

Build like the experts

The Best of the Scale Auto Roundtable

EXPERT ADVICE

- Juha Airio
- Tim Boyd
- Pat Covert
- Bob Downie
- Jim Drew
- Mark S. Gustavson
- Ken Hamilton
- Marc Havican
- Evan Hermel
- Drew Hierwarter
- Alex Kustov
- Matthew Usher



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Roundtable 1:

The experts speak

Got a modeling problem? Pull up a chair.

Welcome to the *Scale Auto* Roundtable, where a dozen modeling experts will gather to offer insight and opinions on how to solve car-modeling problems.

Q: What motivated you to start building plastic car models?

Juha Airio: General interest in cars, and specific interest in American car styling and the number of body styles.

Tim Boyd: A love of cars, several model car kits that were gifts to me between the ages of 8 and 11, and the discovery of *Car Model* magazine and Don Emmon's columns in *Rod and Custom*.

Pat Covert: I've always enjoyed working with my hands, and building model cars was the most satisfying way to do it. It combines my love of automobiles and hand craftsmanship.

Bob Downie: Having seen a few models and having been given a few promos and drooling over all the cool-looking boxes on the toy-store shelves made me want to start building them myself.

Jim Drew: My dad built wooden airplane models when he was a kid, so he bought some simple 1/72 scale plastic airplane model kits

for me, starting when I was about four years old.

Mark S. Gustavson: An interest in creating, in miniature, modified versions of cars that I saw when I was a kid. I started building at the age of seven in 1958.

Ken Hamilton: I've built models since I was a kid in the 1950s (ships and Aurora figures). The transition to car modeling in the early 1960s seemed natural.

Marc Havican: I started with Aurora monsters in the 1960s, then moved to cars in 1965 after my dad took me to see Johnny Rutherford and A.J. Foyt run Super Modifieds at Meyer Speedway.

Evan Hermel: I've always liked models, and have enjoyed building many different subjects. I've been on my "truck kick" for some 20 years now.

Drew Hierwarter: I was just a little kid, maybe 8 or so when my big sister helped me build a plastic model airplane. I was hooked on those for a number of years and began to get interested in cars. By the time I was 11 or 12, I was building nothing but cars.

Alex Kustov: As a kid I used to build model airplanes. After getting my first car, I quickly became an avid car enthusiast.

Matthew Usher: My older brother built model cars, and he had a really cool collection of Strombecker and Cox big-scale slot cars. My Dad worked in the automotive industry and was a real car guy, too.

Q: How many models have you built?

JA: There must be more than 100 finished models.

TB: I presently have around 250 built models.

PC: Surprisingly few, considering how many years I've been building. I would guess about 50 total. Many of them have been project vehicles for books and articles, which slows the building process way down for the many photo stops along the way.

BD: Somewhere between 250 and 300.

JD: Man, who keeps track? A rough guess would put it near, say, 70-ish.

MSG: About 55 or so.

KH: Hundreds over the years.

MH: Before or after The Layoff? Like most guys of a certain age, I grew away from modeling when I discovered 1:1 cars and girls, then came back to the hobby about a decade ago. All told, probably a little more than 100 since I was a boy.

EH: Probably more than 500.

DH: Hundreds. There's no way to know for sure. I have well over 200 built models in my collection today, and I've been building nonstop since I was a kid.

AK: I never really counted, but I guess close to a hundred.

MU: I've built more models than I can count, or even remember. I still have more in the "unbuilt" pile, though. ■



Pat Covert's Chevy SSC



Roundtable 2: Basics

Fundamentals, detailing dilemmas, and more

Q: When our club holds its annual judged shows, the first thing we look at are the "basics" of building: removing mold lines and ejection-pin marks, sanding seams, etc. Sometimes a car has a ton of aftermarket stuff, and nice paint, yet loses out because attention to the basics was lacking. I think too many newer builders tend to overlook these simple details. — *Dave Kessler*

Juha Airio: I believe this is a common problem worldwide; as for an easy solution, I believe there isn't one. One should always stress the importance of good basic modeling techniques, in each possible instance.

Tim Boyd: I build all types of models and all types of styles, from straight-out-of-the-box to a top-end ultradetailed model every few years. The one thing these models share is removed mold lines, sanded seams, and filled injector-pin marks and smoothed manufacturer markings.

Pat Covert: The fundamentals — preparation, painting, and execution — are at the very heart of good modeling. These form the foundation for a great model. All modelers should learn these skills before advancing to more complicated aspects such as adding aftermarket parts, scratchbuilding, and the like.

Think about it: what's the use of going to great lengths to wire and plumb a model when you haven't even mastered the art of a slick paint job?

Bob Downie: Beginners lack experience, and many times don't know the basics to look for. They're going to learn by seeing or being shown examples of how experienced builders handle the basics.

Mark S. Gustavson: A model that does little but conquer basic craftsmanship

should prevail over a model with lots of aftermarket stuff but still displays seams, parting lines, ejection pins, manufacturer logos, and the like. Ideally, a contest model would display basic craftsmanship and lots of detail — but first things first.

Marc Havican: Given the quality paints, tools, and aftermarket parts available today, it is relatively easy to lay down a nice paint job or add all sorts of nice, shiny gizmos to our models.

Remember, beauty is only skin deep, and sparkly baubles only distract from real problems underneath the surface.

Drew Hierwarter: The basics are so important. When I judge a contest, that's



Tim Boyd advocates detail-painting an engine as an inexpensive way to improve its looks. His V-8 Flathead shows what can be done a bit of paint and sand technique (see feature in *Contest Cars 2005*).

the first thing I consider.

Is the model cleanly built? Are there glue spots, fingerprints, scratches in the paint, wrinkles or bubbles in the decals? Do all four tires touch the table's surface, and are they straight-up-and-down and pointing in the proper direction?

It doesn't matter if a model has \$100 worth of aftermarket parts on it; if the basics aren't there, I move on.

The first thing I do when I start any new project is remove the mold seams. It only takes a few minutes with a sanding

stick or some fine sandpaper. When assembling the chassis and running gear, I always set that up on a piece of glass. I make sure all four wheels are touching the glass and are straight.

I wash my hands a lot, I work carefully, and I avoid getting paint or glue my fingers. It wasn't always so, but over the years you train yourself to not let things get messy. If you just can't keep that stuff off your hands, there are many different styles of affordable disposable gloves on the market.

Alex Kustov: I would never leave mold lines or other flaws on the model — especially on the body. Why spend hours to paint, polish, and rub paint into a beautiful paint job if it's plagued by pin marks, mold lines, and flash?

Matthew Usher: Some beginning modelers concentrate too much on adding aftermarket details; I'm most impressed by superclean straight-from-the-box builds. "Box Stock" is one of the first tables I check out at a contest.

Q: How do you efficiently organize your parts box (including specifics on small parts and how they are categorized, and where large parts, like chassis and bodies are stored)? — *Mark Doolittle*

JA: Smaller parts are organized in plastic drawers. The departments include wheels (different drawers for alloy-type wheels, wheel covers, and nonchromed wheel inners), several drawers for engine parts (oil pans, intakes, pulleys/fans, valve covers, air cleaners, exhaust manifolds/headers, engine blocks, smaller engine parts like carbs, oil filler tubes, starters, etc.), steering wheels, batteries, clear and red clear lenses, chrome head/taillights, and rearview mirrors.

Slightly larger parts like radiators,

firewalls, suspension components, dashboards, and engines with glued block halves are kept in slightly larger plastic drawers of their own.

Large parts, like entire interior buckets and similar interior parts, are kept in their own cardboard box.

Components like entire chassis, parts cars, and assembled junkers are kept in their own large cardboard boxes, mostly unorganized.

It's pretty easy to acquire parts cars and junkers for future use, but the most time-consuming aspect is to disassemble them properly and store each part in a logical place.

PC: I use Tupperware containers of all sizes. My parts are loosely organized, but you can be as picky as you wish about sorting parts and putting them into whichever size container you need.

MSG: Hardware or variety stores sell relatively inexpensive cabinets with individual clear plastic "drawers" that can be labeled with white stickers.

The individual drawers could be divided into engine type/size (e.g., Ford small-block, Chrysler Hemi), suspension pieces (vintage Ford drum brakes, disc brakes), interior components (individual drawers for bucket seats, dashboard, consoles and so forth), exhaust systems, and the like.

Larger pieces (frames, unibody platforms, bodies) can be stored in inexpensive/commercially available light cardboard boxes that can be purchased from companies that just sell boxes.

An initial investment of time spent sorting, storing, and labeling will pay huge dividends in the future!

MH: I don't use a "parts box" *per se*. I purchase freestanding plastic drawer units at the discount store, and organize my aftermarket parts, decals, wiring, and the like in those units.

If I pirate parts from a kit, I generally leave the rest of the parts in the kit box instead of combining them with others.

For the really big stuff, like bodies and large-scale parts, I bought several inexpensive cardboard "banker's boxes" at the local office-supply store.

Q: For us novice builders, what would be the best way to start detailing our models? Would it be the engine compartment (wires, hoses, and such), or the interior (flocking, paint, etc.)? The cheaper, the better; any extra cash I have, I try to save to buy more kits.

—Shane Schaper

TB: Given your budget constraints and

self-described status as a novice, I'd vote for doing some basic engine detailing. Start with sparkplug wires, then add details on subsequent models.

I'd also recommend you try what I call detail painting – using different colors of paint to make the existing kit parts look more lifelike.

Investing in a single tube of black flocking will provide you with enough material to do several models. Many cars with carpeted interiors had a black or white-with-black interior color option.

BD: If it's a full-detail kit, you might want to focus on the engine. If it's a curb-



Several of the Roundtable members keep small parts organized in sliding-drawer-type cabinets, typically available at hardware stores and home-improvement centers.

side, focus on the interior.

I find interiors easier to detail, as painting techniques and flocking, even adding seatbelts, seems easier to me than drilling holes and adding wires and hoses under the hood.

Jim Drew: You hit me where I live; I enjoy building as cheaply as possible.

The engine compartment seems to be the first thing that grabs people, after the overall look of the vehicle. A lot can be accomplished with just different shades and colors of paint under the hood.

You can take a tip from military modelers and darken the model's primary colors and use that to add more shadow to recessed areas. This can be done by overlying thinning the paint and bleeding it into the nooks and crannies.

Conversely, you can add highlights to the edges and the tops of the curved areas by drybrushing lighter shades of the part color.

Adding simple wire and hoses with craft wire is always a plus. You can make simple sparkplug boots with larger-diameter wire insulation cut in short pieces and slipped on the plug wire.

Try winding a single strand of ultra-thin wire around a needle, and then cut-

ting it to length for use as a return spring.

Purchase a roll of aluminum repair tape, and cut some thin strips for use as hose clamps.

MH: If you are building hot rods with exposed engines, then I'd say you should detail the engines. If you like to paint and build curbside models, which often have little or no engine detail anyway, then go for interiors.

If I had to pick only one, I'd start with engines, because they're usually more visible than interiors.

You can drill out a distributor and add inexpensive ignition wiring without having to spend money on an aftermarket unit. Radiator and heater hoses are easy to do, and they add a lot to a finished engine bay.

AK: If you build convertibles, and models with lowered side windows or opening doors, detailed interiors are important. So you may want to start adding flocking, or seatbelts.

Floor mats and instruments are also simple and effective ways to detail interiors. Replace thick shifters with wires or pins; add some Bare-Metal foil to accent dash and door panels.

In the engine bay, start with simple spark plugs, then add distributor coils, maybe a hose or two, or a set of pulleys and a belt.

Don't try to add everything at once. Start with a few small things, and when you master them, add more detail to your next model.

Now, about the "cheaper the better" part of your question:

There are some cheap things you can use to add extra detail to your models, and by all means use them: wire from an old telephone cable, old guitar string, parts from an alarm clock.

But do spend *some* cash on detail parts; most are really worth it. There are some things you just can't make by yourself, and if you really need something for your next model, the model-car aftermarket is the only way to go.

MU: Adding detail to your models doesn't have to be expensive. A spool of ignition wire goes a long way, and the same goes for flocking – especially if you stick with a basic color, such as black or dark gray.

Take a look at the wire that's available at Radio Shack, and at the hardware store, too. You'll probably find some that's just right for sparkplug wires or heater hoses. ■



Roundtable 3: Parts-fit issues

Body chopping, dealing with chrome, final assembly frustrations, and more

Q: When you extend or chop a body, how do you get the cuts correct, glued together and stay that way, and keep the joints covered so they don't show after painting?

—Dan Ackermann

Juha Airio: If possible, I add sheet plastic or styrene strips behind the cut to give more strength to the joint. To achieve a solid seam, I never use traditional solvent-based plastic cement — one never knows how long it will take for the solvent to evaporate and the seam to be fully cured. I use super glue, which I let cure about a week before painting.

Joints in plastic becoming visible after the completion of the model is one of biggest problems in our hobby, and I still am not aware of a bulletproof solution.

One possibility is to plan the building process so that no joints will be needed in visible areas such as the middle of a roof or hood; it's better to try to make any cuts near areas where there are moldings, so that if the seam does become visible later, it will be less obvious.

The reason why seams between plastic parts do become visible may be that the solvents in the paint will chemically react differentially with the plastic material around the seam (bare plastic) and in the actual seam (consisting of a mixture of plastic, glue, and possibly filler). To avoid this, a sealer prohibiting the solvents to reach the joint could be the key.

I haven't tried it yet, but I have heard that DuPont VariPrime is a primer/sealer that works effectively with plastic [see following comments].

Tim Boyd: When I chop a top, I cut masking tape to a constant width, then apply it to the body on the A-, B-, and C-pillars (the posts that hold the roof above the rest of the car), then carefully cut along the two edges of each piece of tape with a hobby knife. A tape width of

1/8 inch works out to a scale three inches — perhaps the most common top-chop amount on modern rods and customs.

If the A- and C-pillars are angled, you'll need to extend the length and perhaps the width of the roof to compensate for the shorter pillars. I use regular Testor's tube glue to secure the parts. If reinforcement is needed, a strip of cloth, or my favorite, a strip of K&S thin sheet brass, epoxied in place from behind, has always worked for me.

A thin application of automotive body putty on the outside of the seam, sanded to shape, primed, and sanded some more, generally hides the seam.

Bob Downie: By careful measuring of the cuts, and strengthening the glue joints from behind. The joints can be strengthened by using small pieces of fine fiberglass cloth soaked with super glue.

As for making them invisible on the outside, you have to carefully blend the parts together with putty, make sure the putty is thoroughly dry, and then use a proper sealer over the surface. This should prevent the paint solvents from swelling the plastic around the puttied area, which causes an irregular surface.

Mark S. Gustavson: Make sure that you measure several times, so that all cuts are the same side-to-side. Lightly rough up the mating surfaces with a medium sanding stick to give some "bite" for the adhesive. Use only so-called "instant" adhesives, matched with an accelerator, for joining panels. Apply a modest bead of adhesive on one side of the parts to be joined, and attach those parts; don't try to join all of the parts in one sitting.

After the parts are joined and the adhesive has cured, file a tapered V-shaped incut across the joint and drop a strip of styrene into that "incut" area, again using instant adhesive with an

accelerant. Use a flat hobby file to smooth the joint; don't use sandpaper. The cured adhesive is harder than the surrounding plastic, and you'll get a ridge instead of a smooth surface.

Spread a bit of catalyzed polyester putty over the joint, which should be sanded only with a coarse sanding stick to ensure a smooth surface; again, the putty will sand at a different rate than the adjacent plastic.

Apply a good sealer over the bodywork (DuPont's VariPrime is excellent — but use it only with good ventilation and a proper dual-cartridge respirator).

Drew Hierwarter: You need to get those joints as good as they can be, so the glue has as much contact area as possible. Sanding sticks or sandpaper glued to a small wooden block will help you get those cuts nice and flat.

Flow a little liquid cement into the seam, and let it set up well. The best filler material to use is the same plastic that the rest of the model is made from. I use thin scraps of Evergreen to fill gaps.

After the glue hardens, file and sand the joints, and they will disappear.

Q: I am an older (72) modeler who has recently gotten back to modeling. My question is this: when removing the chrome parts from the tree, I am left with a void in the chrome, always in a most exposed area. What is the best way to resolve this problem?

—Don Goldman

JA: I usually cut chrome parts from their trees with a fresh hobby knife blade, making sure no material is removed from the part. Then I remove tree residue from the part with a hobby knife, and sand the area smooth using 400- and 600-grit paper. In some cases (like heavy mold seams), a relatively large area must be sanded to remove the marks.

I cover the area with regular Bare-Metal foil, and if there are any obvious moldings in the part, I try to extend the foil so the joint between the plating and foil is less obvious.

Ideally, the entire part should be stripped and sent out to be replated, but this would make any basic modeling too complicated and slow.

TB: A simple touch-up with Testor's Chrome Silver bottle paint, applied with a 00000 red sable or similar paint brush, should do the trick for all but the most-detailed contest model.

BD: The simplest solution is using a silver Sharpie, or some chrome silver paint applied with a fine paint brush. If you are particularly fussy over the detail – if it's a visible area – you can apply a small piece of Bare-Metal foil over the area.

Ken Hamilton: Don, you probably noticed when you were first building models that chrome parts were typically attached to the sprue in the worst possible locations. As you're finding out, some things never change – but there are ways to correct the problem.

Be careful when removing a chrome part from the tree. Use a good cutter, and remove the part from the sprue fairly close to the sprue – but not right up against it. Trim off the last bit of sprue with a sharp knife or file, being careful not to remove any of the chrome finish from around the connection point.

The offending area can now be touched up with a dab of chrome paint, or better yet, a small piece of Bare-Metal foil. As a worst case, you may even want to strip the entire part and rechrome it by using foil or Alclad spray.

Another option is to send the parts out to be replated. Check the *Scale Auto* advertisers for these options.

Marc Havican: There are a couple of ways to approach this, Don. Use a pair of sprue cutters to carefully remove the part and try to limit the "damage" to as small an area as possible.

Touch up the blemish with a brush, using Testor's Chrome enamel. The other (and in my opinion, better) option is to strip the chrome plating and refinish the piece with Alclad Chrome lacquer.

Evan Hermel: I use a Chrome Silver Tamiya paint pen when I need to cover up paint boo-boos.

AK: For bigger parts, such as bumpers or grilles, you can always strip the chrome plating using Castrol Super Clean or

brake fluid, then correct the flaws and rechrome the parts with the help of chrome-plating companies or with Alclad II Chrome paint.

For small parts, I usually use a small piece of Bare-Metal foil to cover the flaw in the plating. The trick is to use a piece of BMF big enough so the edges of the foil are far apart from each other and are therefore less visible.

Matthew Usher: Adding a tiny patch of self-adhesive Bare-Metal foil seems to be the best way to hide spots. It's extremely thin and matches the finish of the surrounding kit chrome almost perfectly.



Q: One of my greatest modeling frustrations is an accident near the end of fabrication that either ruins the project or creates a delay in getting it done. I realize this is part of the hobby, but I'd like to hear how the "pros" face these dilemmas. – Brian Yockers

JA: If a major problem occurs at such a late stage that the entire model should be disassembled and rebuilt, try to find a possible modification hiding the problem, necessitating less work than a full disassembly and rebuild.

For instance, once a scratch – too deep to be polished – developed in the middle of the roof on one of my models. I checked my reference material and noticed that the car was available with a sunroof. I cut an opening in the roof, thus getting rid of the damaged area.

After adding the sunroof, some other alterations were necessary, but it was substantially less work than disassembling and rebuilding the model. In this case, another option may have been to add a vinyl roof.

TB: A good coat of The Treatment model-car wax on the body and the glass, prior to assembly, will give you a second chance to recover from unwanted paint "fingerprints" (it has happened to me more often than I would like to admit), and may even lessen the damage of errant glue.

BD: I put the part down and think over the problem. Most often I'll have a problem with the exterior paint finish, and I've learned how to deal with most problems without starting from scratch or stripping the paint.

Many of my models get a last-minute repair of a panel, where I mask an area, apply some color to cover the damage, and re-clear and repolish. Instead of freaking out, I've learned to accept these problems as part of the process.

I've seen many a car on an assembly line going back through for simple body repairs. It happens. Just think the problem through calmly, and sometimes ask for advice from other modelers.

Jim Drew: Unless you have done some sort of heat/melt deforming to a model, everything is fixable.

MSG: There are no easy answers to this problem. The best way is to work with patience and caution, and to avoid doing final assembly when you're tired or the night before a contest! Modeling accidents are almost always caused by haste and physical exhaustion.

DH: I doubt if there's an all-encompassing answer; it depends on the seriousness/visibility of the goof. One of the advantages, as it were, of building race cars is that many sins can be covered with graphics and decals.

AK: I get really frustrated, and sometimes this may result in the project being scrapped or delayed for a long time.

I remember a time when I was painting a keyhole on the door of an almost-finished model; all I had to do was install the wipers, license plates, and a few other small things. The moment was tense; I didn't want to put a silver dot in the wrong place.

Just as I was about to touch the model with the brush, the doorbell rang. I didn't expect that, my hand slipped, and I knocked over a bottle of silver paint!

More than a few drops landed on the model; the paint was ruined. It took me a few months to get back to this model and repaint the body.

The funniest part of the story is that the guy at the door was a mailman who brought a parcel with more kits!

MU: I have a lot of problems with this, too. When I feel that I am rushing or getting frustrated, I make myself walk away from the workbench and take a break for a while. When I come back, the parts that were fighting me usually seem to go together much more easily. ■



Roundtable 4: Finishing tips

From primer to clear, the experts solve puzzling paint problems

Q: I was wondering if the guys could discuss the use of fillers and primers. I am especially interested in the sprayable fillers, like Mr. Surfacer 1200.

—Peter Coevey
Auckland, New Zealand

Alex Kustov: I use Tamiya sandable primer almost exclusively — their gray and white are the best primers I have ever tried on a model.

As for fillers, I've used Squadron products for several years, and they are excellent. I prefer white because of the color (easier to cover with primer and paint).

Tamiya epoxy putty is excellent, though a bit awkward to use. It dries fast, sands smooth, and does not shrink.

Drew Hierwarter: My favorite filler is Squadron White Putty. It dries fast, sands smooth, and has a minimum amount of shrinkage.

I use Testor's Model Master white primer almost exclusively.

Marc Havican: My favorite is Tamiya Fine White primer, but it is a bit pricey. A good substitute is Dupli-Color sandable white primer, which comes in a large can and is relatively inexpensive. For white-metal and photoetched parts, I find that a self-etching primer (available in auto-parts stores and at your local paint jobber) works best as an initial base, followed by some Tamiya white.

Pat Covert: If you are working in small scale — for example, 1/43 — a thin primer is much better than a thick one. Mr. Surfacer is relatively thin, especially compared to “scratch-filling” primers sold by companies like Dupli-Color in the 1:1 automotive world.

As for fillers, once again, jump in and test hobby and automotive brands. My favorite for most projects is Evercoat



Euro-Soft (two-part) polyester glazing putty, available at auto paint stores.

Juha Airio: I use only two-part automotive polyester fillers, which harden by chemical reaction. Traditional one-part solvent-based model fillers shrink while drying, as the drying process is based on evaporation of the solvent. And the solvent may attack the plastic, leading to deformation and unpredictably long drying periods (up to several months).

Q: What is the easiest way to make two-tone paint schemes? What product will give the best separation line?

—Dave Bowers

Matthew Usher: I use Bare-Metal Foil when I need a razor-sharp separation

line. It's extremely thin, and I almost never have a problem with paint bleeding underneath it. I'll use strips of foil to mask the edge, then use standard masking tape to fill in behind it.

AK: I recommend automotive lacquers for two-tones, since lacquers dry faster than any other paint and can be masked off after a few hours in some cases.

DH: I prefer plain old masking tape. The cheaper the better too, as the lower-quality brands don't stick so well and are less likely to pull off the paint underneath.

MH: I use Tamiya tape to mark separation lines, but I've recently discovered some very thin tape at Hobby Link Japan that I've been using for tight-radius

bends and curved surfaces.

Apply very light coats of paint, and spray from the tape side onto the model – shoot away from the separation line and not toward the tape edge. That will help prevent paint buildup at the edge of the tape and reduce the difference in paint thickness at the line.

JA: I use frosted Scotch tape for most of my two-tone paint jobs. This gives the sharpest separation line, provided the tape is removed as soon as possible (while the paint is still soft). Unfortunately, this type of tape does not bend easily. For curved areas, I either cut the tape using a fresh scalpel blade, or use Bare-Metal foil for the curved areas and mask straight lines with the Scotch tape.

Q: How long after priming should the final finish be applied? How long should the final finish be allowed to dry before a clearcoat is applied? And how long should the clearcoat be allowed to dry before polishing, applying decals, etc.?

—Mike Jagadich
Lincoln, Nebraska

AK: It is critical for primer to be completely dry before the first color coat. Most primers dry in 5-10 hours, and some in as little as 30 minutes!

Do not try to cover the entire body with the first coat. Many call first coats “mist” coats, and this is exactly what they should be: a mist of paint to build up the color. This builds a foundation for the following coats of paint, and allows thin coats to dry and gas out significantly faster than thick coats.

If you’re working with lacquers, you can recoat in as little as 10-20 minutes. Acrylic paints should gas out for at least 1-2 hours between coats; allow a full day for enamels. You can sand and fix little imperfections in the paint when it’s dry.

After the mist coats/sanding, it’s time for one or two “wet” coats – final, “thicker” coats of paint. Spray until the part is fully covered and until paint starts to look “wet.” Rotate the part frequently while spraying wet coats to avoid runs.

After a wet coat, leave lacquers to dry for a day, acrylics for a day or two, and at least a week or more for enamels, before recoating. If the paint smells like thinner, that means the solvent is still evaporating, and it is not completely dry.

If you clearcoat paint that is still drying, solvent trapped under the clear will try to escape, and may crack the clear.

DH: It’s only after applying several coats of clear that the waiting begins: 24 hours to a week, depending on type of paint,

number of coats, and even the weather (paint will dry faster in warm, dry weather than it does on a more-humid or damp day.)

Q: I would like to paint in my basement, but the fumes are too much. I try painting outdoors, but finding a favorable day in Michigan that coincides with time off work is not easy. Venting is a problem too, as I have glass-block windows.

—Alan Twietmeyer
Berkley, Michigan

MH: Two words: paint booth!

TB: My house also has those glass blocks in the basement, but I got a quote of about \$200 to install a dryer-type vent to the outside of the house, which could then be hooked up to the vent hose from a paint booth. This is really the best solution, and I’ll do it one of these days!

Q: How can I get a glossy shine on my finishes like the pros achieve? I’ve tried the sanding films to buffing compound, but nothing seems to work.

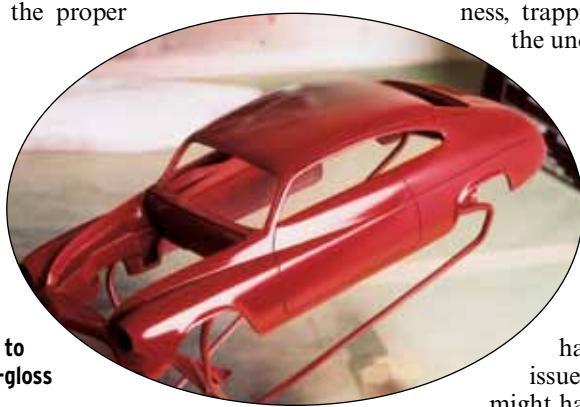
—Ryan Bogdewic
Ellsworth, Pennsylvania

MU: One of the best ways is to practice your painting technique. After struggling to correct lumpy orange peel with a polishing kit, I concentrated on improving my starting-point finishes. For consistency, I worked with one brand of spray paint and practiced until my finishes were glossy “straight from the can.”

BD: You will have to practice, and you must use the proper products.

Q: I’ve recently gotten back into model building after a 15-year hiatus. I use the new (to me) acrylic paints, and I can’t seem to get a good, high-gloss finish.

—Mike Hoekstra



MH: I have had great success polishing the color coat with polishing cloths, and not even using a clear coat.

Tamiya’s outstanding polishing compounds come in three “grits” and will work wonders with your paint.

JA: I have had satisfactory results with

polishing kits by using the pads dry and by skipping the final polishing compound included in the kit. Instead, I use waxes meant especially for acrylics; Tamiya and Gunze Sangyo make such waxes and rubbing compounds.

Q: I was clearcoating a batch of kits, and the clear formed many little holes – places where it refused to go on the surface. It looked like what happens when we try to put the primer over a resin body that still has some mold-release agent. I think it’s related to the decal-setting solution.

—Sylvio, via E-mail

AK: I believe you experienced a common problem with lacquer paints, called *pinholing* – tiny holes in the finish, putty, or body filler, usually the result of trapped solvents, air or moisture, right after spraying the final (clear) coat.

This is caused by improper surface cleaning or prep; moisture or oil contamination of air lines; wrong airbrush adjustment (paint application is too wet); or wrong thinner or reducer (solvent trapped by subsequent topcoats).

I think the problem is improper application: you are applying the paint too wet. I’m afraid that the only remedy in this case is to sand the paint down and recoat, or strip it and start again.

Another possibility is solvent popping, which usually looks like small holes in the paint film caused by rapid evaporation of trapped solvents or air.

Usually this is caused by using the wrong thinner or reducer (too fast for the paint); waterborne paints applied in high humidity; or excess film thickness, trapping solvents in the undercoats.

MH: Test the same combination of primer, paint, and clearcoat on a scrap body and see if you have the same issues. If so, you might have a bad batch

Shiny side up: Mark S. Gustavson’s New-Age Merc (February 2004 issue) in the midst of its color lacquer coats.

of clear. If not, strip the body and start again, making sure that you practice cleanliness every step of the way. Wash the body with dish detergent and a soft toothbrush between coats. ■

Roundtable 5: Details, details

How to make great gauges, classy chassis, and more

Q: I'd like to learn more about finishing and detailing the underside of a model.

— Bruce Poage
Norton, Kansas

Juha Airio: In addition to correct undercarriage colors, I suggest adding basic wiring, like fuel lines and brake lines; the aftermarket provides material for these, and workshop manuals can provide information about the correct routing. Kit shock absorbers are often best replaced with ones built from styrene tubing and rod; realistic coil springs can be made by wrapping scale ignition wire over a suitable rod; exhaust pipes can be made from solder.

Pay attention to the overall appearance: finishing all seams, removing mold lines, filling gaps between the body and chassis, and removing ejector-pin marks and copyright information.

Tim Boyd: When I build a replica-stock or muscle-car-era car, I use gray- or rust-colored primer for the underbody, followed by the topside body paint color, airbrushed onto the edges of the underbody to replicate the factory overspray.

Chassis and exhaust components usually are finished in various shades of silver, aluminum and gunmetal metallics; leaf springs and other suspension components are often a custom mix gold/copper/bronze color to simulate the cosmoline that was applied to these parts at the factory.

Jim Drew: Finish the underside in semi-gloss black. I like to drybrush the high points dark gray to force definition between the shadow areas.

Shave pastel chalk sticks of various shades of grey, then dust areas with a soft, wide brush and a little of the pastel powder. This will give a dirty, "used" look. When you have it the way you like,

lightly airbrush the whole area with semi-gloss flat clear.

Ken Hamilton: Much of the detailing can be done with paint – especially with older kits that have a lot of molded-in drivetrain detail. For kits with multiple chassis parts (separate frame, add-on driveline and exhaust pipes, etc.) paint each subassembly prior to installation, then add detail such as brake lines, fuel lines, wiring, exhaust hangers and clamps, and any other detail that would spruce up the bottom end.

Alex Kustov: One of the best flat black paints available for chassis painting is one of the cheapest: Wal-Mart's Color Place flat black in big spray cans. When properly mixed, and sprayed in thin coats, it looks really great and dries fast.

Suspension parts are usually painted in different shades of black, but can really benefit from light black or dark brown wash, or drybrushing with metalizers (Testor's Burnt Metal works great).

Q: How can you identify "accurate" undercarriage colorings? How can I make the undercarriage as show-quality "spectacular" as the rest of the model?

— Vince Weston
Omaha, Nebraska

JA: Adding all the prototypically correct colors to a model car may lead to a multicolored patchwork, not appearing particularly realistic or in scale. I'd limit the use of various color markings, and use only semigloss or matte colors tinted with gray to tone down the intensity of these colors.

KH: Consider the use of the vehicle you're modeling. The only 1:1 cars that have immaculate undersides are full-blown show cars. In that case, you would detail

the underside to the same degree as the top. But if you're building a driver, the undercarriage should show appropriate signs of wear and tear. The degree of weathering would depend on the amount of "driving" your driver would be exposed to.

Q: How about techniques for getting the finished chassis into the body without damage to either? Many models' sides curl under, creating a smaller opening than the chassis is wide. This gets dicey sometimes.

— Rich Williams
via E-mail

TB: It helps if I practice this assembly step early in the build process (like before I apply all that delicate Bare-Metal foil).

You might also try a "lubricating" type material between the chassis and the body at the point of interference. I'm thinking of something like waxed paper, which could be pulled out of the way after the chassis is securely in place.

PC: Some kits require the chassis to be fitted from one end first, so check the instructions for recommendations.

If a chassis is a supertight fit, try starting one end, holding the chassis with one hand and flaring the sides of the body. After the outer frame rails are positioned inside the side panels, slowly work your way forward until the body is completely fitted over the frame.

JD: I tape pieces of 3x5 card stock to the inside of the right and left sides of the body panels. Most of the card stock should be outside the body shell after you tape it in place. Curl the card stock to the outsides of the body panels.

Insert the chassis. The card stock acts as a shoehorn to guide the chassis in place. Pull out the card stock, and you'll have an undamaged chassis and body.

Q: Kit hoods are always underdetailed, and are neglected by most how-to articles. Information about detailing them (hood pins, soundproofing, hinges, stands, etc.) would be much appreciated.

– Thomas Mifsud
via E-mail

JA: Underhood bracing can be replicated using styrene strips of various widths. Adding various holes and smaller openings typically found in the bracing makes it look more realistic.

The problem with hinges is that plastic hinges (whether modeled in open or closed position) occupy too much space, dictating the hood being glued in the open position.

I usually create the basic (closed position) flattened hinge shape with styrene strips, and space permitting, add springs made from stripped electrical wire. This is not prototypically correct, but leaves the possibility to display the hood in open or closed position. Some newer kits come with hinges that may be adaptable to other subjects as well.

Pins and stands are best made from sewing pins or stripped electrical wire.

Don't forget to add heater or air cleaner vent grilles on the underside of the hood; these can often be created by foil-copying the detail on the outside, then gluing the copy to the underside.

Because of the different material thickness in 1/25 and 1:1, it is often simply impossible to add all the correct three-dimensional details.

Marc Havican: You might use strip styrene to create raised detail. For soundproofing, spray a couple of coats of Scale Motorsports Faux Fabrix and then paint with a flat color. Model Car Garage is a great source for a variety of hinges and hood pins.

DH: The steel bracing on the undersides of racecar hoods is simple to replicate with .030" x .030" styrene strips. There are also photoetched hood-hinge kits for street cars and racecars.

Q: I've had problems making headliners on my car models. I've tried flocking, painting to match the interior, and painting them to match the exterior. I would like to see what the group would come up with.

– Mike Kucaba
via E-mail

PC: If you have the patience, Mike, try masking the headliner and building up coats of overspray – yes, that stuff that builds up inside your spray booth! Apply successive coats of spray mist until there's

Drew Hierwarter added strip styrene bracing to increase the realism of this NASCAR model's hood (see "Working with styrene" in the October 2005 *Scale Auto*).

a nice texture. Gloss paints work best here, and when you have achieved the level of texture you wish, top it off with your favorite headliner color. This technique works well on seats and other areas of a model too.

MH: A lot depends on the scale of your model, Mike. Flocking has a bit too much texture and would be out of scale on a 1/24 model, but it might work on a 1/12 replica. Check out various fabrics at a local discount store or fabric store, but careful masking and flat acrylic paint would probably produce the best results.

Q: I would like to find out about methods of handling gauges, radios, and the rest of the dash. How do I make mine look realistic? My painting technique just does not come up to the standard I would like to have.

– Several readers

JA: A small drop of epoxy on top of a printed gauge face can be used to replicate the gauge glass.

JD: Lay down a piece of Bare-Metal foil over the areas that will be done in bright work, then airbrush the primary dash color over the entire area. When the paint is dry, you can burnish it away from the high areas with the edge of a toothpick to expose the chrome look.

MH: Why not borrow a page from our military modeling brethren and try dry-brushing? Paint the dash in its base color and allow it to dry. Dip the brush lightly into a lighter-color paint and wipe most of the paint on to a paper towel until there is barely any left. Gently drag the brush across the raised detail. Don't cover the entire knob or trim ring at

once. Wait a few minutes and repeat the process, gradually building up the color.

Q: I always have issues trying to paint small details. No matter how well I try to steady my hand, detailing these items is always a chore. Do you have suggestions on trying to steady a hand? Types of brushes? Tools?

– Michale Dela Cueva
via E-mail

JA: Small details can be painted with a brush, but also with a small, sharp, pointed piece of relatively thin cardboard. The cardboard's porosity acts in a similar manner as a pen, absorbing paint that can be then transferred to the desired area – like writing with a pen.

PC: Use a magnification aid for getting down to the real nitty gritty of detail painting. I use an OptiVisor with a No. 3 magnification lens. This unit mounts on your head like a sun visor, and allows you to keep both hands free for painting or detailing.

JD: I use tiny spring clothespins that I found at a craft store. They look just like full-size clothespins but are only about 3/4 inch long. They can hold model parts in the smallest locations, and you can modify the tips with a file or sandpaper.

I have a few of these mounted to the ends of small bamboo cooking sticks. I really don't know how I have lived without them for so long!

AK: You need to fix your elbow; lay it flat on some support, such as a book or a pile of magazines.

Minimize vibration transition to your brush; use soft grips on your brushes, or buy brushes with grips on the handle. ■





Roundtable 6: (Almost) Perfectly Clear

Dealing with decals, gluing glass, and more



Q: What do you do when the decals you are about to use are in rough condition: cracked in several places, yellowed overall, or lifting off the sheet?

—Mark Doolittle
via E-mail

Pat Covert: Buy another set in good condition or scan the decal sheet, retouch the art in an easy-to-use software program (such as Photoshop Elements or Corel Draw), and print a new set using the waterslide decal papers that have recently become available.

Matthew Usher: If they're cracked or lifting off the sheet, they're probably too far gone. If they're intact, but yellowing, there's a chance they can be saved.

Place the decals in a resealable plastic bag, and tape the bag inside a window that gets plenty of sunlight. Check the decals every day. It may take weeks, but often the sunlight will remove the yellow tint from the sheet.

(The plastic bag protects the decal sheet from condensation. Moisture is a decal sheet's worst enemy.)

If you're worried about old-but-intact decals cracking when you apply them, give the sheet a coat of Microscale Liquid Decal Film. It's easy to apply with a wide, flat paintbrush, and it does a nice job of reinforcing old decals.

Q: The color has faded on some of my old decal sheets. Can anything be done about this, aside from scanning them and "correcting" the colors in Photoshop?

—James Russell
via E-mail

Jim Drew: If you can't use Photoshop, I would go with some good, old-fashioned skill, paint, and quality artist brushes, and have at it.

Thin the paint on some kind of pal-

ette so that it will spread nice and thin over the surface of the decal. It takes a steady hand and nerves of steel, but it can be done.

KH: It sounds like you're computer-savvy enough to be able to scan, correct, and reprint decals. That's the way to go.

Make sure the colors have, in fact, faded, and that the decal sheet isn't just dirty. Swiping the surface with a moist cloth may eliminate some of the crud, and bring back at least a small amount of intensity to the decal.

Q: How can I flatten a curled decal sheet?

—Mark Doolittle
via E-mail

JD: I have used a tea kettle with steam coming out of the spout during a slow simmer. You don't want to overdo it with the steam, and saturate the paper. Try waving the sheet in and out of the steam, then quickly tape the corners of the sheet to a hard, flat surface until it dries.

DH: You could place it under a large stack of books for a couple of days, but you have to be careful. Sometimes, trying to flatten an old decal sheet that has

curled will cause the decals to crack.

Try using one as it is. After they are wet and applied to the model, they will usually flatten out and work just fine.

Q: Are there any rules of thumb about how to handle decals from different manufacturers? They don't all "work" the same.

—Several readers

PC: Some manufacturers' decals work well with decal solvents, and others do not. When in doubt, test the solvent on a decal from the same sheet that you will not be using, applying it to a piece of scrap plastic. If it works out okay, you should be safe using it on the model.

Decal solvents should not be confused with setting solution. Solvents actually attack the decal, softening it so that it will conform to compound curves. A setting solution is milder, and its purpose is strictly to break the surface tension between the paint and decal so that it slides around easier for placement.

Evan Hermel: Remember, setting solutions are *not* adhesives! They're softening agents to get the decal to lay snugly on the surface.

Always make sure that the surface is

glossy, so that no microscopic air bubbles become trapped under any clear areas of the decal, resulting in silvering. Larger bubbles can be released while the decal is still wet by poking it gently with the tip of a hobby knife or a needle.

MU: When I'm not sure about a manufacturer's decals, I take a look at the sheet and find a marking that I'm not going to use, or that I can live without. I'll test that one before I move on to the rest of the sheet. Often the manufacturer's logo and copyright block are decals, and those are perfect for tests.

Q: Getting decals to lay correctly on complex surfaces has always been a problem for me, even with setting solution. I'm sure I'm not the only one who has built a decent model, only to ruin it with a mangled decal job.

— Steve Calpino
Doylestown, Pennsylvania

Tim Boyd: It sometimes helps to separate parts of a single decal, using a sharp (read: "new") hobby-knife blade. You can then put these down with less chance of wrinkles, if the decal has logical places to separate the component markings!

KH: Make sure the surface is as smooth and shiny as possible. We rough up the surface of a model to apply paint (so the paint has something to grab), but decals grab better on a smooth, glossy finish.

Setting solutions, which soften the decal film and cause it to tightly hug the surface, will help, but sometimes you might have to make relief cuts in the decal to get it to lay right on really complex surfaces.

So you don't accidentally smudge or tear the decal, work slowly and carefully on one section at a time, and let that section dry thoroughly before continuing onto an adjacent area.

AK: Use good, fresh setting solution, and apply it liberally. Heat also helps to conform decals to curved surfaces. I use a hair dryer on a low setting, or the hot-towel method.

The hair dryer is pretty much self-explanatory: you put some setting solution on the part, place the decal on, add more setting solution, position the decal, and when it starts to wrinkle, blow a little bit of warm air on it. Look carefully, and add more setting solution with a soft, wide brush as needed.

Or you can use a hot towel to press decals to conform to the surface. Prepare the surface, place the decal, and allow it to set in place.

Wet a towel with hot tap water, wring



Curled decal sheets can be sprayed with water on the back side; a towel warmed with an iron can help decals lay down properly.

out the towel, then place the hot towel firmly over the decal (do not move it around). Remove the towel, and the decal should conform to the surface, but you may need to repeat this step.

If you don't want to mess around with hot water, try warming the towel with an iron instead.

Q: I need some help getting started making decals on a computer. I want to make law-enforcement decals.

— R.L. Leslie
via E-mail

EH: I make the designs in Microsoft PowerPoint, size the file to match the paper size, *always* print a test onto regular paper, and simply print off the decals. I try to fit as many logos and images onto a sheet as possible, to maximize its use.

MU: Micro-Mark (www.micromark.com) sells decal paper that can be used in Inkjet and color laser printers. You can create decals using graphic-design software, then print them onto decal film.

Q: Can the group discuss installing clear acetate windows and windshields? I'm talking about making and cutting out templates from acetate and gluing them in place. What type of acetate and glue should I use? And how do I hold the acetate in place while glued?

— Jim Polli
via E-mail

Juha Airio: For curved glass, .010" acetate is the best choice. The exact chemi-

cal nature of commercial acetate sheets is not usually given; I use cellulose acetate from an art-supply store, but polyethylene phthalate and clear PVC can be used as "acetate" too.

For straight (uncurved) glass, clear styrene sheet is the best choice, as acetate may yellow and warp with time; clear styrene tends to form hairline cracks if bent, so it cannot be used on heavily curved areas.

Carve channels inside the body around the window opening where the new "glass" will go, then cut the acetate sheet slightly larger than the window opening; carefully remove material from the acetate until the "glass" fits tightly enough to stay in the channels without glue.

For gluing, I recommend a few small drops of superglue; capillary action will suck the glue in the joint but won't fog the glass. However, if any fog develops, it can be removed with model wax.

After the superglue has set, secure the glass with epoxy. If the fit is tight enough, the glass will usually stay in place without holding. If not, place the body upside down on a workbench, then force the glass from the inside in the correct configuration with the fingers of one hand, leaving the other hand free to feed the glue with a toothpick to the joint between the glass and channel.

There is no need to use force on straight windows, and in these cases, no channels are usually needed either.

Mark S. Gustavson: I have black-and-white film developed in a film shop

(a good shop can impart a range of “tints” to the unexposed film to fit a particular need). Also, get some of the larger-format 120 film and you can get a larger “glass” surface for your model.

I don't know about the glue, since I've held such “glass” in place mechanically.

I don't like acetate; it has a texture and “grain” to it that doesn't look realistic.

AK: I use Evergreen clear plastic sheets; they work great. I use 40mm Tamiya masking tape to transfer the shape of the window to plastic. When you're cutting the plastic window, leave about 2mm extra clear acetate to mount the window inside the body.

I end up making two windows: one for testing purposes, and one (identical to the first) for the installation. The one that you use for testing is usually pretty scratched and bent by the time you make the correct groove!

Q: I have mega trouble gluing in the windows/windshield every time I make a model. Any tricks to do this would be appreciated.

—Rich Williams
via E-mail

TB: I will sometimes apply a thin coat of mixed five-minute epoxy, then wait until it is just about dry (ultrasticky) before placing the clear component in place and holding it there. This is a bit tricky and requires practice, but works well for me.

PC: Make sure your hands are clean. You can grip the plastic better and are less likely to impart oil onto the glass, which can repel certain types of glue.

If you're worried about having to position the glass, use an adhesive that dries slowly: white glue, clear enamel paint, or modeler's cement.

The best way to install glass is to hold the clear panel into place with one hand and apply the glue with the other. An alternative is to tape the glass in place on the opposite side you will be gluing.

Always apply glue sparingly when working with windows; apply the adhesive with a fine paintbrush or a toothpick, whichever suits the adhesive you choose to use.

Be sure to allow ample time for the glue to cure before continuing your building, or you'll find yourself reinstalling the glass — and that ain't no fun!

MSG: Never use instant-type glue — the fumes will mar the clear plastic — and don't use any solvent, because solvents will just soften the clear plastic and any

adjacent plastic panel.

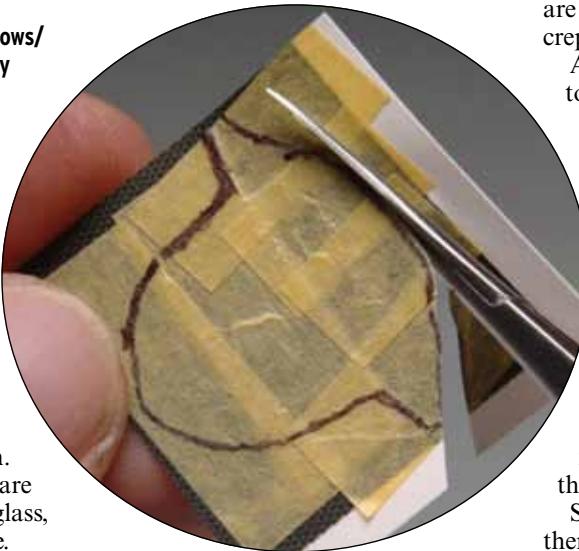
I use Microscale's Micro Kristal Klear because it dries clear and doesn't “fog” clear plastic. You can also use very small drops of two-part epoxy. Both glues take a while to set up, so be patient.

KH: I frequently use clear report-cover sheets from an office-supply store.

To make a windshield template, cover the windshield opening with masking tape, then trace the outline of the opening onto the tape from inside the body.

Remove the tape, trim it almost to the line (so the cut tape is a little larger than the window opening) and use that as a template to cut the acetate.

Test-fit the acetate, do any final trimming, then tack it into place with clear five-minute epoxy. Hold the “glass” in place with little tabs of tape until the epoxy dries.



Marc Havican used Tamiya masking tape to make a pattern for a carbon-fiber decal, then transferred the tape to the decal sheet and trimmed to shape with scissors.

DH: Use Microscale's Micro Kristal Klear. It's slow-drying, so you have time to adjust the fit, and it dries clear, so you can't see smears or smudges.

Q: I also have trouble painting around the windshields. Cutting around the windshield with a No. 11 blade is where the buck stops. I can never get a smooth cut all the way around, because many windshields do not have a molded-in crease to follow.

—Rich Williams

JG: Instead of a larger piece of masking tape cut to correct shape, I suggest using strips of Bare-Metal foil for masking.

For a regular windshield, cut four

strips of BMF (about $\frac{1}{4}$ inch wide and slightly longer than the windshield) with the help of a ruler and a fresh scalpel blade, and attach them to the windshield, leaving the area to be painted free.

There will be overlapping foil strips in each corner, and these will have to be cut off; however, because you only have to worry about getting the corners right while cutting, it is easy to get satisfactory results — in part, because the scalpel blade is much sharper than a regular hobby blade.

If there is no frosting around the windshield, I suggest gluing the glass in place before painting it, in order to help determine how wide the black strip around the glass should be, and to help attach the foil straight.

PC: Start with a good masking medium that will provide a crisp edge. I like 3-M Fineline tape, or airbrush frisket; these are less likely to bleed than standard crepe masking tape.

Always use a fresh, sharp hobby blade to prevent snags when cutting, and keep the blade at approximately a 60-degree angle, so you can see your work better and keep the cutting edge on track. A low angle tends to track off in a straight line and is harder to control.

Go slowly, especially around those curved corners, and use a magnification aid if the work is extremely delicate.

KH: Use a set of dividers to score a fine line around the windshield (or the window opening on the body).

Set the dividers to the desired width, then place one end of the dividers against the edge of the windshield, and drag the divider around the glass so the other leg scores a fine line in the glass.

Use that scribed line as a guide for your masking material.

AK: The trick where you cut it with a No. 11 blade has never really worked for me. Even folks with steady hands have trouble cutting straight lines sometimes.

I always use Tamiya masking tape for this purpose. Tamiya makes a tape in 6mm rolls, and it bends very easily around the curves, corners, etc.

Mask the trim with the tape, burnish the edge with a burnishing tool or a toothpick, and mask the rest. Then carefully spray the trim, and remove the tape before the paint dries.

I usually use Tamiya X1 Flat Black acrylic paint for the trim, because I find that it can be buffed to a realistic rubber sheen. ■