

SebArt *professional line*

Angels 30E ARF

ASSEMBLY MANUAL

The new *Angels 30E ARF*, was designed by the 10 times F3A Italian Champion Sebastiano Silvestri, it is the replica of his 2 meter size F3A competition airplane, 3rd at the European Championships in Swiss land 2006 and 5th at the World Championships in Argentina 2007.

This professional ARTF kit is the result of Sebastiano's long research and experience in F3A and 3D. This combined with an extremely lightweight structure, the all wood airframe, give the *Angels 30E* an impressive thrust-to-weight ratio and an impressive precision at any airspeed and flight condition.

The *Angels 30E* can do it all... it is ready for any pattern sequence as for unbelievable easy 3D aerobatic manoeuvres, and almost anything else you can dream up are waiting you!

.....the only aerobatic limit is your fantasy!

Specifications

Wing Span:.....127 cm (50 in.)
Length:..... 132,5 cm (52,16 in.)
Wing Area:..... 33 dm² (51,15 sq.in.)
Weight:.....1.100 g. RTF less battery (38,7 oz)
Radio:.....4-Channel with 4 mini servo

Recommended power set up:

Motor:..... Hacker A30-14L
ESC:..... X40 SBec-Pro
Battery: Flight Power 2170-3S or 2500-3S
Propeller: APC 14x8E

Table of contents

Table of contents.....	2
Required radio, motor and battery.....	3
Additional required items, tools and adhesives.....	3
Warning.....	3
Before starting assembly	4
Using the manual.....	4
Warranty information.....	4
Section 1 – ailerons installation.....	5
Section 2 – aileron servo & control horn installation.....	6
Section 3 – rudder installation & tail wheel installation.....	8
Section 4 – elevator installation	10
Section 5 – elevator servo & control horn installation.....	12
Section 6 – rudder servo & control horn installation.....	13
Section 7 – landing gear & wheels installation.....	15
Section 8 – electric motor installation	17
Section 9 – small wings installation (optional).....	19
Section 10 – final radio installation	21
Wings installation.....	21
Control throws.....	22
Mixing.....	22
Rates and expos.....	22
Recommended CG.....	22
Range test your radio.....	23

Required radio, motor and battery

Radio equipment:

- Minimum 4-channel radio system
- 4 digital mini servo, recommended JR PROPO DS385 or DS381
- 2 servo extension 400mm, for elevator and rudder servo
- 2 servo extension 100mm, for aileron servo

Recommended electric motor for best performance:

- Hacker A30-14L + X40 SBec-Pro controller + APC 14x8 E

Recommended Li-Po battery pack for best performance:

- Flight Power EVO 2170-3Sfor unlimited 3D
- Flight Power EVO 2500-3S.....for duration and precision

Additional required item, tools and adhesives

Tools:

- Drill
- Drill bits: 1,5mm, 2mm, 3mm
- Phillips screwdriver
- Hobby knife
- Sanding paper
- Masking tape
- Soldering iron

Adhesives:

- thin CA
- medium CA

Warning

This RC aircraft is not a toy!

If misused, it can cause serious bodily harm and damage to property.

Fly only in open areas, preferably in official flying sites, following all instructions included with your radio and motor.

This plane is a compromise between Aerobatics and 3D flying, and not a pylon racer.

It is built with a very light structure and for this reason we hardly recommend:

→ **Do NOT fly your airplane at high speeds, because this may cause structural failures or flutter due to the extremely large control surfaces.**

Before starting assembly

Before starting the assembly of your AngelS 30E, remove each part from its bag and protection for a prior inspection. Closely inspect the fuselage, wing panels, rudder, and stabilizer for damage. If you find any damage or missing parts, contact the place of purchase.

If you find any wrinkles in the covering, use a heat gun or covering iron to remove them. Use caution while working around areas where the covering material overlap to prevent separating the covers.

Using the manual

This manual is divided into sections to help make assembly easier to understand and to provide breaks between each major section.

In addition, check boxes () have been placed next to each step to keep track of each step completed. Steps with two boxes indicate that the step will require repeating, such as for a right or left wing panel, two servos, etc.

Remember to take your time and follow the directions.

Warranty information

SebArt guarantees this kit to be free from defects in both material and workmanship at the date of purchase.

This warranty does not cover any parts damage by use or modification, and in no case shall SebArt's liability exceed the original cost of the purchased kit.

Further, SebArt reserves the right to change or modify this warranty without notice.

In that SebArt has no control over the final assembly or material used for the final assembly, no liability shall be assumed or accepted for any damage of the final user-assembled product. By the act of using the product, the user accepts all resulting liability.

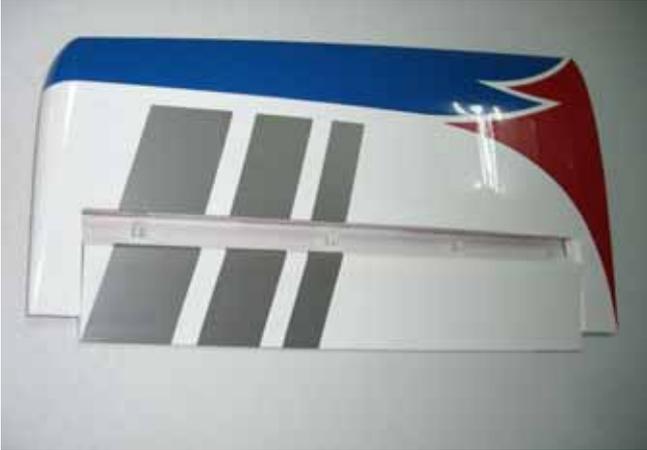
If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

SebArt di Sebastiano Silvestri
Via Trento 69/3
38017 Mezzolombardo (TN) – Italy
www.sebart.it

Section 1 – ailerons installation

□□ step 1

Trial fit the four aileron hinges, included in the hardware pack, in their place and verify the correct position and alignment of the aileron with the wing panel.



□□ step 2

Carefully glue, with some drops of thin CA, each of the four hinges in the aileron.



□□ step 3

Locate the aileron and carefully glue, with some drops of thin CA, the hinges into the wing panel.



□□ step 4

Work the aileron up and down some times to work the hinges and check for proper movement.

□ step 5

Repeat steps 1 through 4 for the remaining wing panel.

Section 2 – aileron servo & control horn installation

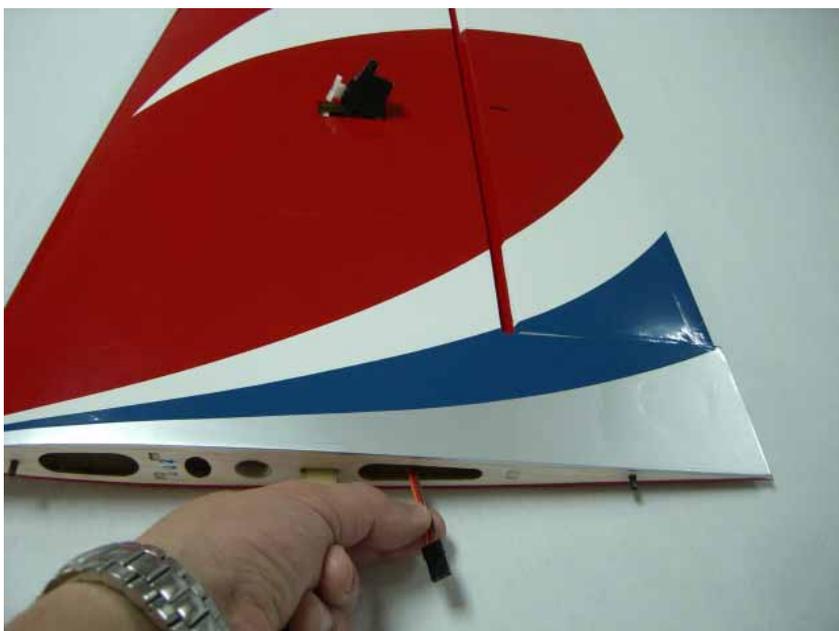
□□ step 1

Locate the following items included in the hardware pack and the servo.



□□ step 2

Install the servo hardware (gommets and eyelets) and put the servo into the wing panel, as per pictures.



□□ step 3

Drill using a 1,5mm drill bit, and install the servo into the wing panel using a Phillips screwdriver.



□□ step 4

Glue the fibreglass horn with medium CA into the aileron.



□□ step 5

Install the hardware and make the final adjustment as per pictures.



□ step 6

Repeat steps 1 through 5 for the remaining wing panel.

Section 3 – rudder installation & tail wheel installation

□ step 1

Locate the items included in the hardware pack and assemble them as per picture.



□ step 2

Locate the following items.



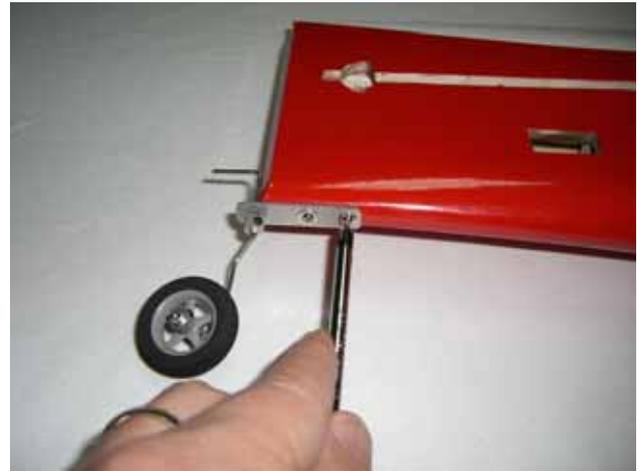
□ step 3

With the hobby knife cut a groove of 15mm length into the rudder. Drill in the rudder, 15mm from the bottom, the location for the tail wheel using a 2mm drill bit.



□ **step 4**

Drill the screw locations for the tail wheel using a 1,5mm drill bit, and install it as per picture.



□ **step 5**

Locate the rudder in his place and check the alignment with the fuselage. Right after glue the rudder with some drops of medium CA, as per pictures.



□ **step 6**

Insert the three hinges in their appropriate slots of the rudder, and glue them with some drops of thin CA.



□ **step 7**

Carefully put some drops of medium CA into the 2 mm hole into the rudder. Carefully locate the rudder and glue the hinges with some drops of thin CA.



□ **step 8**

Work the rudder right and left some times to work the hinges and check for proper movement.

Section 4 – elevator installation

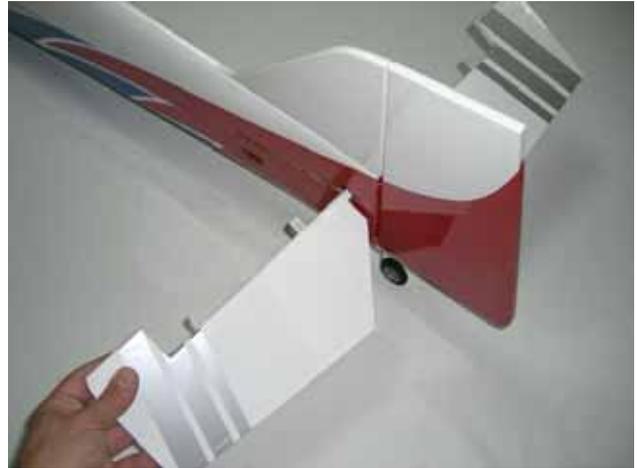
□ **step 1**

Insert in the elevator the four hinges into their appropriate slots and verify the correct position and alignment of the elevator with the stabilizer.



□ **step 2**

Carefully glue the hinges, with some drops of thin CA, in the elevator only. Then insert carefully the elevator through the fuselage.



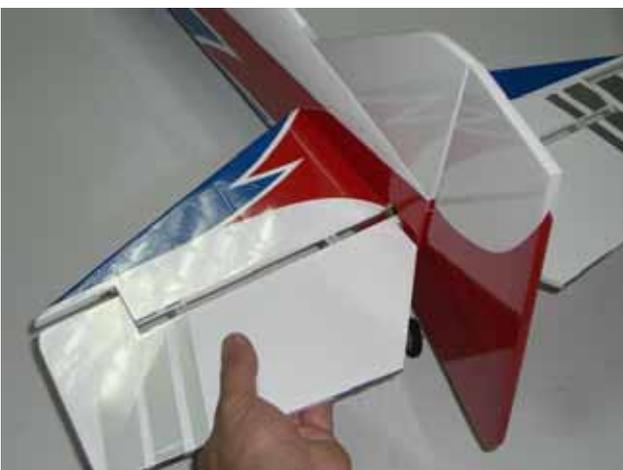
□ **step 3**

Insert the stabiliser into fuselage space and check the alignment with the wing carbon tube.



□ **step 4**

Locate the elevator hinges into the stabiliser. Glue carefully the hinges in the stabiliser with some drops of thin CA.



□ **step 5**

Once satisfied with the alignment, glue carefully with thin CA the stabilizer at the fuselage.



Section 5 – elevator servo & control horn installation

□ **step 1**

Locate the following items included in the hardware pack, servo extension 400mm long and servo.



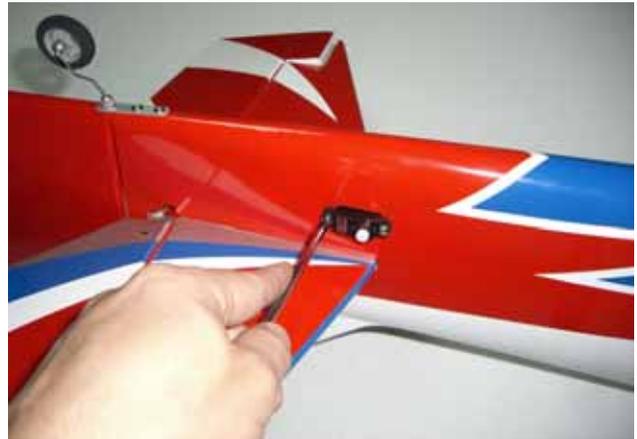
□ **step 2**

Then install the servo hardware (grommets and eyelets) and locate the servo into the fuselage.



□ **step 3**

Drill using a 1,5mm drill bit, and install the servo into the fuselage using a Phillips screwdriver.



□ **step 4**

Glue the fibreglass horn with medium CA into the elevator. Then install the hardware and make the final adjustment as per picture.



Section 6 – rudder servo & control horn installation

□ **step 1**

Locate the following items included in the hardware pack, servo extension 400mm long and servo.



□ **step 2**

Then install the servo hardware (gommets and eyelets) and locate the servo into the fuselage.



□ **step 3**

Drill using a 1,5mm drill bit, and install the servo into the fuselage using a Phillips screwdriver.



□ **step 4**

Glue the fibreglass horn with medium CA into the elevator. Then install the hardware and make the final adjustment as per picture.



Section 7 – landing gear & wheels installation

□ step 1

Locate the following items included in the hardware pack.



□□ step 2

Install wheel and wheel pant as per pictures.





□□ **step 3**

Locate the landing gear on the fuselage and fix it with the 3 screws included in the hardware pack.



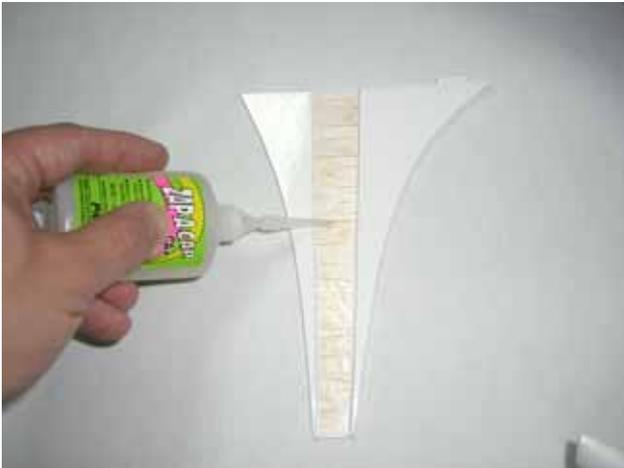
□□ **step 4**

Test fit the L.G. Lift Generator and his alignment with the fuselage.



□□ **step 5**

Glue carefully the landing gear fillet with some drops of medium CA, as per picture.



□ **step 6**

Repeat steps 2 to 5 for the other side of the landing gear.

Section 8 – electric motor installation

We recommend to use HACKER motor, you need the following items (not included):

- Hacker A30-14L + X40 controller + APC 14 x 8 E



□ **step 1**

Locate the motor and fix it with the four screws included in the motor hardware pack.



□ **step 2**

Locate and fix the ESC and his switch as per picture.



□ step 3

Glue with some drops of medium CA the Velcro strip included in the hardware pack.



□ step 4

Fix carefully the prop and spinner.



Section 9 – small wings installation (optional)

We recommend to install this small wings (included in the kit) to improve the aerobatic capability of your Angels 30E.

□ step 1

Locate the following parts included in the kit.



□ **step 2**

Install the fuselage small wing, gluing the parts with some drops of medium CA, as per pictures.



□ **step 3**

Install on both wing panels the small deflectors, gluing the parts carefully with some drops of thin CA, as per pictures.



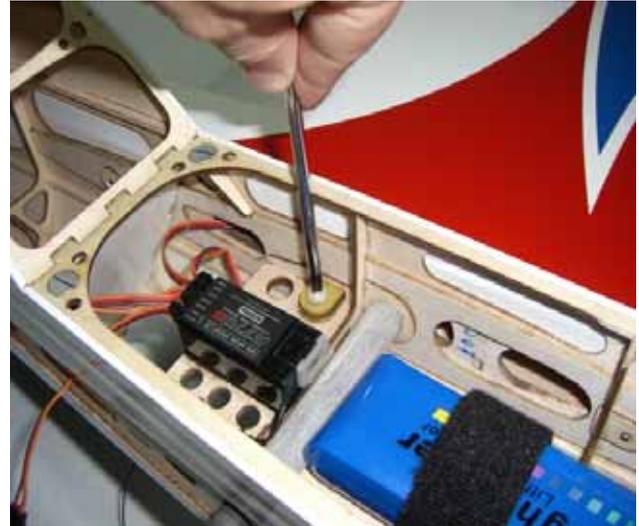
Section 10 – final radio installation

Install the receiver, two extension 100mm for aileron servos and the battery pack as per the picture.



Wings installation

Locate the wing panels and fix them using the two nylon screws, included in the hardware pack, and a Phillips screwdriver.



Control throws

Please, follow carefully the recommended linkage setups for ailerons and elevators.

- For the AILERON we recommend the following throws:

Low rate: 20° up / 20° down	Expo: 40%
High rate: 50° up / 50° down	Expo: 80%

- For the ELEVATOR we recommend the following throws:

Low rate: 20° up / 20° down	Expo: 30%
High rate: 50° up / 50° down	Expo: 80%

- For the RUDDER we recommend the following throws:

Low rate: 30° left / 30° right	Expo: 30%
High rate: 50° left / 50° right	Expo: 60%

Note: the **Expo** is (+) for JR systems, and (–) for Futaba systems.

Mixing

For best performance, we recommend a linear-mix*: **Rudder → Elevator UP**

When you give full rudder to the right or left side, the elevator have to go up (positive) approx. 4%

* if you have a programmable computer radio.

Rates and expos

Use the recommended expos to soften the feel of the model, especially on high rates. The goal is to get the model to feel the same around neutral as it does on low rates.

Use low rate settings for all flying, included starts and landings, and high rate for snap, spins etc.

Recommended CG

The recommended **Center of Gravity** location is **145mm** behind the leading edge of the wing against the fuselage.

- **140mm** is good for pattern flying.
- **150mm** is good for 3D flying.

Use the Flight Power battery pack, moving it forward or backward, to achieve the correct balance. A Flight Power 3s 2150 for more agility and a 3s 2500 for precision and sports flying.

Range test your radio

- Before fly, be sure to range check your radio as manufacturer's instruction manual of you radio-system recommend.
- Double-check all controls (aileron,elevator, rudder and throttle) move in the correct direction.
- Be sure that your Flight Power batteries are fully charged, as per the instructions and that your radio is fully charged as per its instructions.

Finally...
have a nice flight!

SebArt di Sebastiano Silvestri
Via Trento 69/3
38017 Mezzolombardo (TN) – Italy

www.sebart.it