**Building Model Factory Hiro Car Model Kits: A Primer**

**By Chris Bowie**

The purpose of this paper is to give the reader an overview of the various techniques I use to build MFH car model kits. Some of the new members of this Facebook group have been asking questions on getting started with MFH kits and I thought it would be useful to provide a primer on building these kits.

I have been building models for over 50 years now—initially ships, then cars, then aircraft, and back to cars for the past ten years. The car models I found are the most challenging, particularly the internal detail work on the engine and interior and the painting of shiny gloss finishes. I started with 1/24 scale models, then did some 1/8$^{th}$ scale Pocher and Monogram kits, and then settled on 1/12 scale. Big enough so I can see the detail with my aging eyes, but not so big to overwhelm my shelf space. I did a number of Tamiya and Revell 1/12 kits and then learned about Model Factory Hiro. After my first MFH kit, I was spoiled. These kits had a level of detail far beyond the mainstream manufacturers—and also feature a number of unique and historically significant cars. The kits are expensive, but on a dollar per hour basis, probably are pretty cost-effective. MFH offers some 1/24 and 1/43 scale kits, which are cheaper, but I have focused exclusively on their 1/12 scale kits.

If you have not built a car model kit before, I would suggest starting with a plastic 1/24 scale model to try out the techniques suggested here before tackling something like a MFH kit.

MFH are manufactured in Japan—there is a two part video on You Tube showing a visit to the factory for those that are interested. The kits are fairly unique in that they are primarily composed of resin and metal parts, which introduces some challenges in terms of glue and paint. They are also extremely detailed and require careful study of the directions in order to complete the kit. In addition, MFH only produces a limited number of kits for each car—I think because the molds decline in quality over time. This means that the number of models available for sale decreases over time. So when a new kit is announced, you need to get your order in early. I use Stradasports in the United States to order my kits. You can order directly from MFH on their website, but Kevin at Stradasports (and others on this Facebook group) have been very good in terms of getting me the kits I desire.

The high level of detail also requires extensive planning about painting, assembly, and the like. You must study the highly detailed directions very carefully and then begin part preparation, assembly, and painting. Building these kits requires many hours, but the results are, in my opinion, the most impressive car models ever available to the hobbyist—about the closest thing you can get to an engineering model. You must also work hard to ensure that pieces fit tightly and accurately—this can require some filing and adjustment. If one part of the car is not positioned correctly, it can ripple throughout the assembly.

Even though these are larger scale cars, some of the parts and assemblies are quite small. I accordingly use an Optivisor (a head-mounted set of magnifying lenses) when working with small parts.

The following contains the tips and techniques that I have been using. I am sure others on the Facebook group have additional great ideas and would encourage them to share with this group.

**Getting Started**

Typical 1/12 kit. Resin parts on top, decals and photo etch in a plastic folder, metal parts beneath

MFH kits typically come in a high quality box. Typically the resin parts are on top, along with a plastic folder that contains the instructions, decals, and photo-etched parts. You may also find a bag containing speciality items (wire, tubing, clear plastic resin parts) and another bag containing the clear plastic vacuform parts for the windshield and headlight covers). Below these items is a cardboard shelf. Beneath this shelf in the lower part of the box are typically the metal parts, the tires, and rims (which are usually turned metal). These are contained in multiple bags.

I only do one kit at a time. I typically place the decal sheets and photo-etched parts in a drawer, clip the resin parts from the runners using a plastic sprue cutter, and place the tires and rims in a separate small container. I then carefully open the plastic bags with an X-acto knife and then dump all the metal parts into a plastic box. Then comes careful study of the directions.

**Painting Basics**

You have to do extensive painting on these kits. MFH provides paint colors from Mr Color, which is a Japanese firm that produces high quality lacquer paints. I have switched over to these paints almost exclusively for my builds. These paints are obviously toxic, so for airbrushing, you need a good paint booth to evacuate the fumes. You should also use a high quality respirator as well to deal with any errant fumes or backspray. You can see a picture of my paint booth below, which is manufactured by Pace. If you google Pace paint booth, you can locate their website. My booth vents to an outside window. For air, I use a Paasche compressor with an adjustable pressure gauge and water trap I got via Amazon.


Paint Booth

Compressor. I typically spray at about 20 lbs of pressure. The water trap prevents condensation from getting into the airstream (and your paint).

There are many different types of airbrushes available.  I use a simple single action Paasche H model with a number 5 tip and needle.  It is easy to use and clean.

Paasche H Model Airbrush

It also has a big advantage over other airbrushes when painting a small number of parts or a small area. You can put paint directly into the needle shaft without attaching the cup.  This makes it easy to clean up and then apply a different color.  You will be surprised to find how much you can cover just using the needle shaft for paint.

I also have a double action Paasche airbrush—double action means that you can control both the amount of air coming out the tip along with the amount of paint at the same time.  These airbrushes are more complex to operate and clean, but are useful for some detail work (such as adding heat staining to exhaust pipes or exhaust stains.

Paasche double action airbrush with built-in cup


The heat and exhaust stains on these exhaust pipes for the Mercedes 300 SLR were done with a double-action airbrush.

For mixing paints, I use squeeze bottles that I ordered from Amazon. I stir using a popsicle stick and pour the paint from the Mr Color jar into the squeeze bottle. I then fill the original paint jar with Mr Color thinner. I stir and shake the jar, then pour the thinner into the squeeze bottle. That way, I get a ratio of 1 part paint to 1 part thinner, which works well for airbrushing. I also label the squeeze bottle

with the Mr Color number.  When I get ready to paint, I just shake the bottle to mix it up, unscrew the tip, and pour the paint either into the cup or the shaft of the airbrush.

For some parts, I use Tamiya acrylic paints.  This has some advantages for various parts of the painting process as I will discuss below.

Squeeze bottles

Here is my paint collection of mixed paints ready for airbrushing.  I use a lot of primers, semi-gloss black, aluminum, and Italian red.

You need to prime the parts before applying color coats.  For resin parts, I use Mr Color Surfacer (it comes in grey and white with various grades—1000, 1200, and 1500).  I typically use the 1500 grade—think it is a little finer and gives a smoother finish.  For metal parts, I either use Mr. Color Metal Primer or Surfacer.  I thin the primers with Mr Color thinner—one part primer to one part thinner in my mixing bottles.


Primers

To hold parts for painting, I use toothpicks, alligator clips, and 3M double sided mounting tape on popsicle sticks.  For car bodies, sometimes I will use spray cans or build a simple stand to hold the body when painting.  I mount the body on the spray cans or stand using 3M double sided mounting tape.

When painting, I use a disposable glove to hold the parts—if I get overspray on the glove, no problem.  When finished with painting, I place the glove and tissues used to clean the gun and cup in a Ziploc bag to avoid fumes.  I typically open the Ziploc bag inside the paint booth to avoid the nasty smells and then seal it.

Getting parts ready for painting—primer white coat applied.  My custom stand is shown on the right

**Preparing the parts**

The resin and metal parts have mold release agent on them, which prevents paint from adhering properly.  The first item of business is to clean the parts.  For the resin parts, I remove any stubs using sanding sticks (typically 400 grit wet and dry) and try to get rid of any seam lines (using an X-acto knife with a No 16 blade to adze the seam) and then sand with wet 400 grit.  To get rid of the mold release agent, I use a toothbrush and Dawn dishwashing liquid.  I have been told that other dishwashing liquids have creams in them that can interfere with paint adhesion.  For each part, I use the toothbrush to scrub the resin part with soap, then rinse if off in warm water.  I do this three times for each part.  I then put all the resin parts in a plastic bin with a towel underneath to let them dry off overnight.  For body parts, I

will also clean the entire surface after the three washes with rubbing alcohol.  I want to make sure there is no mold release agent left on the parts before painting.

Other models have recommended soaking the parts in Polydent for several hours—or soaking in Purple power.  I don't know how well this works—I use a toothbrush and Dawn.


Cleaning the resin parts

Resin parts drying after washing

For the metal parts, I use a metal tumblerI got via Amazon.  This consists of a plastic bowl filled with small stainless steel pins.  You put the metal parts in the bowl, fill part way with water and cleaning

solution (either a purpose built cleaner or dishwashing liquid), and then turn on the tumbler. This causes magnets in the tumbler body to spin, which makes the metal pins hit the suface of your metal parts. After 10-15 minutes, the parts are cleaned. I rinse them off in the sink over a sieve (to prevent losing the part down the drain), put in a plastic bin with a towel underneath, and let them dry off. The parts will be noticeably shinier after cleaning.


My magnetic tumbler with burnishing liquid and sieve (to catch parts when rinsing over the sink)

Metal parts in the drying bin after cleaning. Much shinier now!

**Sorting the parts**

The next phase is to get all the parts sorted according to the instructions. You will be dealing with hundreds of parts. I use a set of bins I got from the Container Store to hold the various parts for each step in the assembly laid out in the instructions. I also use the photos from the MFH website, which identify the various parts by number. Using my Ipad, I can blow up the pictures to identify the parts. This is very useful for some of the smaller parts, such as rivets and connectors.

Sorting the parts using the MFH instructions and web site photos.

**Beginning Construction**

Model sub-assemblies all painted and ready for final assembly—1/12th scale Ferrari 330 P3

So far, there has been a lot of preparatory work—now you are ready to actually begin construction. The general object is to construct sub-assemblies that build up to larger assemblies, which are then joined together to form the chassis of the car. You will also need to paint the body and apply decals. The overall object is to get to the position show in the photo above—everything ready for final assembly.

I usually follow the step by step kit instructions in sequence. You will also need to drill many, many holes in the resin and metal parts to fit the various parts together. I have assembled a range of drill bits—running from 0.5mm to 2.0mm. You can order these on Amazon. I also purchased multiple pin vises to hold the drill bits—saves me time from having to switch out the bits.

The drill bits typically come on packs of 10. You are likely to break several drill bits, particularly the smaller ones, during the course of building the model.

One key drill bit to get is a 1.2mm bit. You will use this to drill pilot holes for the 1.4mm screws that MFH provides to hold key assemblies together.

Drill bits in pin vises

These are very complex models. Before doing construction, you need to dry fit each sub-assembly, determine where to drill out the holes (which are shown as small dimples on the kit parts), test fit, clean up mold part lines, etc. I will typically spend several days just doing dry fit assemblies. In particular, I look ahead in the directions to see where other parts are fitted. It is easier to drill out mounting holes before assembling and painting than after. You need to familiarize yourself with all the steps in the build process. Take your time!

I also typically do a dry fit of the resin body parts, holding parts together with Tamiya modeling tape. You may find that some parts are warped and have a poor fit. I have not had great success in fixing these issues—some modelers here use very hot water to bend the resin into shape, others have talked about using hair dryers to heat the resin and adjusting the fit. Many of the kits have metal doors, trunks, and hoods. I usually spend some time bending the metal parts to get a good fit—the parts often don't fit well out of the box and need some coaxing. The larger metal parts often have mold lines or small sink holes on them. I remove the mold lines by wetsanding. To fill any imperfections in metal parts, I use gap filling superglue and accelerator. You apply the glue, then the accelerator, and wet sand the excess off. You can use the same technique to eliminate seams in parts that are glued together, like fuel tanks.

Once you feel comfortable, you can begin gluing parts together. I use two glues—medium gap filling superglue and 5 minute epoxy. For the super glue, I typically put a small puddle on a strip of masking

tape and apply the glue with a toothpick.  I also then follow with a small amount of accelerator (which rapidly hardens the glue).  I usually use a small cotton swab to apply the accelerator.

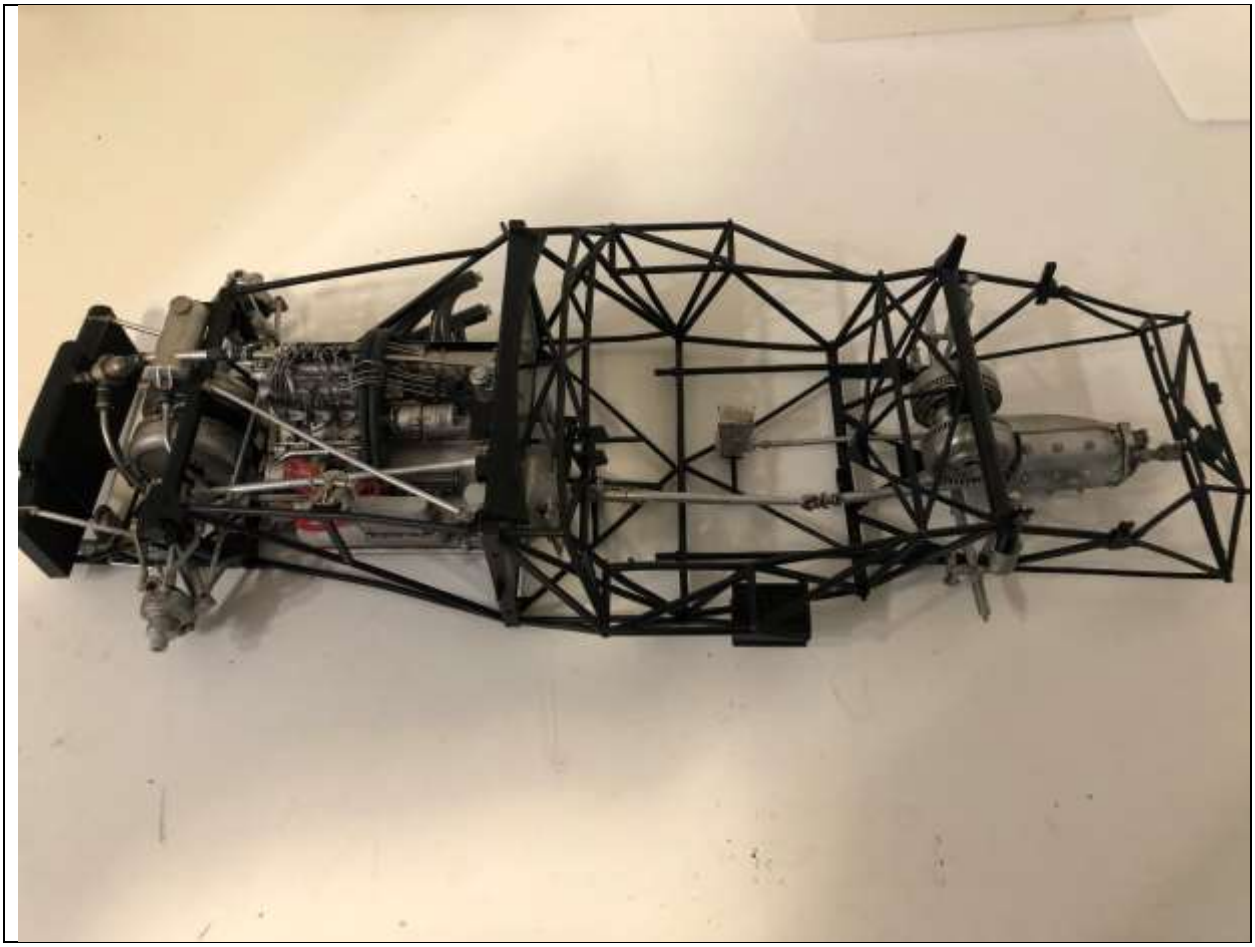
The downside of superglue is that it is brittle—under pressure, it can crack (ask me how I know!).  For some assemblies (or assemblies where I want to have time to adjust the fit), I will use 5 minute epoxy. This provides a stronger and more durable bond than superglue.  You can remove any excess epoxy during assembly using a Qtip dipped in rubbing alcohol.


Recommended glues

For some parts, such as metal emblems on the body, I will use Tacky white glue.  You can position the part, clean off any excess with a Qtip dipped in water, and the glue dries clear.  I also use this for simulated wooden steering wheels (see below).

Many of the MFH kits feature tube chassis made out of metal.  The best method of putting these assemblies together is solder.  I had not used the soldering technique before, but once I started, it is now my favorite method of bonding metal parts, particularly cars with a tube chassis.  I use a variable temperature soldering iron set to 200 degrees Centigrade (the metal parts melt at 270 degrees Centigrade), low temperature solder (which I believe melts at 70 degrees Centrigrade), and flux.  I got my soldering iron via Amazon for about $50.  You can get the solder and flux from Langley Models in the UK—they ship internationally.  I typically hold the parts together using some blue tack, then apply the flux to the joint, and then melt some solder onto the tip of the soldering iron.  I then apply the solder to the joint—it typically flows into the joint and then solidifies.  You get a very strong and durable joint. Any excess solder can be removed with sanding sticks and files.  It is best to solder before painting, since the primer and paint will interfere with bonding the parts together.


Equipment for soldering metal parts—works great!

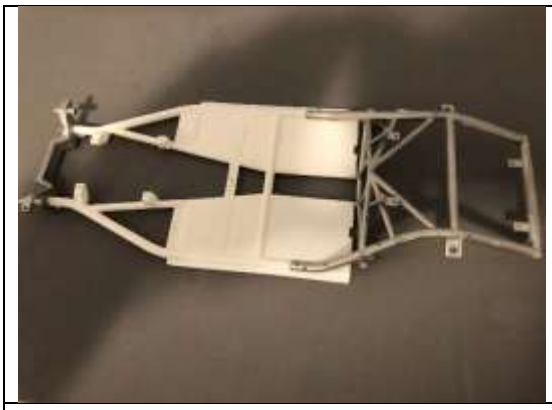
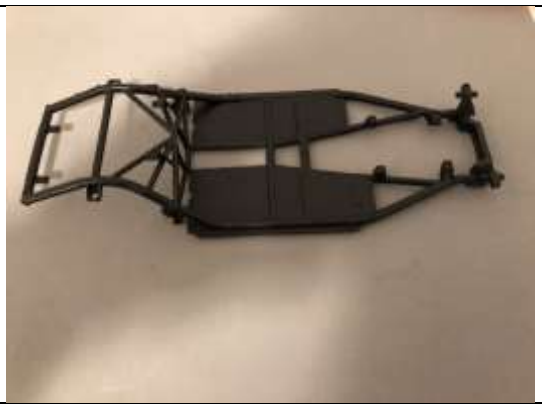


A complex tube chassis for the MFH Mercedes 300 SLR.  Soldering the joints offers the strongest bond

You will need to paint the various parts and sub-assemblies during the construction process.  You need to study the directions carefully, since these provide quite accurate painting instructions.  There is quite a bit of thinking ahead when doing this.  I try to put together as much of the sub-assembly as possible before painting.  So if possible,  I will construct most of the engine block and then prime and paint.  Or the main parts of a tube chassis.

Engine parts assembled and ready for color coat.

Here is another example.  Metal and resin chassis parts assembled (with screws and epoxy)—then the whole assembly is primed (with Mr. Color Metal Primer) and then painted with semi-gloss black.  The metal primer also works well on resin.

Sub-assembly completed—then primed and painted.

I usually paint as I progress. So I will get all the parts for one assembly and then prime and paint. The next day I am ready to assemble—and then can move on to the next section. Patience is required in building these kits.


This shows the parts for the rear suspension of a model after painting—and then assembled

One other point. Sometimes I will not paint a part and just leave it in the natural metal. Nothing looks like metal like metal! Not painting the part can add various shades of metal to increase the realism factor.

During the build, I will also prepare and paint other small sub-assemblies out of sequence—sometimes I need a break from the main action. Shown in the picture below is the steering wheel and instrument panel of a Ferrari Testa Rossa. Many of the MFH models of older cars have wooden steering wheels. To make the steering wheel, I first sanded off the excess resin trim and then airbrushed it with Tamiya acrylic Desert Yellow. I then dry brushed some acrylic Tamiya dark brown on the pieces to represent graining. I then airbrushed acrylic Tamiya Clear Orange over the pieces and the result looks remarkably like varnished wood. I glued the pieces to the photo etched framing using Tacky white glue. The advantage of the white glue is that you have some working time to get everything lined up. I then

placed a heavy object on the assembled steering wheel to make sure it lay flat as the glue dried. I polished the metal center hubs, attached with super glue, and then added the center Ferrari decal.

Completed steering wheel and instrument panel

MFH kits feature very realistic instrument panels. The instrument panel requires drilling holes in the panel to install the various switches. The metal panel was then painted the body color (in this case). The various knobs and switches were painted and inserted into the correct locations. MFH provides decals for the instrument panel dials and a separate clear plastic disk for each dial to represent the glass. After the decals were dry, I use Tamiya acrylic gloss clear to glue the plastic disks in position into position. I brush some clear around the rim and then move the clear plastic disk into position with a toothpick.

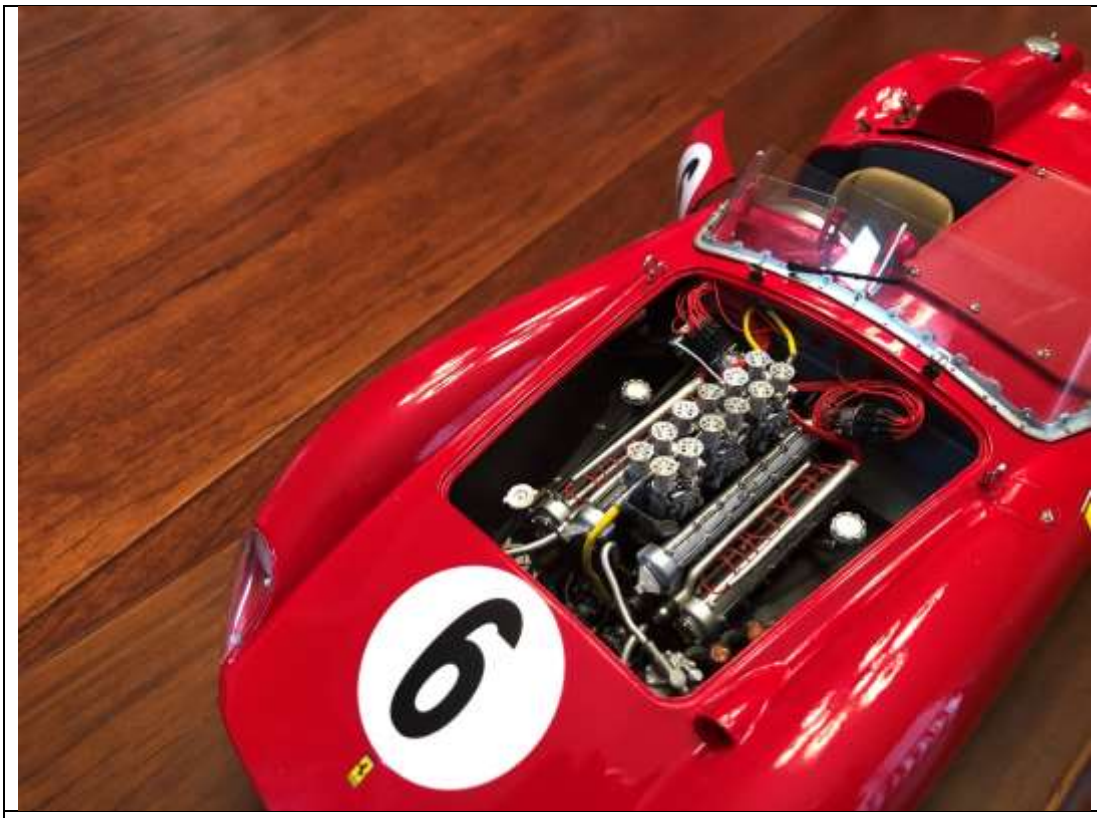
In any case, if you get stuck on a particular part of the assembly process, you might want to tackle another part of the model, which can be added at the appropriate time. I also take a break from the main chassis assembly along the way to work on the resin body parts and get them ready for priming and paint.

**Engine wiring**

Almost all of the MFH kits feature the distributor and ignition wiring—often additional tubing and pipes are featured as well. Although MFH supplies wiring, I find the ignition wiring a bit too thick (and drab as well). For my engine wiring, I typically use a bright colored wire (to show off the work) even though it may not be realistic. For wire, I use wire wrapping wire from Radio Shack, which is about 0.5mm in diameter. You can also get various shades of thin wire from Detail Master or from the local craft store in

the beading department. I drill 0.6mm holes in the distributor and spark plugs—after painting and assembly, I then insert the wires using super glue and accelerator to hold them in place.

This picture shows the ignition and fuel injection wiring on a 1/12 MFH Porsche.




Engine wiring on a Ferrari 335S—two distributors each of which had a dozen wires. So much better with the red wire instead of black!

**Washes and Dry Brushing**

To generate further realism and bring out detail, many modelers use paint washes. This is a thin mixture of darker paint and thinner that is applied to such parts as the engine block. The darker paint flows into all the nooks and crannies to provide shadows and make the detail "pop."

I prefer oil washes compared to water washes—I found the former has a better flow. I use either raw umber or black artists oil paint thinned on an painters palette with lighter fluid. The latter dries very quickly compared to other thinners.

You can use the oil-based washes directly over acrylic paint—the thinner will not have any effect on the acrylic paint. With lacquers, there is risk of damaging the paint with the wash. For small areas with a light wash, there is typically not a problem. But you can avoid any risk altogether by applying a coating of clear acrylic over the lacquer—when the acrylic is dry, the wash will have no impact.

In general, you apply the wash and then wipe off any excess with a Qtip. You will be amazed at how much more realistic the model appears.

Dry brushing is a technique used to highlight details. You dip a flat paintbrush into a lighter shade of the paint (say dark grey for a black part), rub the brush over a paper towel to get rid of most of the paint, and then "dry brush" over the part in question. Some of the paint will come off and highlight the part.

Dry brushing used in conjunction with washes provides a very realistic finish for engines and chassis parts.

**Wire Wheels**

The older 1/8 scale Pocher kits were the first models to feature individually spoked wire wheels, which added greatly to their realism. MFH offers an even better representation. Though time consuming, the resulting wheels are very realistic. Show below are the steps required to build each wire wheel.

Drilling out the wheel hubs

First item of business is to drill out the wheel hubs. There are 72 holes per hub that must be drilled out. MFH provides a dimple where the hole should go. Here you can see my 0.5mm bit and a drilled out wheel hub. It takes about 15 minutes per hub. MFH also supplies a jig to hold the hub and the turned metal wheel.

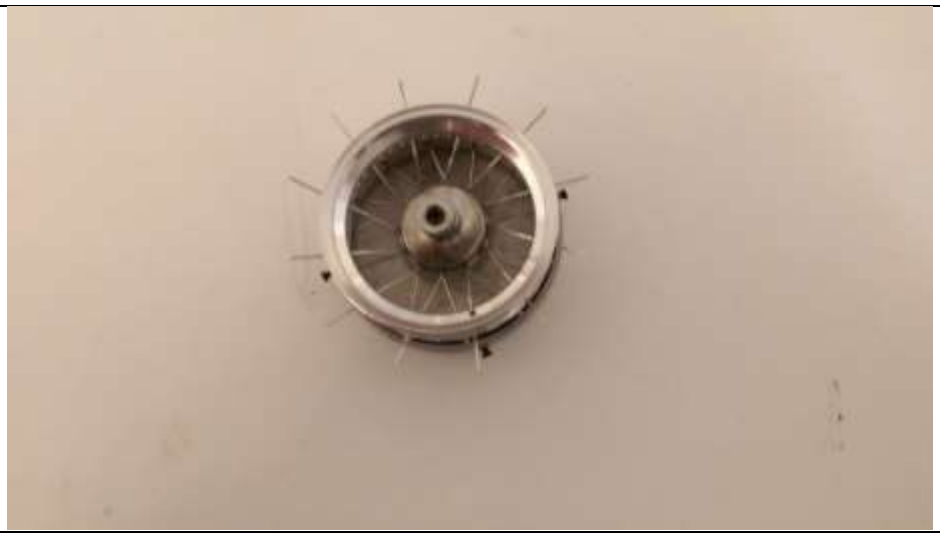
Four wheel hubs drilled out—one installed in the wire wheel jig.

Here is the jig with the hub in place and the turned aluminum wheel installed.  I drilled 1.2mm holes in the marked position and then screwed in the self-tapping screws to hold the wheel in position.

Here are the parts for the wire wheels—wheel and hub in jig, metal spokes, and the small connectors.

Here is the first layer of spokes installed.  The instructions are very clear on which holes to use to get the right pattern.  I pushed the spoke through the appropriate hole in the aluminum wheel and into position on the hub.  I then slid the connector down the spoke so that it appeared on the inside of the wheel, and then applied superglue and accelerator to get everything snugged down.  When done, I used a wire cutter to snip off the extra length of the rod.  After you do this a few dozen times, you get into a rhythm.  There are 72 spokes per wheel.

I have built multiple MFH kits which had a similar procedure for building the wheels.  It takes patience and time, but the results are miniature masterpieces!



Second row of spokes installed.  I have clipped off the excess from the first row.

Third row installed.  It takes about 15-20 minutes to put in each row.  There are six rows total per wheel.

Fourth row installed

Fifth row.  Getting there!

The sixth and last row.  Though time consuming to build, the wire wheels look fantastic.


Next is a tip I learned from my other MFH kits. Test fit the wheel on the brake drum and mounting stub. You may find that the center hole in the wheel is too small—or some of the spokes in the hub interfere. I use my Dremel tool with a small bit to grind out the hole and sand off the excess spokes. Keep going until the wheel fits easily on the brake assembly.

**Painting the body**

Applying a good paint job is a very important step in building your model. Because cars typically have gloss paint jobs, achieving a smooth glossy surface without imperfections is a challenging task—and what most people will look at when examining your model. I will take you through the steps I use to get a good paint job.

The first item of business is to drill out any relevant holes that are used to attach such things as taillights, headlight covers, number lights, door handles, and so on. Always best to have these drilled out before, rather than after, painting. I also do my best to eliminate any remaining stub marks from the sprues by wetsanding—and any flash from the body parts using my X-acto knife.

Next I assemble all the relevant body parts and mount them on popsicle sticks using 3M double sided mounting tape. For other parts I will use a variety of holders, such as alligator clips, spray cans, or even a purpose-built stand.

Once I have all the parts mounted, I will apply a coat of grey Mr Surfacer 1200 or 1500. This color coat will highlight any imperfections. I use Tamiya white putty to fill any divets or imperfections. You may also find pin holes from the resin casting process. For these I use white putty and/or unthinned Mr. Surfacer—it often takes several applications to fill these in. I then sand the first coat with 600 grit wet/dry sandpaper—then apply another coat of grey Mr. Surfacer. I do another scan for imperfections—wet sand—and then apply a third coat of Mr. Surfacer. This coat I wet sand with 2000

grit wet-dry paper.  Using water with the sandpaper increases the life of the sandpaper and makes the sanding job easier.

Once this is done, I apply several coats of white Mr. Surfacer 1500, wet sanding between coats with 2000 grit wet/dry sandpaper.  You can wait about 30 minutes between coats for the primer to dry so you can sand.  After the final coat, you should have a nice smooth surface for your color coat.

Ferrari 512M body parts after final coat of white Mr. Surfacer 1500, ready for the color coat

For the color coats, you have multiple options.  For some models, you can get an exact match from Gravity Colors in Spain (which will ship you the paint)—check their website.  I usually order two bottles to make sure I have enough.  This paint comes ready to spray through your airbrush.  It has a matte finish, but you can apply decals over it.  It will require a clear coat to get a glossy finish.


I used Gravity Colors for the metalflake green on the Bentley Speed Eight

Another option is Tamiya lacquer—I have used paint decanted from their spray cans for various builds.

For many of the cars, Mr. Color has the right shade which are called out in the instructions. For many red Ferraris, you can use Mr. Color 158 Super Italian Red. You should thin Mr Color paint with Mr. Color Levelling Thinner, which dries slower than the regular thinner. This makes it easier to get a glossy finish. The picture below shows a Ferrari 312P after painting with Mr. Color Super Italian Red —the front section was then masked off with Tamiya modeling tape, sprayed with white primer, and then sprayed with Mr. Color green (along with the spoiler).

With my paint selected and mixed up, I use my Paasche H model airbrush with the No 5 tip. I typically spray the little nooks and crannies with a light coat, along with the inside of the wheel wells. Then I start laying on thin coats of paint until I have an even color. I usually wait about 15-30 minutes between coats. For the final coat, I spray closer to the model with the tip opened up to build up a heavier, glossier layer. The latter takes a bit of practice, but leaves a pretty smooth finish. You want to flood the surface so the paint goes glossy (but not too much so you get runs. Don't worry if the paint has dust particles in it—you will eliminate that with clear coat and polish. I then let the model sit over night to let the paint harden fully.

Ferrari 312P body parts with color coat

**Decals**

Many of the MFH models are race cars and are covered in various decals—racing numbers, sponsors, and the like. Sometimes, as the photo below shows, the decals play an important role in the overall paint scheme and lend a lot of color and interest to the model. In addition, many of the more modern race cars feature carbon fiber structures. MFH often provides these decals, which must be applied during various phases of the chassis construction effort.


Decals can present a significant challenge. The body of this MFH kit was first painted blue, then the decals applied to form the white areas. Quite a fantastic paint job!

For the maint body, MFH kits come with the decals for the various versions of the car. These decals are high quality, though a bit thicker than decals from other manufacturers. To apply decals, I cut out the decal for a particular marking and dip in warm water. On the model, I use a brush to apply my home-made decal decal setting solution, which consists of a drop of dishwashing liquid in a small bottle of water—this forms a slippery surface that aids in decal positioning. Once the decal has dried for a few hours, I will apply decal solvent (either Microscale Microsol or Tamiya Decal Softener) to make the decal conform to the surface. Inspection a few hours later will reveal if any air bubbles form—I prick these with a pin and then apply more solvent. Decal application can take several days for cars with lots of markings. Some folks use a hair dryer to speed the drying process.


Decal application solutions

The end result is shown in the photo below of my 1/12 scale Ferrari 512M.


Ferrari 512M after decal application

**Clear Coat**

You are now ready for the next to last phase of body paint—the clear coat. The clear coat blends the decal film into the paint and increases the shine of the body paint. I have used 2K clears (these are clear coats composed of paint and hardener—you mix together before applying). 2K clears offer a very rock hard surface, but are very toxic.

Mr Color Super Clear III—my preferred clear coat.

I have switched over to Mr. Color Super Clear III for my clear coats—it offers similar performance to the 2K clears, but is easier to use and less toxic. I mix a bottle of Super Clear III with 3 bottles of Mr Color Levelling Thinner in a mixing bottle. I also have a separate Paasche H model airbrush with the number 5 tip that I only use with clear coats to avoid any errant colors being sprayed on to the model. I typically apply 4 heavy coats of the Super Clear, waiting about 30 minutes between coats. The photo below shows the result on my Testa Rossa.

Model after decal application and clear coat

**Clear Coat Sanding and Polishing**

After application of the clear coat, I let the model dry overnight. Then comes a decision whether or not to sand and polish. The advantage of sanding and polishing is that you can get rid of any dust particles and gain a very smooth finish. The downside is that you run the risk of sanding thru the color coat and exposing the primer. So you need to decide if you are happy with the model as is—or if you want to further enhance the shine.

When you apply the clear coat, you need to apply heavy enough coats that the paint "glosses"—it is heavy enough to flow together, but not too heavy that it runs (if the latter occurs, you can get rid of the run mark through sanding). That said, even the best paint surface will still have tiny dimples in it, which reduce the gloss of the finish. Sanding and polishing gets rid of these to deliver a show car shine.

To sand and polish, I first wet sand with 2000 grit wet and dry paper using a foam block. I typically sand in an up and down or side to side motion, not in a swirling pattern. You will see the clear coat coming off in the water residue—the object is to generate a smooth dull surface, but not sand through the clear coat. If you see any color in the water residue, time to stop!


Wet sanding with 2000 grit using a foam block

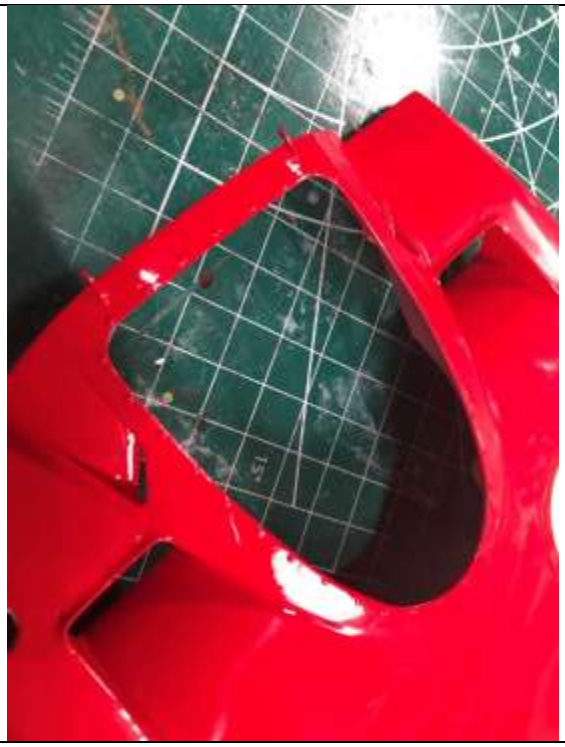
I then follow the 2000 grit by wetsanding with 3000 grit 3M Trizact, followed in turn with 5000 grit 3M Trizact. You can get these products via Amazon. The object is to further reduce the scratches left by the 2000 grit paper. Again, go up and down and side to side, not in a circular pattern.


3000 and 5000 grit Trizact wet sanding. Surface is still dull, but smoother. Sanding also helps blend in the clear decal edges.

When complete, I then polish using the three grades of Tamiya polishing compound—coarse, fine, and finish. I do this using either a soft cloth or a buffing wheel held in my Mototool.


Polishing with three grades of Tamiya polishing compound.

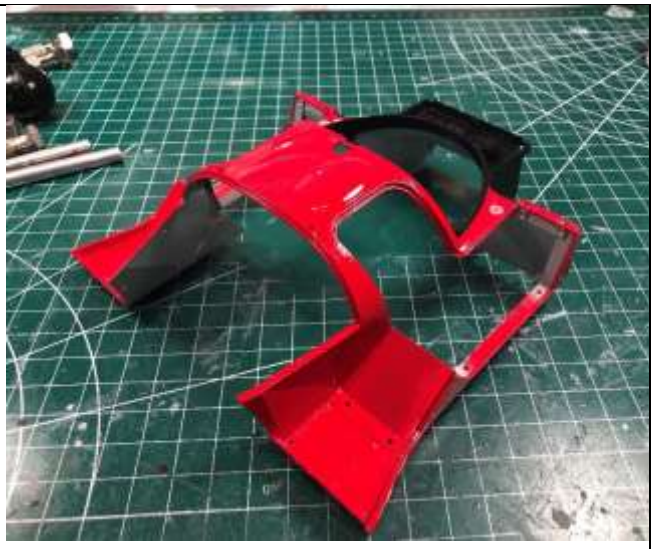
The resulting surface is shown in the photo below



Polishing does give a better finish than just clear coat, but requires some practice!

**Final Painting**

Typically, the inside of body parts are finished with a semi-gloss black or aluminum color. What I do is to airbrush this color on the inside surface without masking the model. I get nervous about applying even low tack tape like Tamiya modeling tape over decals, since I run the risk of pulling off the decals. What I do is to apply Tamiya acrylic paint on the interior surfaces spraying freehand with my airbrush. I then remove the excess overspray using a Q-tip dipped in pure ammonia. The ammonia removes the overspray, but does not affect the lacquer on the body.

| | |
|---|---|
|  |  |
| Body part after freehand spraying with Tamiya semi-gloss black (X-18) | After removing overspray with Q-tip dipped in ammonia |

**Seatbelts**

The newer race cars will have seat belts—the fabric and metal parts are provided in the kit. MFH kindly provides double sided tape to aid in putting together the seat belts. The tape works much better than glue. In addition, you can use the tape to position the seatbelts realistically.

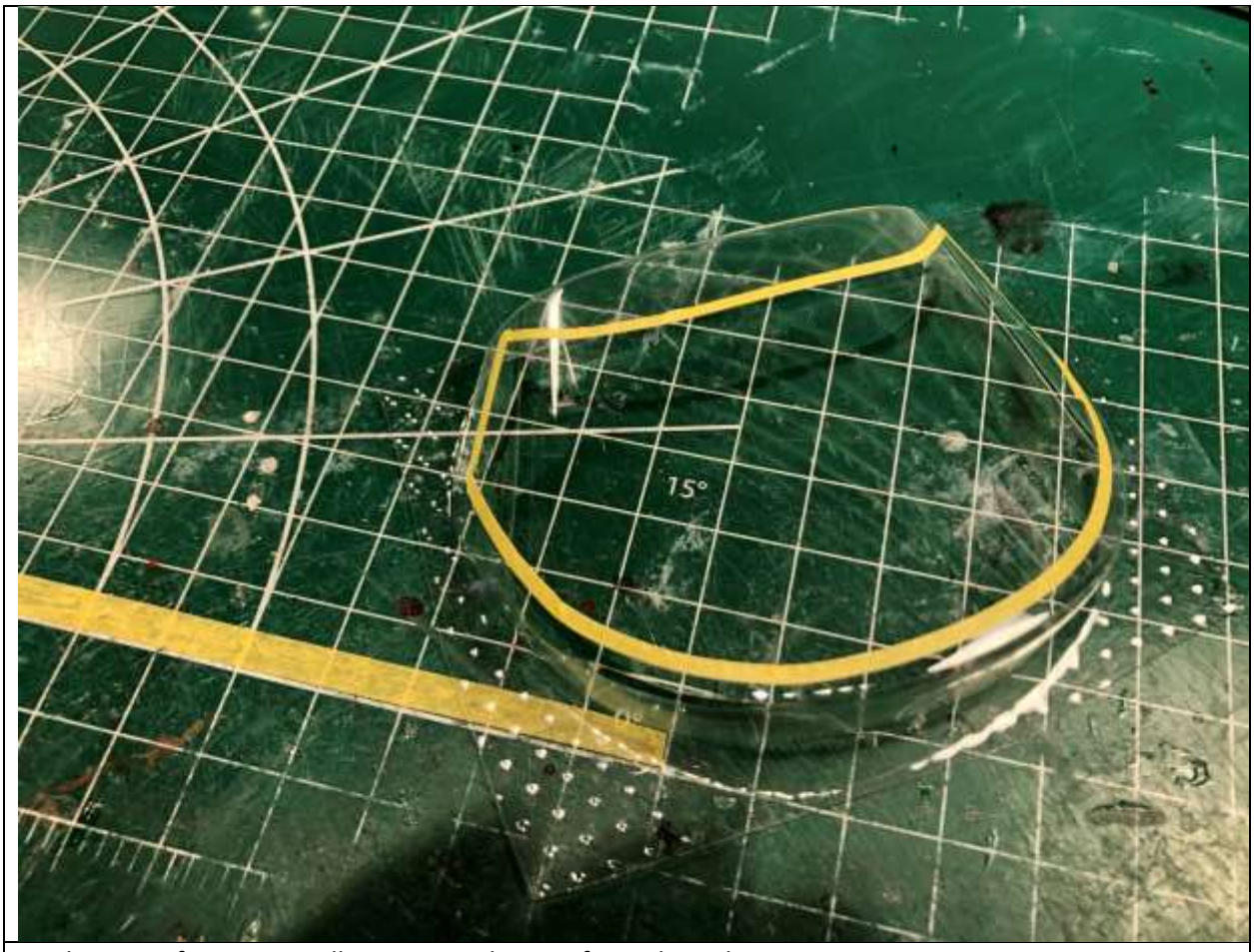
**Windows and headlight covers**

MFH supplies clear plastic vacuformed windows. The advantage of this is that the plastic is very thin, thus increasing the realism. The downside is that you need to cut out the clear plastic parts very accurately and then apply to the model without screwing up the paint job.

I also have trouble seeing the seam lines on the vacuform. So what I do is cut thin strips of Tamiya modeling tape and use these to outline the window shape. I then use a scissors to cut along the tape

and cut out the glass part.  I then position on the part on the model to determine if I need to remove any more plastic (typically yes).  I use a Chinagraph pencil to mark these sections and trim using scissors or an X-acto knife.

Modern cars typically have a black border on the windshield.  For these, I outline the border area on the inside of the glass using thin strips of tape, use wider tape to cover the center clear section, and then mist on coats of Tamiya X-18 semi-gloss black on the interior of the window.  The advantage of the Tamiya paint is that any bleed thru can be removed with a Qtip dipped in ammonia.



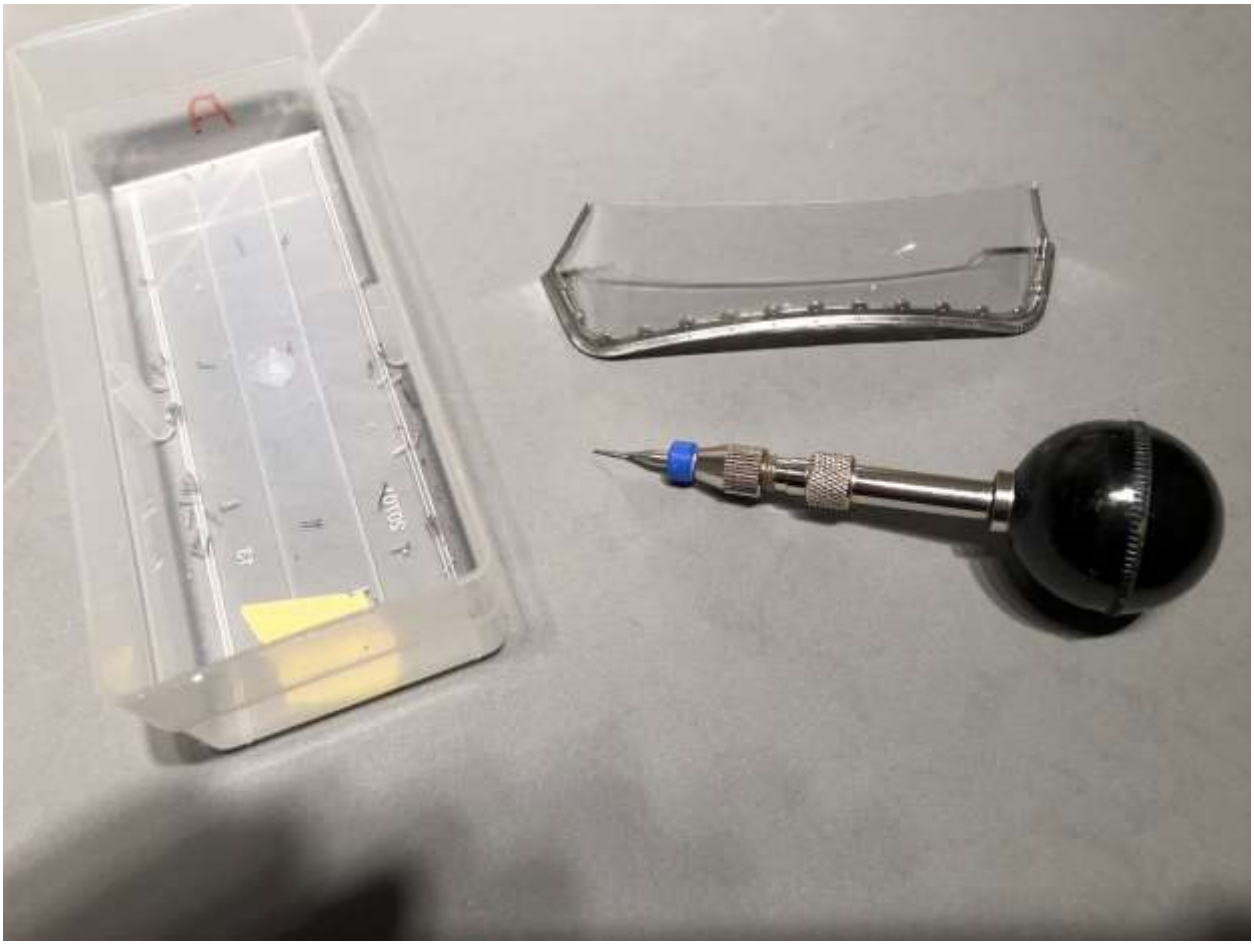

Application of Tamiya modling tape to the vacuform clear plastic parts

The next issue is how to attach the windshield.  You have a variety of options.  One is to use white glue—it dries clear, but is not very durable.  Another option is to use double sided tape—apply small blocks to the area and then press the glass on.  The third option is to use epoxy, which is very strong.  You can remove epoxy drips using a Qtip dipped in rubbing alcohol, but the downside is that the rubbing alcohol will damage or remove any paint finish.  So you must be cautious.

For older race cars, the glass is attached to a metal frame via rivets, which is then mounted to the body.  For these models, I test fit the metal framing to the body and bend the metal structure so it will fit.  I then test fit the clear plastic and trim until I am happy with the fit.  I then mix up some 5-minute epoxy and apply it using a toothpick to the inside of the metal framing.  I then inserted the clear plastic piece,

using some microclips to hold it in position.  I use Q-tips dipped in rubbing alcohol to remove any excess epoxy.  I then let the assembly dry overnight to make sure it is set.

The next step is to drill holes in the various locations for the rivets.  I used a 0.6mm drill bit.  After drilling each hole, I inserted the aluminum rivet part way, then applied a little superglue to the shaft, and then ran it home.  Any excess superglue was wiped up with a Q-tip.  After the glue had dried, I clipped off the rivet shafts.  A bit tedious, but the windshield comes out looking great.




The metal framed glass mounted to the body of a Ferrari Testa Rossa

Many race cars have streamlined glass coverings over the headlights. These are often attached using rivets. Before painting the body, I drill these holes out using a 0.6mm drill bit. After painting and installation of the headlight assembly, I test fit the headlight cover and use a Chinagraph pencil to show where I need to trim excess plastic. I then drill a hole through the headlight cover (or poke a pin through in the area) and insert the riven (I usually use white glue to hold the rivet in place. The photo below shows this technique on January kit.

If there are not rivets, I use white glue to attach the headlight covers, wiping off excess with a Qtip dipped in water. The white glue dries clear.

Headlight covers on a Jaguar XJ13.

**Concluding Thoughts**

I hope you have found this primer useful and it has increased your interest in building MFH models. I am sure I will think of more items to add to this paper in the coming months, but this seems a good start.

One final thought. When building models, you have to decide at some point what is "good enough." All of my models have mistakes and errors, but I keep pushing through the finish the model. Many of the builders on this Facebook page have skill levels far above mine—I enjoy seeing their models and they give me new ideas on how to tackle modeling challenges. So learn from your mistakes—and keep building!