



# INFO FOR THE CLASSROOM TEACHER

## INTRO TO THE AMA ALPHA

Model airplanes are the perfect tool for teaching about aerodynamics and many other science concepts! The AMA ALPHA is a hand-launch, rubber-powered airplane made from EPS foam and balsa wood.

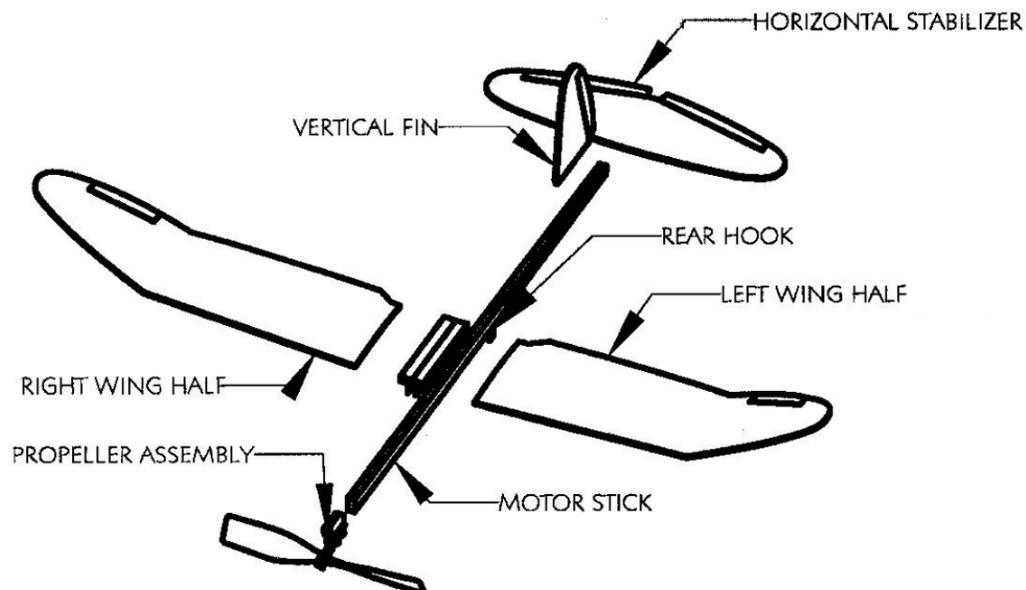
If you're short on time or have younger students, simply using the ALPHA for a "show and tell" demonstration may be your best choice. Instructions come included with the plane, but **be sure to check out our short video** which covers assembly, winding the motor and flight at <http://amaflightschool.org/alpha>

If you have a little more time or older students, there are three lessons with student activities included in this packet:

- Center of Gravity
- Potential and Kinetic Energy
- Wing Loading

ALPHA DIAGRAM (sample below) labeled with these features of note:

- Rubber motor- 80 inches of FAI competition rubber- should be enough for about 3 motors
- Hooks for attaching motor
- Propeller
- Polyhedral wing shape
- Molded aileron, elevator, and rudder tabs for trim changes
- Winder 20:1 ratio winder





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Tips for a great demo:

- Read and follow the instructions and perform a few test flights without students first. This is important!
- Make sure you fly the plane in a large open area, such as an outdoor field or a gym.
- Remember, you'll need a partner or a winding stooge (see the directions insert included with the ALPHA) to hold the plane still while you wind the motor.
- Explain to the students that by winding up the rubber motor, you are storing energy inside of it, creating **potential energy**.
- Launch the aircraft like you're throwing a dart, with a gentle forward toss from the fingertips. Explain to the students that you are now releasing the energy stored in the rubber motor, creating **kinetic energy**. As the motor unwinds, it makes the propeller spin. This moves the plane.

Additional supplies that might be useful to you:

- A small bottle of Armor All- for lubricating the rubber motor (will increase flight performance and extend the life of the motor, place rubber and a bit of Armor All into Ziploc)
- Painter's tape- for holding pieces of the aircraft in place, in the event that it becomes helpful or necessary
- Clay- for adding a small amount of extra weight to the nose, if necessary
- Gorilla Glue, CA, or wood glue- for making repairs to the foam or balsa if necessary
- Materials to make a winding stooge if you will not have a partner to help with winding the motor (see the directions insert included with the ALPHA)

For all of the following activities, students will need to know how to wind the motor and launch the aircraft. Performing flight trials is how they will gather the information they need to draw conclusions. You can demonstrate this for them yourself, or you can show them part of the instructional video at <http://amaflightschool.org/alpha>

We recommend starting with the Center of Gravity lesson and activity. Finding the correct CG will benefit all of your future flights!

