Section One: Completing the helicopter mechanics.

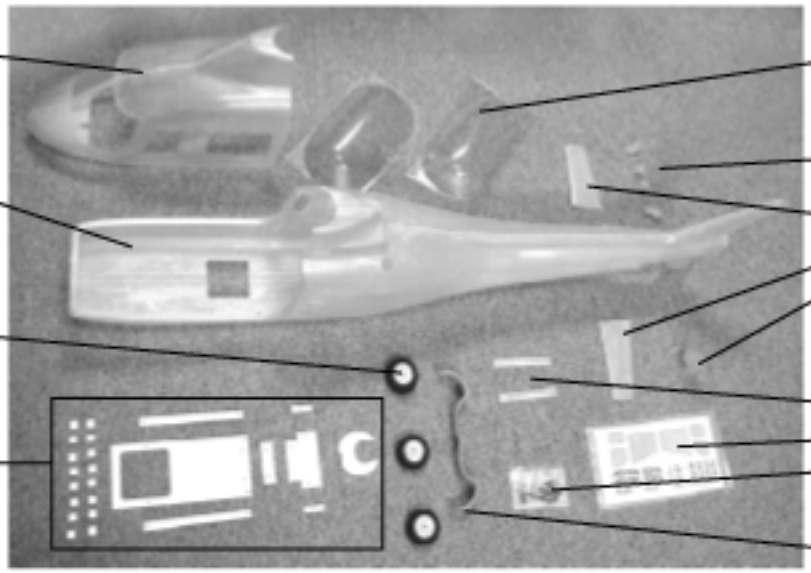
The mechanics (a completely built helicopter without body) should be flight ready. At this point, the helicopter should essentially be together without the fuselage, this can be accomplished with the standard instruction manual that comes with the kit.

The final items that need to be finished are:
1. The battery pack and the receiver (wrapped in foam) are installed below the battery tray.
2. The antenna needs to be routed to the tail gearbox with out contacting any metal or wiring.
3. Remote glow plug adapter and fueling system needs to be installed (purchased separately).
4. The engine Run-in will require 2-4 tanks of fuel to get the engine running smoothly (must with main blades).
5. Rudder pushrod is shorter and the pushrod length needs to be adjusted based on the rudder setup instructions.
6. During the Run-in, cycle the throttle to lift-off and trim the rudder while setting up the gyro.

Do not fly the helicopter at this stage, the mechanics are designed for the scale fuselage and is not balanced for extended hovering or forward flight. Also note that the is no tail support strut or tail fins (apart of the fuselage) for stability.

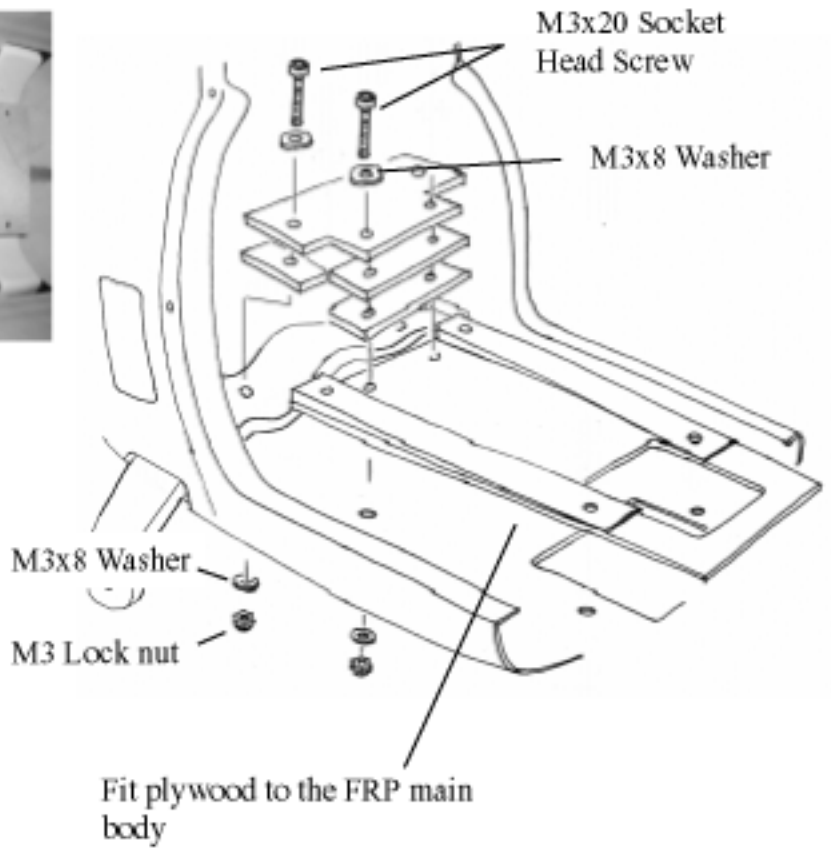
Section Two: Fuselage Preparation

Step 1 Inspect fuselage parts

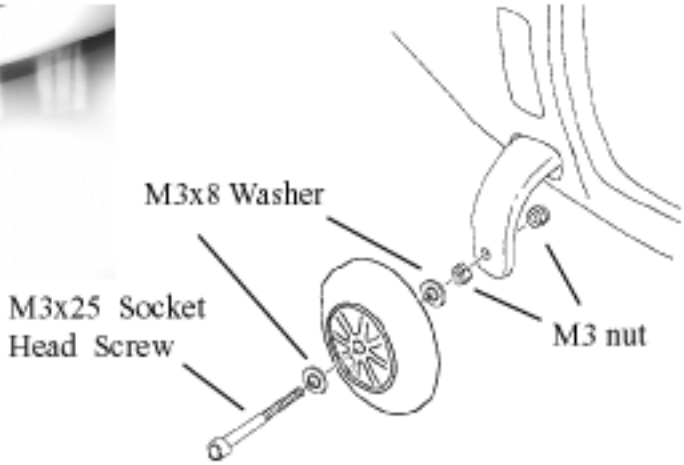


Step 2 Assembly special Hawk scale machinics :

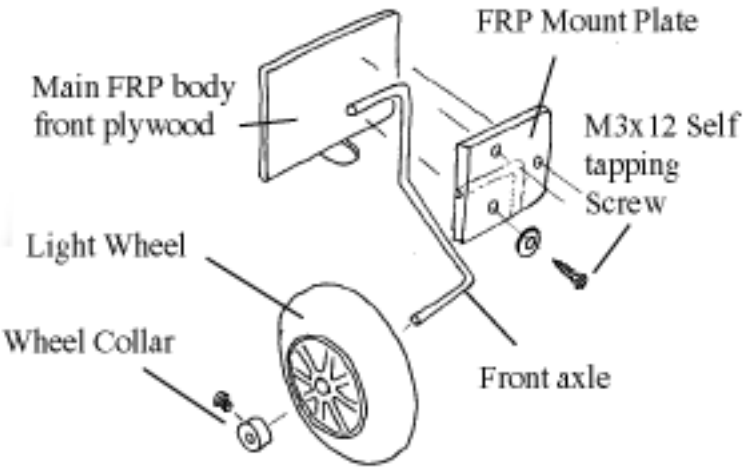
Step 3
Using an adhesive, glue the mounting wood to each other as shown in the diagram. This frame will be installed in step 7.



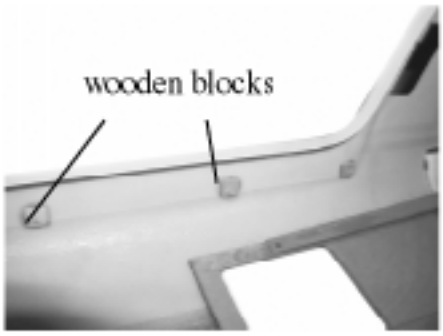
Step 4 Install main wheels as shown in the drawing.

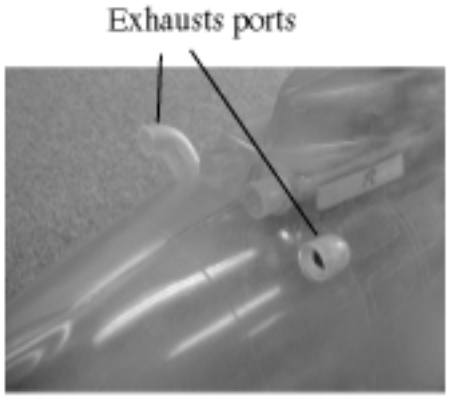


Step 5 Install front wheel as shown. Make sure the FRP mount plate is glued to the main FRP body front plywood with the front axle properly inplace. You can now screw the assembly to the front of the fuselage.

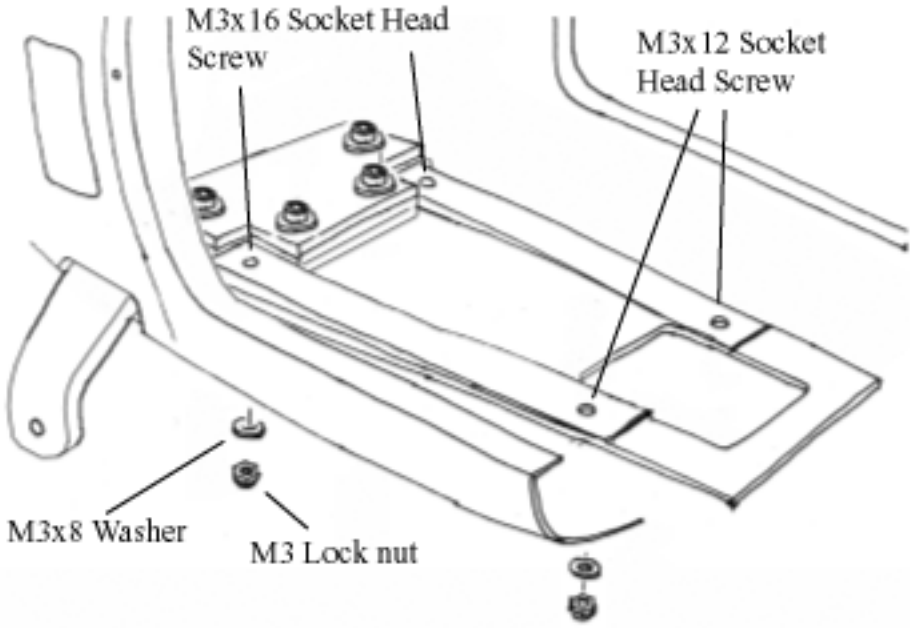


Step 6 Install FRP exhaust ports by using an adhesive on the inside of the fuselage to secure the exhaust . Next, using adhesive, place and space the 8 small wooden blocks inside the canopy mounting area. These will be used to secure the canopy. Suggestion, temporarily place the canopy on the fuselage and secure with scotch tape. After aligning, mark the inside of the fuselage,with and erasable marker, where you want the blocks to be located. After marking, you can remove the tape.

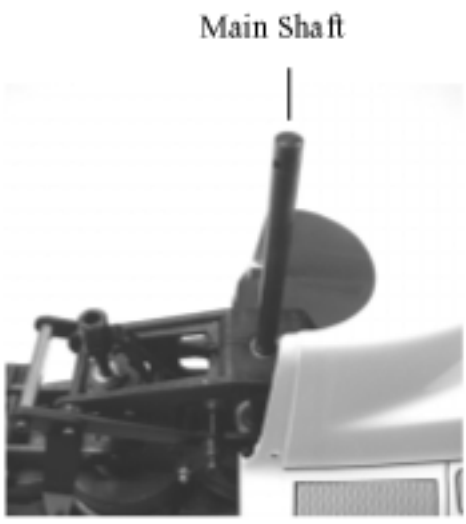




Step 7 Temporarily install the wood mount onto the main frame and temporarily install your mechanics. After you are satisfied with the alignment (main shaft centered with fuselage opening) you may want to use an adhesive to permanently attach the wood frame to the fuselage. At this point, you may want to paint the fuselage prior to reinstalling mechanics. From the package, remove the 2 aluminum strips. You may want to temporarily screw the strips to the left and right side of the mechanics (see photo below). Make Z bends and the flat section should be attached to and against the fuselage (see photo in step10). After you are satisfied with of the angles, attach the strips to the fuselage using adhesive.

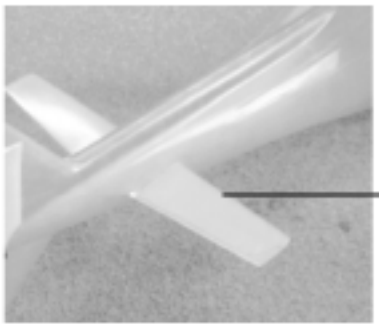


NOTE: Prior to installing the mechanics, all links and servos, battery and gyro should have been properly installed.



Step 8 Install horizontal tail fins

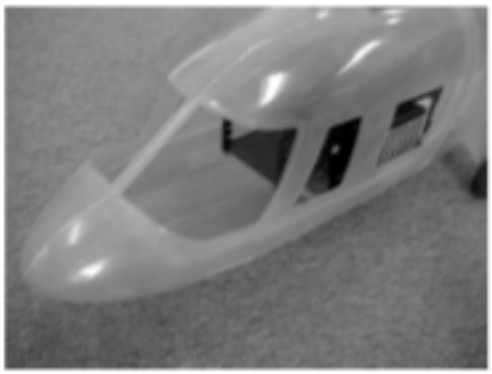
Attach the fins to the tail boom and check for fitness. Use an adhesive on the inside of the horizontal fin and slide into place. It is not recommend to put the adhesive on the protruding fin attachment of the fuselage as this will cause the adhesive to side out and around the outside area of the horizontal tail fin.



*Pre-painted bodies require sanding and cleaning off the surface paint of the protruding fin attachment of the fuselage.

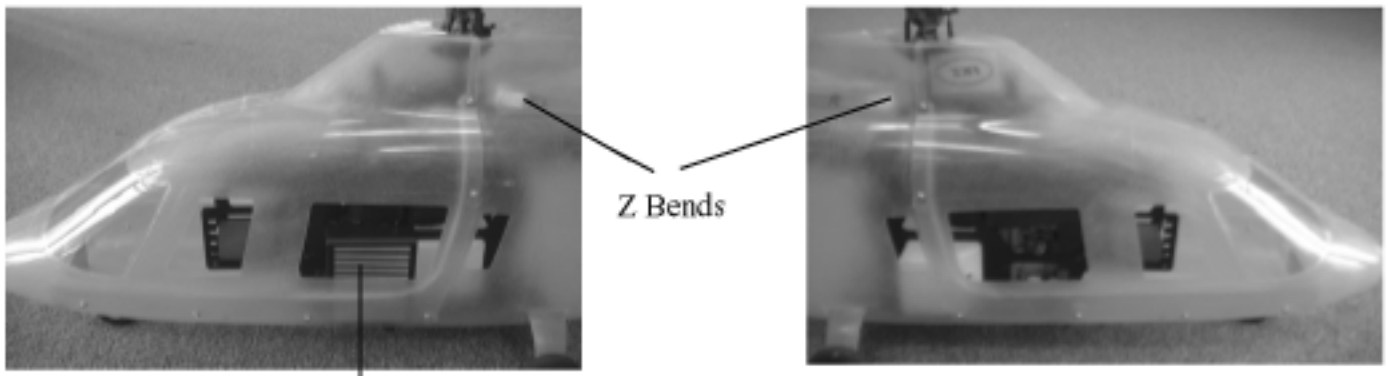
Step 9 Front body/canopy installation

You can use scotch tape to temporarily hold the canopy area to the main fuselage for alignment. Note where you have attached the wood blocks for alignment. Drill small holes throught the fuselage and through the wood blocks. You are now able to secure the front canopy/body to the main fuselage. At the bottom of the nose is a notch enabling the nose to slide through the nose gear for alignment. Remember to install your mechanics for final installation.



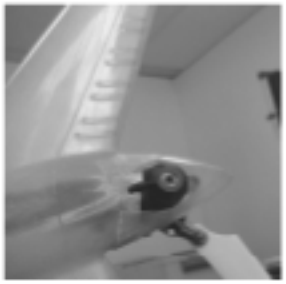
Step 10 Windshield Installation

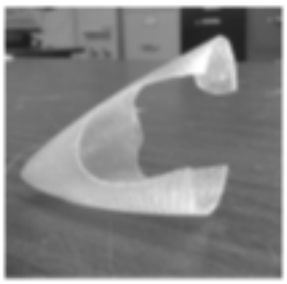
The windshield in the kit version comes molded with a scribe line around the outside of the each windshield half. Using a black erasable marker, trace the line and cut out both sides. For painting, tape off all areas except the outside 1/4" and match the color planned for the front section. Tape off the back side before painting. After painting, attach the windshield to the canopy using an adhesive around the frame.



Step 11 Tail Boom installation

After the mechanics are installed into the fuselage, slide the wood half-moon brace,that is provided, on the inside of the fuselage. Slide it towards the rear then glue in place. Slide the tail boom through the fuselage and into the main frame and into the precut grooves of the fuselage. Secure the tail boom. Next, place the pre-cut tail cone and screw into place.





Reminder

Before starting the prep work for painting the fuselage, re-check all areas that need to be glued or fastened after the paint has been applied. Redrilling may be necessary after painting.

Spray cans vs Airbrushed finishes. The preference is left to the modeler, many good paint jobs have been accomplished using the spray cans. However, in the long run, a good spray can finish requires more attention than using an airbrush. The answer is simple, you want a professional looking fuselage, and not a helicopter looking like a flying brick. We need not even think of or mention any type of paint brush larger than 1/4" wide.

As for selecting the type of paint, visit your local hobby shop and ask their opinion on painting polyester fiber-glass. On a general note, polyurethane is always a very safe paint that is fuel proof. A perfect paint job can be easily ruined by spilling raw 15-30% fuel accidentally. There is no pain manufacturer who will tell you that their product will resist 30% fuel for a very long and for the most part the fuselage is only exposed to the oil residue from the burned exhaust. The restricted fueling areas in a scale helicopter are prone to having fuel spills from time to time. For this reason, it is recommended to paint the area around the engine and fuel tank, especially the edges of the fiberglass opening where paint runs are likely to start. A good hobby shop will carry a bottle of clear polyurethane in liquid form just for this purpose. Thinned epoxy works well as an alternate.

Good luck with your paint schemes and your painting job undertakings.

Section Three: Installation of mechanics into the finished fuselage

Step 1

Insert the mechanics into the fuselage. Loosely attach the scale muffler on the engine and move the mechanics into place. Insert the tail boom into the fuselage, through the wooden half moon, and into the main frame and attach.

Step 2

Move the mechanics into place and secure the muffler to the engine. Slide the mechanics and align the mounting bolts holes. Care must be taken when doing the final positioning as the scale muffler exhaust pipe needs to protrude through the bottom of the fuselage. Note that the front left locknut needs to be held at an angle while the bolt is tightened from below (as it is under the muffler). If the muffler is against the fuselage, cut the fuse-

Step 3

The gyro, battery pack and receive should have been installed during the run-in procedure. However, to clarify the mounting location, the gyro will be installed beside the collective and throttle servos. The receiver, wrapped in foam will be positioned below the battery tray. In this position all the leads can be collected and neatly routed. Take the time now to route the antenna wire from the receiver. The important issue is the antenna wire does not contact metal on the mechanics, does not contact any wires and is laid out not wrapped together. A simple solution is to insert into a length of fuel line and taped into the inside of the fuselage.

Step 4
Attach the front fuselage/canopy section using the M3x8 Phillips head screws. The screws are mounted along the

Step 5
At this point before, the windshield has been installed, mount the battery pack in the front section of the fuselage. Do not secure until the final balancing is done to leave flexibility in the final placement. Mount the receiver, wrapped in the mounting foam below the battery tray and secure with elastic bands.

Step 6

To attach the windshield after it has been painted, apply a thin layer of "Goop-Canopy Adhesive"(which can be purchased from your local hardware store) to the inside 1/8" edge of the windshield. Be very careful with this type of adhesive because the nature of this glue is to melt into the mating surfaces and a single drop or finger print on the front windshield is permanent. Alternately you can drill and screw the the windshield in place with small hardware from your local hobby shop. Both solutions work well.

Step 7
As a final precaution, look over the entire fuselage and compare to the manual to be sure all steps are completed and all accessories are securely attached.

Step 8
Cut the DECALS from the sheet and slowly peel them from the paper. They can easily be attached to the fuselage for realism.

Step 9
Congratulations, you now have a fine looking scale Agusta 109A helicopter. The final work is in the balancing of the helicopter before flying. With the main blades and tail blades installed, pickup the helicopter by the flybar with your fingers and look to see how level the helicopter hangs in the fore-aft direction. If necessary, add nose weight to the very front of the fuselage. This can be glued inside the front fuselage section in front of the battery pack near the wall of the nose. Generally, 4-6 ounces is the maximum weight that should be added to the nose if the engine is 30 size.

Section Four: Mechanics Disassembly

Remove the tail gear assembly and tail boom. Remove the bolts that are holding the aluminum Z bends. Remove the bolts at attach the mechanics to the fuselage. Care should be taken in removing the mechanics due to the location of the scale muffler and the Z bends.

Happy flying with your Great looking Agusta 109A helicopter.

Section Five: Preparing and painting the kit version.

This section is written to cover painting and detailing of fiberglass components using in Century's scale helicopter kits. Some included references may describe components of different kits, not exclusive to this instruction supplement.

Introduction to Fiberglass
When considering the strength compared to the space age canopies that are common on most pod and boom helicopters there is no contest. This plastic material is virtually indestructible at the penalty of being virtually unpaintable without specialized and expensive automotive primers and paints, there is also a very limited range of color available. The reason you are reading this page is that you have come to your senses and wanted to fly a model that looks and holds all the prestige of a real helicopter.

Flexibility
A wonderful attribute of fiberglass is in its flexibility. Century and Funkey take care and pride in craftsmanship that goes into every fuselage. However, fiberglass parts will migrate while inside the shipping box. When two mating components are brought together and they do not align or mate, the culprit is a warped part. Many become upset and wish to lay blame but dealing with this is very simple when explained a simple procedure. Using a heat gun set at the high setting at a distance of 1-2 feet away, evenly heat the warped part until the outside surface is hot to the touch and the part has become pliable (flexible). Using adhesive tape, mate the two fiberglass parts together and let both parts sit until both parts have reached room temperature. Remove the tape and now both parts are stable and match one another. In some instances, depending on the location of the warp, the part may need to be held in an overextended position to achieve the proper shape when the part is finished.

Working with Fiberglass
Difficult to work with, We disagree. Fiberglass is easier to repair than you think. Using today's CA type of adhesives, a severe crack in a fuselage can be simply fixed and the repaired section is much stronger than in its original state. Add touchup paint and no one would ever know it had been damaged. There is a limit to this type of thinking where purchasing the replacement fiberglass part is simply cheaper and less work than performing major reconstructive surgery.

The Paint Job.
There is no magic to a good paint job, the true secret is time, patience and common sense. A beginner who thinks that they can throw paint onto a fuselage Friday night before flying on Sunday is dreaming, the helicopter would be flyable but even that is a stretch. The average beginner will spend the better part of a month to apply a good clean paint job.

Preparing the fuselage for painting.
After opening the kit version of the fuselage, examine all the fiberglass components to see where work needs to be done to allow a simple "bring up" of the fuselage. "Bring up" describes the necessary steps to complete all the jobs in order to start priming the fiberglass parts. Typical work that is done at this stage is rough sanding on seams and jointed components, filling of surface imperfections, adding panel lines and rivets, cutting required holes and preparation for priming.

1. Start by thoroughly washing all fiberglass parts in mild detergent and warm water, this will remove any residue remaining from the molding process. Next wipe down all the parts with Acetone (from the hardware store). The Acetone will remove all traces of oil or grease that will affect the adhesion of two fiberglass parts or between the paint and the fiberglass. Now using fine steel wool or an abrasive pad commonly used for scrubbing dishes, scuff all surfaces that will be joined or receiving paint. What is important to note here is that we are breaking through the topmost resin surface and creating the best surface for adhesive or primer to adhere to.

The prepared finish will have very fine score marks usually seen when the part is held to the light at a slight angle.

2. This is the time to rough sand any accessories or small parts, using the 320 grip sandpaper, that will be assembled and attached at different positions on the fuselage. These can be marking lights, engine exhausts, scale fuel tanks, horizontal and vertical stabilizers, guns, antenna or any scale details being bonded to the fuselage. These accessories should be test assembled to make sure that all parts are prepared, and you will be able to see any problems that may arise in trying to paint these parts. Some thought should be put into how to hold the part as it is being painted. Go ahead and bond these parts at this time using the slow CA glue. A quick note on adhesives, as the fuselage resin is polyester, **do not use any regular 5-30 minute epoxies to bond** two fiberglass components together, Stabilit is specially formulated for this purpose and excellent for fillets. Epoxy and polyester will not bond properly to one another, but epoxy is good to bond unlike substances like wood or metal to themselves or other parts.

3. Once the detail parts have been built into the sub assemblies are ready to paint, use a filler in sections that have gaps or slight surface imperfections, occasionally there are voids (air bubbles in the resin) that occur near the surface that need to be filled. There are allot of good fiberglass fillers on the market, it is best to check with your local hobby shop to get a recommended product. Try to stay away from porous fillers designed for wood as they will shrink and are not a good choice for large areas.

4. Most major windows and accessory holes have been precut by Century, leaving only those that have a user dependency like the type of exhaust system used on the helicopter or the exact exit position for the cooling fan shroud. For these fuselages that have been explicitly designed for the Hawk III mechanics, almost all of these concerns have been considered and finished at the factory. This leaves the hole for the exhaust, if you are using the recommended scale muffler (CN3058 .32-.38 or CN3059 .46-.50) then these dimensions have been included on a template that includes both possible hole locations.

4a. When making cutouts or holes in the surface of the fiberglass the best procedure is to drill a pilot hole using the 1/16" drill bit at corners or along a curve. Start with an erasable marker to draw the opening or window. The pilot holes serve to avoid leaving sharp corners which given the nature of a helicopter will be the focal point for stress cracking originating from corners. Once the holes have been made, use the moto-tool for all other roughing cuts. The cut off wheel is the best for straight lines and either the sanding drum or the curved stone is used for smoothing edges. If the cut out is a window, do not use the moto-tool for the final work. Switch to a sanding blocks, square blocks of various sizes for straight edges and round dowels for rounded corners.

4b. In the case of the exhaust opening which will end up being 1/8" larger across the outside diameter of the exhaust pipe that extends below the bottom of the fuselage. After drawing the circle, use grinding stone and move in small circles until the hole is at the size wanted.

5. Priming the fuselage accomplishes two tasks: first, the primer paint is designed to aggressively adhere to the surface being painted and provide the best surface for the colored paint to adhere to; secondly, all surface imperfections will become visible. Depending on the particular imperfection, light sanding with number 600 or 800 sand paper and the second priming will take care of 90% of the highly visible problems. The remaining 10% need to be filled, let dry, sanded again and then sprayed with the second coat of primer. The primer process will be repeated until the surface is as perfect as your patience and time permit.

6. Select your paint color and follow the directions on the particular brand of paint being used as each manufacturer has different requirements.

7. After completing your paint scheme, and installing your mechanics, all that is left to do is to enjoy your dream!