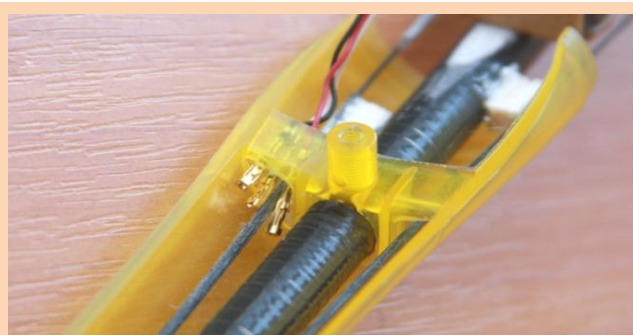
2

Remove the wires from the plug by gently teasing each leg and pulling out the wire.

3
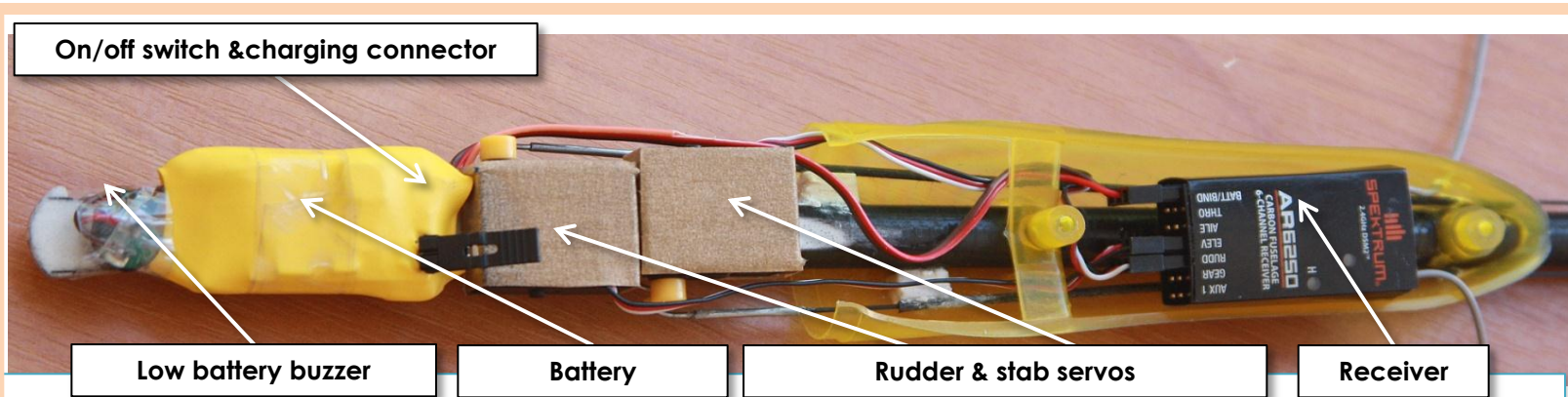

Do this with all connectors.
Note the polarity!

4

Now thread the wires through all the holes in the pylon. Put the plugs back. Ensure the polarity is as on fig 3! Check servos before gluing in place.

Equipment final assembly

5

On/off switch &charging connector

Low battery buzzer

Battery

Rudder & stab servos

Receiver

Place RC as above. Centre the output arms & glue servos in place. Trim the pushrods to length, thread on 2cm heat shrink tubing. Test fit and then CA the Z bend wires to the pushrods. Slip on the heatshrink tubing and heat to secure joint. Add more CA. Remove servo arms and thread onto Z bends. Tape the battery in place.

6

Make holes for the receiver antennas

7
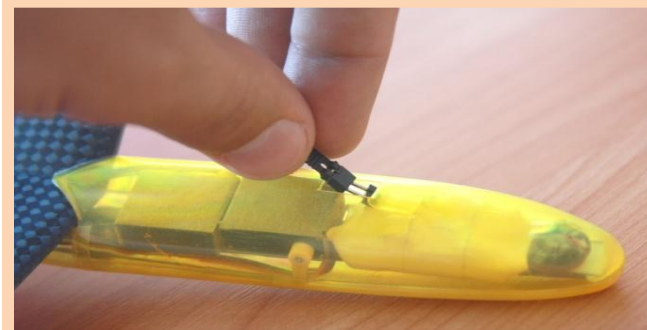
If using a SmartLipo cut a hole in the sheath for the on/off switch, otherwise remove the sheath to connect the battery

Balancing the model

1 →

Set the centre of gravity initially to 75mm from the front edge of the wing at the root. Add lead weight as required. Advanced fliers move the CG back after the test flights if this suits your flying style.

Program as much rudder throw as possible, at least 20mm each side.

Set horizontal stabiliser (tail plane) to be parallel to the boom. Program 9mm of up elevator (measured at the root trailing edge), and 9mm of down elevator. Optionally set up a rate switch to reduce throws for launch.

Start with gentle side arm launches. When trimmed try 360⁰ launches. Let the model balance itself in the wind, and make a 360⁰ turn, releasing into the wind. Do not cantilever the wingtip to hold it against the wind – this will crack the tip.

Fly safely, do not launch near others.

2 →

Program the transmitter and fly!

Addendum for Nuke 3 servo installation

The short metal output arm on this servo does not allow enough rudder movement. Either drill a new hole in the rudder horn, closer to the rudder, or preferably extend the servo arm to get an effective arm length of about 8.5mm. This can best be accomplished by squishing an 8mm piece of 3/32" (2.4mm) aluminium tube, and fixing this to the short arm with a little CA and pressure. Then flatten the end and drill a 1mm hole.
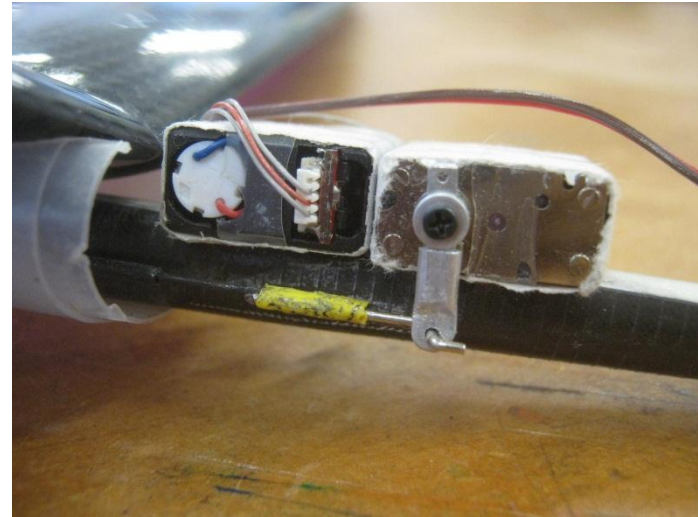
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UK Dealer: **Hyperflight**
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