

Pzazz-E

1520mm Span Sport Electric Aerobatic Glider for 4-6 Channel RC Equipment.

Designed by: Stan Yeo

Produced by: Phoenix Model Products

Introduction



Pzazz-E is the electrified version of the popular Mk2 Pzazz and has been added to our range after a number of customer requests. The Pzazz-E is best described as an *electric warm liner* suitable for the sport / intermediate pilot. It will perform all the manoeuvres expected of its sloping sister i.e. inside outside loops, rolls, spins, inverted flight and stall turns etc. As each aileron has its own servo the ailerons can also function as flaps and coupled with the elevator to further enhance the model's performance. Performance with a 2200mAh 3S LiPo, 2836/08 1120Kv 270w motor and 10x5 folding propeller is more than adequate but much more lively with a 1800 4S pack and 9x5 prop.

The build follows that of other models in our range i.e. simple ply sided fuselage with a full depth 'egg box' mainspar, fully sheeted wing and custom ply servo mounts. For maximum building pleasure great effort has been made to remove the 'chore' element in kit building by CNC cutting the fiddly bits. The only additional items required to build the Pzazz-E kit are the glues, covering materials and electrical equipment.

Airborne Equipment Required

The recommended radio equipment required to fit out the Pzazz-E is four HS82MG / HD1711MG micro sized servos a 6 channel transmitter and receiver. For the power train we recommend an Overlander Thumper 2836/08 1120Kv, 270w brushless motor, with a 40A speed controller and a 2200 3S / 1800mAh 4 cell LiPo battery driving a 10x5 / 9x5 folding propeller.

Tools / Materials Required

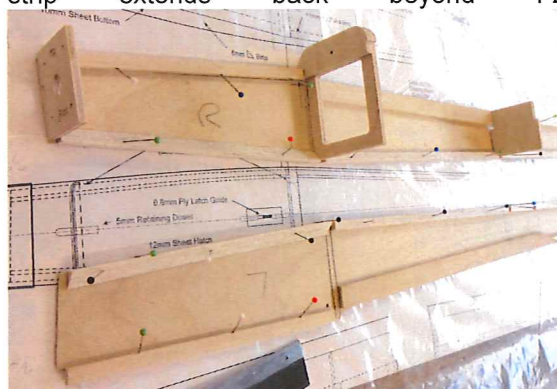
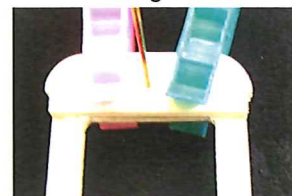
The tools required to build the Pzazz-E are a modelling knife with spare blades, a One Metre Straight Edge, a miniature David Plane, 180 grade Wet & Dry sanding block and a soldering iron. 10mm thick Sundela board is recommended for use as a building board (you can stick pins in it!). The primary glue used to build the model is white PVA

wood glue. Small amounts of thin Superglue (please observe safety precautions) and two part epoxy are also used. We recommend using a polyester film for covering such as Oracover (Profilm), Monokote or Easycoat, the thinner more economic version of Oracover.

Please Note for ALL wood joints use PVA wood glue unless otherwise stated

Building the Fuselage

1. Lightly sand the fuselage sides, top and bottom with 180 grade wet and dry to remove the 'release' agent. Remove dust with a small brush or vacuum cleaner.
2. Glue 3mm balsa motor mount to back of 4mm ply mount aligning motor screw mounting holes. Use aileron pushrod to assist with alignment.
3. Glue F2A to front face of F2.
4. Mark out the position of formers F2 & F3 on the inside of the fuselage sides ensuring there is a left and right side. They are marked!!
5. Cut slot for Elevator cable exit as indicated on plan (bottom of fuselage (One side only)).
6. Using PVA (wood glue), glue spruce nose and wingseat strips to fuselage sides. Note wingseat strip extends back beyond F2.



7. Glue strip longeron super structure on the fuselage sides noting there is a right and left. To avoid mistakes we recommend both fuselage sides are placed on the building with the



undersides facing each other.

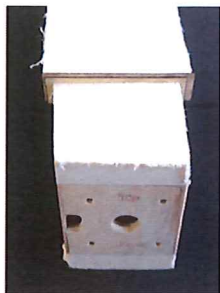
8. Lightly sand edges of fuselage side to prepare gluing surface to receive top and bottom sheet.
9. Join fuselage sides together over the plan ensuring that both are straight and square.
10. Lightly mark out centreline on tailplane ensuring it square to the hinge line.
11. Glue triangular strips to base of Fin and glue Fin to Tailplane ensuring it is perpendicular and **square**. If, when glue has set, Fin is not quite perpendicular to the Tailplane then slice the triangular strip on the acute angle (leaning towards) side and insert a thin cardboard wedge to correct inaccuracy. Thin Superglue wedge in place.
12. File a recess in triangular strip on one side of Fin base to accept Rudder control cable.



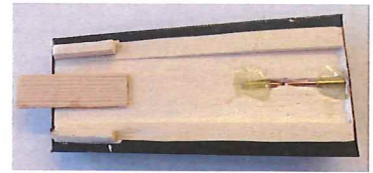
13. Glue Tailplane in place checking that it is both horizontal, in line with axis of fuselage and the distances between Tailplane hinge edge corners and centre of F2 are equal.
14. Fit fuselage top sheet. When glue has set drill hole close to Fin (item 11) at an acute angle for the Rudder control rod. Use a long drill constructed from a piece of 3mm (10swg) piano wire as per the wing dowel drilling tool shown on the plan.
15. Fit Rudder and Elevator control rods. These must be anchored to the fuselage side every 100-120mm using spare 6mm x 10mm strip to make a bridge. Superglue in place. Before fixing control cables check control cable inners are not binding and move freely.



16. Fit Fuselage bottom front and back plus 10mm top nose sheet.
17. Angle rear face of hatch to match front face of F2. Centrally position 0.8mm ply end face and Superglue in position.
18. Cut Hatch to length and slope end at front of hatch to match abutting face. Allow enough space between the front of the hatch for the two ply end faces plus enough to 'jam' a third ply plate (supplied) to hold the hatch in position whilst the sanding to shape. This gap is to allow for the thickness of the covering material / fitting and removal.



19. Glue 4.5mm x 25mm sq locating strips and ply hatch to inside of hatch (see picture). Adjust to remove sideways slop.
20. PVA Glue ply faces in position and jam hatch in place using third piece of 0.8mm ply. (Superglue can be used but with extreme care). Do not shape the front 0.8mm end faces.
21. With the hatch firmly held in position sand and shape nose to achieve a smooth line.
22. Remove Hatch from Fuselage when glue has set and fit Hatch Latch. Grease Latch before Epoxying brass tube in place to prevent it sticking.
23. Fit Rudder and Elevator servos.
24. Cut Mylar Hinges to size (12mm x 25mm). Trim corners to stop the digging in and roughen gluing surface with Wet & Dry.
25. Hinge Rudder and Elevator control surfaces. Do NOT glue until the model is covered.



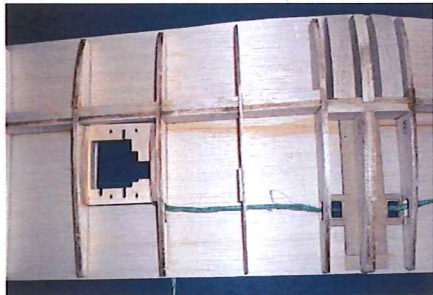
Building the Wings

To avoid delays when building the wing panels waiting for the glue to dry separate the wing panel plans from the fuselage plan and mount both sets on the building board and cover with clear polythene / cling film. We strongly recommend using PVA wood glue throughout except for fixing the wing joining tubes where two part epoxy is used.

1. To protect the plan cover in either thin polythene or cling film.
2. Glue together Wing Servo Mount Assembly. Consult plan as they are handed i.e. there is a left and right hand!
3. Join front & back 1.5mm sheeting. Use metal straight edge to trim for a good joint. The sheeting has been Laser cut but may require further trimming due moisture changes in the wood. Sellotape them together along the joint. Hinge joint back and insert PVA glue. Place on flat surface and wipe away excess glue. Run Sellotape along top of joint. Weight down until glue set. Repeat for other three pieces.
4. Pin bottom 1.5mm sheeting to plan aligning leading and trailing edges plus servo bay / lead exit holes on plan. Note sheeting overlaps ends of ribs by approximately 2mm.
5. Elevate front of underside of bottom sheeting with scrap 1.5mm balsa to conform with contour at front of Wing rib (see plan)



6. Using Ribs W1 and W15 locate position of 3mm Main Spar.
7. Glue mainspar in position using a long straight edge behind mainspar to check it is straight and not bowed. Do not centre rib in position.
8. Using guide lines on plan glue ribs in place. For the servo bay ribs use servo mount for alignment.
9. Glue together Wing Servo Mount Assembly. Consult plan as they are handed i.e. there is a left and right hand! (DO NOT copy photo!!) Before glue sets glue in position in the wing ensuring side cheeks are in contact with adjoining ribs and align with servo bay cutout.



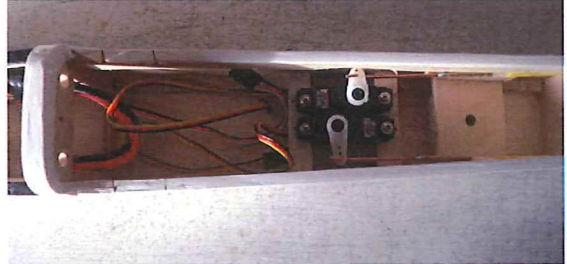
10. Build second Wing.
11. Trim root ends of wing square and place together flat on the building board using a straight edge to aid alignment. The trailing edges edges of all the ribs should be in line. There is no sweepback on the trailing edge.
12. Glue on ends of wing joint along with 0.8mm ply centre bay floor. Needs to be assembled whilst glue is still wet.
13. Check wing trailing edge alignment before glue sets.
14. Glue W1A/B ribs together and fit in position along with the 12mm wing dowel tube ribs.
15. Pin the four corners of each wing panel flat to the building board. If building board is not big enough do one wing at a time.
16. Trim and fit 1.5mm top sheeting taking care to ensure that it is making contact with both the wing ribs and the mainspar. Tip: Use rubber bands over the ribs to get sheeting to follow rib contour.
17. Using a David Plane and a 180 grade Wet&Dry sanding block to trim leading edge sheeting back until level with the ends of the ribs. When satisfied place Sellotape along leading edges of LE & TE sheeting to collect any surplus glue and fit

Leading Edges and Rear Spars. Use Masking Tape to hold in place whilst the glue sets.

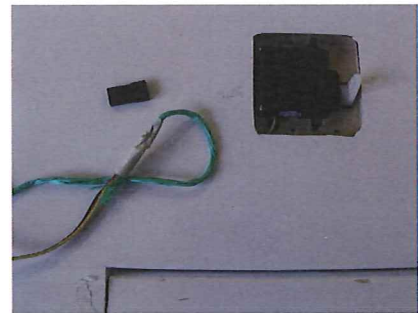


18. Carefully plane / sand both rear spar and leading edge to shape. Tip: when using David Plane set blade at slight angle so that the cut is thinner on one side of the plane. It helps to control thickness of cut.
19. Glue centre section Trailing Edge in position.

20. Glue 0.8mm ply end ribs to balsa tips. Again there is a Left & Right! Roughly shape.
21. Carefully align and glue wing tips in place and finish shaping.
22. Cut ailerons to length. Fit 0.8mm ply end plates and tape in position.
23. Shape centre section TE to align with the ailerons.
24. Drill Wing Bolt hole fit 0.8mm ply Wing Bolt washer. Give wing a final sand using 320 grade Wet & Dry.



25. Draw a line on underside of Ailerons to indicate extent of shaping required for down going Aileron relief. Shape ailerons and cut to length allowing for 0.8mm ply end plates.
26. Dry fit aileron servos in position. Using aileron pushrods determine position of slot for fibreglass control horns.
27. Cut slot in Aileron for fibreglass control horn. Do NOT glue in position until Aileron is covered.



Covering & Finishing

1. The originals were covered in heat shrink film and this has proved more than adequate. Should you wish to cover in a different material please take into account any potential weight penalty that it may incur and puncture / tear resistance / repairability.
2. Give the complete model a final sanding with 320 grade Wet & dry. DO NOT use a sanding block on wing sheeting. Use light filler as required to fill in any blemishes. Dent can be removed by wetting the area and ironing with a film iron. Do NOT use a sanding block on wing sheeting. It will thin the sheeting on top of the rib and weaken the wing.
3. Before covering vacuum the model to remove embedded dust to avoid 'pimpling' when covering.
4. Please follow the instruction for the covering material being used. Normal procedure is to tack the material at one end. Tack the other end and then proceed to gently stretch and tack along its length before sealing all along the edges and shrinking with a Heat Gun.

5. Fit controls, hinge rudder, elevator and ailerons. Carry out final adjustments to control neutrals and balance the model including the wings (laterally). Balance Point 85mm +/-3mm behind the leading edge former.
6. Set the control movement as per the plan i.e. Elevator +/- 10mm. Rudder +/- 30mm. Ailerons +16mm - 13mm. If using 2.4Ghz R/C equipment it is often recommended that you re-bind / pare the receiver with throttle control in LOW throttle position to update failsafe settings. Please consult your equipment manual.

The Electrics

We recommend using 2.4Ghz radio control equipment to minimise the risk of interference from the power train. The motor recommended is a the Overlander 2836/08 270W, 1120Kv with a 40A speed controller with the brake ON and a 1800/2200mA 3/4S LiPo battery typically driving a 9x5in / 10x5 folding propeller. If using 2.4Ghz radio then the Tx/ Rx must be paired / bound with the throttle in the LOW throttle position to set the Failsafe. If, when powering up the motor it does not run the swop two of the three motor leads. If it runs in reverse then either swop two leads again or reverse the throttle channel on the transmitter. If the motor just sits there with the ESC beeping then increase the travel on the throttle channel via the EPA / Travel Adjust menu and re-pair /bind the Tx and Rx again. The ESC is armed using the Leading / Trailing edge of the throttle control pulse supplied by the Tx via the Rx. When satisfied run motor on low throttle and switch off the transmitter to check the Failsafe (observe safety precautions i.e restrain model and stand behind propeller). If the motor continues to run then increase the travel on the throttle channel (EPA). Re-pair / re-bind and repeat check.

As the motor is reverse mounted the motor shaft has to be tapped forward and a retaining collet fitted on the bulkhead end of the shaft. The shaft is now too short. A replacement shaft 54mm long can be made from 4mm Silver Steel available from PMP.



Flying

When satisfied, the model set-up and ready to go choose a suitable site and day to test fly Pzazz-E i.e. wind not too strong or too light. If you are not experienced flying this type of model please get an experienced flyer to test fly it if required give you some flying tuition. If set up correctly very little trimming should be required. The Pzazz-E is capable of almost any manoeuvre expected of this type of model i.e. inside and outside loops, rolls, spins, inverted flight and stall turns. If new to model flying there are a number of articles on our website www.phoenixmp.com which you may find useful.

Happy landings,

Stan