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HOT ROD



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THE NEW BUILD-IT-YOURSELF ROD THAT HANDLES

**HOW TO
PREP FIBERGLASS
FOR PAINT**



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HOT ROD WHERE IT ALL BEGAN

RACE ROD

You know of Factory Five Racing (FFR) as the creator of you-assemble-them roadsters (don't call them Cobras—Shelby gets really territorial), Daytona coupes, and the GTM supercar, but its new car is a whole other ball of wax.

FFR owner Dave Smith had always sworn he'd never create a street rod kit, since he hated the way the typical rod rode and handled. But when his director of R&D, Jim Schenck, came

to him with a new idea for one, it was obvious what needed to be done. Schenck designed a tube-chassis car that handled like a son of a gun and wore a '33 Ford suit. In Smith's words, "Today, most guys get their parts from a variety of sources—say a frame here, a body there, a front end, and so on. Jim pitched me on the idea of using the FFR product template on the hot rod—not a donor car, but rather a complete kit with all-

new parts save for running gear."

The Hot Rod kit costs \$19,990 and comes with everything except an engine, a transmission, a rearend, wheels, tires, a battery, a fuel pump, and paint. And, of course, you have to assemble it. The option list includes a removable roof, a few different styles of fenders, and upgrades for suspension, brakes, and some other stuff. The frame is set up for a small-block or modular Ford, but with a little fabrication,

you could probably stick anything under the hood. Factory Five estimates just under \$40,000 to build a complete car, and that sounds about right. Obviously, the more you can do yourself (like paint and engine building), the more affordable it gets.

We got all excited about the concept of a cool street rod that actually handles and then got really giddy when we heard the specs on the car. A completed car weighs right around 2,100



> We had Kris Horton design the paint scheme of the car to look as tough as possible.

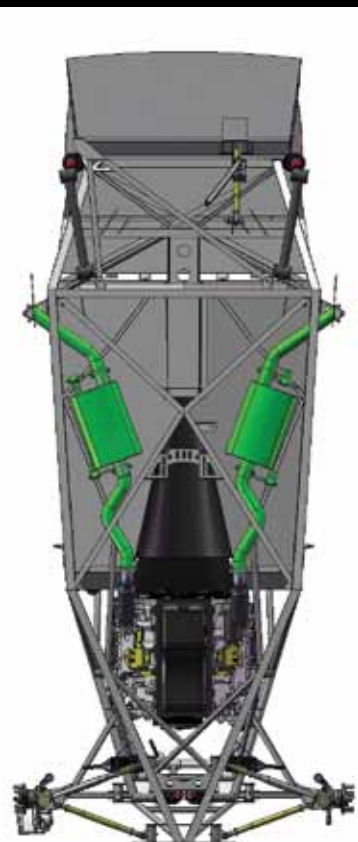
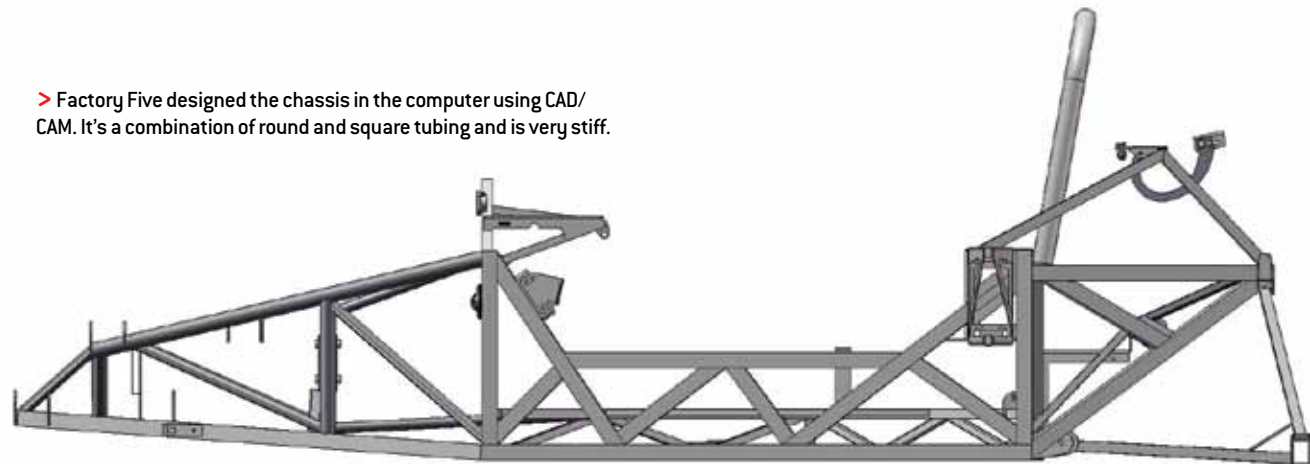
Factory Five's Latest Kit Looks Like a '33 Ford but **Handles Like an IndyCar**, and We Built One. Here's Part 1 of the Buildup: How To Prep and Paint the Fiberglass Body.

By Tom Wilson and Rob Kinnan

Photography: Tom Wilson

Illustration: Kris Horton

> Factory Five designed the chassis in the computer using CAD/CAM. It's a combination of round and square tubing and is very stiff.



> The rear suspension uses a four-link, but there is an optional three-link as well. We plan on driving our car hard at some open-track events, so we opted for the three-link. You can also see the side-exit exhaust. As you'll read about next month, we had LK Motorsports convert our car to a rear-exit exhaust.



> The front suspension uses unequal-length control arms actuating inboard Koni coilovers mounted right behind the radiator.

pounds (without driver), so with any kind of power under the hood, this thing should really haul the mail. And doing it on a road course is just that much cooler.

We wanted to build one, and thankfully Factory Five agreed and shipped a kit to LK Motor-

sports in Hermosa Beach, California. On top of that, the company put the word out to good customers and fellow FFR fans on its message board, and we made a five-day party out of the assembly. You'll read about that next month, though. This month we're cov-

> Factory Five engineer Jim Schenck did the bulk of the design work on the car and is seen here testing the prototype.



ering the bodywork and paint, which was finished prior to the buildup.

Our goal for the buildup was to do the whole thing in a week, but obviously the body and paint work take a lot longer than that, so a month or so before the build began, we sent the body parts off to Jeff "Batman" Miller at J. Miller Customs to do his paint and body magic. Miller's job was fairly straightforward: trim the as-delivered Factory Five body panels to fit, prep their surfaces for paint, and spray them in our two-tone gloss and matte-black paint scheme.

While the '33 body kit was a new experience for Miller, prepping Factory Five bodies was not. His bread and butter is working Factory Five Mk 3 roadster bodies into objects of desire. As the Mk 3 roadsters and the '33 coupe share the same fiberglass construction, the techniques needed to get the '33

body up and running were old hat to Miller.

Those techniques are similar for any fiberglass body: checking fits, knocking off the mold line joints, filling the inevitable pinholes, and then prepping all surfaces for paint. On this job, a hood bulge was added to clear the engine we were originally going to use (a blown Ford DOHC mod motor—we ended up using a tried and true Ford Racing 347), but the part we're presenting here is what the average customer does when building a Factory Five '33 coupe—or an Mk 3, for that matter.

If this prep work seems excessive, it isn't. Miller reports the Factory Five fiberglass work is quality stuff, and it's definitely superior to most. Panel alignments are good with only the occasional shift, and the fiberglass quality is high. Doors, lids, and hoods fit with minimal trimming, and the rest is simply surface preparation.

To put numbers to it, Miller says the Factory Five roadsters take about 90 hours of body shop work for prep and paint. Other brands more typically consume 130 hours. Those are roadster numbers; prepping the '33 coupe seems about the same but might take slightly longer because it has more body panels. This is especially true if choosing the optional roof panel and fenders.

Factory Five councils that \$4,500 is a typical paint job tariff on its cars; toss in half that much for body prep and the numbers add up to a realistic \$7,000 to \$9,000 if you farm out body preparation and paintwork for a quality job. Most people do, as they don't have the tools, experience, or place for bodywork and the results are so, well, public.

On the other hand, the work is more tedious than brain straining, and fine results can be obtained by dedicated first timers. If education and craftsmanship are why you're building a kit, then tackling the bodywork makes sense.

Our job was typical and



> Step one is to make sure the body panels fit the chassis and each other. A dry fit of the Factory Five kit uncovered no body panel issues, but Jeff Miller did reshape the trunk hinges for more clearance.



> With paint on the panels, this is obviously taking place later in the game, but getting the hinges on moving panels correctly aligned is part of checking body panel fit. Here, Miller uses a paint stir stick as his panel fit gauge. Typically, a bit of edge trimming of the door or lid sets the panel gaps equally around the opening. Nubs and resin globs are the typical offenders, but occasionally, slightly altering a door or lid edge is required. Quick grinding or sanding does the trick.



> Out of the box, the raw body panels are marked by mold parting lines. These are where the various sub-panels were joined to form a fender, or a roof panel in this case. They look hideous standing up in a jagged line, but they buzz off easily enough and are an unavoidable characteristic of fiberglass construction.



> Parting lines are taken off using a simple grinder fitted with an 8-inch soft pad with 36-grit paper on the business side. Spinning 3,600 rpm, the parting lines vaporize in a haze of black gelcoat dust. As Miller Custom employee Jose Castillo demonstrates, breaking through the dark gelcoat reveals the lighter fiberglass underneath. Material is taken away in a hurry by the 36-grit pass, and you don't want to overdo this step as you'll only have to fill in the scratch marks. Feather the grinding pass a couple of inches out from the seam.

**"We figured we could build a car that backed up its performance looks with more than just straight-line speed but would handle and stop just as well as a modern supercar without compromising any of what makes these cars fun in the first place—the style."
—Jim Schenck, Factory Five Racing**



> Expect to find a few thin spots and air voids with the initial seam grinding. You need to rough these up so they'll provide some tooth for the filler material to adhere to, but there's no need to dig the hole any deeper than it is.



> Fiddling too long in one area can dig holes, especially if you're chasing an imperfection. Here the paint-stick straightedge shows a low spot that'll get smoothed with polyester filler—a good example of why you want to be thorough. There's no need to make extra work for yourself.



> Next, body filler is applied across the width and length of the seam. This action fills low spots with material with minimal chance of creating voids. The filler is a two-part, hardening polyester material. Various colors and brands are available, and selecting a contrasting color to the job helps because you can more easily see what's happening during the sanding phase. Some people glob the stuff on, but this only makes more work when sanding it off. It's "absolutely worth the time," to spread filler evenly, Miller says.



> A close look at the finished filler application shows it's generally smooth, with only the occasional small glob and relatively faint seams. This will sand easily.



> Now the filler is made smooth using a double-action sander and 80-grit paper. The sander is run along all the filled seams to get them generally smooth, and then the entire panel is roughed with the same 80-grit. Make sure the filler is smoothly feathered at its edges as Castillo is doing here.



> After the filled seams and general panel area are roughed with 80-grit and the DA sander, use a metal tool to trace along the panel edges. Press the tool along, looking for soft spots—voids—that will break out. If you find any, dig out loose material with a small grinder, then fill it with polyester. Sand as necessary, then spray the entire panel with polyester gray primer.

complicated only by the custom hood bulge and two-tone paint. Factory Five supplied the hood bulge to Miller, who 'glassed it into the stock hood using a bit of eyeball engineering to get it placed just so. This was done by cutting a hole in the hood sufficient for the bulge to fit into, then 'glassing the two together. Miller laid out the cut so the seam would be easiest to work with, about 3/4 inch out from the bulge proper. Another fitment job was a simple reworking of the trunk lid hinge brackets for more clearance. Other than that, only the most minor of edge filing was needed to perfect the fit of the various doors, lid, and hood.

The rest, as we said, is about 80 hours of sanding and painting as detailed in the photos. But once finished, the results are nothing less than transformational. Now that it looks so good, we can't wait to get the body onto the chassis. Come back for that story next month.



> One reason bodywork isn't such a popular pastime in suburban garages is the messy process always ends up looking something like this. Once the polyester primer dries, block-sand it with 150-grit for a general smoothing. You'll uncover a few pinholes; fill and sand the holes, then reprime everything with urethane primer. Then block-sand everything again with 320-grit. You'll want a guidecoat—mottled black—on the surface to indicate what's been sanded at this point.



> For the final smoothing of the primed surface, wet-sand the entire body with 600-grit. This makes a wet mess, but flushing with water lets you see the work progressing. Getting the primer to a scratch-free, even, matte finish is the goal.



> And now for the artistic part. With the hood, body, and trunk lid carefully mocked into their final relationship, Miller begins laying down fine-line tape where he wants the break between the gloss and matte-black paint.



> Applying our two-tone gloss and matte-black scheme requires mocking the body a couple of times. Here Miller and Castillo carefully assemble the bodywork on stands, so the final step—applying the matte black—can be accurately laid out. It's worth noting the chassis was never at the paint shop, so all the lines and paint breaks were established like this. Set all panel gaps as carefully as possible for this step.



> "Tape twice and paint once" could be the two-tone painter's credo. No matter how much doodling and planning takes place on paper or a computer screen, being there when the tape lines go on is the only way to account for the complex interplay of body lines and paint breaks. This is the last time Miller can adjust his paint lines, so he gives the body a critical visual hose-down.



> With the break between matte and gloss black set, a 6-inch-or-wider secondary masking job goes on. This doubling up on masking paper over the edges of a finish paint coat keeps solvents from leaking through the paper and causing evil to the first finish coat below.



> Miller's final step is to spray black epoxy sealer over the feathered edges of the gloss-black paint. That's because the gloss paint is still fresh and sanding it can release solvents that will foul the matte black he'll be spraying in a few minutes.

> Finally, with all parts hung for easy access, the matte-black paint goes on. We took Miller's helmet and fresh-air breathing apparatus as our sign not to linger in the paint booth. Besides, our Nikon is already black.

> With the paint dry, the masking paper can be pulled off, leaving crisp lines between the colors. As always, there's no magic in a great paint job—just endless preparation and attention to details. Once the car is assembled, we'll lay on the red pinstripes.



> With the doubled-edge masking paper in place, the general run of masking paper is applied. On smaller areas, such as the narrow edges of the window frame, Miller skips the paper and tapes the whole area. Getting the edges down firmly is important to avoid paint leaks.



> Lap joints are for roofers; painters always need to feather any point where sprayed layers join or the hard line will show through the finished paint. Miller does this dry with the double-action sander and 500-grit paper. Be very careful not to brush the tape with the sander or paint will definitely leak through, causing a wavy edge. It's best to stay an inch away from the tape.



> Miller uses this nifty dryer to speed away residual water so he can get on with painting the '33. The dryer is just a venturi that augments the shop's compressed air with ambient air. It helps limit the number of towels that get wet and dirty drying the car and works fine for water-based paint jobs.



> Finish sanding by hand-working very near the edge of the tape, switching to Scotch-Brite right at the tape line—you can't afford to notch the tape with sandpaper. Where the painted area is narrow, do all sanding by hand, as power tools will dig into the soft primer and slide over the much harder paint. These final steps can be done wet. Finally, give a quick Scotch-Brite rub over the whole car just in case an insect landed there. After that, quickly wash the entire job with fresh water to clear all dirt, bugs, sanding dust, and so on.



SOURCES

FACTORY FIVE RACING; Wareham, MA; 508/291-3443; www.factoryfive.com

J. MILLER CUSTOMS; Temecula, CA; 951/676-0191; www.millercustoms.com

