Sbach – 1,2m 3D/aerobatic EPP model
Building instructions

Please refer to the Diagram sheet

Diagrams A, B

Press 2 carbon strips (1x3x1000 mm) into the grooves in the sides of the fuselage central part (the „backbone"). Position the backbone on your workbench on its side, gently press if necessary and make sure that the sides are perfectly straight. Apply thin CA glue over the carbon strips and saw off their overhanging ends.

Diagram C

Use thin or medium CA to attach the wing halves to the backbone. Note the little tabs that should help you position the wing halves correctly. (put some down pressure on the thickest part of the root of the wing first to set the wing at 0° incidence). Caution! The backbone should be in inverted position, i.e. the elevator cutout facing down and the wings should be attached with their bottom side up! If you get this wrong, your elevator will not fit into the fuselage correctly.

Diagram D

Locate two carbon strips (1x5x1000 mm). Use sharp hobby knife to cut shallow (5mm) slits into the upper and lower surface of the wing as indicated. Press the two carbon rods into the slits. Make sure that the wing is perfectly straight (press gently down on the workbench) and apply thin CA glue over the carbonstrips. Cut two shallow slits into the backbone according to the part 2 of diagram D.

Diagram E

Cut shallow slits into the elevator upper and lower surface as indicated. Press in two carbon strips. Make sure that the elevator is straight and apply thin CA glue over the carbon strips.

Diagram F

Glue (using thin or medium CA) the canopy (made of black EPP) into place. Use sharp hobby knife to separate the fuselage upper and lower parts, cutting through the center of the little tabs.

Diagram G

Put the backbone on your workbench in inverted position (the stabilizer cutout is again facing down). Assemble together the landing gear plate and the stirrups. Glue the LG plate to the bottom edge of the slot in stirrups according to the diagram. Use thin CA to glue the landing gear mount to the backbone.

Diagram H

Connect the lower fuselage part to the bacbone using thin or medium CA or contact glue. Install the stab/elevator into the assembly using thin or medium CA (check its proper alignment first). Use medium CA to glue anti-torsion reinforcements.

Diagram I

Drill holes into the landing gear as indicated.

Diagram J

Slide landing gear legs into the stirrups. Due to manufacturing tolerances you may need to trim slots in stirrups. Use two wood-screws (2,9x6mm) to screw the LG to the LG mount. To remove the LG you can just slightly loosen the screws. Assemble the landing gear as indicated. Gluing the EPP wheel pants to their mounting tabs is the last step of the LG assembly.

Diagram K

Now is the convenient time to install aileron servos. Cut appropriate slots into the wing lower surface using sharp hobby knife. Make the slot somewhat smaller, for a tight fit. Use hot glue or thick CA to install the servos. Cut into the ailerons and press in the aileron control horns. Make sure your servos are centered (with zero trim). Glue the control horn into the aileron.

Use the included pushrods (carbon rod 1,8x50 mm) with ball links on both ends. Screw ball links to the servo arm and control horn using M1,6x4 mm screws. Trim the lenght of carbon rod to sleeve it into ball links about 5mm deep. Check neutral position of servo and aileron and glue together pushrod and ball links using thin CA.

Diagram L

Use medium CA to glue the firewall. Attach the upper fuselage part to the backbone using thin or medium CA.

Diagram M

Assebmle tail wheel as indicated and glue it to the bottom rudder hinge (12mm wide with slots for the tail wheel). Take the second part of the hinge (16mm wide) and screw both parts together using M2x5 mm screw. Prepare the upper hinge. Cut two slots in the rudder according to the diagram and glue in hinges using CA. Cut matching slots in fuselage. Make sure that the rudder throws are sufficient and apply some CA glue over the hinges.

Diagram N

Glue SFGs to the wing. SFGs are not symmetrical – shorter part should be on the bottom side of the wing. Make sure SFGs are parallel to the fuselage.

The elavator servo is on the side of the backbone right bellow the carbon strip behind the aileron. Use sharp knife to cut appropriate slot. Take carbon tube 2/1x500 mm and glue metal Z bend into the tube (let the Z bend stick out about 10-15mm). Sleeve elevator horn on the Z bend and glue the horn into the slot in the elevator as indicated. Center the servo (servo arm should be heading 12 o'clock). Sleeve the pushrod support (orange plastic tube 3/2x15mm) on the pushrod. Install the other Z bend into the servo arm and trim lenght of the pushrod to leave about 10-15mm gap between carbon tube and servo arm. Use CA to glue Z bend into the tube and check elevator deflection. Install longer servo arm if necessary. When you are happy with results glue the pushrod support to the fuselage.

Diagram O

Instal rudder servo according to the diagram. On the side of the control horn, tie the control line to the outer hole. Use small drop of CA to secure the knot and prevent the (rather sharp edged) control horn from cutting through the line. CA glue the extension arms to your original servo arms and secure with few threads of the kevlar line and a drop of CA glue. Finally, thread in the included M2x5 screw and use it to pinch the line in the right

position and with moderate tension. The line should lead around the outside of the screw below the servo arm first – please refer to the diagram.

Or you can use your own preferred method to attach the cable to the servo.

Motor mount

First attach the „X" motor mount to the motor using M3x6 socked head bolts. Than screw the „X" mount to the firewall using 2,9x9mm wood screws.

Final setup and flying

We expect that you know how to connect the receiver to the ESC and to the servos, the ESC to the motor etc. If not, please refer to the respective instructions or better ask some more experienced friend.

For first flights, your C of G should be 100 mm behind the leading edge at the wing root. Attach your battery to the plane using adhesive velcro tape for the first flights, to be able to adjust the CG easily. Set control throws at 60% of max and 30% of exponential on all controls (if your radio permits). Check all systems and go fly. To trim the plane correctly, the weather should not be too windy.. First, trim all controls coarsely to make the plane appear to fly straight. You should need about the same amount of elevator for both inverted and normal flight. You may try vertical power off dive to trim the

neutral elevator. Your aileron trim should be the same in normal flight and inverted. If it is not, you may have a lateral balance issue. Try to move the battery pack sideways (say to the opposite side of the fuselage), if you can, to fix this

problem. After this, you should play with the thrust line to setup for clean and effortless hover without any tendency to "pull out" to any side. This may take a while and require quite a few tests. The thrust line can be changed by

inserting thin washers on the screws between the „X" mount and the.

Next thing, the center of gravity. We prefer the plane to fly almost "hands off", just the slightest bit of elevator needed for level flight. Move the C of G vertically (by moving the battery pack) to get a perfect knife edge without any tendency to roll.

For clean rolls, without any coupling to yaw, you may want to play with aileron differential (different up and down deflection of ailerons).

Have fun!   Your RC Factory team.

Technical specs:
Wingspan 1220 mm
Length   1230 mm
AUW   600 - 800g
Motor   200 – 300W outrunner type
Servos   4pcs of 12 – 20g servos of good quality
Battery   Lithium Polymer 1600 – 2500 mAh 3s

Sbach 1.2m

Kit contains:

*Fuselage
*Cannopy
*Backbone
*Elevator
*Rudder
*SFG's

*Wings
*Landing gear
*Wheell pants
*Anti-torsion reinforcements(2x)
*Bag with hardware

*Carbon rods and strips:
 - 2x 1x3x1000 - fuselage
 - 2x 1x5x1000 - wing
 1x tube 2/1x500 - elevator pushrod
 - 1x 1x5x245mm - elevator
 - 1x 1x3x245mm - elevator

Bag with hardware includes:

4x screw M1,6x4 ... ball links
2x screw M2x5 ... rudder hinge
2x screw M2x5 ... pull pull cable tightener
1x screw M2x8 ... tail wheel shaft
2x nut M2 ... tail wheel shaft
2x socked head M3x15 ... landing gear shaft
4x washer 3 ... landing gear
2x nut M3 ... landing gear
2x nut M3 ... landing gear
2x screw 2,9x6mm ... lading gear plate
4x screw 2,9x9mm ... X motor mount
4x socket head bolt M3x6 ... X motor mount

2x "Z" bend ... elevator pushrod
1x firewall
1x control horn set
2x wheel pant mounting tab
1x LG plate
2x LG stirrup
4x ball link
2x wheel 50mm
1x wheel 25mm
1x plastic tube 3/2x15mm - pushrod support
2x carbon strip 1x3x100mm - elevator reinf.
2x carbon rod 1.8x50mm - aileron pushrod
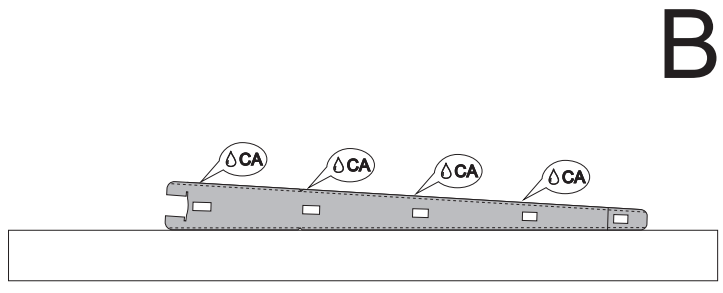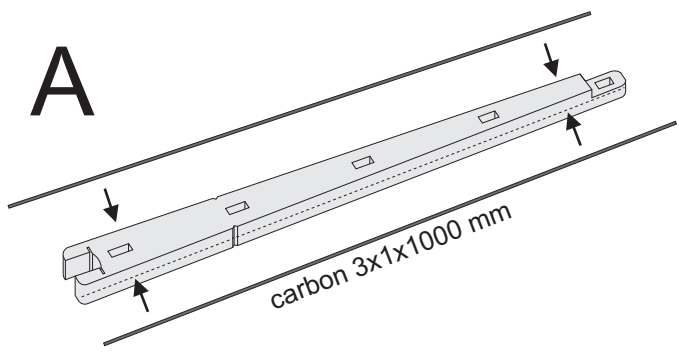1,5m kevlar cable - rudder pull pull

Control horn set:

1. Rudder hinge - fuselage (2ks)
2. Bottom rudder hinge
3. Elevator servo arm extension
4. Aileron control horn (2ks)
5. Rudder control horn
6. Rudder servo arm extension
7. Tail wheel
8. Elevator control horn
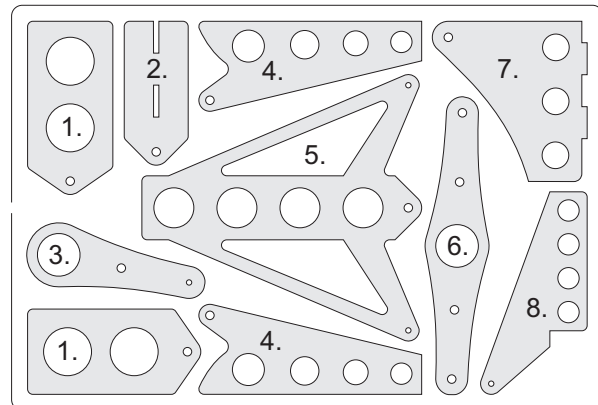
You will need:

* hex key nr.2
* phillips screwdriver
* screwdriver
* CA glue with kicker
* sharp knife
* flat file
* sand paper 100-500
* driller 3mm
* about 5 hours of your time

A

carbon 3x1x1000 mm

B

bottom side of wing facing up!

elevator cutout down!

C

D

1

2.

CA

3.

CA

carbon 1x5x1000 mm

E

carbon
1x3x100 mm

carbon
1x3x245 mm
1x5x245mm

CA

CA

CA

F

CA

H

L+R

CA

CA

G

CA

I

3mm

socked head M3x15mm

washer 3mm

nut M3

wood screw 2.9x6mm

J

CA

CA

CA

CA

L

CA CA CA CA

CA

K

M2x5

M

CA CA

M2x8

M2x5

CA CA

N

cca 25mm

CA

CA

O

110mm

M2x5

CA

CA