

PUSH-E CAT



From  **Mattes
Models**

and **Garrison**
 **Aerodrome**

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This and more Push-E Cat information is available on-line at:

<http://www.rc-aero.com>



Push-E Cat V.2 Kit Instructions:

Thank you for purchasing a Push-E Cat Kit!

The Push-E Cat has been designed to allow beginning R/C flyers to learn without fear while also providing more experienced pilots with a relaxing and enjoyable flyer that can take the abuse of small field flying.

The Push-E Cat's EPP foam primary construction, corrugated plastic tail feathers, and its pusher configuration provide optimal protection from inevitable impacts.

We appreciate any pictures that our Push-E Cat customers might send us of their completed planes. Any pictures we receive will be posted on our web site along with your information unless you specifically request otherwise.

Here's how to get hold of us:

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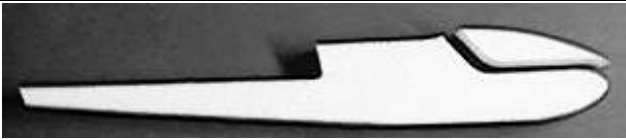

NOTE: Read all instructions *BEFORE* beginning construction!

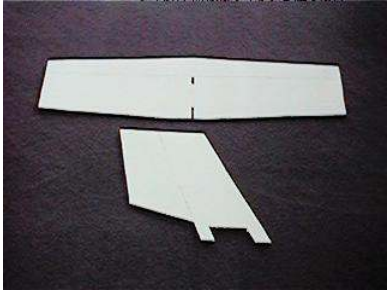
When learning to fly, always seek out your local Academy of Model Aeronautics (AMA) sanctioned R/C club for instruction. Additionally, we strongly recommend that you consider becoming an AMA member. Push-E Cats are really, really durable, but you'll still spend less time and money repairing and more time flying if you get experienced instruction from a sanctioned club.

Model aircraft built with EPP foam require different building procedures and techniques than those constructed of more fragile traditional materials. Pay particular attention to notes regarding adhesives, tapes, covering, cutting and forming of EPP.

While not necessary to build and fly the kit, we suggest that, if possible, you review Dave Sander's informative articles about working with EPP. This data is available either in the October 1997 issue of Model Airplane News, or on-line at: <http://www.davesaircraftworks.com>

Ok, let's get started! First, you need to check out the contents of your kit to make sure you have received everything:

Each Push-E Cat kit should contain the following:	
Item	Description
A	 EPP Fuselage and Canopy
B and C	 (2) EPP Main wing cores ¹ (2) EPP Wing tip cores (1 left, 1 right)
D	(2) 3/16"x1/4"x36" spruce main spars

E	 <ul style="list-style-type: none"> (1) Coroplast Fin/Rudder (1) Coroplast Stabilizer/Elevator
F	<ul style="list-style-type: none"> (1) 1/4" plywood motor pylon (4) 3/16"x1/4"x12" balsa tip spars (1) 3/16" diameter x 12" dowel rod
G	<p style="text-align: center;">Hardware bag containing the following:</p> <ul style="list-style-type: none"> (1) Laser cut speed 400 plywood motor mount (2) Motor mounting screws (1) Motor tube (2) Solder clevises (2) 1/2A control horns with screws (2) Threaded rod adapters (2) Threaded clevises with retainers (4) 1"x2"x3/32" balsa shear plates (1) 1/4"x1/4"x6" balsa triangle stock
H	<ul style="list-style-type: none"> (2) 36" cable push rods
I	<p>Block of scrap EPP foam</p>
<p>Notice: If anything is missing or damaged in your kit when you receive it, please contact us for replacement. Optional items you may have ordered such as motors, receivers and battery packs may also be included in the kit box. Please check your invoice/packing list.</p> <p>Note ¹: The Push-E Cat does not use trailing edge stock for two reasons: durability and simplicity of construction. Unfortunately, EPP, unlike Styrofoam, does not "gas" or "burn off" as a hot wire cuts through it. Instead, EPP goes liquid, almost like hot melt glue. This can cause difficulties in cutting wings with sharp trailing edges like the Push-E Cat. The liquid EPP can seep through the gaps in the foam beads right at the trailing edge of the wing and then cool and solidify. When the wing is removed from the core beds, several beads of foam may stay with the core beds instead of the trailing edge. This event is unavoidable, but the loss of a few small balls of foam causes no structural damage to the wing and is invisible once the wing is covered either with tape or covering film.</p>	

Now that we've checked to make sure all the parts are there, you need to make sure you've got the other things it takes to finish out your Push-E Cat:

Materials required for completion:



Adhesives:

EPP is a material that works best with different adhesives for different kinds of bonding. Here's a list of adhesives we recommend for use with our kits, and the applications for which they can be used:

- DAP Weldwood Contact Cement (joining motor pylon to wing cores, prepping EPP surface for covering)
- 3M 77 spray adhesive (optional, prepping EPP surface for covering).
- Pro-Bond Urethane glue (wing spars, wing dowels)
- Carpenter's Goop (installing tail, gluing in reinforcement plates, repairing tears in EPP)
- Common 5 or 15 minute epoxy, model airplane super glues, and/or aliphatic glues (motor pod assembly)

Tapes and Coverings:

- Tesa "Strap" #36504 or 3M Super Strength filament tape $\frac{3}{4}$ inch wide
- Packing tape (clear or colored) or Ultracote (Oracover) for covering plane.

Tools:

- Wax paper or plastic sheet (such as visqueen or the backing from iron on covering).
- #11 Exacto hobby knife and #26 long straight blade hobby knife.
- Sandpaper of different grades (100, 80).
- Lacquer thinner (optional, for use with 3M 77 clean up, get at local hardware store)
- Heat sealing iron
- Electronics solder, low temp silver solder or regular solder, and soldering iron
- Weights to hold wings flat in cores while building²

Finishing Touches:

- #64 Rubber bands (we use 6 to 8 at a time to hold down the wing)
- Servo aileron extension wire compatible with your receiver
- Electric flight wire (silicone insulated, high strand count, flexible), between 16 and 13 gauge, black and red.
- Sermos or Power Poles type connectors (no latch for disconnect) (four each of two colors)
- Speed 400 class motor³
- 10+ amp BEC electronic speed controller³
- Propeller³
- Propeller adapter
- Battery pack³
- Radio: 3-channel minimum, micro equipment required
- Charger capable of charging at rates appropriate for the battery. Sanyo KR1400AE packs like a rate of 3 amps maximum (peak charger ideal).

Note ²: Weights do not need to be fancy. Old schoolbooks work OK. We use bags made from a densely woven canvas type fabric about a foot long by 3 inches wide. We fill these about half way with lead shot, and sew a double seam in the end. They're great!

Note ³: We recommend running a 7.2V Speed 400 motor on 8-Cells (KR-1400AE preferred) and a 6x4 prop or a 6V Speed 400 motor on 7-cells with a 5.5x4.5 prop. The Push-E Cat was conceived using the Jeti 14 Compact speed control, and the system works well with these combos. Other combinations have been successfully used as well.

If all the parts and construction materials are in place, let's get to building!