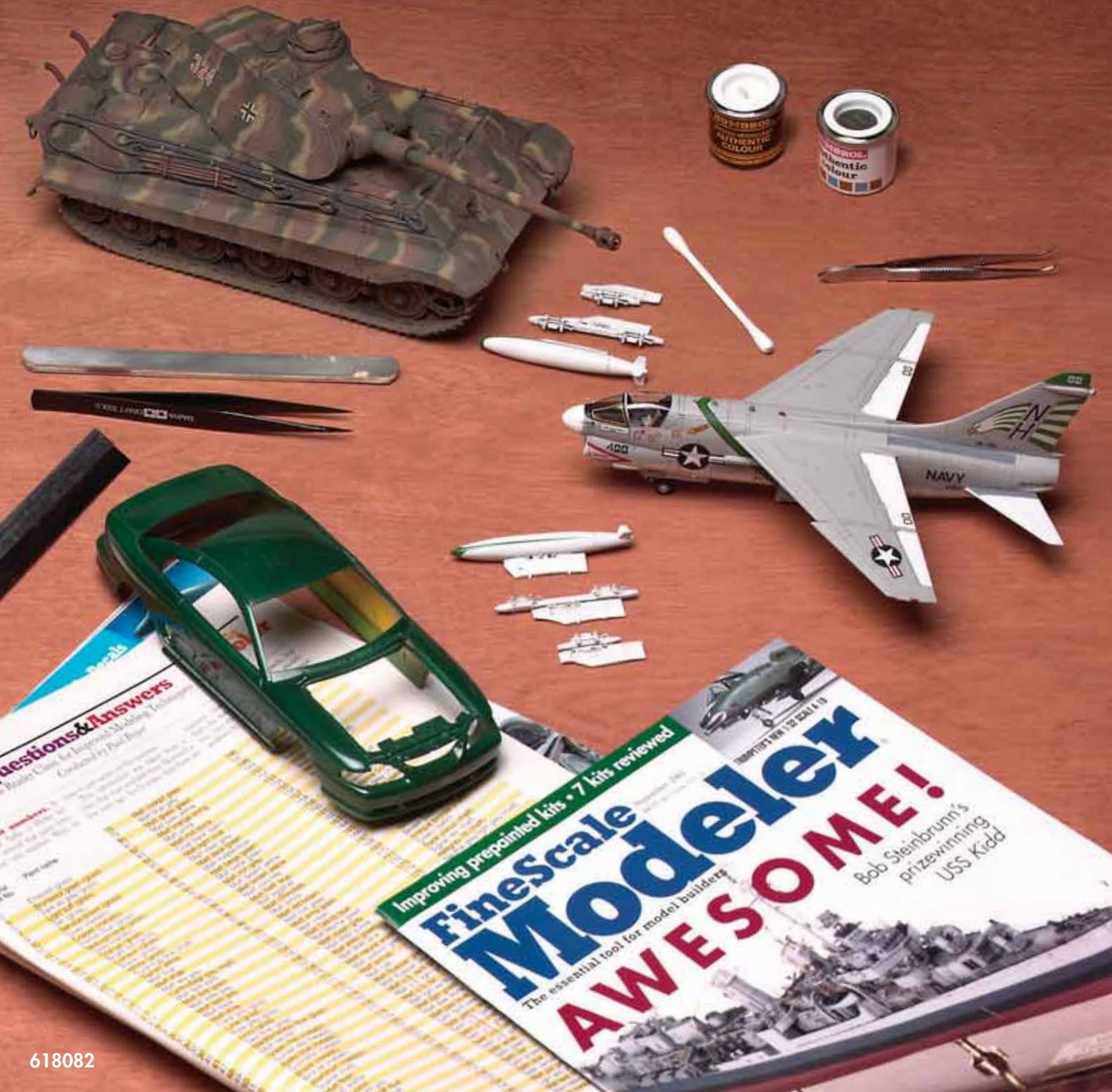
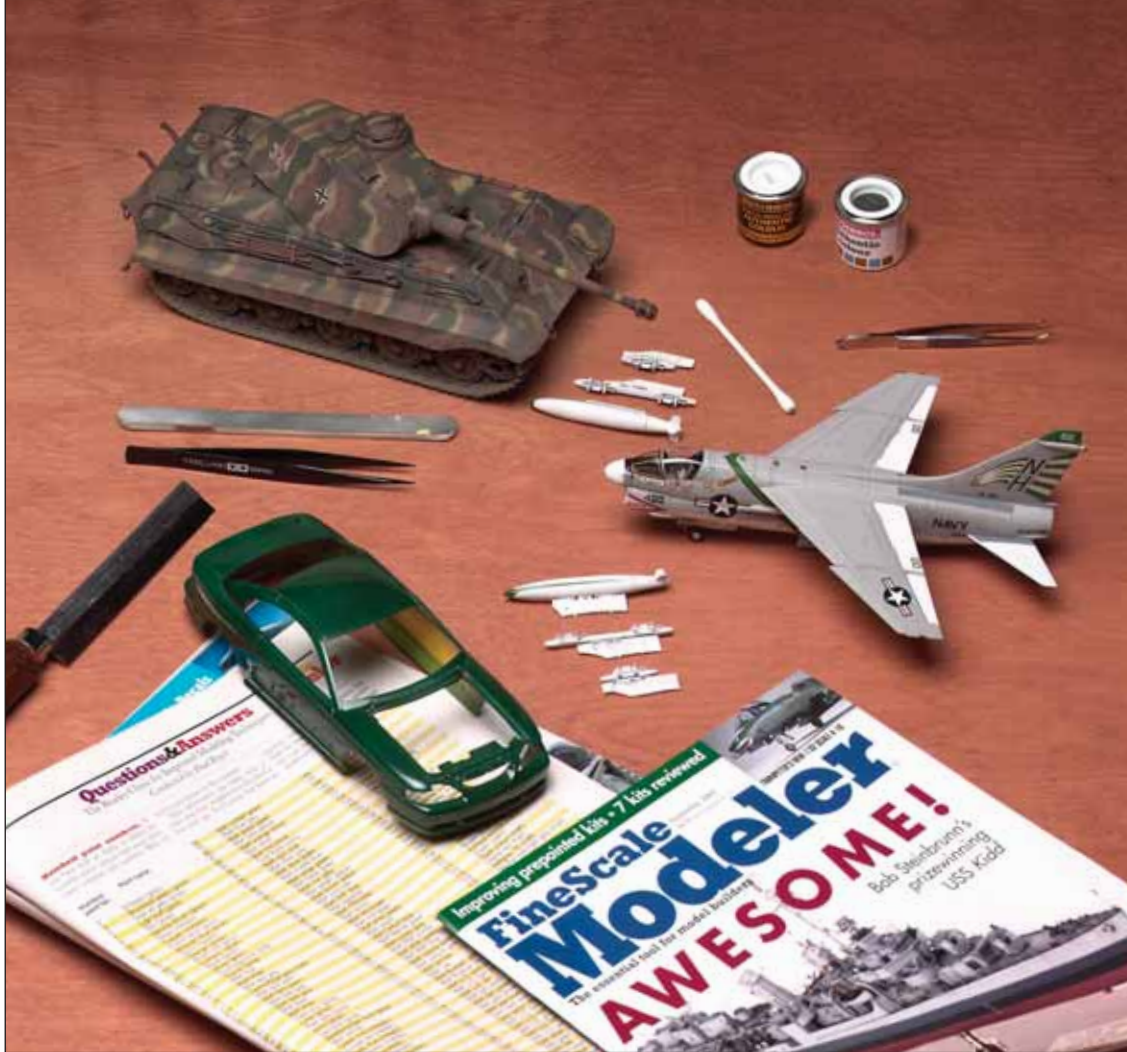


Questions & Answers

Solutions to help you build better models





B E S T O F

Questions & Answers

Solutions to help you build better models

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AIRBRUSHING

Airbrush advantages

What are the advantages of airbrushes over spray cans?

— Paul Stefanski

Although the airbrush may seem like a tool for experts, it is easy to use once you get used to it. The advantages far outshine those of spray cans.

First, you have more control. Spray cans always go full blast – but with an airbrush you can control the volume of paint, air pressure (with a regulator), and the area of coverage. Say you just need to spray a nose cone. With a spray can you may have to mask off the rest of the model to prevent overspray from ruining your paint job. If you're careful with an airbrush, you'll only have to mask off the forward end of the fuselage.

Another advantage is that you can use almost any brand or color of paint, including colors you mix yourself (perhaps unavailable in a spray can). Just thin the bottled paint and spray it, but take time to determine the proper thinning ratios. Airbrushed paint reaches the surface almost dry, which helps prevent paint from seeping beneath masking tape.

Airbrush problems

My airbrush is anything but precise, and I am experiencing obvious overspray. Is the tip bent? Is the nozzle broken?

— Matt Jar

Here's a troubleshooting list:

- Have you cleaned the airbrush regularly?

- Is the tip of the needle bent? Remove the needle from the airbrush and lightly drag it across your fingertip. Rotate the needle and do it again. You'll be able to feel a little "hook" on one side if the needle is bent. You can straighten it by lightly dragging the tip over fine sandpaper until the "hook" is gone.

- Is the opening in the nozzle perfectly round or is it lopsided? Is it cracked?

- Are you thinning the paint properly?

- Is this fresh paint? Old paint can separate and clump, clogging the airbrush.

Air first

I'm interested in a CO₂ tank for airbrushing. I priced one about the size of a fire extinguisher and wondered how long such a container can sustain airbrushing

at 30 psi. Also, what kind of regulators and connectors will I need?

— Ted Wills

A 20-pound tank can spray 10 - 20 models at 10 to 15 psi. A single-stage regulator works fine. The regulator lets you adjust line pressure to the airbrush. A two-stage regulator has the advantage of a tank pressure gauge. (A single-stage setup won't warn you when you're running low.) Take your airbrush hose coupling to a well-stocked hardware store; they should be able to match connectors for you.

Basic airbrush set

I want to get into painting with an airbrush and air compressor. What do you recommend?

— David Quigley

If you have no prior experience, try a single-action external-mix airbrush and a simple diaphragm compressor. Check the January 2001 and March 2002 issues of FSM for more airbrush and compressor information.

Spraying chunks

I'm still getting used to my Badger airbrush, but there's one problem I haven't solved. I'll be spraying along when suddenly I'll get little spots of another color marring what would otherwise be a nice paint job. What's wrong with my airbrush?

— Tim Fischer

It doesn't sound like the problem is with the airbrush. What you're getting is little chunks of dried paint from a previous painting session. They're loosened from the inside of the needle housing or the paint siphon by fresh paint. Simply blowing thinner through the airbrush after every color sometimes isn't enough to thoroughly clean it. If I'm spraying one color after another in a single sitting, I'll take the airbrush apart and clean it after every three colors.

Take the needle housing (the tip) apart and inspect the inside. If there is hard, crusty buildup, soak the parts (tips up) in a small jar of lacquer thinner for an hour. Clean the rear portion of the tip with a cotton swab and pipe cleaner soaked in lacquer thinner. The front portion should be cleaned carefully with a thin pipe cleaner. Also clean out the siphon in the paint jar or cup. Now you're ready to reassemble the airbrush and move on to the next color.

Clean or not?

When a model requires several thin coats of the same color just a few minutes apart, should I thoroughly clean the airbrush after each coat, or is it enough to spray fresh thinner and back-flush the airbrush, then clean it completely after the painting session?

— Chuck Martin

You won't have to clean between coats of the same color, but back-flushing the paint into the reservoir is a good idea (for single-action airbrushes only). The paint may separate between applications and need to be "stirred" – open the nozzle halfway and place your fingertip on the nozzle. Instead of blowing out, air blows back into the paint nozzle and bubbles up into the cup or bottle and stirs the paint.

You should blow lacquer thinner through the brush between colors during a paint session, then break the airbrush down and clean it after the session.

CO₂ with water trap?

Do I need to attach a water trap to my airbrush rig if I use a CO₂ cylinder as my "air" source?

— Eric Zak

No, because CO₂ in a cylinder is liquefied and anhydrous (without water). The gas cools as you release it from the cylinder, but because there is no water or water vapor in the cylinder, no droplets will form in your airbrush line.

Covering dark with light

What's the best way to keep the color of the plastic from showing through lighter paints?

— Michael Scheel

Start by spraying a light- or medium-gray primer. Usually one coat will do it. The primer covers the dark plastic and has the added advantage of making it easier to spot flaws in construction. Once the primer is dry, paint over it with your final color coats.

Frosty flat spray

What causes flat finishes, such as Testor Dullcote, to turn my model finishes frosty white?

— Robert Martinez

There are two probable causes. First, make sure you stir bottled Dullcote completely to mix the flattening agent (which settles to the bottom of the bottle) with the vehicle. If you're using a spray can,

shake it vigorously before spraying. If you get too much flattening agent, it will ruin the finish.

The other cause is trapped water vapor. This happens most often on humid days. The compressed air (from a spray can or compressor) cools as it is released. This condenses water vapor in the air, which mixes with the paint droplets and settles on the model to create an opalescent appearance. Try to avoid spray painting on humid days. If you must spray on humid days, build up light coats to limit the amount of moisture trapped.

Masking small circles

I'm trying to paint a 1.5mm-wide circular outline of a helicopter landing pad on a ship. Masking tape will not produce an even outline, and a fine brush in a steady hand does not appear to be the answer. What do you suggest?

—Edward Sachs

The best way to mask a circle is to use frisket paper, sometimes called frisket film. This is a thin, paper-backed, self-adhesive material used by artists to mask airbrush illustrations. Look for it at art-supply stores.

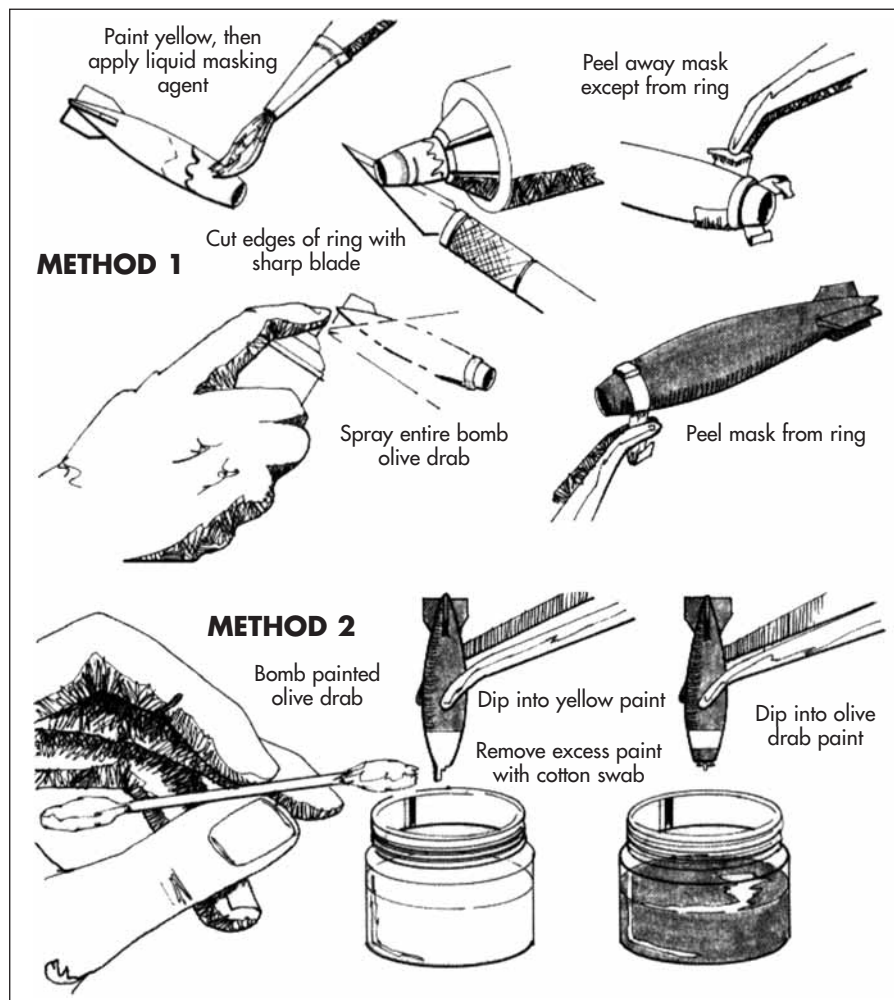
You can use a draftsman's compass with a cutting blade in place of the pencil. First, cut the mask for the outside of the circle. Then cut another circle 1.5mm smaller in radius. Apply the frisket outline on the part to be painted, then place the smaller circle within that mask, making sure it's centered. When you're satisfied with the position of the masks, burnish their edges with your fingernail. Now you're ready to paint, preferably with an airbrush. If you hand brush, take care to keep the paint from creeping under the frisket.

Masking wheels

I've been using an artist's template to cut masks for wheels, but this doesn't always work well, especially with small wheels. Is there a better way to mask and paint wheels?

—Shishin K. Phanselkar

Instead of using a circle template to cut masks, use the template as a mask. Paint the tire black or dark gray and let it dry. Now prepare the wheel paint for airbrushing. Find the circle on the template that is closest to the correct diameter and hold the wheel behind the template. Spray through the template; you may have to cover adjacent holes in the template.



Painting bombs without decals

Is there an easy way to paint bombs? Should I use decal stripes?

—Mel Danielson

The problem with painting rings on bomb noses is masking a sharp line on a compound curved surface (one that curves in more than one direction). Masking with tape or applying solid-color decal film doesn't work well because you're trying to apply a flat material to the curved surface. Above are a couple of methods that should work.

First, paint the front end of the bomb gloss yellow and allow it to dry. Apply a liquid masking agent over the yellow and let it dry. Next, carefully chuck the bomb in a variable-speed electric drill. (Don't turn the chuck too tight or you'll crush the plastic.) With the drill operating at low speed, bring the edge of a sharp modeling knife or a razor blade to the front and rear edges of the area to remain yellow, cutting through the masking agent. Peel away the masking agent at the nose tip and from behind the yellow ring.

Paint the entire bomb olive drab, then remove the masking agent from the yellow ring.

Although not as precise, method two is easier: Paint the entire bomb olive drab and let it dry. Open a bottle of yellow paint (well stirred) and dip the bomb into the paint far enough to create the rear edge of the ring. Allow the yellow paint to dry thoroughly, then dip the nose tip in olive drab paint. When dipping, be sure to hold the bomb as close as possible to vertical to produce an even ring. When you remove the bomb, excess paint will flow down to the tip and, if left there, dry into an ugly blob. Before it dries, touch a cotton swab to the tip to blot away excess paint.

Mixing paint

What's the best way to mix paint and thinners for airbrushing?

—Dan Heath

You can use plastic 35mm film canisters for mixing paint. For measuring, use an eyedropper and record the amounts of paint and thinner used. If a certain combination is too thick or too thin you can

avoid repeating the mistake.

For custom colors, record amounts of each color used. For example, you might use ten eyedroppersful of Floquil primer and add five drops of reefer yellow to come up with light gull gray. If it's too yellow, add two more eyedroppersful of the primer. If you're mixing a new color, always use the same brands of paint to ensure compatibility and consistent results.

When the color is right, thin two parts paint to one part thinner. This is just a starting point; experiment to find the right ratios. Then transfer the paint into an airbrush paint cup or bottle.

Keeping leftover thinned paint is risky; putting it back in a paint bottle sometimes contaminates the remaining paint and shortens its life. If you haven't made enough paint, just refer to your notes and whip up a new batch.

Static cling

How do I keep dust from settling on my models as I paint them?

—Harold Williams

To cut down on static, try washing the model with soapy water mixed with alcohol before you paint it. A dry climate also can contribute to your problem; try painting on days when the relative humidity is 40-70 percent. When it's more humid you run the risk of the paint "blushing" (condensation underneath the paint creating a frosty look).

Spraying without an airbrush

I can't afford an airbrush. Is there a method I can use with spray cans to get feathered edges?

—Robert Miller

Since spray cans produce a wide spray pattern, you'll need to cover portions of the model with a mask. Masking tape, artist's frisket film, newspaper with tape at the edges, and many other means can be used. To get that feathered edge, burnish the tape down on the color demarcation line, then lift the edge slightly. This allows a little overspray onto the line. Of course, this method has limits — it's impractical on small models with multicolored camouflage over uneven surfaces. That's where an airbrush comes in handy.

Water problems

My airbrush sprays small water droplets after a few minutes of use, and

this ruins the paint job. Is there a product available in Puerto Rico that would solve my problem?

—Fernando Del Toro

Your problem is not with the airbrush, compressor, paint, or thinner, but with the constant humidity in Puerto Rico. Air under compression heats up; as your humid Puerto Rican air cools on its way from the compressor to the airbrush, water vapor condenses on the inside of the air hose. The force of the air pushes the fine water droplets into the airbrush, and they spurt out with the paint.

The solution is a device called a water trap or moisture trap. It is inserted in the air line much like the fuel filter of a car.

In a humid atmosphere, it's best to install the water trap as far down the line from the compressor as possible. Most airbrush manufacturers have water traps in their catalogs; also, ask the dealer who sold you the airbrush.

CANOPIES

Canopy cleaner

What's the best way to remove paint from a clear plastic canopy so I can repaint it?

—Katie Michaels



Painting over the frames would be the easiest fix. But if you need to make a clean sweep, you should be able to remove the paint and polish the plastic with Novus 2 or Bare-Metal Foil plastic polish. Clear plastic is brittle, so fill the canopy with modeling clay to reinforce it as you polish. Put a dab of polish on a clean cloth and rub the canopy until the paint is worn off. This may take several applications, and certainly some time, but it pays off. Rub with a clean cloth to remove all the dried polish, then dip the canopy in Future floor polish for the ultimate shine.

Canopy masking

How can I get better results masking and painting canopies?

—Brinn Clayton

Adhesive-backed foil (such as Bare-Metal Foil) is thin and works well. After masking I spray the interior color of the canopy frame on the outside and follow with the exterior frame color. This is easier than trying to paint the canopy inside and out. Remove adhesive residue with alcohol on a cotton swab.

Or you could paint canopy framing on clear decal sheet, using the same order of color to get interior and exterior frame colors. Apply slightly oversized decal strips, let them dry in place, then trim them with a sharp knife. Lift the small trimmings away with a bit of Scotch tape; if you mess up, lift the mistake with tape and try it again.

One more tip: Don't forget to mask the inside of the canopy to block overspray.

Canopy masking troubles

I use Parafilm "M" to mask frames on aircraft canopies, then paint the interior color of the frame, followed by the exterior color. However, when I remove the mask it leaves jagged edges. What am I doing wrong?

—Greg Williams

After painting, lightly score the edges of the mask with a sharp blade. This will separate the paint on the frames from the mask. Also, don't wait too long to remove the masks; take them off as soon as you can. The trick is to find a place to grip the freshly painted canopy while you work.

Canopy replacements

How can I make a new canopy for an aircraft model without a vacuum-forming machine?

—Dennis Brennan

You could make a new canopy by stretch-forming heated (therefore softened) clear plastic. PETG (available from plastic suppliers) is the clearest and most distortion-free. Mount the canopy form on a stick. Heat the clear sheet over a kitchen stove burner, then thrust the form into the heated sheet. You need at least three hands for this, so recruit a partner to hold the hot sheet (with oven mitts). It may take a few attempts, but you'll get your canopy.

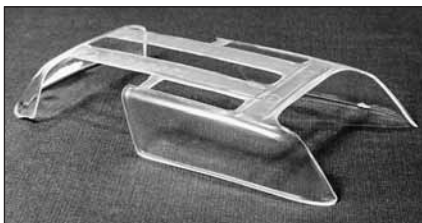
Repairing clear plastic damage

I have a car window with a blemish caused by plastic cement. Is there any way to eliminate it and still keep the canopy clear?

— *Rosauro Ona*

Sand the blemished area with wet 400-grit sandpaper, moving the sandpaper in little circles. It may take a while, but you should be able to smooth out the flaw.

Repeat this with wet 600-grit sandpaper, sanding in tiny circles and pressing hard at first, then gradually easing up. Then use plastic polish, rubbing compound, or toothpaste (not the gel



type) to polish the area smooth. Keep polishing (it takes a while) until the flaw is invisible. Finish with a coat of Future acrylic floor polish applied with a soft brush.

Tinting blue

How do I tint the rear portion of my A-1E Skyraider canopy blue?

— *Paul Kopczynski*

To color the canopy yet leave it clear, use clear blue paint. To avoid fogging the canopy, airbrush water-based clear tint such as Tamiya (X23) or Gunze Sangyo (H93), available at hobby shops. The trick with tints is to apply several light coats to get even coverage without runs. Then follow with a wet coat, and everything will smooth out and become clear. It takes practice.

Vacuum-formed canopy cutting

I like to buy aftermarket vacuum-formed canopies. What's the best way to cut them out without crumpling them?

— *Thomas Lore*



Use a small scissors, such as for trimming cuticles (the little curved ones). Rough-cut them from the sheet, then use a coarse sanding stick to fine-tune the edges to fit the model. Test fit often and adjust with further sanding.

CONSTRUCTION

Antenna attachments

What's the best way to attach fine stretched sprue or nylon monofilament on aircraft?

— *S. Brezin*

You can use super glue or white glue. Mount a horizontal strand first, from the fin to the antenna mast. Now glue one end of the short vertical strand to the fuselage and cut it long enough to intersect the horizontal antenna.

Trim the excess from the vertical section. Using a toothpick, place a dab of glue where you want it on the horizontal antenna, then move the vertical piece over until it touches the glue.

Brass parts

Is there a correct way to bend photoetched-brass and stainless-steel detail parts that require shaping or folding?

— *Rich Sarbacher*



Pin one side of the part down on the work surface with a metal straightedge, with the edge right on the recessed fold

line of the part. Slide a hobby knife under the other side and roll the knife so the blade forces that side up. Keep pushing until the part is bent to the desired angle.

This requires practice, but is certainly easier than doing it without tools.

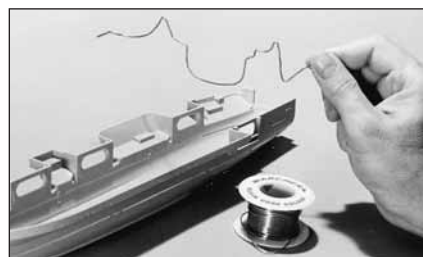
Bulkhead contours

I hate bulkheads. I struggle to get the proper internal contours of aircraft, ships and other complex shapes. Is there an easy way to do this?

— *Geoff Groube*

Look in any hardware store for a contour gauge, a group of fine wires held in a brace. You press the ends of the wires against the shape you need to duplicate and the wires slide in the brace.

Trace the outline from the gauge onto the material you're using to make the bulkheads. This will give you the rough outlines; you'll need to refine it as you cut.



Another way is to press solder or some other soft wire into the cavity. Solder will hold any bend you put into it. Lay the solder on the bulkhead material, trace the outline with a pencil, then cut it out.

Fabric-covered aircraft

How can I simulate the fabric covering on the control surfaces of many biplanes and World War II aircraft? I want these areas to have a texture different from the metal-covered parts.

— *Coy Johnson*

Fabric-covered surfaces on early aircraft and WWII airplanes are just as smooth as metal surfaces. A fine, strong linen was impregnated with a pigmented dope which caused the fabric to shrink tight over the internal structure.

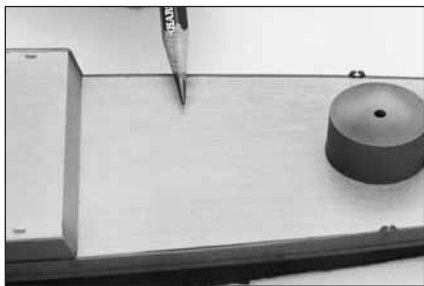
However, these areas should look a lit-

tle different. Try tinting the paint slightly or giving these areas slightly more gloss or flat clear overcoat to suggest a different material without producing an out-of-scale texture.

Decking it out

How can I model deck planking for 1/350 scale ships?

— *Bob Morris*



Depict cracks between planks by grazing the raised surface plank detail with the side of a soft lead pencil (see photo). Although it looks shiny after it is applied, it will look just right after a coat of clear flat such as Testor Dullcote, which also seals the pencil on the paint.

Filling seams

What's the best method for mating parts without any seam lines?

— *Jojo Anononuevo*

Filling seams is one of the fundamental skills a good modeler must master. Lightly sand all the mating surfaces and try to get the parts to fit well before gluing. Hold the parts together and apply liquid cement to the seam line with a brush. The liquid runs along the seam, softening the plastic. When the parts are pressed together, they chemically bond.

After allowing the glue to set for a day, sand the seams with a medium-grit sanding stick and inspect them. Fill gaps or pits with gap-filling super glue, set it with super-glue accelerator, then sand immediately.

Gap-filling super glue is easy to sand right after it sets — if you wait more than an hour, the glue will become too hard. It can be sanded and polished until it's as smooth as plastic.

Fuselage fits

I'm an intermediate modeler but still often have a hard time getting seams to fit properly. I get "steps" on fuselage halves, where one side sits higher than the other.

I've tried running a big bead of putty or super glue down the seam, but even

after sanding it still looks bad. How can I beat this problem?

— *Robert E. Thomason Jr.*

Plop each fuselage half onto 400-grit sandpaper and lightly sand away alignment pins. (Take care to not erase small details such as antenna mounts at the edges.) The sanding smooths imperfections along the mating surfaces.

Now dry-fit the halves and note any mismatches. Sometimes you can glue one side first, let it dry, then cajole the other side into place as you glue it. Hold the halves together with rubber bands as the glue sets.

Make sure you don't compromise the fit of wings, nose cones, or canopies. Again, dry-fit everything before gluing the parts.

Gear doors closed

I want to build a series of aircraft with the gear up. But most kits have gear doors that don't really fit in the closed position. How can I fix this?

— *Bill Prentis*

The best way is to scratchbuild them from sheet styrene. Draw the shape you need on paper, cut it out, then transfer that shape to the styrene. It may take a few tries, but the doors will look better.

The glue for you

I built a collection of 1/72 scale aircraft so long ago that the glue on them has become brittle and the models are falling apart. What can I do to prevent this from happening to a new collection?

— *W. Ross Loflin*

It sounds as though you used tube glue on your original collection. Tube glue is a plastic solvent with a polymer added to thicken it and slow evaporation. Beginners tend to use too much glue, bridging gaps with it and generally making a mess. If the parts are not making contact, the glue has no chance to weld the parts together. When the solvent dries, only the hardened polymer is left. After a while, the polymer becomes brittle and flakes off, especially if the model is put under stress — not unusual when they're owned by young modelers.

Now that you're older, try liquid cements — solvents that melt the plastic. As you press the parts together, the molten plastic of each part mixes together to form a welded bond. Apply liquid cements with a brush, a hypodermic needle, or an applicator bottle. Hold the

parts together and apply a drop of cement to the joint. Let the cement run down the seam, then gently squeeze the parts together. Repeat the process until the entire seam is cemented, then wrap rubber bands around the parts and wait a few hours for the molten plastic to set. If applied properly, the joints should last as long as the plastic.

Gluing resin parts

Can resin parts be attached with epoxy adhesive instead of super glue?

— *Ken Rice*

Yes, but I prefer super glue because it fills gaps as well as bonds. Epoxy also can fill gaps, but it's rubbery and doesn't sand well. Two-part epoxy is a little better in this respect, but doesn't bond as well as super glue. With either adhesive, wash and lightly sand the bonding surfaces for best results.

Gluing wood to styrene

What's the best adhesive to use to bond basswood to styrene?

— *Warren Kiel*

The best adhesive for bonding wood to styrene is cyanoacrylate (super glue). The thicker, gel-type versions tend to stay where you put them more easily than thinner, runnier super glue. An accelerator sets the bond more quickly.

Lens replacement

I've misplaced the clear plastic lenses for a set of Maverick missiles. Without buying another kit, how can I replace them?

— *Corey Ransom*

If you're careful, you can build up new lenses with 5-minute epoxy. After mixing a gob of glue, transfer the epoxy to the nose of the missile. Hold the missile upside down so the glue forms into a hemisphere as it sets. Epoxy dries nearly clear, so it should look just about right.

Liquid-glue dispenser

I'm having trouble finding the right applicator for liquid glues such as Tenax or Weld-On. I don't like brushes because the glue runs out too fast. Bottles with needle applicators either clog up or saturate the model with glue.

— *David Mocabee*

An old paintbrush (size 0) should do it. You can reduce the amount on the brush by touching the lip of the bottle

and letting some of the glue run back in. Merely touching the brush to the seam will let glue flow in without further brushing. Residue can be removed with light sanding.

Masking material

What kind of tape works best for masking? I have a lot of trouble with masking and transparent tape.

—*Julia Crawford*

Remove the tape as soon as possible. Masking and transparent tape become more difficult to remove with time, pulling up underlying paint or leaving adhesive residue. Try drafting tape, available at art-supply stores. It's similar to masking tape, but the adhesive is less sticky.

Mending fabric

I have an old biplane kit with ejector-pin marks smack in the middle of fabric details on the wings. How can I erase these marks and make the work blend in?

—*Bruce Ross*

Your frustration with the marks is understandable. However, the fabric wing detail is probably inaccurate, too. Fabric-covered areas of aircraft are just as smooth as the metal. Only the characteristic tightening over the ribs gives the fabric away. So the area should not be textured.

Fill ejector-pin marks with your favorite filler and sand them smooth. Sand away the "fabric" detail, too.

Oleo struts

How do you depict chromed oleo portions on the landing gear struts?

—*Bill Humbert*

There are two ways: one is to replace the plastic oleo section with a piece of stainless-steel tubing. The easier way is to glue a piece of aluminum foil to the section and trim away the excess. I use Bare-Metal Foil because it already has an adhesive on it. I burnish the foil down with a cotton swab stick. The effect is most noticeable if the remainder of the strut is painted flat aluminum, white, or any dark color.

Photoetched philosophies

I'm just getting back into the hobby and am not sure how to handle, paint, and attach photoetched parts. Do you have any pointers?

—*Richard Kohli*

Handling photoetched parts can be tricky. Buy a good set of tweezers to handle the parts. They can be painted with enamels or acrylics, but adhesion is sometimes a problem. Wash the parts with lacquer thinner to remove oils and chemicals that may interfere with paint. Photoetched parts can be attached with super glue or epoxy, but some modelers use a dab of Future floor polish or other types of clear coats.

Rotor blade droop

At rest, main rotor blades on real choppers exhibit a distinct droop that I have been unable to induce in kit blades with hot water. How can I get them to droop?

—*J.F. Roche III*



You can make rotor blades droop by simply bending them. Don't hold each end and bow it, though – that could be disastrous! Apply stress along the length of the rotor, starting near the hub and working outward every 1/2" or so (see photo). Avoid the outer quarter of the blade, and make just a little bend in each spot. You can always go back and give it more. If you do break one, repair it with liquid glue. After you have repaired the rotor, you'll have to avoid bending near the break.

Resin parts

I've never worked with resin conversion parts or kits. Do they require special glue or paints? Should I prime the parts?

—*Dick Jones*

What we call resin parts are made from one of several polyurethane resins that are impervious to solvent cements such as tube glue or liquid cement such as Tenax or Weld-On. You need either

super glue or epoxy to attach resin parts. Since a mold-release agent is used in resin casting, wash parts with soapy water before gluing or painting.

Priming resin parts will reveal pinholes or other surface imperfections. Fill pinholes with super glue. You should be able to use lacquer, enamel, or water-based acrylics for priming and color coats. If an area of resin repels paint, there may still be mold-release agent on it (or the resin may have been improperly mixed). Try sanding the surface slightly, and spray paint or primer in light, dry coats.

Restoring vintage kits

I recently acquired a built-up Aurora King Kong, and I would like to disassemble it and repaint and rebuild it. Some of the small parts come off easily, but many of the larger parts are glued on solid. Is there some way to dissolve the glue and start over?

—*Steve Grossi*

I recommend scoring around each glue joint with a sharp blade until the joint gives way. Assuming the original builder used tube glue, the bond probably isn't strong. I don't know of any chemical that will dissolve the hardened polymer used in tube glue, but once you get the pieces apart you may find the excess glue will flake off or that you can cut and sand it off.

Sanding it smooth

I have a kit with raised rivets that look way too big. What's the best way to remove and smooth these inaccurate details?

—*Brett Rhein*

You can get rid of the rivets with 400-grit sandpaper, followed by 600-grit sandpaper. Prime the model with a light gray paint to check for heavy sanding marks. If there are any, sand and prime again. After you've fixed them you're ready to paint.

Ship railings

What material do you use for ship railings? I'm having trouble finding something thin enough to be in scale.

—*Robert Munro*

There are many alternatives, including aftermarket photoetched sets, but if you want to make them yourself try HO scale detailing wire and clear stretched sprue. You also can use clear stretched sprue for mast rigging.

Ship-railing removal and replacement

I want to replace the railings on a Revell USS *Arizona*. How do I remove the kit railing without damaging the parts?

— Jim Anderson

To remove the railings, score along the bottom edge with a sharp hobby knife. Repeated passes with the blade will eventually weaken the plastic so you can easily bend them off. You also can replace them with an aftermarket photoetched brass railing kit from Gold Medal Models.

Stretched sprue

I've read a lot about using stretched sprue for rigging and antenna wires, but have no idea how it is made. How about a quick course?

— Mark Pfohl

Stretching sprue is sometimes considered an advanced technique, but it is quite simple. Every injection-molded kit has parts attached to runners or sprues.



Light a candle and cut a segment of straight sprue (4"-6" long). Hold the center of the segment about 1" over the flame and roll the sprue between your fingers so the flame heats it evenly.

Continue until the sprue turns glossy and soft, remove it from the flame, and pull the ends apart. The quicker you pull, the thinner the diameter of the stretched sprue, but if you pull too fast, the sprue will break.

Pulling slowly produces thick sections that can be used for boarding ladders and other structures. A quick, steady pull can give you nearly 3' of thin, constant-diameter stock for antenna and rigging wires.

Some styrene stretches better than others, so experiment with different

brands. Clear sprue can give the best results if you're looking for ultra-thin stock. Be careful not to ignite the sprue; styrene fumes are toxic and you'll get little black ashes floating all over the room.

Stretched sprue can be attached with white glue, super glue, or epoxy. Don't use plastic cements; they'll dissolve the thin, fragile plastic.

Sprue sag

I have tried using stretched sprue to simulate vehicle antennas, but the pieces always seem to sag or bend. What can I use to "straighten out" my problem?

— Stephen Hilliard

I'll assume you mean whip antennas, which are anchored at only one end. Stretched sprue is fragile and it kinks easily, but this is offset by its cost — it comes free in every injection-molded kit.

If you break or bend stretched sprue, just snip it off and replace it. Or you can entirely avoid the hassle by using spring steel or stainless-steel wire. An ideal source is old guitar strings. The high E string is the finest gauge, good for small scales.

Super glue etiquette

I have trouble using super glue efficiently. The tips clog and the caps get gummy and don't fit. I tried thin applicator tips and they clog, too. How can I clean this mess up?

— James R. Staunton

First, wipe excess from the tip every time you use the glue. The cap will fit if the tip stays clean.

Instead of struggling with a finer tip, put a drop or two of glue on a scrap surface and use a toothpick to apply it from there. Apply a little accelerator with an old brush.

Afterwards, throw away the toothpick and cap the bottle. Refrigerate super glue to make it last longer.

Super glue, not putty

I always have trouble filling gaps and making my models look seamless. I find body putty difficult to use. Is there anything better?

— Steven T. Linehan

Body putties are easy to sand, but their tendency to shrink is annoying. They also may pit and are not as smooth as the surrounding plastic or metal.

Instead, use gap-filling super glue and an accelerator. The syrupy glue flows

slowly into seams, and you can control it by tilting the model to let gravity pull the glue where you need it.

Once you've filled the gap or seam, apply super-glue accelerator. Use the bottle's sprayer, an old brush, or a Microbrush to apply a few drops.

The glue will set in seconds; inspect the seam to see if you need more. Slightly overfill the seam before sanding.

Sand the glue after it's set but before it cures completely — it's much tougher to sand later. Use various grits of sandpaper or sanding files to smooth the filled area. You'll find super glue is faster and looks better as a filler.

Super glue technique

I'm having difficulty attaching small parts such as nose probes with super glue. It's not sticky enough to hold the part in place, and it doesn't give you much of a chance to position parts before it sets. I tried using tube glue to position the part, followed by super glue, but that's not as strong a bond as super glue alone.

— Bradley Jones



Rest the model so you don't have to hold it in your hand — you're going to need both hands to do the following. Put a little gap-filling super glue on the base of the nose probe (to use your example). Hold the probe in one hand, then dip a Microbrush into super-glue accelerator (both are available in hobby shops).

Position the probe, check it, then quickly touch the Microbrush to the joint. The accelerator will flow from the little ball of fiber onto the super glue and set in a second or two. Then set the model aside — although super glue sets in seconds, it takes an hour or so to fully cure.

Super-glue trouble

I build injection-molded and vacuum-formed plastic kits with super glue, but some of the seams open later. Does using an accelerator make a difference? What am I doing wrong?

— J. Patron

I haven't found that accelerator weakens joints. However, super glue is susceptible to contamination. It's impor-

tant that the areas to be glued are free from mold-release agents and fingerprint oils. Wash the parts thoroughly and lightly sand the joints before gluing.

Super glues have great tensile strength but weak shear; in other words, it's difficult to part a joint with perpendicular force, but force parallel to the joint may break the bond. Reinforcing vacuum-formed fuselage joints with internal strips of styrene reinforces a joint by adding surface area to take advantage of the tensile strength.

Super-glue ugly

I like using super glue but dislike having to repaint the white crud left on my models by the curing glue. How can I avoid this?

— Bruce Beamish

You might find thick, slow-curing super glues produce less "crud," or chlorosis, a precipitate of cured super glue. A coat of Future floor polish retards the formation of chlorosis on clear parts.

To keep the precipitate from settling on your model, position a fan to blow past your work area. Fine-grit sandpaper or polishing compound can remove this deposit from your model.

Thermoforming plastic

I want to try thermoforming a small canopy, pushing a reinforced kit canopy into the heated sheet. Is clear styrene the best material for this?

— Brent Fordham

You want to look for PETG (polyethylene terephthalate glycol copolymer, also known as copolyester or Vivac). Check with a plastic supplier and see if they have scraps of .020" around. If you need a lot you can get it in 4' x 8' sheets, too.

The problem is chrome

I'm having trouble getting the dual tandem wheels on my 1/25 scale Ertl and AMT trucks to stick together. I use tube-type plastic cement. Is the glue the problem?

— Skip Arnold

Assuming your problem is getting the outer wheel rims to stick to the inner wheel rims, first make sure you scrape away the chrome plating on the surfaces to be glued. Plastic cements cannot penetrate this plating and a bond is never achieved.

Tube-type plastic cements may not be giving you a strong enough bond; use liq-

uid plastic cement. Put the inner and outer rims together, then brush on the glue and let it flow between the parts. Wait a day before mounting the tires. You also can use super glue – but do so carefully or you'll really get attached to your hobby!

Tire technique

What does the term "weighted tires" mean?

— Boris Bozic

Some kits provide tires with a flat side and bulges to look as if they're under a load. Some modelers get this effect with a hot knife; other modelers think the effect is overdone. However, done correctly, this can make the model look more realistic and sometimes helps the model sit properly.

Trimming tubing

I've seen hypodermic needles or stainless-steel tubing used for pitot tubes and gun barrels on models. I've tried to use them, but I can't find a way to cut the tubes without crimping the ends. How can I get nice, clean, round ends?

— John Bowery

If you have a motor tool, use an abrasive cutoff wheel to cut the tubing. The end will probably be a little rough; clean it by twisting the tubing while lightly pressing the rough edge against the spinning cutoff wheel.

Make sure you wear safety glasses – cutoff wheels can fly apart! Finish with 600-grit sandpaper.

If you don't have a motor tool, score the tubing with the edge of a fine-tooth file and bend the tubing toward the scored notch. The tubing will break with only a little crimping. Clean the end by inserting the tip of a sharp No. 11 hobby-knife blade in the opening and twisting. Final cleanup can be done with sandpaper.

Vacuum-formed cut-up

I want to try my hand at a vacuum-formed plastic model. The guys at the hobby shop say to cut out the parts with a scissors, but the plastic looks too thick for that. Should I use a jigsaw?

— Fred Jope

No, the best way is to score along the edge of each part with a sharp knife at about a 45-degree angle. Then you can snap the plastic along the scored line.

Next, sand away excess plastic. After that, glue parts as you would with an injection-molded kit.

Warped fuselage

How can I straighten out warped fuselage halves?

— Ted Swidler

Soak the pieces in hot water, then gently straighten them. Another way is to glue them in stages. For example, let's say the fuselage halves are fine at the front end but diverge at the other end, causing a 1" gap at the tail. First, glue the forward fuselage and let it set for at least a day. Make sure it is a strong joint (you may want to reinforce it with a bead of gap-filling super glue if you can get to the inside of the fuselage).

Repeat the procedure for the tail section, forcing the halves together. Wrap rubber bands, pipe cleaners, or strong tape around the rear fuselage after the glue has been applied and let it set for 24 hours. This can work for warped wings as well.

Warped auto body

I have a 1967 Plymouth GTX with a slightly twisted body which makes the back and the front uneven. How can I fix this?

— Joe Camarda

Soak the body in hot water for a few minutes, then twist it gently beyond straight in the other direction. Then set it on a flat surface and hold it straight until the plastic cools.

Warped wings

I recently built a vacuum-formed model of a World War I aircraft and ran into a serious problem – after gluing the wing halves together, the wing warped into a bad case of anhedral. How can I fix this?

— Tom Leamon

The cause of your problem may be too much glue. Split the wing open and reattach it with a little liquid cement.

If it appears that this would ruin the wing, make several cuts in the underside of the wing and glue in small strips of plastic. These wedges force the wing into the proper shape.

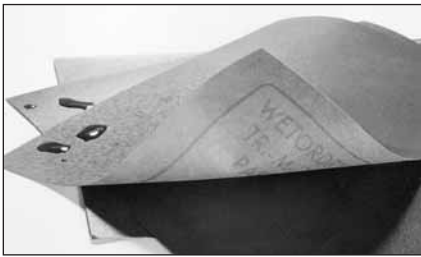
It's hard to predict how many cuts you'll need to make – just add a few at a time until you overcome the warping. Cover the cuts and strips with filler putty and sand them smooth.

You also could immerse the wing in hot water and reshape it. After you correct the shape, tape the wing to a flat surface and let it cool.

Wet sanding

Could you explain wet sanding? I tried wetting sandpaper and it was a real mess!

– *Sonny Augustinadinocentuis*



First of all, you can't use just any sandpaper to wet sand. Ask for "wet-or-dry" sandpaper at the hardware store. This is a special sandpaper that can be wet with water and not come apart. Wet-or-dry sandpaper is available in many brands and grits and is usually dark gray. Use 220-, 320-, 400- and 600- grit papers for modeling. The higher the number, the finer the grit.

The advantage of wet sanding is that water keeps the grit from clogging. With cleaner grit, the sandpaper works faster. Sand at a utility sink, occasionally passing the sandpaper through a stream of water from the faucet. Pass the model under the stream to wash away the slurry (the muddy mix of sanding dust and water).

DECALS

Blue Angels blues

I build a lot of Blue Angels models and I always have the same problem: No matter what I use, the blue paint always shows through the yellow decals. What am I doing wrong?

– *Vincent Maddux*

Light-colored decals may not be opaque enough to hide the underlying color. My solution is to double the decals – lay another set over the first. Yes, this means you may have to buy two sets of aftermarket decals. But the results are worth it.

Be careful not to stretch decals or they won't match up. After the bottom decal dries, carefully position the top decal with a water-soaked brush. When the decal is placed, blot up excess water with a cotton swab. Don't press the decal down or you could knock it out of alignment. Use a decal-setting solution only after both decals are dry.

Crinkled decals

I recently covered a model with a clear

coat from a can. It seems the clear coat reacted with the decals and they crinkled badly. What went wrong?

– *Darcy Abbott*

That can happen, especially if you apply a heavy coat of clear. Solvents in the spray can dissolve decal inks and carrier film as well as paint and plastic. Apply light coats of spray and don't let the model get "wet" with clear paint.

Damage control

My first model was the Revell/Monogram 1/48 scale "Big Beautiful Doll" P-51 Mustang with the checkered nose. I tore most of the decals! What am I doing wrong?

– *Jim Holtz*

Big decals are difficult. The larger the decal, the more it drags on the surface of the model as you try to position it. If you keep the underside of the decal wet it will slide more easily, so flood the area with water (lots of water on the curved nose of a Mustang). Do not touch the decal with your fingers; use a small, flat brush and tweezers to move the decal around.

Once the decal is placed, drain the water from underneath by placing a cotton swab or the edge of a paper towel to the edge of the decal and let the water wick away. You can carefully blot or roll a cotton swab on top of the decal to gently press it into place.

After more experience you'll want to experiment with decal-setting solutions, which soften the decal and allow it to "melt" into the surface.

Decals on decals

I build airliner models and many of the available decals involve layering one decal over another. Should I lay the first decal down, apply solvent, wait for it to dry, and spray on an overcoat before applying the next layer? Would it be better to put on both decals, then solvent and overcoat?

– *Tim Malone*

Actually, your first method is a little overkill. Apply the first decal using only as much solvent as is necessary to get the decals to snuggle down over the detail.

Wait for the decal to dry, then lay on the second layer. (If too much solvent is used, you risk stretching the decal, making it nearly impossible to line up the second layer in register – you would have to stretch the second decal in exactly the same places to get perfect register.)

Apply the second decal as you did the first. Let it dry, then overcoat the decal sandwich.

Disintegrating decals

I've had problems with decals disintegrating when they come off the paper. What am I doing wrong? How can I prevent this?

– *Tony Partlow*

Disintegrating decals are usually caused by insufficient clear carrier applied to the paper under the color inks. Other causes are aging and temperature and humidity extremes. This clear, somewhat flexible coat holds the decal together – without it, the inks just float off in tiny particles.

You can fix the decals you have. Apply a new clear coat to the decals by brushing on Microscale Liquid Decal Film, or spraying on a coat of clear enamel or lacquer – I prefer Floquil Crystal-Cote.

It's difficult to tell which decal sheets will fracture, so test by cutting an unimportant decal from the sheet and dipping it in water. If it fractures, apply the clear coat to the entire sheet. You'll have to trim away the excess clear film from each decal, but you'll save a few dollars on the decals – and perhaps markings that can't be replaced.

Flat decals, shiny model

I'm building an aircraft with a natural-metal finish and I don't want the decals to be shiny. How can I make them flat without spraying a flat clear overcoat that will spoil the metal finish?

– *Tom Wilson*

Before applying the decals, lightly air-brush them with a flat clear. However, you'll have to cut out each decal to release it from the sheet.

Lightly score around each image as closely as possible, then dip the image in water; the excess film will disengage as it releases from the paper. Soak up excess water to avoid ruining your metal finish with spots.

Missile stripes

Is there an easy way to paint stripes on missiles?

– *Shang Lee*

Instead of trying to paint a perfect line, cut a thin strip from solid-color decals. Wet it, wrap it around the missile, add a drop of setting solution, and let the decal dry tight on the missile.

Removing decals

I ruined my decals and I want to replace them. How do you get decals off a model?
— *Gavin MacPherson*

First, try very sticky tape such as Scotch (clear or frosty). Burnish it down on the decal, then rip it off. It should remove most if not all the decal.

If this doesn't work, try alcohol and a cotton swab, or perhaps ammonia. Make sure you have good ventilation when using these liquids.

Silvering decals on flat surfaces

My problem is getting decals to stick to models painted with flat paints. Even after applying setting solution, the decals look pasted on and glossy.

I don't have problems with them on gloss paints, but most of the colors I use are flat. What can I do?
— *H. Smulders*

Decals don't stick to flat paints because there is little surface contact. If you could see your model under a microscope, it would appear as coarse sandpaper and the decal as a sheet of glass.

The decal makes contact with the paint only at the peaks of its bumpy texture, trapping air in the valleys below. Light reflects and refracts through the air and decal, producing a silvery appearance in the clear film areas.

Gloss paints, on the other hand, have a smooth surface and allow maximum surface contact with the decal. You can spray on a coat of clear gloss, let it dry, apply the decals, let them dry, then overcoat with a clear flat.

Solvents and solutions

What's the difference between a setting solution and a decal solvent? Is it necessary to use both? Why don't manufacturers provide both?
— *R. J. Brandt*

Setting solutions are acetic-acid-based formulas and usually have the word "set" on their labels. Solvent formulas are alcohol-based and usually have the word "sol" in their names.

You don't necessarily need both, but a setting solution provides a "friendlier" surface for the decal, while the solvents soften the decals as they dry so they conform more closely to the surface. One drawback is that certain formulas can destroy decals; test a spare decal from the same sheet to avoid this risk.

Yellow decals

As time passes, many of my older kits' decal sheets are yellowing. I recently packed all of them in an airtight box filled with silica gel (the stuff packed with cameras and electronic equipment to absorb moisture). Will this keep the decals from yellowing further?
— *Andy Chong*

No, moisture is not the problem here. Decals yellow due to the acid in the paper. Over time, the acid creates a chemical reaction within the paper and turns the paper and often the clear carrier film yellow.

To cure the problem, tape the yellowed decals into a south-facing window and let the sun bleach out the yellow — it takes a few weeks, but it works! Make sure the window doesn't collect moisture — a bathroom window is a bad choice — since this could wet the decal and activate the water-based adhesive. Better yet, build those kits before the decals get old and yellow!

FINISHING

Acrylic thinner

I've heard windshield wiper fluid can be used for acrylic-paint thinner. But isn't it poisonous?
— *Ken Millard*

Don't drink it! It has alcohol and maybe glycerin or other surfactants. However, other acrylic thinners also are poisonous, though less hazardous than enamel and lacquer thinners.

The safest acrylic thinner is distilled water (and it works), but you should check the paint labels to determine the manufacturer's recommended thinner.

Blasted bubbles!

How can I prevent bubbles when I'm painting with a brush?
— *Nan Yang*

Air bubbles can form when you're shaking the bottle before painting. This occurs most often with water-based acrylics.

Also, vigorous brushing can introduce air bubbles. When you mix paint for brushing, stir it with a Popsicle stick. Brush gently in one direction, using only one or two strokes.

Clear coats

What is a good technique for airbrushing clear top coats over a completed model? I use a single-action Paasche and

I always get an orange-peel bumpiness in the finish. I use one part thinner with two parts Model Master Clear Gloss.
— *Robert Hersch*

One variable you didn't mention may be the trouble. If the air pressure is too high, you may be blasting the clear with enough air that it's drying too fast.

If you don't have a regulator, adjust the knurled knob below the air button on your Paasche to reduce the amount of air. Also, lightly wet sand with worn 600-grit paper after each coat (let each coat dry first) and mix the final coat at least 50-50 with thinner.

Or you could finish with Future acrylic floor polish. I've had great success by airbrushing it at low pressure and gradually building up coats to let the Future flow evenly.

Dry-brushing

I've often seen a technique called dry-brushing in articles in FSM. Just what is dry-brushing?
— *Nathan Higa*



Dry-brushing is a weathering technique to simulate worn and faded paint. After the painted model is dry, lighten the base color with white and paint a small swatch on a piece of cardboard with a soft brush. Continue to work the brush until it's nearly dry. Next, lightly brush this color on raised details of the model. To enhance the effect, scrub the brush a little harder on the model (see photo).

Dry-brushing highlights the raised details; the goal is a smooth gradation of color. If your paint is too wet, you'll only produce a spot of color that won't look right. If it's too dry, nothing will happen. Practice dry-brushing on an old model before working on a prizewinner.

Fume avoidance

I'm reluctant to take my painting inside during the winter because of the fumes. What can I do?
— *Del Jack*

First, use water-based acrylic paints; the fumes are less noxious. Second, turn

Humbrol paint numbers

If you have built an Airfix or Heller kit recently, you've noticed that paint references comprise only numbers. Well, it's time to put names on the numbers.

This information was taken from a color-chip chart that Humbrol made several years ago. You'll notice that there are numbers missing in the sequence, but that's the way the paint line is. So, modelers, keep this reference near your workbench.

— Paul Boyer

Paint No.	Paint Name	Paint No.	Paint Name	Paint No.	Paint Name
2	Emerald (gloss)	80	Matt grass green	147	Matt light grey
3	Brunswick green (gloss)	81	Matt pale yellow	148	Matt radome tan
5	Dark ad grey (gloss)	82	Matt orange lining	149	Matt dark green
7	Light buff (gloss)	83	Matt ochre	150	Matt forest green
9	Tan (gloss)	84	Matt mid stone	151	Interior green (matt)
10	Service brown (gloss)	85	Coal black (satin)	153	Insignia red (matt)
11	Silver (metallic)	86	Matt light olive	154	Insignia yellow (matt)
12	Copper (metallic)	87	Matt steel grey	155	Matt olive drab
14	French blue (gloss)	88	Matt deck green	156	Matt dark grey
15	Midnight blue (gloss)	89	Matt middle blue	157	Azure blue (matt)
16	Gold (metallic)	90	Matt beige green	158	Interior green (matt)
18	Orange (gloss)	91	Matt black green	159	Khaki drab (matt)
19	Bright red (gloss)	92	Matt iron grey	160	Ger. camo. red brown (matt)
20	Crimson (gloss)	93	Matt desert yellow	161	U.S. Marine Corps green (matt)
21	Black (gloss)	94	Matt brown yellow	162	Surface grey (matt)
22	White (gloss)	95	Matt concrete	163	Dark green (satin)
23	Duck egg blue (matt)	96	Matt RAF blue	164	Dark sea grey (satin)
24	Trainer yellow	97	Matt eggshell	165	Sea grey medium (satin)
25	Matt blue	98	Matt chocolate	166	Light aircraft grey (satin)
26	Matt khaki	99	Matt lemon	167	RAF barley grey (satin)
27	Matt sea grey	100	Matt red brown	168	Hemp (satin)
28	Camouflage grey (matt)	101	Matt mid green	169	Yellow facings (matt)
29	Matt dark earth	102	Matt Army green	170	Brown Bess (matt)
30	Matt dark green	103	Matt cream	171	Antique bronze (matt)
31	Matt slate grey	104	Matt Oxford blue	172	Green (satin)
32	Matt dark grey	105	Matt Marine green	173	Track colour (matt)
33	Matt black	106	Matt ocean grey	174	Signal red (matt)
34	Matt white	107	Matt WWI purple	175	Hellgrau 76 (matt)
35	Clear poly (gloss)	108	Matt WWI green	176	Neutral grey/light grey (matt)
38	Lime (gloss)	109	Matt WWI blue	177	Hull red (matt)
40	Pale grey (gloss)	110	Matt natural wood	178	British scarlet (matt)
41	Ivory (gloss)	111	Matt uniform grey	179	French artillery green (matt)
47	Sea blue (gloss)	112	Matt tarmac	180	Red leather (matt)
48	Mediterranean blue (gloss)	113	Matt rust	181	Glossy sea blue
49	Matt varnish	114	Matt Russian green	182	Black grey (satin)
50	Green mist (metallic)	115	Matt Russian blue	183	Grey (satin)
51	Sunset red (metallic)	116	Matt U.S. dark green	184	Freight stock grey (satin)
52	Baltic blue (metallic)	117	Matt U.S. light green	186	Brown (matt)
53	Gunmetal (metallic)	118	Matt U.S. tan	187	Sand (matt)
54	Brass (metallic)	119	Matt light earth	188	Chrome yellow (gloss)
55	Bronze (metallic)	120	Matt light green	189	Insignia blue (matt)
56	Aluminum (metallic)	121	Matt pale stone	190	Blue Angel blue (gloss)
60	Scarlet (matt)	122	Matt pale blue	191	Chrome silver (metallic)
61	Matt flesh	123	Satin dark sea grey	192	Blaze matt (fluorescent)
62	Matt leather	124	Satin petrol blue	193	Blaze gloss (fluorescent)
63	Matt sand	125	Satin U.S. dark grey	194	Saturn yellow gloss (fluorescent)
64	Matt light grey	126	Satin U.S. medium grey	195	Dark green (satin)
65	Matt aircraft blue	127	Satin U.S. ghost grey (light)	196	Light grey (satin)
66	Matt olive drab	128	Satin U.S. compass grey (dark)	197	Lufthansa yellow (satin)
67	Matt tank grey	129	Satin U.S. gull grey (light)	198	Lufthansa blue (satin)
68	Purple (gloss)	130	Satin white	200	Pink (gloss)
69	Yellow (gloss)	131	Satin green	201	Metallic black
70	Matt brick red	132	Satin red	202	Fluorescent aurora pink
71	Satin oak	133	Satin brown	203	Fluorescent signal green
72	Matt khaki drill	134	Satin blue	204	Fluorescent matt Saturn yellow
73	Matt wine	135	Satin varnish	205	Fluorescent matt fire orange
74	Matt linen	140	Matt gull grey (dark)	206	Base white (gloss)
75	Matt bronze green	141	Light sea grey (matt)	207	Aurora pink (fluorescent gloss)
76	Matt uniform green	142	Matt field drab	208	Signal green (fluorescent)
77	Matt navy blue	144	Intermediate blue (matt)	209	Fire orange (fluorescent)
78	Matt cockpit green	145	Matt medium grey		
79	Matt blue grey	146	Gloss aircraft grey		

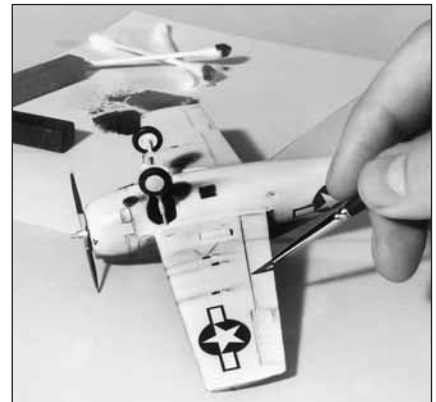
down the pressure on your airbrush; you need only 10-15 psi. If you see clouds of overspray, you're wasting paint.

Try to airbrush on dry days. You can speed the drying with a hair dryer. In any event, consider buying or building a spray booth to pump overspray and fumes out of the house.

Washes are for details

The term "wash" is used often in FSM. Just exactly what is a wash?

— Will Derwolfe



A wash is a highly diluted paint used to add a visual illusion of depth. For instance, thinned black paint brushed onto an aircraft wing will settle in panel lines and hinge lines. Washes can be brushed on figures to add natural shadowing.

Use a paint and thinner that won't harm underlying coats of paint. If you use lacquer color coats, you can safely use an enamel wash over them. Don't use lacquer over enamels, though, because lacquers will eat through enamels quickly. Use an acrylic wash over enamels.

Gloss-white coverage

I'm painting with Tamiya gloss white (X-2) but I'm having trouble getting it to cover. It leaves brush marks and it won't stick in some areas no matter how many coats I apply. I tried washing the model in warm, soapy water, but it didn't help.

— Mark Schicker

This paint seems particularly sensitive to oil on the plastic surface. Try wiping mineral spirits or rubber cement thinner over the trouble spots after washing them with soapy water. These solvents will loosen oils without affecting the plastic.

My favorite white paint is Floquil's Reefer White, but this should be air-brushed. For hand brushing, I like Polly Scale White. Both of these colors dry flat but will accept a clear gloss overcoat.

Paint before or after assembly?

I wonder why the models I see in FSM are built before being painted. I don't see how you can paint after the thing is built.

—Mike Devine

A combination of painting interior detail before assembly and exterior finishes after assembly is the best way. Painting after assembly allows you to cover filled seams and gaps.

For an airplane, build and paint the interior (cockpit) first, then paint the interior walls of the fuselage halves. When the paint is dry, glue the cockpit in place and glue the fuselage together.

Fill seams with super glue, add a touch of accelerator to harden the glue, then sand it smooth. Then glue on the wings and stabilizers, filling seams along the way if needed.

Now you're ready to paint the outside of the model. You can stick a brass tube up the tailpipe or into a hole for a propeller to hold the model while you paint. Find a way to mount the brass tube (with the model on it) to keep from touching the paint before it dries.

Rough finish

How can I simulate crude, field-applied paint (such as temporary white winter or sand-colored desert camouflage) without the model simply looking badly painted? Should a model like this be placed in a diorama or can it stand by itself?

—Bryan Prima

Build the model and paint the base colors as best you can. To simulate the field-applied camouflage, try thinning the paint and applying it with a brush or an eye-shadow applicator — a small, round, sponge-covered tool that, with practice, can produce the rough hand-applied paint look you want.

The model wouldn't need to be in a diorama if properly labeled, which is not a bad idea — not everyone who sees your work is going to know what it is. It wouldn't hurt to let your audience know the paint job is supposed to look the way it does. The quality of your construction and underpainting will show that you aren't ham-fisted.

Painting tiny details

I have problems painting details. Is there a brush smaller than "0"? Also, how do I keep a good point on the brush?

—Ben Goerz

Art-supply stores usually carry finer brushes such as a 10-0. There aren't many bristles, but they're expensive.

No brush will keep forever, but a good brush will keep its point with proper care. Clean it immediately after every use with a thinner that will dissolve the paint. Dip the brush in the thinner, but never let the bristles rest on the bottom of the container; that bends them. Pull the brush along a clean rag. Don't scrub it or jam it into the rag; that bends and even breaks bristles. You may need to dip and wipe several times before the brush comes clean.

To restore the brush's point, put a drop of saliva on your fingertips and draw the brush through. This will hold the bristles in place. Put a plastic-tube cap on the brush and store it upright.

Spray matters

I'm worried about using Testor clear coats over enamels and water-based acrylics. Can I brush the bottled versions

of these clears onto color coats? What about spray cans?

—Tony Simion

Testor Glosscote and Dullcote are lacquers which, properly applied, can go over enamels and acrylics with no problem. However, don't hand brush them. The application will be too thick and the wet lacquer may eat through the underlying paint. You must be careful with spray cans as well.

Make sure the underlying paint is completely dry — wait a couple of days for flat enamels and acrylics, a week for gloss paints. Spray light coats of clear and wait a half hour before applying another coat. If you build up the overcoat too fast it can soften and ruin the colors below.

Airbrush these clear coats from the bottle with about 25 percent lacquer thinner. Dust on several light coats and never allow the overcoat to puddle.

FSM

POPULAR MODELING SCALES

Scale	1" equals	1 scale foot	1 scale foot (dec.)	1 scale meter	Comments
1/4	4"	3"	3.0"	250.0 mm	Flying models, live-steam trains
1/8	8"	1½"	1.5"	125.0 mm	Cars, motorcycles, live-steam trains
1/12	1'	1"	1.0"	83.3 mm	Cars, motorcycles, dollhouses
1/16	1'4"	¾"	.75"	62.5 mm	Cars, motorcycles, armor
1/20	1'8"	⅝"	.6"	50.0 mm	Cars
1/22.5	1'10½"	⅜"	.53"	44.4 mm	G scale trains
1/24	2'	½"	.5"	41.7 mm	Cars, trucks, dollhouses
1/25	2'1"	⅙"	.48"	40.0 mm	Cars, trucks, armor
1/32	2'8"	⅜"	.375"	31.25 mm	Aircraft, cars, No.1 scale trains
1/35	2'11"	⅜"	.343"	28.57 mm	Armor
1/43	3'7"	⅜"	.279"	23.25 mm	Cars, trucks
1/48	4'	¼"	.25"	20.83 mm	¼"-scale aircraft, O scale trains
1/64	5'4"	⅜"	.187"	15.62 mm	Aircraft, S scale trains
1/72	6'	⅜"	.167"	13.88 mm	Aircraft, armor, RC ships
1/76	6'4"	⅜"	.158"	13.16 mm	Armor
1/87	7'3"		.138	11.49 mm	Armor, HO scale trains
1/96	8'	⅜"	.125"	10.42 mm	⅜" scale ships, aircraft
1/100	8'4"		.120"	10.00 mm	Aircraft
1/125	10'5"		.096"	8.00 mm	Aircraft
1/144	12'		.083"	6.94 mm	Aircraft
1/160	13'4"		.075"	6.25 mm	N scale trains
1/192	16'	⅜"	.062"	5.21 mm	⅜" scale ships
1/200	16'8"		.06"	5.0 mm	Aircraft, ships
1/220	18'4"		.054"	4.54 mm	Z scale trains
1/285	23'9"		.042"	3.5 mm	Wargame pieces
1/350	29'2"		.034"	2.86 mm	Ships
1/700	58'4"		.017"	1.43 mm	Ships
1/720	60'		.016"	1.38 mm	Ships
1/1200	100'		.01"	.83 mm	Wargame ships
1/2400	200'		.005"	.42 mm	Wargame ships