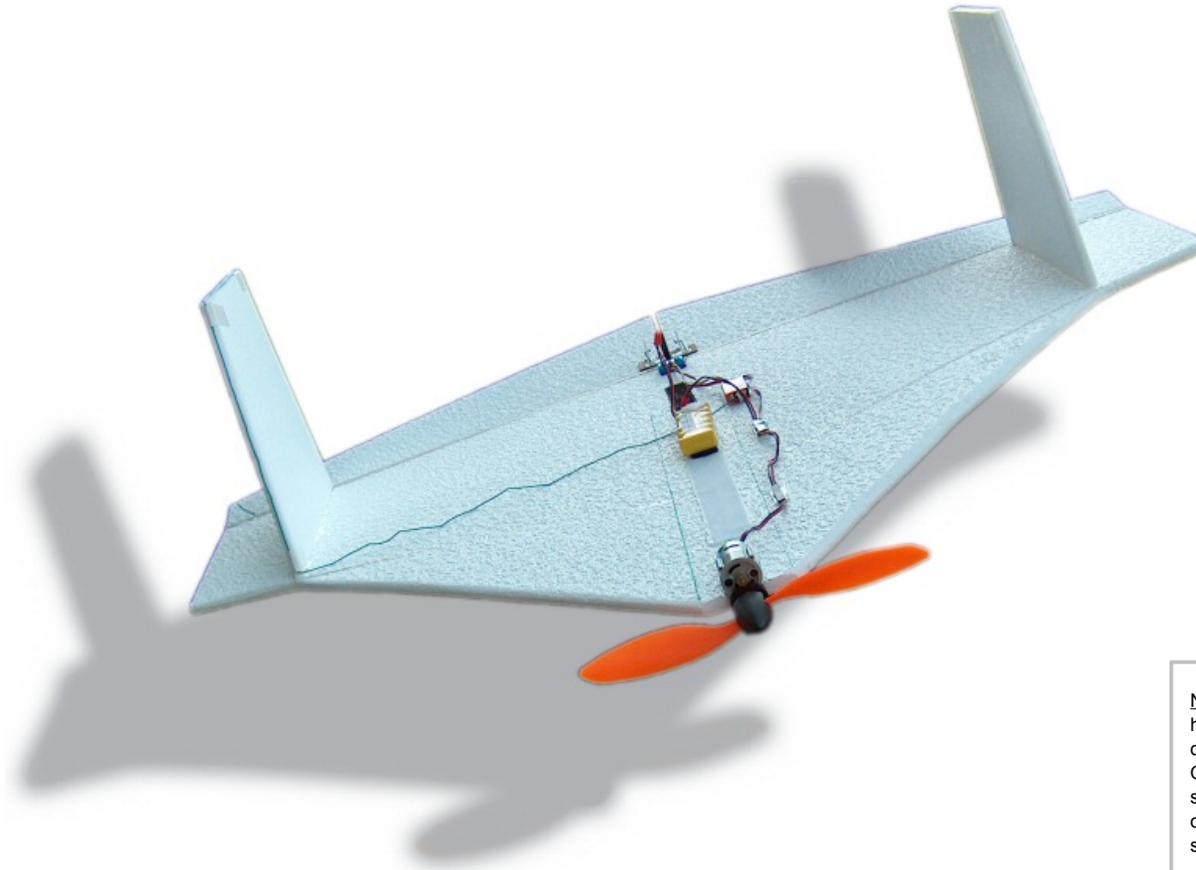


Ceiling Tile Delta (CTD) - electric radio-controlled model aircraft

Armada Model Designs Ltd

MA01A

This is an electric delta model aircraft that is easy to build and straightforward to operate. It is cheap to construct, being made largely of polystyrene ceiling tiles, yet it's great fun to use from a small flying field or park in relatively calm weather (windspeeds of less than 8mph). The model can be looped, although it is in no way intended to be aerobatic. The real joy of the CTD comes with its excellent slow-flying characteristics – all thanks to its delta plan-form.



Note: operating model aircraft can be hazardous if care is not taken. While this design has been subjected to a thorough Quality Assurance procedure it must be stressed that the builder requires a certain level of skill and knowledge to complete the project successfully.

For questions relating to model aircraft safety please contact your country's governing body.

In Great Britain, the British Model Flying Association (BMFA) is the body delegated by the Royal Aero Club to be responsible for all aspects of model flying. Membership brings many benefits, including access to expert advice, a structured achievement scheme and 3rd party liability insurance of up to £10 million. Visit www.bmfa.org for more information.

Instructions

The CTD model is constructed from eight main components cut from several large polystyrene ceiling tiles (size: 50cm x 50cm). First, the four components that make up the wing are glued together (using an epoxy resin or "foam to foam" adhesive). The rear of the wing is edged with 5mm balsa wood, to which the hinged elevons are attached using mylar or commercial hinges. After the main wing is complete, the fins are glued in place. 2 pieces of 10mm x 5mm balsa are glued together to form a keel of cross-section 10mm x 10mm. The keel length should be almost as long as the fuselage, with just enough space at the rear for the servos.

The ply control horn mounts are glued in place, and when set, the horns are screwed into position. A suitably-sized hole is cut in the main wing for the servos (see photo on the next page). The electric motor used on the prototype is a relatively inexpensive brush-type motor from the company GWS. This comes with an integral reduction gear and mount. The mount fits directly onto the square cross-section keel. This keel also serves as a hand-hold for model launching. Of course, alternative electric motors can be fitted and it shouldn't be too difficult to fabricate an appropriate plywood mount to fit directly to the keel.

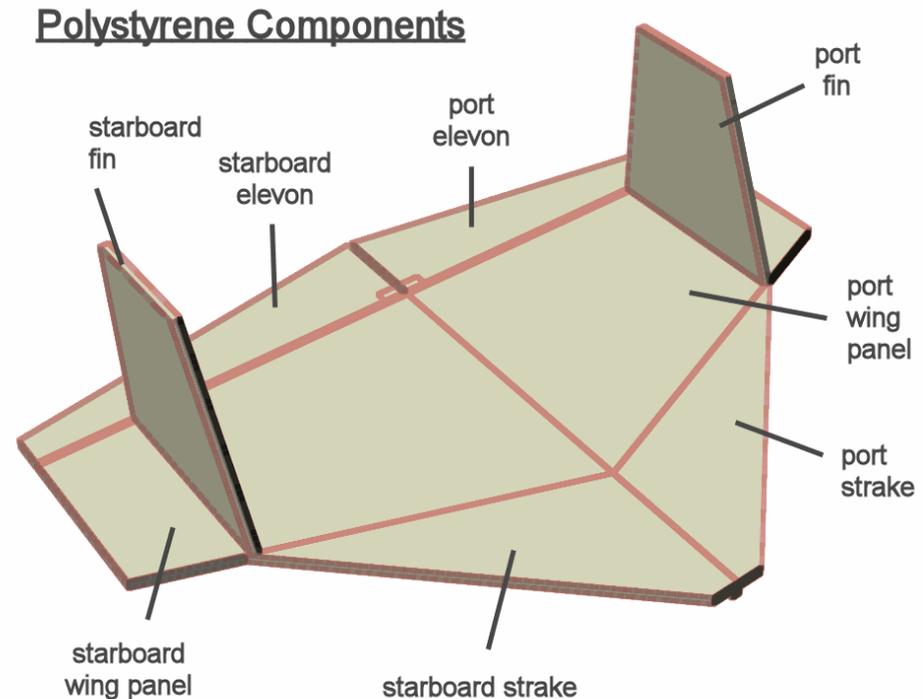
The micro-size radio gear simply sits on top of the airframe, secured with servo-tape. A long strip of velcro, epoxied in place, is used to attach the battery pack. This allows various fore / aft battery positions, to ensure the correct "centre of gravity" location, even with batteries of differing weights. Without battery, the prototype weighed 250g. Tests were conducted with batteries of 7.2 and 8.4 volts. These weighed 75g and 100g respectively, therefore, the maximum all-up-weight tested was 350 grams (12 ounces).

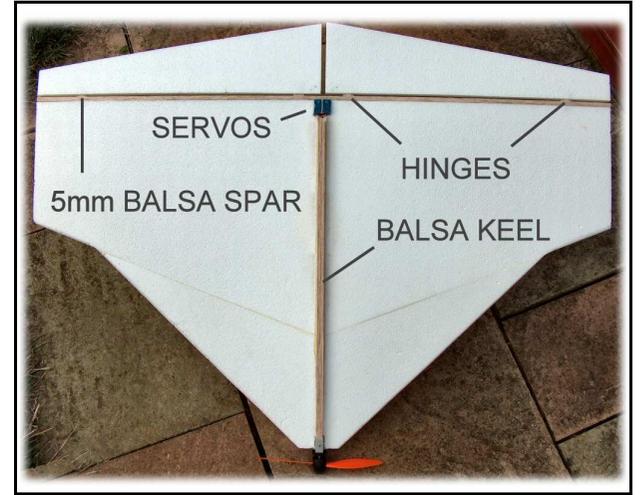
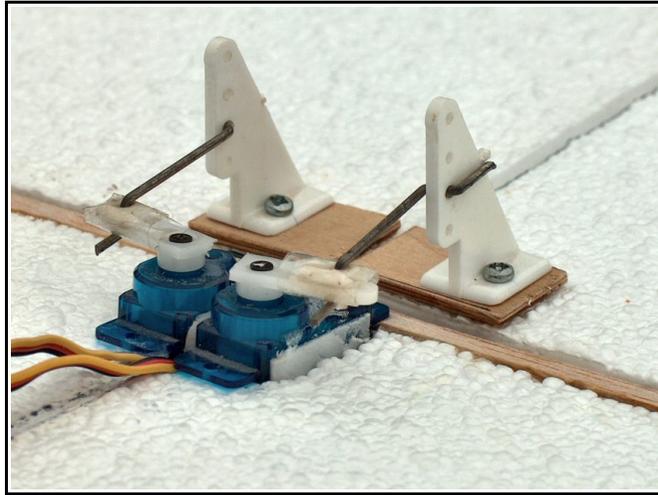
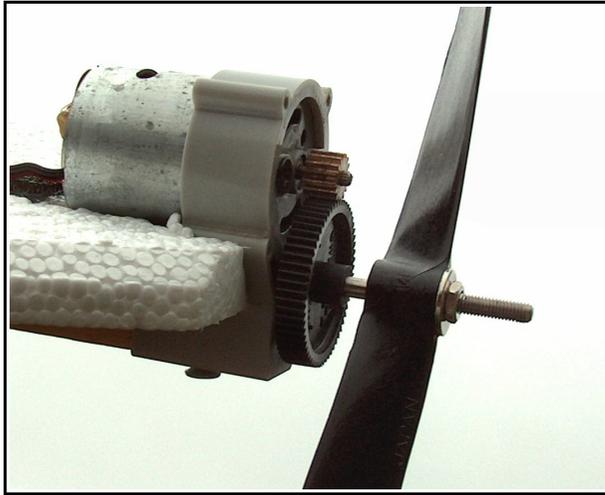
Shopping List

1. 3 x 50cm square polystyrene ceiling tiles
2. 5mm balsa for spar and keel components
3. Velco for attaching battery pack
4. Control horns and hinges for elevons
5. 1.5mm ply for control horn mounts
6. 3-channel RC system with micro servos / featherweight receiver and servo mixing for elevon control
7. Electronic speed controller suitable for the type of battery used
8. "300" electric can-type motor with suitable propeller and reduction gear (the prototype had a gear ratio of approximately 3.75:1)
9. Battery. Prototype used NiMH (7.2 volt, 400mAh and 8.4 volt, 730mAh)
10. Charger – preferably a delta-peak variable-charge-current unit

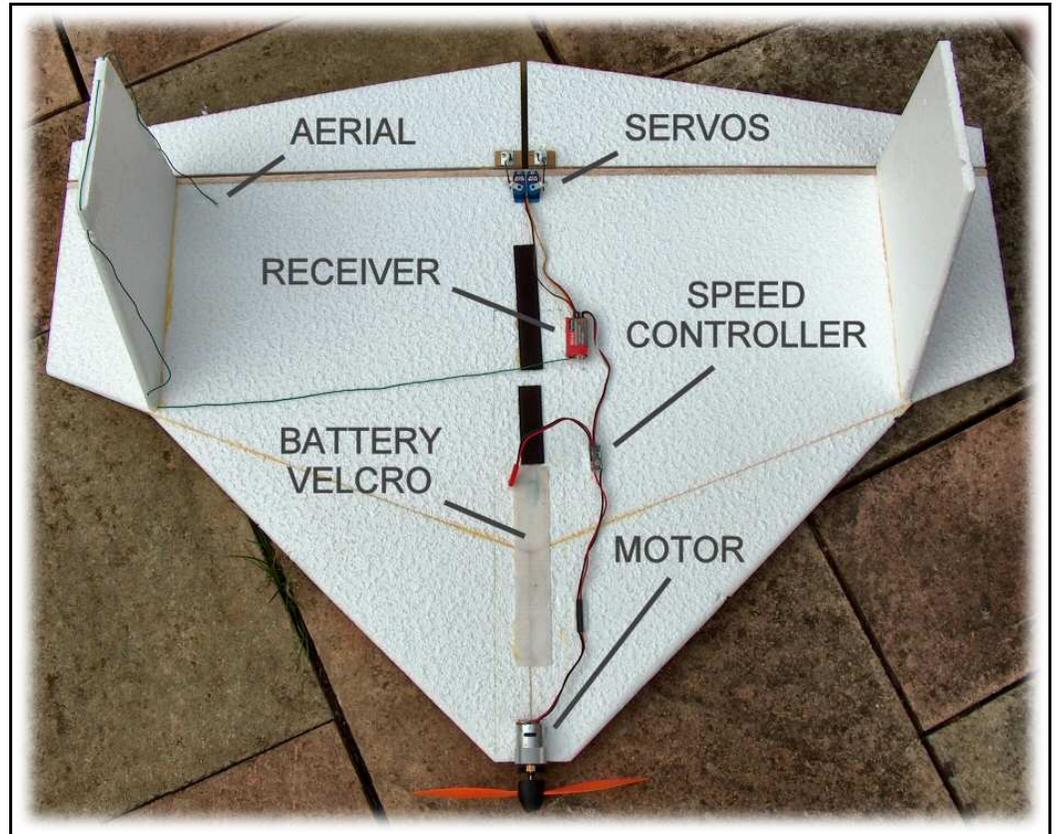
Flying

Adjust the position of the battery pack so that the centre of gravity (C.G.) is as marked on the plan and check that the elevons are both set to 4° up. Make sure that servo mixing is switched on and then check for the following control responses: 1. stick back – both elevons up; 2. stick forward – both elevons down; 3. stick left – right elevon down and left elevon up; 4. stick right – right elevon up and left elevon down. Use the servo reversing switches to correct any errors in control-surface response. Before each flight ensure that all equipment is secure and check that all controls function correctly. Choose a calm day for the test flight. If set up correctly there will be no problems with the model – just get used to its handling characteristics and then start to explore the flight envelope. Happy flying!

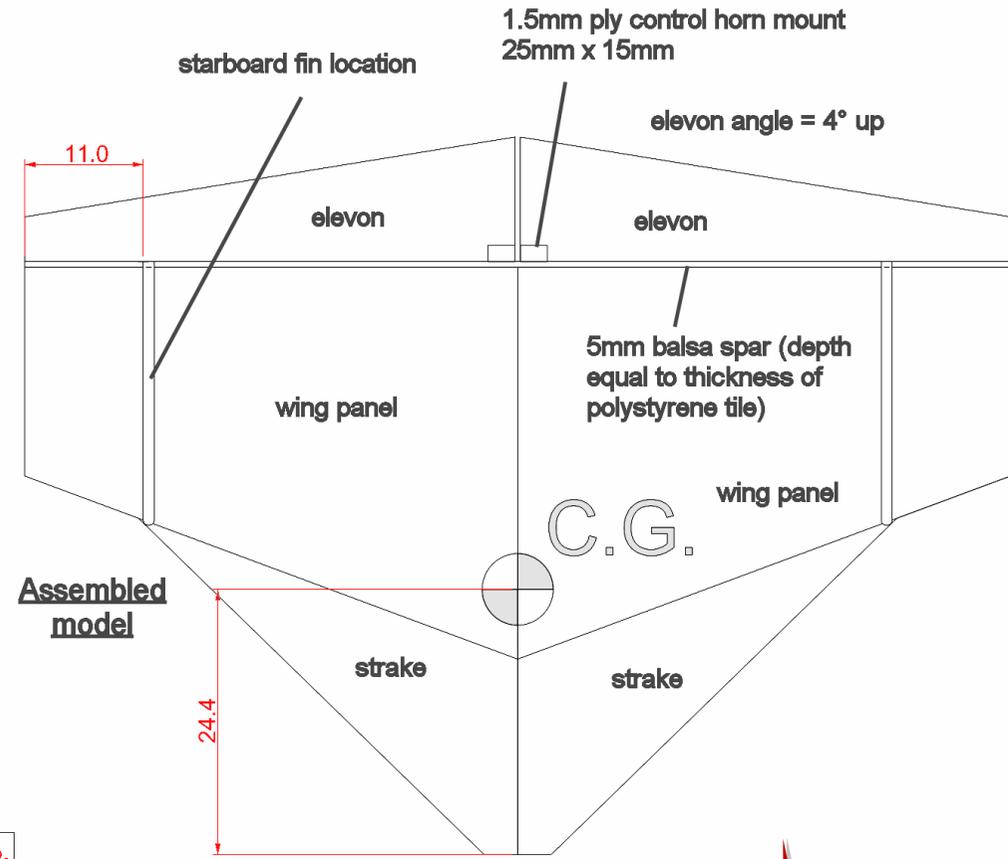
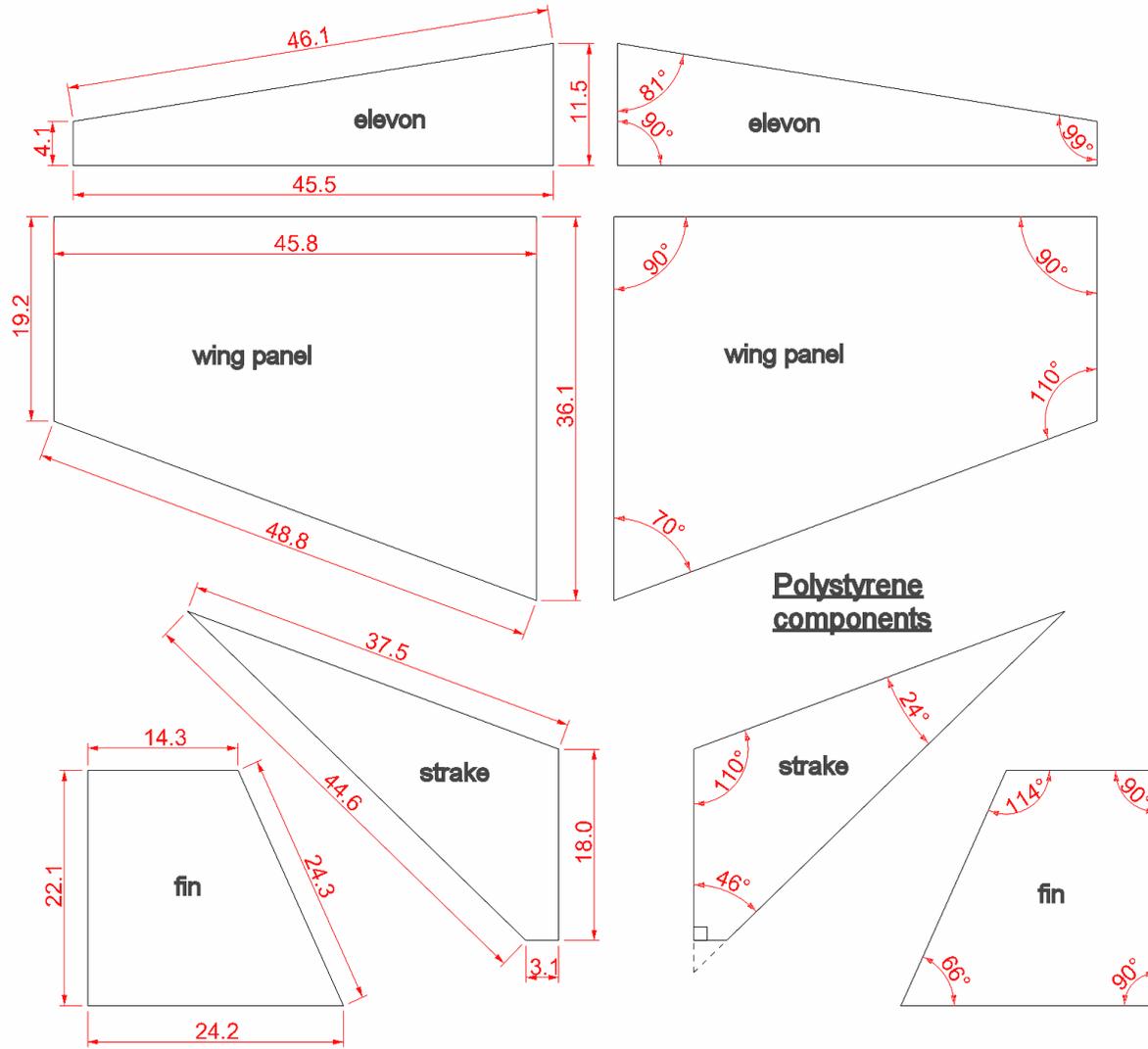




- Clockwise from top left:
1. Motor and reduction gear used in prototype.
 2. Servos and control horns
 3. Underside of model
 4. Equipment
 5. Model launch
 6. Underside view of motor mounted on balsa keel



Cut out component shapes from large sheet of paper, then test fit and modify (if necessary) before cutting pieces from the 50cm x 50cm sheets of polystyrene.



Ceiling-Tile Delta MA01 revision 0

all dimensions in centimetres



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