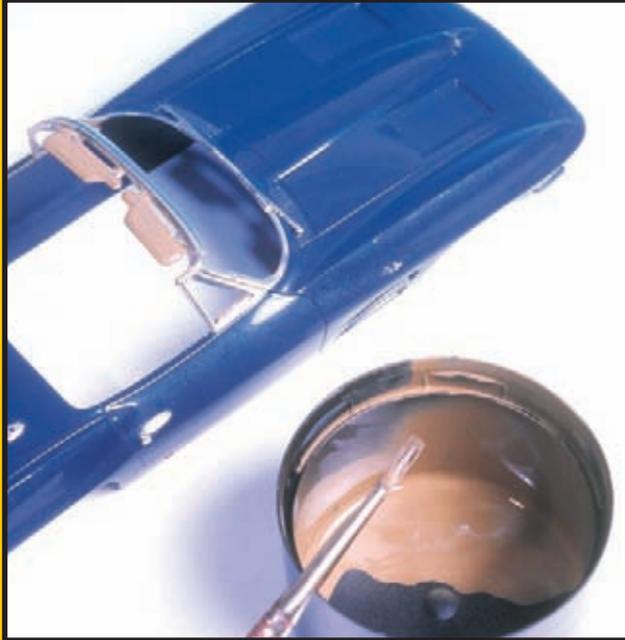


Easy Scale Modeling



Easy Scale Modeling

Welcome to the world of scale modeling! Whether you are taking up the hobby for the first time or returning after a hiatus, this booklet will be a useful addition to your workbench. It distills the knowledge and experience of *FineScale Modeler* magazine's authors and editors into a single quick-start reference guide.

Modelers build for a variety of reasons. For some, it's a way to get closer to a subject (aircraft, tank, ship, auto, or some other vehicle) that fascinates them. Most of us will never drive a racecar, fly a fighter plane, or sail on a battleship. But we can build models of those machines—and learn how they work and what role they played in history.

Whatever your reason for taking up the hobby, it takes time to become a good modeler. I've never met a modeler who said he had mastered everything and had nothing more to learn. No matter how well the last model came out, there's always something that can be done better on the next one. With each project, you learn from your mistakes, add to your skills, and become a better modeler.

How far you develop your skills is up to you. Some modelers like to build kits straight from the box, without modifications. That's fine. Others research their subjects for years, gathering books, articles, photos, and other data from all over the world. Then they spend more years meticulously recreating every detail of a specific vehicle. Developing modeling skills is a journey. As you progress, you'll decide how far you want to go.

But now, it's time to turn the page and begin your modeling journey. Enjoy! —*Lawrence Hansen*

Acknowledgments: Christopher Appoldt, Tea Benduhn, Paul Boyer, Bob Collignon, Jim Forbes, D.J. Heinrich, Elizabeth Lamb, Candice St. Jacques, Kristin Schneider, Terry Thompson, Matthew Usher, Jeff Wilson, William Zuback

Senior editor: Lawrence Hansen

Managing art director: Michael Soliday

Art director: Thomas Ford

The contents of this booklet have previously appeared in *FineScale Modeler* magazine.



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Printed in the United States of America

05 06 07 08 09 10 11 12 13 14 10 9 8 7 6 5 4 3 2 1

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ISBN 0-89024-583-5

contents

7 steps to safe modeling	3
A matter of scale.....	4
Top 10 tools.....	5
Go for the glue	7
Plan your project.....	8
Remove parts	9
Fill seams.....	10
Paint your model.....	11
Put on decals	16
Add realism.....	19



7 steps to safe modeling

You have that exciting new kit in your hands, and you're ready to tear open the box and start building, right? Not so fast, buddy. Let's take a minute to talk about safety. Not only may you save a trip to the emergency room, you'll actually be more productive in your hobby.

#1: Pick the right location

Your work space needs good lighting and adequate ventilation, especially if you'll be airbrushing. Vent the fumes outside the house—sending them to another room only endangers someone else. Use a sturdy work surface; don't model on a wobbly tray table in front of the TV. Store all your modeling supplies behind closed (or locked) doors when they're not in use.

#2: Watch out for sharp tools

The two most important things to remember about hobby knives is that if they have round handles, they will roll—and the end that usually falls first is very sharp. If something rolls off your desk, get out of its way and let it fall—odds are it will be safer to pick up (or clean up) once it's on the floor. Slide a rubber grip onto the round handle or tape a section of sprue to it to take the “round” out so the knife won't roll. Also, keep a sharp blade in the handle at all times. The cut you get from a sharp, fresh blade is likely to heal more quickly than one from a dull blade.

#3: Breathe easy

Wear disposable dust masks when you are sanding; wear a respirator when spray painting or airbrushing.

#4: Respect your power tools

Use power tools the way they were meant to be used—and follow the manufacturer's instructions. Clamp parts securely, then make sure they're positioned so that any chips or fragments fly away from you. Wear protective eyewear; the little shards of plastic or resin hurt as much as metal or wood. When necessary, wear gloves, a mask, and earplugs. Don't try to modify a power tool; buy the specialty attachment you need.

#5: Know your chemistry

Glues, paints, solvents, and sealers are all chemicals. Some of the combinations of these chemicals are relatively harmless, but others can be risky, dangerous, or even fatal. Read the information on the package. The label will tell you what the basic hazards are, how you can avoid them, and what to do in case of an accident.

#6: Play it safe

Use materials and tools properly, and use extra caution when trying a new product. If you're picking up tips from a friend or buying something at the store, don't be afraid to ask questions. It's foolish to end up in the hospital because you didn't want to ask a “stupid” question.

#7: Use common sense

The most important asset you can have for safe model building is your own self-education. Make sure you know what materials you are working with, how to work with them, what they can and cannot do, and what to do if something goes wrong.

Store paints, solvents, and other chemicals in well-sealed and well-labeled containers, in the appropriate temperature range.

Don't assume that if you don't smell anything, there's nothing harmful in the air. If you begin to feel sleepy, inattentive, or distracted, take a break. If you have old materials, call your local hazardous waste disposal facility to find out if they're still safe to use—or how to dispose of them.

If you have special medical conditions, talk with your doctor about the chemicals you use and avoid any that might aggravate your condition.

Precautions aren't intended to prevent you from modeling—they're meant to keep you modeling happily for years to come. Use them.



A matter of scale

Before you make a trip to the hobby shop to pick out your first model, there's a question you need to ask yourself: "What scale do I want it to be in?" Read on for the answers.

A model's "scale" is expressed as a fraction of its full-sized counterpart. A 1/6 scale figure of a 6' person would be 1' tall, with the proportions of that subject faithfully reproduced head to foot. Put in the reverse, it would take 72 1/72 scale F-16 Falcons end-to-end to equal the length of the real thing.

The P-51 Mustang models in the photo above show, from front to back, these scales: 1/144, 1/72, 1/48, 1/32, and 1/24.

Some modelers are "constant scale" builders, meaning they build everything in the same scale, often regardless of the subject. Other modelers like to skip around a bit scale-wise.

Before you can decide what scale you want to model, you need to first know the strengths and weaknesses of the various scales.

Aircraft

Models in 1/32 scale or larger are big—*really* big. The parts are easier to handle than in smaller scales, and there are usually more of them. The models are impressive, but you'll need a lot of display space. There are fewer subjects available in 1/32 scale than in 1/48 or 1/72.

Easier to build than 1/72 scale, 1/48 scale offers most major single-engine aircraft, plus some multi-engine types. Subjects are more limited than 1/72 scale, but if you can't decide on a scale for your next airplane project, 1/48 scale is your best choice. The kits are often newer than their 1/72 scale counterparts, and the parts fit together more easily.

The largest variety of kits is available in 1/72 scale. The models are small enough to display, but large enough to have good detail. If you want to build everything, love obscure subjects, or are short on space, 1/72 scale is a great choice.

A good variety of kits of airliners and multi-engine military types is available in 1/144 and smaller scales. The models are easy to store and display, but they demand excellent building and painting skills.

Armor

The widest variety of armor subjects is available in 1/35 scale. The models are big enough to detail but small enough to display on a shelf. Watch out for older kits, however—some are terrific, but many are clunky.

Popular in Europe, 1/72 scale offers a good variety of subjects

(some older kits are 1/76 scale). Detail parts can be finicky to work with, and many parts are heavy for scale, but this is a good size if you have limited space.

On the other end of the size spectrum is 1/16 scale. These huge models have a high "wow" factor. Be sure you have the space to display them.

Autos

The "standard" scales for auto kits are 1/24 and 1/25. (There's a 4-percent size difference, so be careful when swapping parts between kits.) Completed models are large enough to detail and small enough to display. You can even combine them with 1/24 scale aircraft in dioramas.

If you prefer impressive size and jaw-dropping detailing, go for models in 1/12, 1/18, or 1/20 scale. Be prepared for a limited selection of kits and aftermarket parts. The size of these models also demands exceptional painting skills.

In 1/43 scale, you'll find a good selection of foreign and racing subjects, as well as die-cast models to "kitbash" or modify. These models are conveniently sized for display, but very few injection-molded plastic kits are available in this scale.

Ships

The majority of ship models are in 1/700 and 1/720 scale. There's a broad selection of subjects, especially if you're a WWII Pacific Theater modeler, and the size of the finished models is nice for displays and dioramas. They're just big enough to make you want to add more detail and small enough that it's tough to do.

With a narrower choice of subjects but great potential for adding fantastic detail, 1/350 scale is the scale of choice for serious ship modelers. The models are impressive when complete, but few kits are available in plastic. Completed models are large but more manageable than larger scales.

Ship models are available in scales smaller than 1/720. They're excellent for dioramas, wargames, and large collections, but some of the models are pretty rough.

Top 10 tools

When it comes to setting up your work space, you need tools—tools to construct, mend, sand, and finish your models. Not necessarily expensive, these are the standard items every good modeler needs on hand.



If you don't get the results you want with these tools, there are more expensive items out there, including motor tools, razor saws, scribers, and jeweler's files. Start with these basics, though, and see what you find—you'll be surprised.

Masking tape & modeling putty

Every workshop must have these basics! Use the tape to secure pieces for painting, hold together sub-assemblies, and mask paint or putty. Here, tape masks the rest of the plane from being marred by seam-filling putty, **1**. The tape is applied on either side of the wing-fuselage joint so the putty won't dry on any surface where it shouldn't be. A flat-bladed hobby knife spreads the compound

along the seam; you could also use a tiny metal spatula. Remove the tape soon after application.

White glue, swabs, & toothpicks

Great for transparent parts since it dries clear, white glue also has no fumes to fog the plastic. Here, white glue spread gently with a moistened cotton swab fills a canopy seam, **2**. Toothpicks hold parts awaiting paint.

Hobby knives

Versatile cutting tools, hobby knives accept many different blades, making them ideal for anything from trimming plastic to scribing lines. This knife (with a No. 11 blade) neatly removes decals from a sheet, **3**.

Sanding sticks

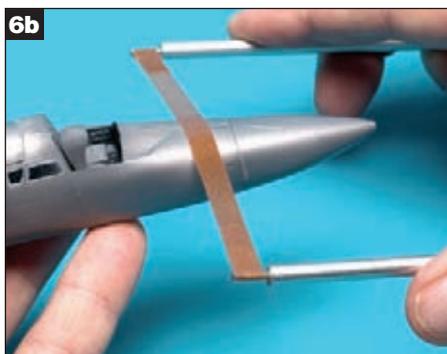
Smooth, seamless plastic makes any model look better. Sanding sticks and wet/dry sanding films help remove flaws from plastic, **4** (page 6).

Use successively finer grades as you sand. Wet the sanding film to keep the plastic dust from clogging the grit; the job will go faster. A four-way polishing or buffing stick for fingernails (less than \$1 at a beauty supply store) will remove even the faintest scratches from plastic.

Sandpaper

Use a full sheet of 320-grit sandpaper laid on a flat surface to dress the edges of kit parts, especially large pieces like fuselage halves, **5**.





The flat surface promotes smooth sanding of the part, but you have to apply even pressure as you sand. Pressing too hard may distort the part and cause uneven results.

Sanding bow

One of the handiest sanding tools to come along is Creations Unlimited's "Flex-I-File." It's an aluminum bow that holds an interchangeable Mylar sanding strip, **6a**. The Flex-I-File works great on curves without flattening the surrounding area, **6b**. The strips can be detached from one end of the bow, threaded through an opening in the part you want to sand, and reconnected to the bow. This way, you can sand the inside of such parts as landing-gear scissors, chassis frames, and so forth. If the

$\frac{1}{4}$ "-wide strips are too wide, you can cut them down to make them fit.

Sanding shapers

Creations Unlimited also makes "Flex-I-File Flex-Pads" (known generically as sanding sticks), which are similar to fingernail shapers. Available individually or in sets, **7**, the sticks come in coarse, medium, fine, extra-fine, and a three-way polisher/finisher that has extra-fine, super-fine, and buffer surfaces. They are $\frac{1}{2}$ " wide, about 6" long, and have tapered tips to get into tight areas. The grit is applied to both sides of each lightly padded plastic stick.

Cosmetic supplies

Don't be surprised if you bump into a fellow modeler at the cosmetic/nail-care

section of the drug store. All sorts of emery boards and nail shapers are great for modeling. Your all-time favorite sanding tool may end up being the Kiss Nail Shiner (item no. F222), a "four-way" shaper/buffer, **8**. The four grits on this item are labeled "coarse" (blue), "fine" (red), "Xtra fine buffer" (white), and "XXtra fine buffer" (gray). These are equivalent to medium, very fine, extra fine, and buffer grits on the commercial modeling sanding sticks. The Kiss stick is $\frac{3}{4}$ " wide and 7" long.

Sanding wands

Micro-Mark's "sanding wands" are another alternative, **9**. These rugged plastic sticks have unpadded loops of sandpaper wrapped around them. The set of four has grits ranging from coarse to extra-fine. When the grit becomes worn, you roll the strip around the stick, much like track on a tank, and continue work with fresh grit.

Files

For extra-fine finish work, make sure you have a variety of files at your workbench, **10**. Needle files, dental tools, riffler files, and jeweler's tools all come into play for fine precision work.



Go for the glue

Modelers usually buy their materials from a hobby shop, but don't overlook hardware, art supply, and home improvement stores. You might discover a venue for a whole new glue!

You may be saying to yourself, "Glue? Big deal! Plastic cement and super glue—what more do I need?" Ah, but the glue universe is much broader than you might think. A surprising number of glues is available, including many other types that you may ultimately find more useful to your modeling needs than the two basics.

Basic plastic cement

The classic favorite is that old standby, Testor liquid cement, the one with the brush in the cap. This cement works great when you can put the assembly aside to set for a while. If you need a quicker weld just to "tack" pieces together, use Tenax 7R (Ambroid Proweld also works well). Reglue the tacked pieces later with the Testor cement if you need a permanent weld.

"Clear" glue

Testor's Clear Parts Cement & Window Maker works as well as

advertised—maybe even better. If you work neatly and put the glue only where it is needed, it really does disappear on clear surfaces.

Super glue

For gluing dissimilar materials (such as resin to plastic, for example) or even gluing metal to metal, super glue is ideal. Zap-a-Gap has a medium drying time and a high viscosity (meaning it's a bit syrupy), which gives it better shear strength than thin super glues. It also works great as a seam filler. It sets immediately with an accelerator (also called

Testor's Clear Parts Cement & Window Maker is milky white when wet, but dries clear, making it perfect for aircraft canopies and other clear parts.



a "kicker") if you need to lock an assembly right away. Use a thinner viscosity super glue when you need more capillary action—it runs down seams quicker, but watch that it doesn't run onto your fingers! Always have a bottle of super glue debonder on hand.

Contact cement

Use old-fashioned household contact cement (such as "Quickgrab" and "Goo") in your diorama work to glue porous materials to nonporous materials (for example, wood to resin or plastic).

Wood glues

Also useful for bonding porous materials is white glue—good ol' Elmer's Glue-All—and carpenter's (aliphatic resin) wood glue. If you use them carefully, they can also substitute for clear parts glue. These glues are water-based, making them easy to thin. You can even tint them with acrylic paint.

So, expand your selection of glues and you'll find the advantages of each. Your models will be all the better for it!



Dragon's 1/35 scale SdKfz 250/10 German halftrack went together smoothly and easily—with some upfront planning.

Plan your project

You buy a kit and eagerly race home, taking it out of the box the moment you get there. You begin removing the pieces, preparing to put the model together then and there. But sadly, the kit doesn't go together right. What went wrong? Nothing much, other than you weren't ready yet to build the model. A little upfront planning can take care of that.

The best modelers develop a “plan of attack” that helps them build kits more quickly. The key is doing a little research, test-fitting, and planning. It's a method that works well no matter what you're building.

The first—and possibly most important—thing to do is study the kit instructions, starting with the paint list. Some kit manufacturers

list only paints from certain manufacturers that may not be available where you live. All good kits have an English translation in the chart, **1**.

Some kits share parts with other kits in the manufacturer's product lines. Many kit instructions have a parts map that shows you which parts aren't used for the version you're building, **2**. Remove unused

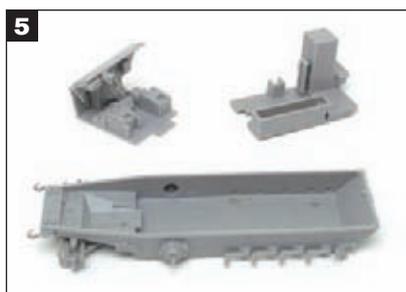
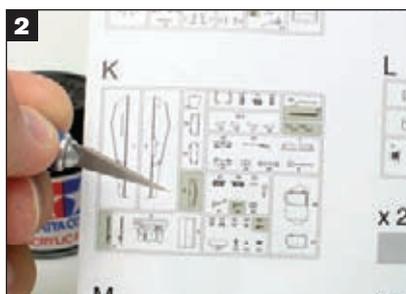
parts from the trees before you start building, **3**. Don't throw them away, though; put them in a box and save them for future projects.

The next step is to test-fit the parts you are going to use. Test-fitting (sometimes also called “dry-fitting”) is important for two reasons. First, you'll find out if the parts go together properly or have gaps or alignment problems that need to be fixed before you glue them, **4**.

Second, test-fitting shows you how to break down the kit's components into subassemblies to make painting easier, **5**. A closed-up tank model is easy to paint after assembly, but models like the open halftrack shown here have intricate details both inside and out that are better if painted before the parts are attached to the model's main assembly.

Test-fitting really pays with small parts like the halftrack's individual-link tracks. Dry-fitting several of the tiny links showed that if they were assembled carefully with droplets of super glue in key places, they'd flex just like the real thing, **6**. After assembling a run of links, the track can be test-fit on the model and adjusted before final assembly.

A little upfront planning will pay off handsomely. Your projects will go more smoothly, and you'll avoid bumps in the road that slow down your work. Best of all, your finished models will look better.



Remove parts

Remember your first modeling attempt as a kid, when all you cared about was, “When can I play with it?” For many of us, that meant doing the “twist and pull”—removing the model’s parts from the sprue (or parts tree) the fastest way possible so that we could get down to the fun of assembling the kit.

Since then, many of us have learned that tearing the pieces of the kit from the tree is a sure way to damage the part, leading to a model that needs a lot of sanding, shaping, and filling to make the parts fit correctly.

The trick to cutting the parts from the sprue is using the correct method for the type of part you’re removing. There are several ways to cut and sand; some are better suited to particular tasks than others.

A sprue cutter makes quick, easy work of removing these wings from the parts tree, **1**. You’re not likely to cut yourself, and controlling the cut is simple.

“Flash” results from the injection molding process and is a common sight on model parts. You can easily



remove it with a No. 11 blade in a hobby knife, **2**. Be careful not to trim away too much plastic.

The jet intake on the left in photo **3** was torn from the tree and glued with liquid cement. It’s a mess! The intake to the right of it was properly removed with a clipper, then sanded along the edges before cementing.

When cleaning up a part, hold it firmly in one hand and place the blade in the spot you want your cut to start, **4**. Keep the blade at an angle, and carefully trim away the

remaining sprue from the part.

A straight blade in a hobby knife produces precise cuts perfect for removing flat-edged parts such as aircraft wings, **5**. Working on top of a “self-healing” mat like this one also increases your control of the blade.

Small parts have a nasty habit of becoming ballistic projectiles when freed by a straight blade. A curved blade planted tip-first into your self-healing mat can be rolled over your tiny part to free it without launching it across your hobby room, **6**.





Fill seams

Model kits are supposed to fit together seamlessly, but often you need to sand at least a little to smooth the seam where parts join. In many cases, you'll use putty or gap-filling super glue to blend the joint. Your goal is to hide the "gap" area completely, filling in the empty space to make it invisible to the eye when painted. The procedure varies a little depending on what you use to fill the gap, but as you'll see from the photos, the results should be the same: That seam will be gone!

Begin by using a straightened paper clip or a toothpick to apply the gap-filling super glue to the seam, **1**. Film container caps (as shown) or margarine container lids are great platforms to work from—super glue doesn't stick to them.

Putty would work here, but the

advantage of working with super glue is accelerator, **2**. Super glue accelerator, applied here with a Microbrush, causes the glue to cure instantly, so you can get right to work cleaning it up by sanding.

Using a sanding stick affords you greater control over where the grit

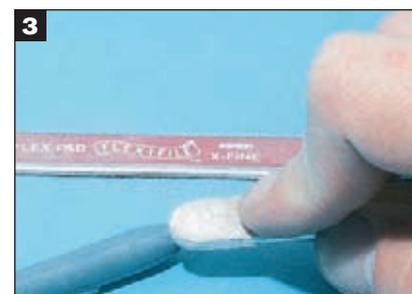
contacts the seam, **3**. You don't want to sand off detail or take the "round" out of a curved part if you can help it. Wet-sanding will keep the stick from clogging with dust. Sand the seam down to the surface of the plastic, and you're ready to paint.

You can also use one of many gap-filling putties. Putty can get messy, though, and end up where you don't want it—try running tape along both sides of the seam so it won't get on nearby surfaces where it doesn't belong, **4**.

Apply the putty with a firm, flat tool (such as a popsicle stick), which will allow you to push the putty into the seam and spread it along the top, **5**. Don't spend too much time smoothing the putty; it dries quickly and will start to cake if you work it too much.

Now that the putty is applied, you can peel off the protective tape, **6**. It doesn't look pretty, and it isn't supposed to. When it sets (each putty's drying time is different—read the labels), you'll be sanding most of the putty off.

Wet-sanding doesn't always work well with putties, since some of them soften or break up when wet. Try successively finer grades of sandpaper or a sanding stick to sand it down to the plastic. When you're done, it will look like the photo at the top of this page, but when it's painted you won't see a thing!



Don't underestimate the power of the brush! Using the proper techniques, you can create finishes that are almost airbrush quality.



Paint your model

You can get some amazing results using basic brush and spray painting methods. With practice, you can give each creation a finish nearly as good as that achieved by experienced modelers using an airbrush. Regardless, every modeler needs to know how to paint the details, and brush painting is great for that.

Brush painting

Successful brush painting requires good brushes and fresh paint, as well as techniques to eliminate brush marks.

The projects shown here were painted with Model Master Acryl and Polly Scale acrylic paints. Both are quality paints that can be thinned (and cleaned up) with water. The techniques for using enamels are similar, but you'll need to use mineral spirits or lacquer thinner to clean your brush. The photos show plastic parts being painted, but the techniques are the same for other materials.

For painting broad surfaces, use as wide a brush as possible, such as round brushes up to No. 5 and ¼" to ½" flat brushes, **1**. The softer the bristles, the smoother the finish will be. For a smooth finish coat, especially with gloss paint, get a good sable brush. A good-quality synthetic brush can also provide a smooth

finish. Camel hair brushes are good for rough surfaces and general-purpose painting.

Brush marks are the bane of brush painting. The main causes are brushes with stiff bristles (poor-

quality brushes or old ones with bristles hardened by dried paint residue) and overbrushing, which leaves patterns in the paint as it dries.

Make sure the surface is clean and free of skin oils from handling. Even a little oil repels acrylic paint, ruining the finish.

Begin by wetting the brush in water (or paint thinner for enamels). Wipe off the brush using a clean cloth or paper towel. This step eases cleanup by keeping paint from drying on the bristles.





Put paint into a separate container or palette, such as the inexpensive aluminum type shown here, **2**. You can use an eyedropper or soda straw to transfer the paint.

Avoid painting straight from the bottle for two reasons. First, air is the main enemy of paint, so you must keep the jar closed as much as possible. Second, wiping off excess paint by pulling the edge of the brush over the lip of the jar often leaves paint in the jar threads. This results in bits of dried paint falling back into the bottle, and they will eventually find their way onto the surface you are painting.

Most paints are already the right consistency for brush painting. Thin the paint only if necessary to get it to flow smoothly on the part. Thinning will decrease the paint's opacity, requiring more coats to cover properly.

Dip your brush in the paint, keeping the paint on the lower fourth of the

bristles. Brush the paint onto the surface, using as few strokes as possible. Let the paint level itself. Don't overbrush the paint: It will start to dry almost immediately, and running the brush over it again will leave unsightly brush marks.

Follow the general direction of surface lines and details, keeping the brush strokes parallel. Apply paint to the bare surface, then use a light stroke to brush it back to the area most recently painted, **3**. Keeping a wet edge at all times will prevent overlap marks.

You'll usually need to apply two coats, which is what was done to this motorcycle cowling, **4**. Some colors—especially black, dark grays, dark blues, and greens—cover better than others. Lighter colors may need an additional coat. If you're painting white or yellow on anything other than white plastic, start by applying a primer coat of medium to light gray.

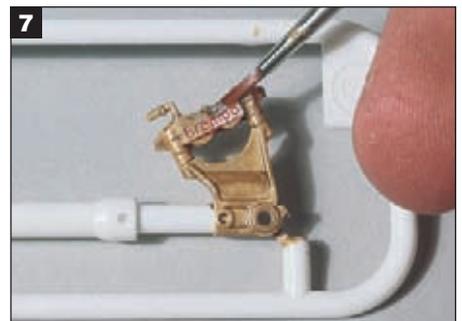


As with airbrushed finishes, small ripples in the finish can be polished out by wet sanding. After the paint is completely dry, start with 320 grit and use progressively smoother grades of sandpaper up to 600 grit.

When painting rougher surfaces, such as stone walls, **5**, cheaper camel hair brushes work fine. Since brush marks aren't critical in this situation, you can move the brush in different directions to work the paint into cracks and crevices.

For painting tight areas and small details, try the Model Master No. 0 synthetic. It has a fine point—finer than many 00 and 000 brushes—and it holds more paint than smaller brushes.

When painting details, start with lighter colors and progress to darker ones, but wait 48 hours before painting one color over another. Paint as much of each part as possible before assembling the model. In fact, keep the parts





on the sprues as long as you can—sprues make convenient handles.

Different techniques are needed for painting details. For example, this motorcycle wheel fork has recessed lettering that needs to be painted red, while the rest of the part must be gold, **6**. Start by painting the area with the lettering red, then wiping the surface with a paper towel. This removes the paint from the surface but leaves it in the recessed lettering. Then paint the rest of the part gold, carefully using the side of the brush to paint around the letters, **7**.

For raised lettering or details, do the opposite: Paint the whole area the appropriate color, then use the side of the brush to lightly dab or sweep across the details.

Let the ridges and relief of the part guide the brush, **8**. With a fine brush, you'll be able to work the paint to and around raised and recessed details. If you get a bit of stray paint on an

adjoining area, don't panic. After it dries, you can either lightly scrape it off with a hobby knife or simply paint over it with the proper color. In this example, the finished wheel fork has crisp, sharp detail, **9**.

When you're finished painting your model, you're not done yet. Properly cleaning brushes will make them last longer and help them hold their shape. After using acrylics, rinse the brush in plenty of warm running water. Massage a drop of liquid dishwashing detergent into the bristles, then keep massaging the bristles under running water to rinse them.

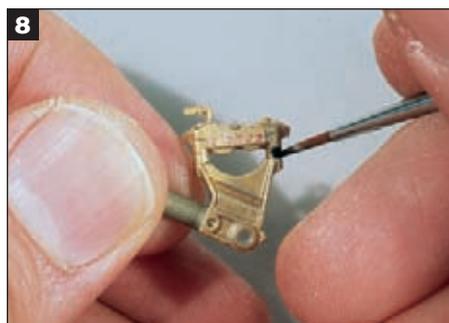
If you're using enamel, dip the brush in mineral spirits or lacquer thinner. Swish it around and roll it gently against the side of the container. Keep three small jars of thinner for cleaning brushes. The first is for getting out most of the paint (this is the dirtiest one), the second for cleaning out any remaining

paint, and the third (with clear, clean thinner) for a final rinse.

Never let brushes stand in thinner, and never jab the bristles down into the bottom of a container. This can damage the ferrule (the part that holds the bristles) and cause the bristles to splay and lose their shape.

While the bristles are still wet after cleaning, form them to their proper shape using your fingers (not your mouth). Store brushes with the bristles up, and make sure the bristles don't rest against the sides of their storage container, **10**. To protect the bristles even more, use the clear plastic sleeves that often come with new brushes.

Resist the temptation to buy cheap brushes; poor brushes will only give you poor results. Good quality brushes, on the other hand, will give even inexperienced painters better results. Properly cared for, they're also a better buy. Really good brushes last a lifetime.



Spray painting

Brush painting is good for details and small models, but large exposed areas really have to be spray painted. Modeling spray paint has come a long way. Years ago, if you visited a hobby shop looking for spray paint to finish your latest project, you'd find only basic colors such as red, silver, and army green. These days, spray can racks feature plenty of shades for aircraft, armor, and autos.

If you're familiar with *FineScale Modeler*, you may be thinking, Why spray paint? While most of the models appearing in those pages are painted with airbrushes, don't think, however, that airbrushing is the only way to produce a nice finish. Often, a spray can will paint your model just as well, without the airbrush expense or cleanup time.

Spray cans aren't perfect, though. Although many more colors are now available, your choices are still limited to just those colors. Also, the only control for a spray can is the paint nozzle, which works like an on-off switch. Push the button, and the paint comes out—at one speed and in one spray pattern. These drawbacks put complex, custom-mixed paint schemes out of reach. But in most cases, you'll still be able to make good-looking models.

Safety should always be your first concern when working with spray paints. Invest in a good two-stage respirator mask and wear it every time you paint.



Airbrush-quality finishes from a spray can? You bet! All it will take are the right paints for the job and a few basic painting techniques.

Spray can fumes are flammable, so work in an area with plenty of ventilation, away from ignition sources such as pilot lights. When you're not using them, store spray cans out of the reach of youngsters, and dispose of empty cans properly.

Warming the paint can will help the paint flow once it reaches the model, producing a smoother finish. Simply fill a container with warm water and place the can inside, **1**. The water should be about 100°F (38°C), so hot tap water should be OK. Don't heat the water or the spray paint can on the stove, in the

oven, or in the microwave—the can may explode and cause serious injury.

Let the can sit in the water for a few minutes until it's warm to the touch. Remove it from the water and dry it. Shake the can for a couple of minutes, and make sure the ball bearing inside is rattling freely (this is where the expression "rattle can" comes from).

Before spraying, make sure the parts you're painting are secured. When painting a large part, fashion a paint stand out of a wire coat hanger and tape it to the inside of the model. You'll be able to

Troubleshooting Guide to Spray Paint Problems



Problem: A rough, pebbly finish.

Cause: The spray can is too far away, and the paint is drying in the air on the way to the model.

Solution: Move the spray can closer to the model and spray in smooth, slow strokes.



Problem: Runs in the finish.

Cause: Too much paint! The spray can is too close to the model, or the paint is being applied with an uneven, stop-and-start spray stroke.

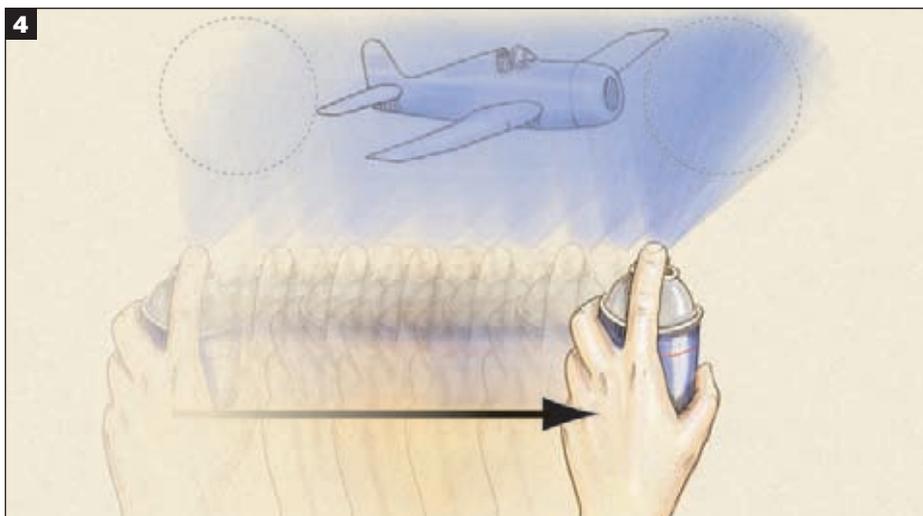
Solution: Start spraying off one side of the model and continue spraying until you're off the other side.



Problem: "Fish eyes."

Cause: Surface contaminants are pushing through the freshly applied paint, producing unpainted circles in the finish.

Solution: Thoroughly clean the model with soap and water just before painting.



move it as needed to make the most of the can's limited spray pattern.

Some parts can be difficult to hold while painting. Find a long piece of sprue and use a tiny drop of super glue to attach it to the part in an inconspicuous place, **2**. After the paint is dry, just pop the part loose and install it on the model.

The paint's force can scatter small items. If you have lots of small parts to paint the same color, attach them to a piece of cardboard with a sticky-side-out loop of masking tape, **3**. You can paint all the parts at once, "assembly line" style, and the tape will keep the parts from scattering across the floor.

After you've warmed and thoroughly mixed the paint and prepared your pieces for spraying, you're ready to start. The trick to applying a smooth, even finish is to use a smooth, even stroke. Press the nozzle button with the can aimed to one side of the model, about 10" to 12" away, **4**. Hold the button down and sweep the paint slowly across the model, keeping the nozzle at a constant distance. Keep spraying until you're off the other side of the model. Turn the model as needed to ensure good paint coverage, and shake the can between passes.

When you're finished, move the parts to a dust-free area to dry completely before handling. Placing the parts in a plastic storage container keeps them out of harm's way as they dry.

A little maintenance after painting will keep the spray can working properly so it will be ready the next time you need it. Turn the can upside down. Push the spray button for a few seconds while the can is inverted, until paint stops coming out. This clears excess paint from the nozzle and keeps it from clogging. If the nozzle is covered with excess paint, dip a cotton swab in lacquer thinner and wipe it away.

Additional spray painting tips

If you want to apply smooth gloss finishes straight from the can, a polishing kit may be what you need, **5**. This kit contains several fine-grit sanding cloths (ranging from 2,400- to 12,000-grit) and liquid polishes that can coax a glass-smooth finish from even the lumpiest paint jobs. The kit is also handy for preparing plastic surfaces for metallic finishes and for removing imperfections from canopies and other clear parts.

Paints designed to create realistic metallic finishes, such as Testor's

Metalizer line, **6**, require special handling. Metalizers go on thin, so prepare the parts carefully and remove any sanding scratches or surface flaws with the polishing kit before painting.

A few of the mail-order modeling paint companies offer spray paint in factory-matched automotive colors, **7**. Some of these paints require special primers, so double-check the directions.

These tips should help you get started. Although the technique has limitations, spray painting can produce eye-catching finishes. In some cases, the only difference between an airbrushed finish and one attained from a spray can is the ease of application. Go ahead—make it easy on yourself.



Put on decals

Even the newest modeler can achieve a good-looking project by adding a few decals. Dealing with decals can be a pleasant experience for some—and a nightmare for others. But if you anticipate the pitfalls, you can work around them, as long as you follow the tips outlined here.

Keys to success

The most important element in successful decaling is to start with a smooth glossy surface. This allows decals to be moved into place easily and prevents the dreaded “silvering.” Silvering is caused by light reflecting and refracting through air trapped beneath clear decal film.

How does the air get there? It occurs when a decal lays over flat-finish paint, which is anything but flat. If you looked at a flat-painted surface with a microscope, you would see zillions of mountains and valleys—not a smooth surface at all. When a decal is applied to a flat-painted surface, it rests on the tops of these mini-mountains, trapping air in the valleys below. Light pass-

ing through the clear film bounces off the sides of the mountains, up through the air, and out through the clear film. All this bouncing causes uneven reflections and, to the eye, makes a silvery patch around the decal—a distracting sight.

This Hasegawa 1/72 scale F-106 Delta Dart fighter required a lot of decaling. “City of Jacksonville” was a Florida Air National Guard jet specially painted for the nation’s bicentennial in 1976.

Decal setting solutions and solvents, **1**, soften the clear film and inks, allowing the decal to conform better to the surface. However, they don’t always eliminate silvering, so nip the problem in the bud by decaling onto a glossy surface.





To attain a smooth glossy surface, either paint with gloss paints or apply a clear glossy overcoat to flat paint. Since most modeling paints are flat, applying a clear gloss is the most commonly used remedy.

If you use both enamels and acrylics on the same model, you need to use a clear gloss that won't affect either paint. Clear acrylic modeling paint works fine, but Future acrylic floor polish works just as well—or even better. Future is also easy to use and inexpensive, and it even smells nice!

After all the paints on a model have fully cured, apply the clear gloss coat. Spray on a few light dusty coats at first, to provide a little “tooth” for the forthcoming wet coats. It's easy to get carried away applying clear gloss. Flooding will cause drips, so gradually build up the clear coat to a beautiful smooth shine.

Decal deliberations

After the model's gloss coat is completely cured (48 hours is a safe bet), study the decaling instructions and the model to determine where all the decals go. You may find that some decals overlap other decals, and some items on the decal sheet may go unused on the particular subject you are modeling. Most models

will have a trouble spot or two. The areas that challenge your decaling skills may include tight corners, compound curves, and heavy relief that will need to be covered by two-dimensional decals.

Check to see if there is a decal that will establish the position of other decals. This occurs mainly when the decals take the place of paint in certain areas. Apply these decals first, then work your way out from them. If you don't, you could run into a problem. One modeler once applied a set of invasion stripe decals to the top of the wings of his P-51 Mustang, only to find that when he put on the bottom stripes, they would line up either with the top stripes or the openings for the gear bays, but not both! He should have started with the bottom stripes that were keyed to the bays, then aligned the top stripes with the bottom.

Steps to success

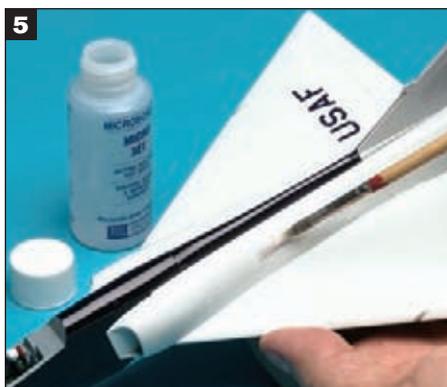
Cut each decal item from the sheet one at a time, cutting wide around the image. Then trim all the excess clear film from each decal to hide the edges. To do this, lightly score the film as close to the image as you can, **2**, but don't cut all the way through the paper as it can crack the inks along the edge.

Next, dip the decal in warm water, **3**, and rest it on a paper towel. Some decals loosen from the sheet right away, and others take a minute or two. Before you move the decal, remove the excess clear film by pulling away each piece with tweezers, **4**. You don't want these strands of film landing on your model.

Place the model on your work surface or in your lap so that the area of the model to be decaled is facing up. Apply a puddle of water, or better yet, a setting solution such as Micro Set where the decal will go, **5**. Hold the decal paper with the tweezers and place it as near as you can to the position where the decal should be. Gently push down on one end of the decal with a brush or cotton swab, then pull the paper out from under the decal, **6**.

Keep the decal wet with water or Micro Set and push it into its final position with the brush or swab. Once it is in position, wick away excess water with the swab. Some modelers like to press the decal into position, squeezing out the liquid from below, but you may prefer to let the liquid drain. You may also want to roll a swab over the decal to push out any air bubbles underneath.

When the decal settles into position and can no longer be moved about,





brush on a softening solution (also called a solvent) such as Micro Sol, **7** (page 17). Solvents make the decals snuggle down into recesses and tightly over raised detail. Once the solvent has been applied, however, do not try to move or even touch the decal. It becomes so soft that the slightest touch will damage it. Wick away any large puddles of solvent. Work on all the decals on one side of the model and let them dry completely before working on the other side.

Overcoats

After allowing the decals to dry for a day, mop up decal adhesive and solvent stains by using a cotton swab dampened with solvent. You don't want to trap these precipitates under the final clear coat—they may discolor over time.

Inspect the decals for areas that

might need more solvent. Occasionally, air bubbles will appear under the decals. Prick them with the point of your hobby knife blade, **8**, and apply more solvent. Also, look for decals bridging deep hinge lines; just slice through them with the blade and reapply solvent. Excess decal material sticking out over edges of the printed area can also be trimmed away with a fresh, sharp blade, **9**.

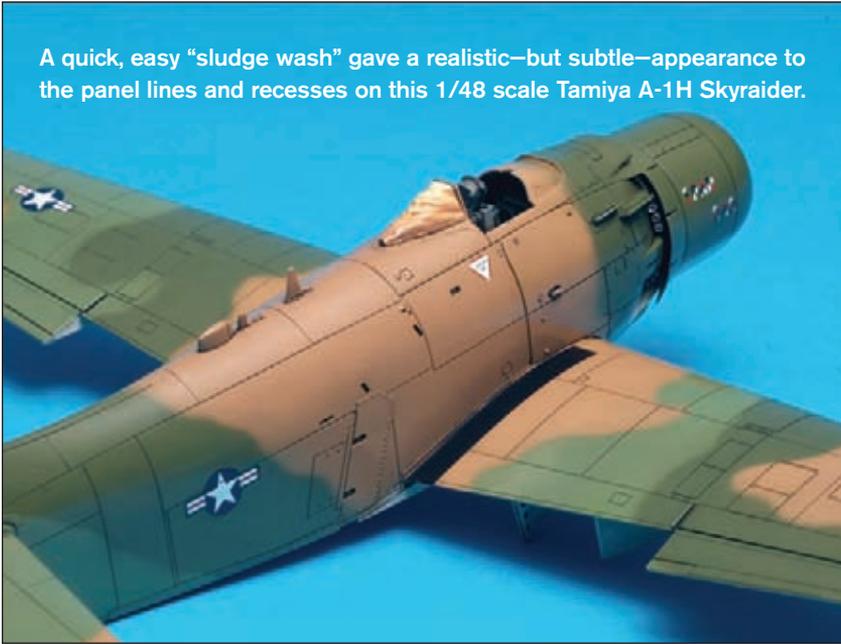
Occasionally, you will run into a decal that you just know is going to be trouble, such as the one-piece decal that decorates the nose of each drop tank on this bicentennial F-106. This decal is preshaped to fit onto the skinny tank, but it's not going to conform easily to the tapered nose. Before wetting the decal, make a series of light cuts through the image, **10**. These help the decal overlap itself without

wrinkling. Next, apply Walther's Solvaset, a strong decal solvent that persuades most stubborn decals to overlap, **11**. When it dries, the decal will conform just about perfectly to the tank, **12**.

After the F-106 dries for a few hours, it is ready for a clear overcoat. Spray on another coat of clear gloss to seal the decals and even out the gloss finish, **13**. If you desire a flat final finish, this is the time to spray on a clear flat. You may choose from a number of products, but try to apply your selection in several light, quick-drying, misted-on coats to reduce the chance of the clear coat affecting the decals. The same goes for a clear gloss lacquer if that is what you decide to use.

With all modeling techniques, practice is the key. The more you decal, the better your decaling experience will be.

A quick, easy “sludge wash” gave a realistic—but subtle—appearance to the panel lines and recesses on this 1/48 scale Tamiya A-1H Skyraider.



Add realism

Maybe you’ve seen them—you know, those models with the neatly accented panel lines and perfectly shadowed interiors. Just how do those modelers do that?

A fast, simple wash technique is the sludge wash. Two key elements are crucial to its success. First, the model must be glossy—the wash will go on better and come off easier than on a flat paint. Second, the wash must be made with soapy water—the soap reduces the adhesion of the paint.

The beauty of this technique is that it can be made with any color—even white! Consider the color scheme of the model to determine which color to use for the wash. A predominately tan tank could use a chocolate brown wash. Black panel lines on an all-white airplane are too stark; use medium gray. Light to medium gray looks good on a black airplane. For the A-1 shown here, neutral gray was used for the undersides, cockpit, gear bays, and landing gear struts, and black for the upper-surface camouflage.

Mix five parts of water and two parts of Polly Scale water-based acrylic paint. Add to this three parts of liquid dishwashing detergent, **1**. Stir, don’t shake, which creates too many suds. The result is a thick slippery wash called “sludge wash.”

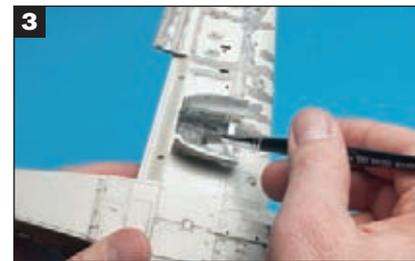
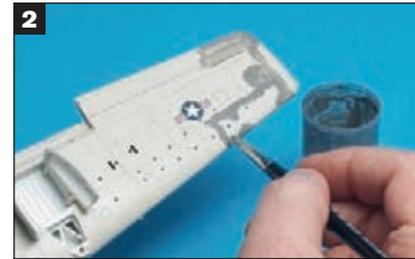
The ratio of paint/soap/water isn’t critical, and you can adjust it to your desire. If you find it difficult to remove the excess wash, you need more soap in the soup.

Slappin’ on the sludge

Once the model is overcoated with clear gloss and dry, it is ready for the sludge! An old 1/8” brush was used to apply it here. Apply the sludge along all the recessed panel lines, **2**, into exposed interior areas like landing gear bays, **3**, and over intricate items like landing gear. Vigorous brushing causes bubbles, so go easy.

The Polly Scale sludge wash dries in 15–30 minutes. You’ll know when it’s done: Wet spots look shiny, dry areas flat. A hair dryer speeds the drying. Once the wash is dry, the excess can be removed.

Remove the sludge with a damp cloth or use dry cotton swabs for better control. Just a little pressure is needed, **4**. Roll the swab as you wipe, avoiding paint buildup on the wiping surface. To remove excess wash in tight areas (such as landing gear struts), use a Microbrush. The wash gives depth and defini-



tion to the struts and wheels, **5**.

Once all the excess is removed, the paint remains inside the panel lines and in the corners and low spots of the bays. Check for areas without enough wash and reapply if necessary. If you’re not satisfied with the wash (maybe the color doesn’t look right), remove it with soap, water, and a toothbrush, and start over. The last step is the final overcoat of clear flat (or clear gloss) to seal the wash and the decals.