RYAN STA

"Sport Scale E-Power ARF"

For Intermediate and Advanced Fliers.

SAFETY PRECAUTIONS

This radio control model is not a toy!

First-time builders should seek advice from people with model building experience to ensure that they assemble the model correctly. This is the best way to obtain the best performance of the model.

Store the model out of children's reach. Take safety precautions prior to operating this model. You are responsible for this models assembly and safe operation. Always keep this instruction manual handy for quick reference, even after completing the assembly.

- This manual includes: Specifications, Parts list, and Assembly Instructions.

This Product Produced by:

Thank you for choosing the Ultra-RC RYAN STA E-Power ARF model airplane.

Please read through the instructions thoroughly before attempting to assemble this model.

The images in this instruction manual may not reflect the actual Ryan STA that you are assembling. Please do not hesitate to contact us with any comments or questions during the assembly process.

Please read the following paragraph before beginning assembly of your aircraft!

This is not a toy! Serious injury, destruction of property, or even death may result from the misuse of this product. Ultra RC is providing you, the buyer, with a very high quality model aircraft component kit, from which you, the buyer, will assemble a flying model. It is beyond our control to monitor the finished aircraft you produce. Ultra RC will in no way accept or assume responsibility or liability for damages resulting from the use of this user assembled product. This aircraft should be flown in accordance to the AMA safety code. It is highly recommended that you join the Academy of Model Aeronautics in order to be properly insured, and to operate your model at AMA sanctioned flying fields only.

Ultra RC in no way warranties its aircraft against flutter. We have put these aircraft through the most grueling flight tests imaginable and have not experienced any control surface flutter. Proper servo selection and linkage set-up is absolutely essential. Inadequate servos or improper linkage set up may result in flutter and possibly the complete destruction of your aircraft. If you are not experienced in this type of linkage set-up or have questions regarding servo choices, please contact us. It is your responsibility to ensure the airworthiness of your model.

Recommendations:

1.   We elect to pin all hinges into the control and flight surfaces on all our proto-type airplanes. We do this by drilling 1/32" holes through the surfaces and into the hinge. Then, we insert T-pins, through the hole. We do this method through the bottom of the surface and do not drill or insert the pin through the top surface so nothing can be seen through the top covering. We insert a drop of thin CA glue to retain the pin.

2.   We seal all the control surface gaps with hinge sealing tape.

3.   We highly recommend going over all the covering trim on the entire model with a covering iron to insure the trim is sealed tight. The finish will look perfect coming out of the box. The factory does not apply the covering with high heat. If this step is not completed, the trim on the plane may start to lift and eventually come off. The covering material used on this plane is Oracover, known as Ultracote.

4.   Due to the nature of flight this airplane was designed for, we recommend the use of servos with at least 20 ounces of torque on all control surfaces.

5.   Mounting of the Receiver, Receiver Battery, and Switch is a matter of personal preference. In our proto-type, we mounted the Receiver just above the bottom of the wing inside the fuselage. We wrapped them in foam and used Zip-Ties to hold them in place. The Switch can be mounted into the side of the fuselage. The Lithium Battery is designed to install inside the fuselage through the front cockpit area on the top of the fuselage.

6.   We recommend the use of Loctite on all assembly bolts and nuts. We also recommend all holes drilled into wood be hardened with thin CA to accept and help retain the threaded screws in place.

Please refer to the Specifications Page to finalize the set-up of the airplane.

Thank you for choosing the Ultra-RC Ryan STA ARF!!!!

LET'S BEGIN………..

P1

Trim the covering in the fuselage for the stabilizer as shown.

Hint: **A pencil tipped soldering iron does a great job of removing the covering material and sealing the edges all in one step.**
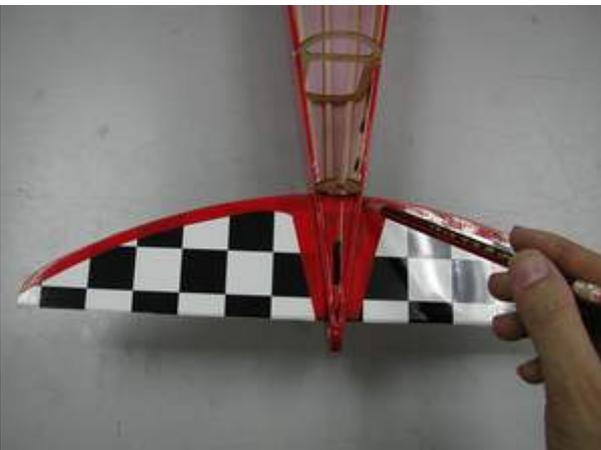
P2

Install the stabilizer inside the fuselage as shown.

Align the stabilizer carefully insuring the stabilizer is centered in the fuselage and 90 degrees to the fuselage sides.

Do not glue at this time.

P3

Once satisfied with the alignment, mark the fuselage side locations on the stabilizer top and bottom.   You can mark this location with a felt-tipped pen or masking tape.

P4

Trim off the covering film 1mm (1/16") on the inside of your mark lines on both sides of the stabilizer as shown.

Note: Be very careful not to cut too deep.   Only cut the covering, do not cut into the balsa wood.

P5

Glue the stabilizer into place with 30-minute epoxy.   Wipe excess epoxy away with denatured alchohol.

Hint: Re-check your measurements and make sure the final installation is centered and 90 degrees to the fuse sides.

P6

Next, trim the covering away from the bottom of the vertical fin as shown.

P7

Glue the vertical fin into place with 30-minute epoxy.   Wipe the excess epoxy with denatured alcohol.

Insure the vertical fin is centered to the center of the fuselage and square to the fuse sides and stabilizer.

P8

Locate the hinge slots in the elevator.

Expose the slots with a sharp knife.

Hint: Slide your finger nail down the hinge line to locate the hinge slots.
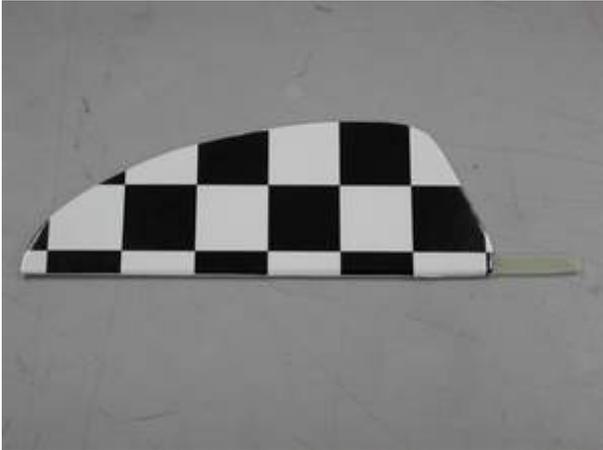
P9

Install the hinges into the elevator halves.

Glue the hinges in place with 15-minute epoxy.

P10

Install the FRP elevator joiner into each elevator half.

Glue one half in place with 30-minute epoxy as shown.

Hint: **Temporarily install the elevators to the stab in order to measure the depth of the FRP joiner into each half.**

P11

Insert one half of the elevator into the stab and glue the hinges in place with 15-minute epoxy.

Next, insert the remaining half into the elevator joiner while inserting the hinges into the stab. Glue joiner in place with 30-minute epoxy and the hinges in place with 15-minute epoxy.

Hint: **Make sure the elevator halves are aligned with each other and centered neutrally to the center of the stabilizer before the glue is dry.**

P12
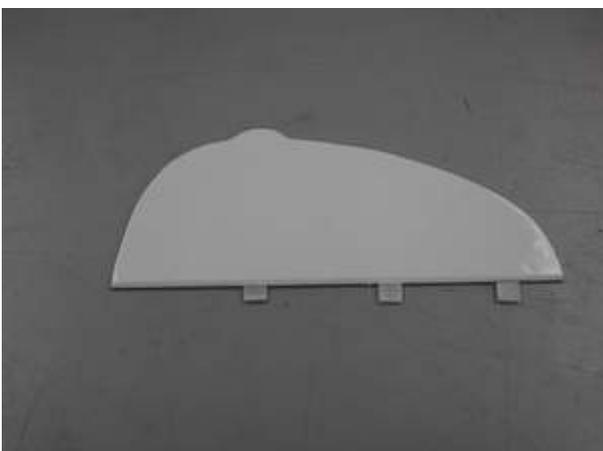
Locate the hinge locations in the rudder using the same techniques as above.

Glue the hinges into the rudder with 15-minute epoxy.

P13

Glue the rudder hinges into the fin with 15-minute epoxy.

Next, install the tail skid wire into the bottom of the rudder with 30-minute epoxy.

Note: **Alternatively, the tail skid can be installed in the rear of the bottom of the fuselage in order to eliminate stress to the rudder.**

P14

Install the rudder control horn into the rudder by drilling a 1mm (1/16") hole, approximately 25mm (1") from the bottom of the rudder as shown.

Align the control linkage pivot point as close to the center of the hinge line as possible.

P15

Locate one of the white control horns and glue it into place with thick CA or 30-minute epoxy as shown.

P16

The control horn will penetrate through the opposite side of the rudder. Trim the excess control horn flush with the rudder with cutting snips, a sharp knife, or a moto-tool.

P17

Install the elevator control horn by drilling a 1mm (1/16") hole approximately 25mm (1") from the root of the elevator.

Align the control linkage pivot point as close to the center of the hinge line as possible.

P18

Locate one of the white control horns and glue it into place with thick CA or 30-minute epoxy as shown.

P19

The control horn will penetrate through the opposite side of the rudder.   Trim the excess control horn flush with the rudder with cutting snips, a sharp knife, or a moto-tool.

P20
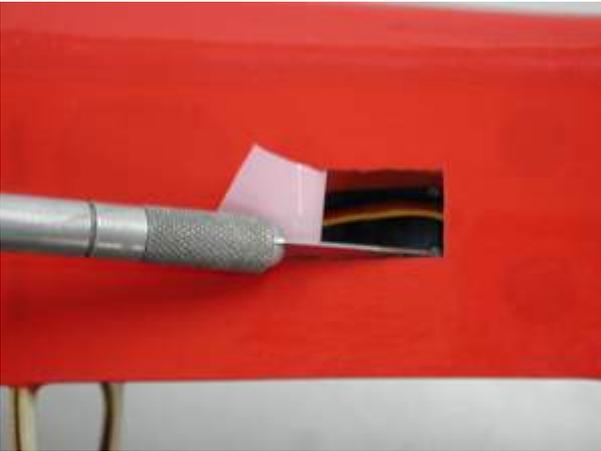
Locate the servo location in the side of the fuselage.

Remove the covering from the servo bay with a sharp knife or pencil tipped soldering iron as shown.
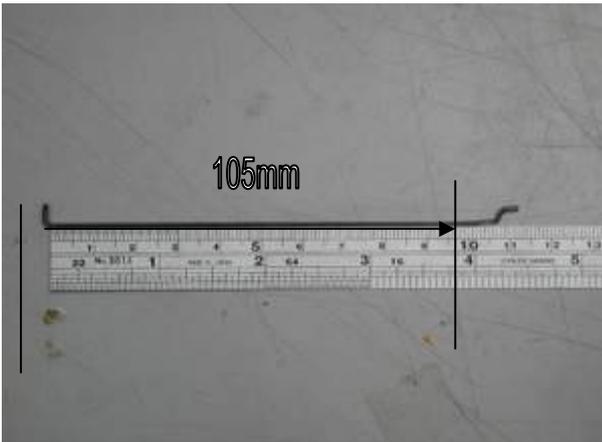
P21

Install the servo as shown.

We suggest the use of a servo weighing 6 – 8 grams such as the Hitec HS-55 or HS-65.

P22

Locate the control linkage pushrod.

Bend a Z-bend in one end of the pushrod as shown.

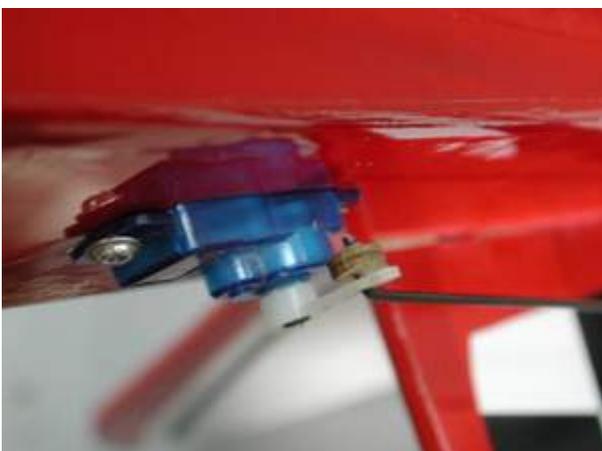Next, measure 105mm (4 1/8") and bend a 90 degree bend as shown.

Note: **Variations in the pushrod length are possible due to your location of the control horn.**
Before making the 90 degree bend, temporarily install the linkage to insure the length is correct.

P23

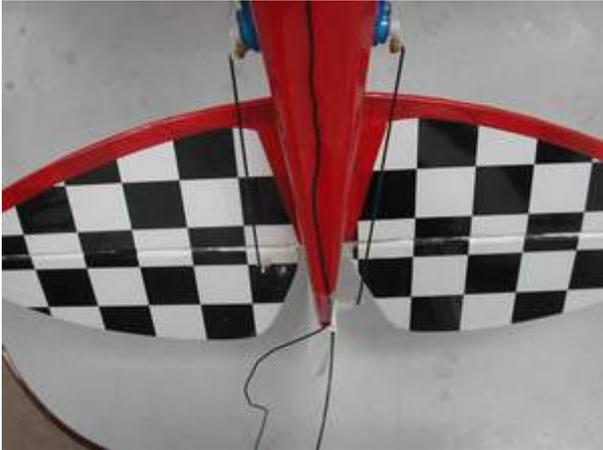Install the elevator control linkage pushrod as shown.

P24

Install the control linkage pushrod keeper (a round wooden part) onto the 90 degree bend in the metal pushrod.

Carefully glue the keeper in place with CA glue.

P25

Install the rudder control linkage pushrod in the same fashion as the elevator.

Make a Z-bend in one end of the wire first.

Measure the distance from the control horn to the neutral servo arm and make the 90 degree bend.

P26

Locate the hinge slots in the ailerons.

Expose the slots with a sharp knife.

Hint: **Slide your finger nail down the hinge line to locate the hinge slots.**

P27

Install the hinges into the elevator halves.

Glue the hinges in place with 15-minute epoxy.

P28

Glue the aileron hinges into the wing panel with 15-minute epoxy.

Repeat for opposite aileron.

P29

Locate the servo location in each wing panel.

Remove the covering from the servo bay with a sharp knife or pencil tipped soldering iron as shown.

Locate the black aileron control horns as shown.

Hint: Use a straight edge in parallel to the side of the servo cut-out to locate the control horn mounting location. Use the same technique as above to drill and install the control horn.
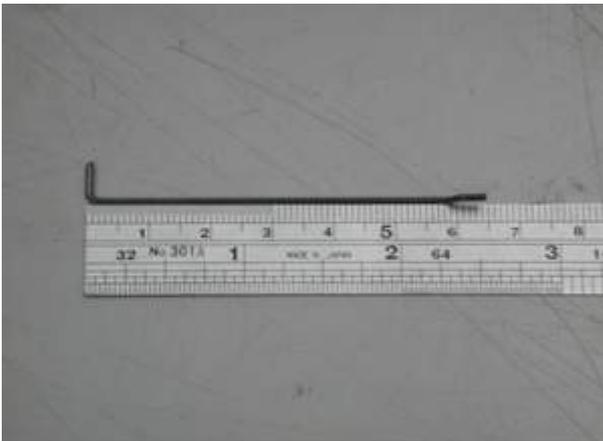
P30

Install the black aileron control horns, as shown, and glue in place with CA glue.

P31

Install the aileron servos, as shown, with the servo output shaft facing the rear of the wing.

P32

Locate the aileron control linkage pushrods.

Bend a Z-bend in one end of the pushrod as shown.

Next, measure 60mm (2 3/8") and bend a 90 degree bend as shown.

Note: Variations in the pushrod length are possible due to your location of the control horn.
Before making the 90 degree bend, temporarily install the linkage to insure the length is correct.

P33

Install the control linkage pushrods and keepers (a round wooden part) onto the 90 degree bend in the metal pushrod as shown.

Carefully glue the keeper in place with CA glue.

P34

Locate and install the wing dihedral brace into each wing half.

Check to make sure the fit is good and the wing panels are matched well together.

Glue the wing dihedral brace in place with 30-minute epoxy.

P35

Install the wing panel into the fuselage.

Carefully measure the wing in relation to the stabilizer and adjust as necessary.

Drill a 3mm (1/8") hole through the wing into the wing mounting plate in the fuse.

Install the 3mm blind nut into the wing mounting plate in the fuselage.

P36

Next, mount the wing to the fuselage with a M3 x 25mm wing bolt, as shown.

P37
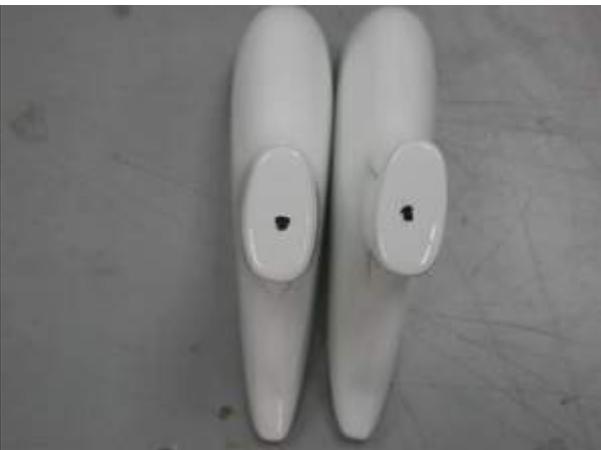

Locate the landing gear parts, as shown.

P38

Trim the covering in the wings for the landing gear wire as shown.

Hint: A pencil tipped soldering iron does a great job of removing the covering material and sealing the edges all in one step.

P39

Drill a 3mm (1/8") hole into the top of the wheel pant fairings as shown.

P40

Install landing gear wire inside wheel pants as show.

P41

Next, install the landing gear into the wing as shown.

Hint: **We recommend, in addition to the landing gear straps, the landing gear wire be glued in the slots for extra support and strength.   We use 30-minute epoxy or goop.**

P42

Next, glue the wood frame together inside the wheel fairing as shown.

The fairing mounting block is laser cut ply and interlocks with the supports pre-mounted on the landing gear wire. Glue this well with thick CA or Epoxy.

P43

Next, drill two 1/16" holes in the landing gear fairing to permanently mount the fairings to the landing gear wire with two M2 x 5 screws.   Repeat this process for the other fairing.

Note: **A drop of CA glue on each screw will keep them from loosening.**

P44
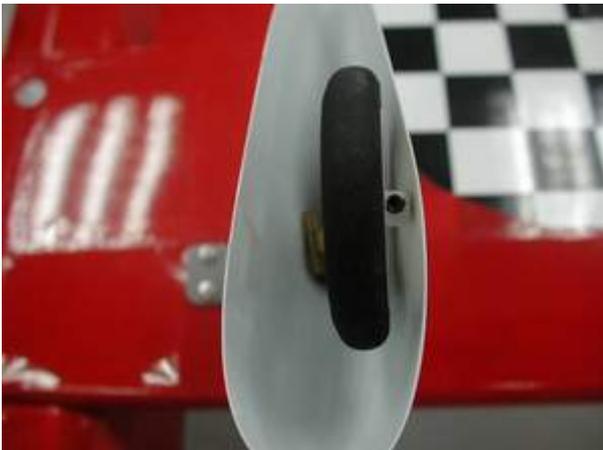
Install the wheels to the landing gear wire and retain with a 2mm wheel collar as shown.

P45

Locate the fuselage top deck.

First, trim the top deck to the mark lines if necessary.   You can use curved canopy sheers or a sharp knife.

Trial fit the top deck several times to insure a perfect fit around the fin and around the front former to insure the cowl will fit correctly.

P46

Next, glue the wing screens to the top deck.

We recommend gluing in place with RC-56, Goop, or epoxy.

P47

Glue the top deck to the fuselage with epoxy or thick CA.

Take extra care to insure the top deck sits flush against all formers and is all the way back, flush with the front former.

Use tape or rubber bands to hold the top deck in place while gluing.

P48

If you purchased the combo kit with our Outrunner motor, please install the motor mount as supplied with the kit, as shown.

P49

Drill a 4mm hole in the center of the motor mount to provide clearance for the outrunner motor shaft, as shown.

P50

Install the motor as shown.

P51

Next, install the cowl as shown.

Use two M2 x 5mm screws on each side of the cowl.   Measure first to insure the screws are threaded into the hardwood fuse side extensions.

Note: Center the cowl in place and leave a 3mm space between the front of the cowl and the prop washer.

P52

Cut an opening in the front of the cowl for both scale appearance and motor cooling.

We use a moto-tool with a drum sander bit to enlarge the hole.

P53

Last, apply the decal set on the fuselage, cowl, and wheel fairings as shown.

SPECIFICATION			
CODE	A134	ITEM	*Ryan STA E-Power ARF*
WING SPAN	44 inches	MOTOR	IX20XL OR OX22-13 Motor
WING AERA	290 square inches	RTF. WEIGHT	20 - 23 ounces
TOTAL LENGTH	30 inches		
		CENTER OF GRAVITY	50mm (2") From L.E. at Root
		WING INCIDENCE	0°
		WING DIHEDRAL	4°
		STAB. INCIDENCE	0°
		RIGHT THRUST	2°
		DOWN THRUST	0°
	CONTRL THROWS		
AILERON	LOW RATE	HIGH RATE	
	UP DOWN	UP DOWN	
	15Degree 15Degree	25Degree 25Degree	
Elevator	20Degree 20Degree	30Degree 30Degree	
Rudder	25degree 25Degree	35degree 35Degree	