

POLECAT AEROSPACE

4" HAWK

MIM-23B

The Hawk was the first mobile medium-range guided anti-aircraft missile deployed by the U.S. Army, and was the oldest SAM system still in use by U.S. armed forces in the late 1990s.

Development studies for a semi-active radar homing medium-range surface-to-air missile system were begun by the U.S. Army in 1952 under the designation SAM-A-18 Hawk (Homing All the Way Killer). In July 1954, development contracts were awarded to Raytheon for the missile, and to Northrop for launcher, radars, and fire-control system. The first launch of an XSAM-A-18 test missile occurred in June 1956, and the initial development phase was completed in July 1957. By that time, the Hawk had been redesignated as Guided Missile, Aerial Intercept, XM3 (and XM3E1). Initial Operational Capability of the M3 Hawk was achieved with the U.S. Army in August 1959, and in 1960 the M3 was also fielded by U.S. Marine Corps units. The Hawk system was used by many NATO and other countries, and the missile was license-built in Western Europe and Japan. There were two training versions of the original Hawk missile, designated XM16 and XM18.

This kit features:

- Through the wall fin mounting
- Fiberglass molded nose cone
- Fiberglass molded boat tail
- Pre-fiberglassed and pre-slotted body tube
- Baltic Birch fins and centering rings
- Fiberglass electronics bay
- 38mm motor mount
- Tubular nylon shock cord
- Shock cord mounting hardware

Polecat Aerospace
9547 Abbeywood Rd
Santee, CA 92071
(619) 258-2537 Voice (619) 374-2195 FAX
info@polecataerospace.com
WWW.POLECATAEROSPACE.COM



List of Materials:

- | | | | |
|-----|-----------------------------|-----|---|
| (1) | Nosecone | (1) | Body tube - slotted |
| (1) | Boat tail | (4) | Main fins (upper piece) |
| (4) | Steering fins (lower piece) | (4) | Fin support stringers |
| (1) | Nose cone bulkhead | (1) | Upper centering ring drilled for U-bolt |
| (2) | Lower centering rings | (1) | Boat tail centering ring |
| (1) | 38mm motor tube | (2) | U-bolts with plates |
| (8) | 1/4"-20 nuts | (4) | 1/4"-20 washers |
| (1) | Shock cord | (2) | Rail Guides |
| (2) | 8-32 Screws for Rail Guides | | |

Construction

Please read and understand each step. The construction methods used in this kit differ from others in many ways. It is important to follow the instructions to ensure you get the most out of your kit.

Motor Mount Assembly

Locate the upper main centering ring and shock cord mounting hardware as shown. Mount the shock cord mounting hardware as follows:

Put two nuts and two washers on the U-bolt

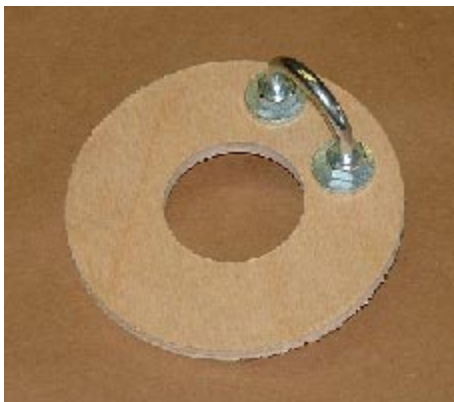
Put the U-bolt through the centering ring

Put the U-bolt backing plate on

Put two nuts on

Tighten snugly with a 7/16 wrench

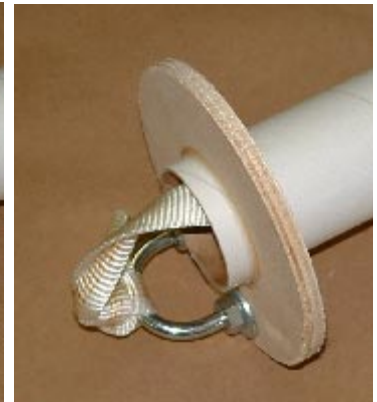
Secure the nuts with Epoxy or thread sealer to prevent the nuts from loosening



Epoxy the upper centering ring assembly onto the motor tube 1/4" in from the end of the tube. Apply a generous fillet of epoxy to this joint. Allow to cure completely.



Securely tie one end of the shock cord to the U-Bolt in the upper centering ring. Apply CA or Epoxy to the knot to prevent it from coming undone over time. Wrap the remaining shock cord up and stuff it into the top of the motor tube. This will keep it out of the way during assembly.



Epoxy a centering ring 16 3/8" from the end of the motor tube (the RIGHT end as pictured). Make sure there is no epoxy fillet on the lower side (RIGHT as pictured), as this will interfere with the fin seating to the motor tube. Allow to cure completely.



Epoxy the boat tail centering ring into place. Add a thick fillet to the inside and outside joints. This glue joint is important as it will see all the shock of landing. Allow to cure completely.



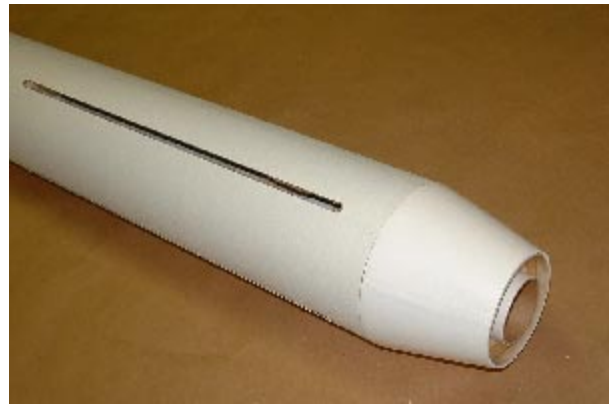
TEST FIT ONLY - DO NOT EPOXY
Fit the remaining centering ring and the boat tail assembly onto the lower end of the motor tube.



The end of the motor tube should be flush with the end of the boat tail. Test fit an upper and lower fin section and make sure they fit between the centering rings. Slide the lower ring down if necessary. **DO NOT EPOXY AT THIS TIME!**



CAUTION - Use at least 15 minute epoxy for this step. Apply epoxy to the inside of the body tube just above the fin slots. Slide the motor tube assembly half way into place. Apply epoxy to the lower ring, motor mount tube, and boat tail shoulder and slide the assembly into place. Make sure you have epoxy on all surfaces. Stand the assembly upright and allow to cure completely.



Assembling the Fins

Using a straight edge and pencil, draw lines on both sides of a fin slot forward about 16 inches forward. Repeat for all slots. The lines are used to make sure the fins are straight.



Test fit the fin set into each slot, making sure they both fit. Once you are satisfied with the fit, epoxy in the fins. Use a clamp or tape to hold the fins together at the tip while the epoxy cures. Make sure the fin is lined up with the pencil marks you made, and masking tape to secure the fin while the epoxy cures. **IF THE FIN IS WARPED, DO NOT WORRY,** This is normal, and the marks on the body tube will ensure the fin is straight after the epoxy sets.



Repeat for all fins, making sure that the fins are straight and parallel to each other.



Epoxy the cap strip to the edge of the upper and lower fins, joining them. Make sure the strip is straight. This strip is a structural member and the joint must be tight. repeat for all fins. Allow to cure completely.

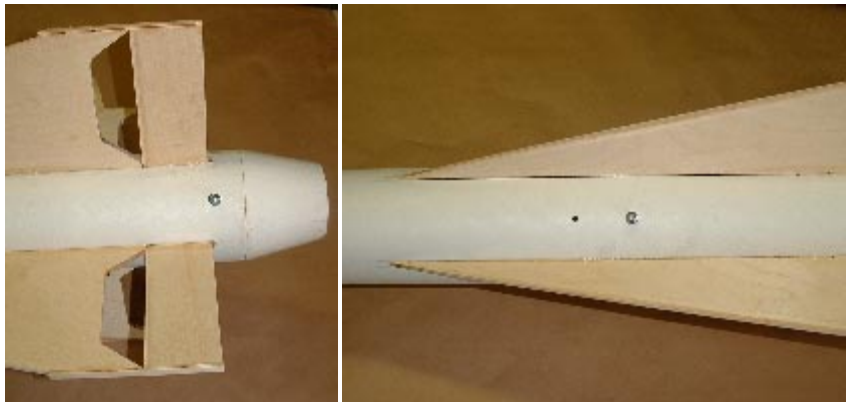


Final Assembly

Assemble the nose cone bulkhead hardware in the same manner as the upper centering ring. Remember to secure the threads with CA or epoxy to prevent the nuts from loosening up over time. Epoxy the bulkhead into the nose cone. After the epoxy sets, apply a generous fillet of epoxy to support the joint. Spinning the nose cone while the epoxy cures helps to keep the fillet thick at the outside edge as desired.



Drill a 1/8" hole through the airframe into the lower centering ring for the rail guide. Install the rail guide with the 8-32 x 1" screw. **DO NOT TIGHTEN THE RAIL GUIDE TOO TIGHT.** It should spin on the screw. Repeat for the upper rail guide, into the upper centering ring.



Drill a 3/16" pressure hole just above the upper rail guide as shown.

Securely tie the shock cord to the upper bulkhead U-bolt. Secure the knot with CA or Epoxy. The parachute should be attached onto the shock cord 12" away from the nose cone. We recommend a 36" to 58" parachute for your Hawk, depending on conditions.

You will need to add nose weight to your Hawk before flying it. **DO NOT ATTEMPT TO FLY THIS ROCKET WITHOUT PROPER BALANCING.**

The center of gravity (balance point) is 29" back from the tip of the nose, in flight ready configuration (motor and parachutes loaded).

We hope you enjoy your Hawk. Happy flying!

Polecat Aerospace
9547 Abbeywood Rd
Santee, CA 92071
(619) 258-2537 Voice (619) 374-2195 FAX
info@polecataerospace.com
WWW.POLECATAEROSPACE.COM

