

Preliminary pilot information

Recommended RC-components:

RC-component suggestions for Freestyler 3, V-tail					
version	FLAPS	AILERONS	V-tail	receiver	battery
low-cost	HS85 MG	HS85 MG	HS81 MG	SMC 14	4 x AA NiMH 2100 mAh (Sanyo, GP)
normal	DS368, DS3068, S3150	DS368, DS3068, S3150	S3150	SMC 14, SMC 19	4 x 2/3 A 1400 mAH (GP, Intellect), 4 x AA NiMH 2100 mAh (Sanyo, GP)
high-end	DS3068	DS3068	DS3781	SMC 14, SMC 19, SMC 19 DS	4 x 2/3 A 1400 mAH (GP, Intellect), 4 x 4/5 A NiMH 2150 mAh

Note concerning cheap AA batteries – it seems possible that life time ends relatively abruptly. Don't save too much at the battery or replace upon slight doubt about capacity under load. Prepare new batteries by charging/discharging several times, checking capacity and voltage.

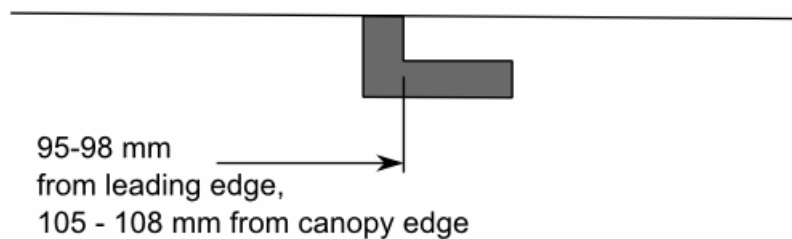
Center of gravity:

95-98 mm measured from leading edge at wing root.

Tow hook:

CG ± 2 mm, depending on desired launch safety.

Position measured from wing leading edge to rear edge of hook, see sketch below.



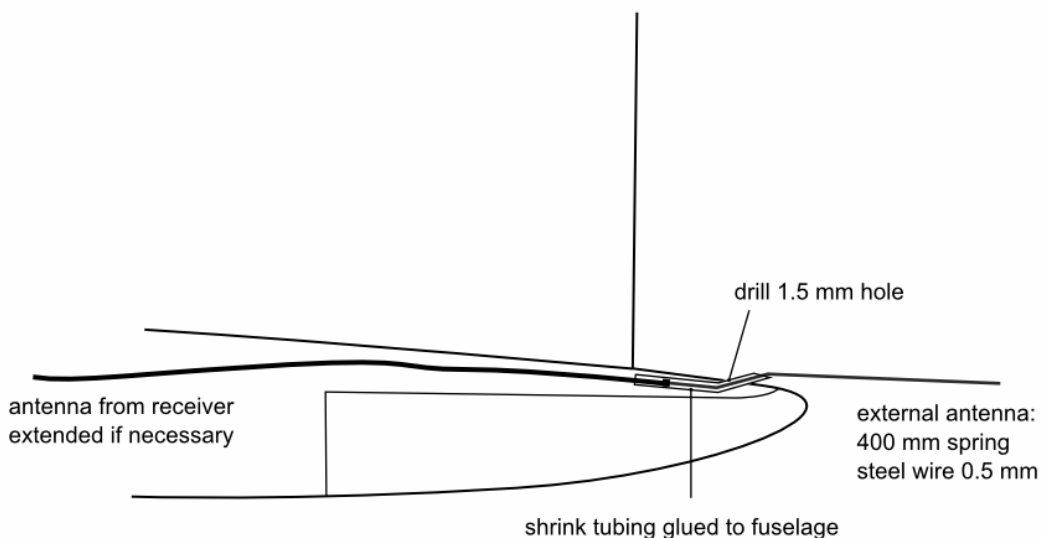
Settings:

The following table gives some hints on possible rudder deflections and positions for general usage. Tweaking to individual preferences is required.

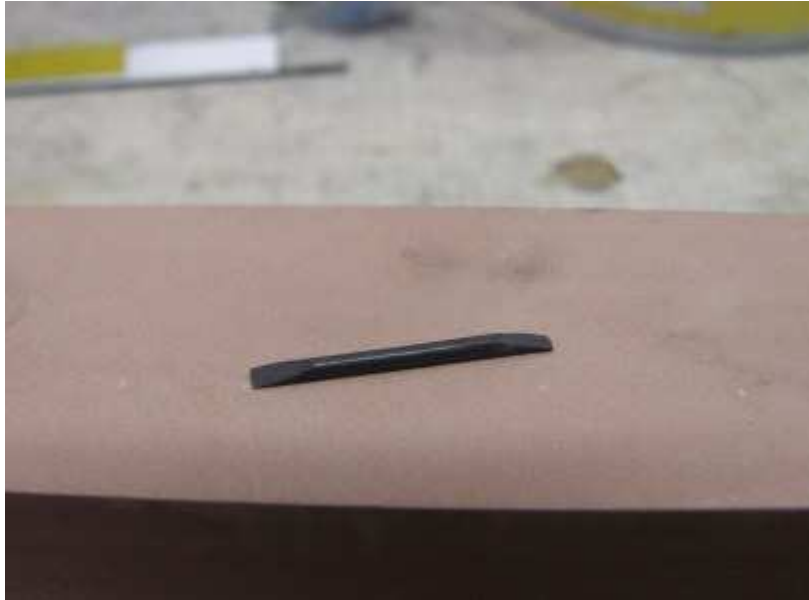
Settings Freestyler 3, V-tail					
trim positions	FLAPS	AILERONS	ELEVATOR	RUDDER	
CLIMB	2-3	-0.5 to flap	0	0	
NORMAL	0	flush to flap	0	0	
SPEED	-1.5	flush to flap	0.5	0	
WINCH LAUNCH	13	-1 to flap	0	0	
BUTTERFLY	35	-8	3	0	
deflections	FLAPS	AILERONS	ELEVATOR	RUDDER	
CLIMB	-5/3	-12/7	±6	±7	
NORMAL	-5/5	-13/8	±6	±6	
SPEED	-5/6	-13/9	±5.5	±5	
WINCH LAUNCH	0	-14/2	±6	±7	
wing mix	ELEVATOR > FLAPS & AILERONS		AILERONS > RUDDER		
CLIMB	-1/1		3		
NORMAL	-4/4		2		
SPEED	-4/5		1		
WINCH LAUNCH	0		5		
flap down = + , flap up = - , all measures in mm					

Antenna routing:

Due to carbon fibre in the fuselage (electrically conducting) the antenna must be routed outside. It turned out to be practicable to use spring steel of 0.5 mm diameter soldered to the (extended) receiver antenna. See sketch below. Use shrink-tubing to isolate from the carbon fibres and glue to fuselage.



Some words and pictures on completion:



For stiffening the fuselage extension use a short piece of 2 mm carbon rod...



and glue it into the fuselage.

In case of too large gaps, strengthen the bonding of the tail joiner



before?



after!



Screw the ball links to the Bowden wires.



Reduce wall thickness of fuselage laminate where they move to gain space.



Bending the rudder horns from brass tube OD=3, ID=2, L=21 mm.



Use a 2 mm steel wire for bending, mark 5.3 mm position.



Insert until mark.



Bend until angle fits and lower legs are parallel when inserted into tails.



Inserting the ball it should look like this.



Check fit in fuselage.



Glue ball links with medium CA.



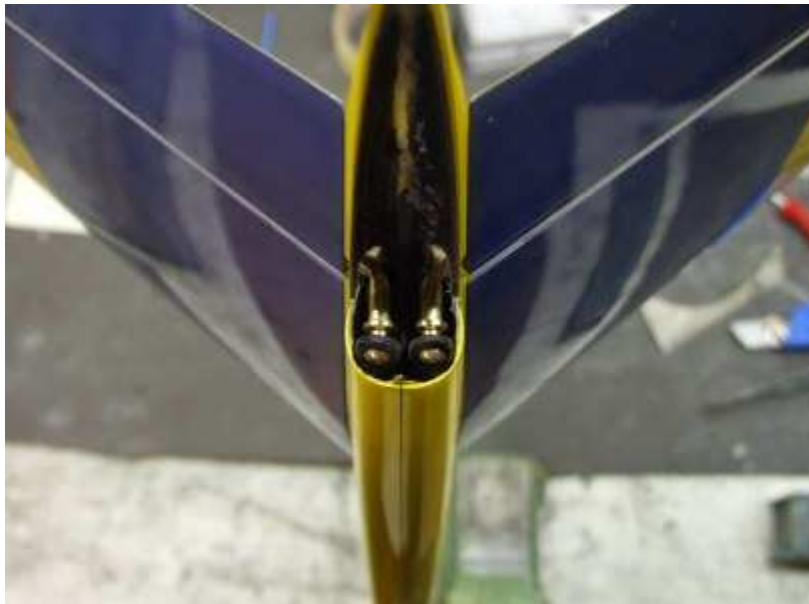
Check fit again.



Glue horns with 5-min Epoxy. Side view should look like this (horns below hinge line).



View from rear end. Flaps are fixed in neutral pos with tape.



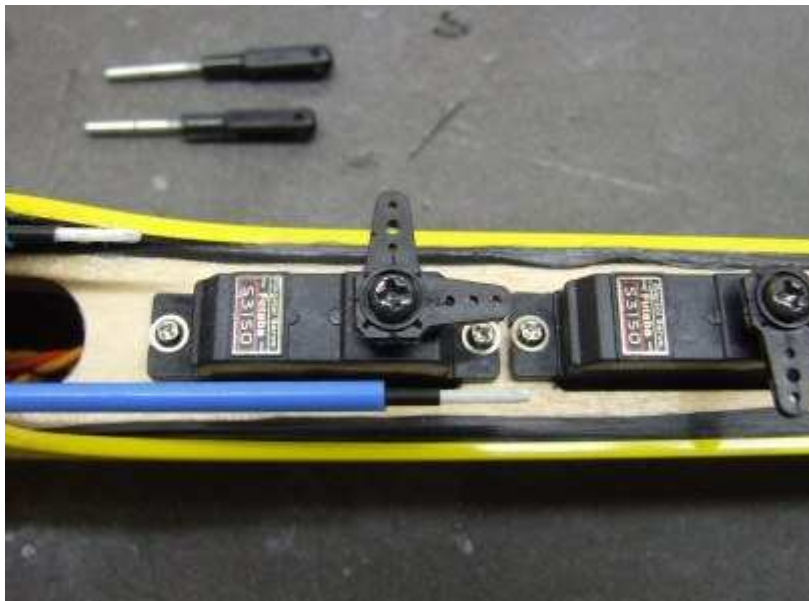
Finished ball linkages on V-tail



Glue plugs with CA.



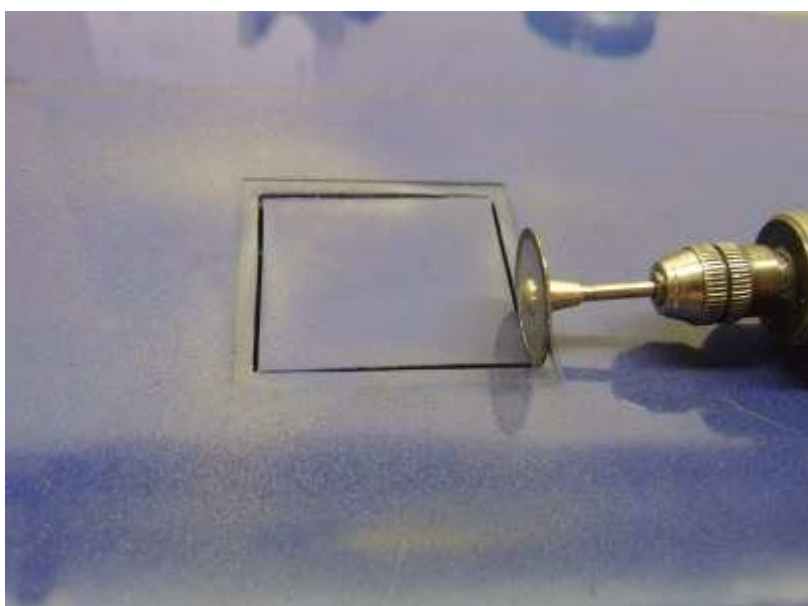
Shorten outer Bowden tubes.



Shorten inner Bowden wires.
Remove black Teflon coating on 9 mm length to insert them into the metal joints.



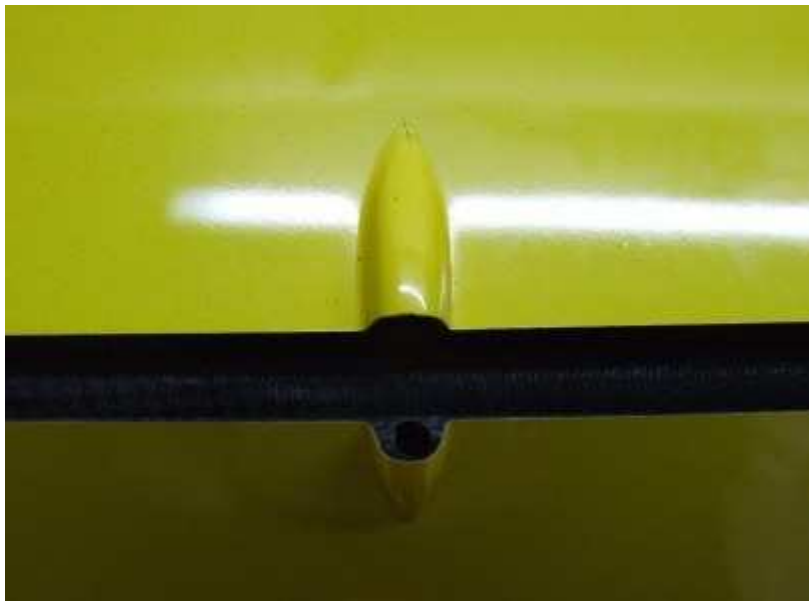
Connect metal parts and Bowden wires with thin CA.
Flaps and servos in neutral.



Open servo bays.



Prepare aileron horns (bevel lower end).



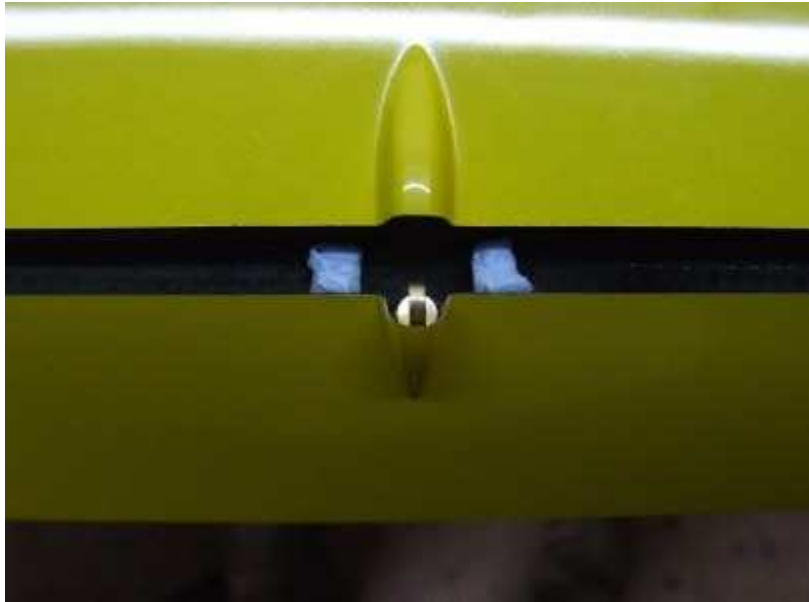
Drill hole into carbon tube.
Alternatively you can put the horns into the gap between shear web and horn cover.



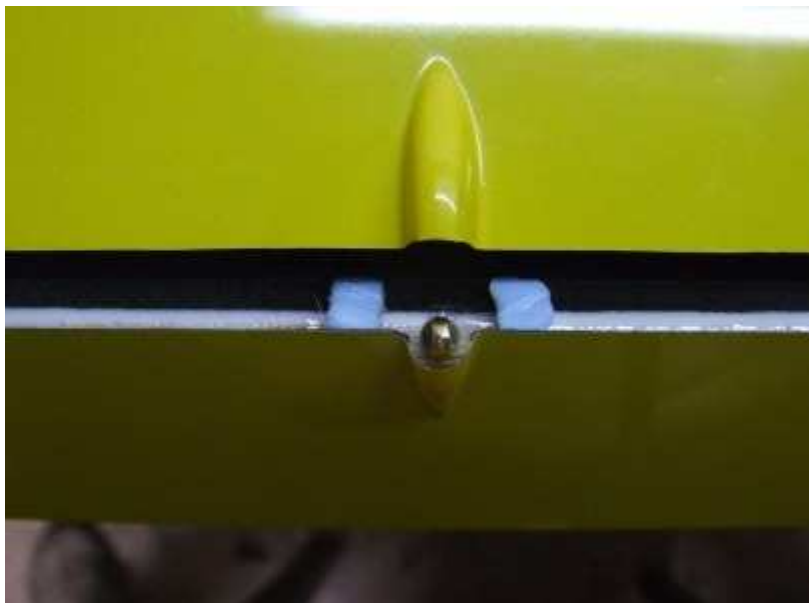
Insert aileron horn to check fit.
Rim of bolt should be 0.5 mm above aileron surface, slightly protruding into horn cover.



Insert flap horn to check fit.
Rim of bolt should be flush to flap surface, slightly protruding into horn cover.



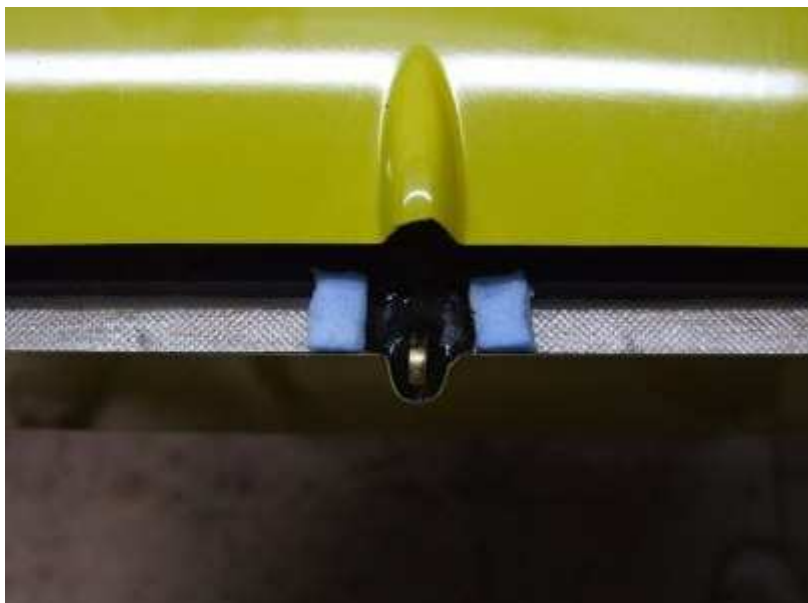
Fix aileron horns with little CA inside the tube. Clevis removed here.
Leave enough gap to let epoxy get inside the tube later.



Fix flap horns with little CA. Clevis removed here.
The blue foam will prevent epoxy to spread in the next step, by the way.



Glue horn with thickened epoxy.



Dito.



Prepare servo arms for ailerons.
Drill 2 mm hole touching bevelled rim of JR servo arm.
Remove excess material later.



For the flap horns use the thick disc supplied with DS368.



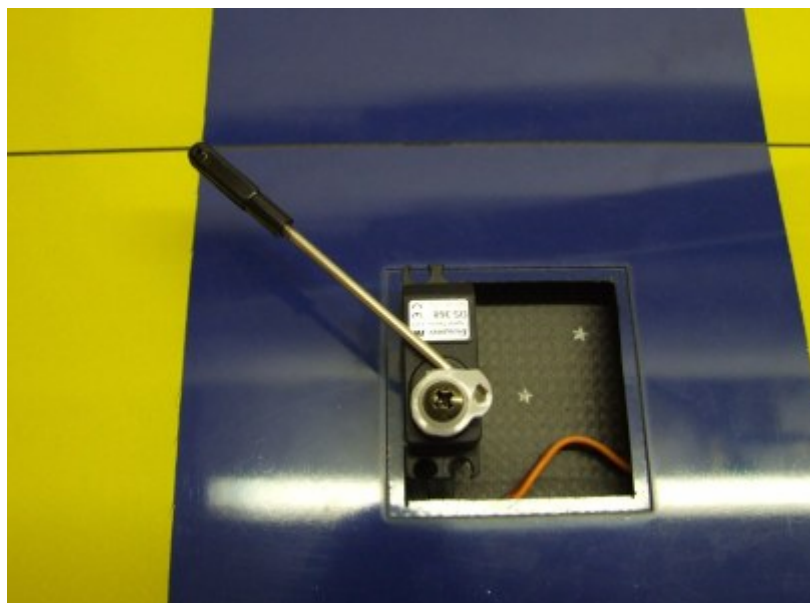
Clip off until it looks like this, let one or two holes with the smallest radius remain.



Round the edges. From a 2 mm spoke prepare pushrods by bending at 90°.
Lengths: Aileron 52, flap 55 mm.



With the clevises the pushrods should look like this (aileron).
For the flaps total lengths should be 67 mm.



Check for enough free movement.

Aileron: In servo neutral the horn should be rotated about 20° downstream to allow enough deflection upwards.
Flap: Apply an offset of ± 50 trim points (MC24), then put on the horns such that the arm is rotated about 5° downstream.
Make a dry test before...



...glueing the servos with medium CA.
Using DS368 on the ailerons it is necessary to sand the casing a bit at the rear end.
Nothing protrudes from the bottom surface.



Finally, the linkages should look like this from outside.