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HOT ROD WHERE IT ALL BEGAN

NO BULL

Ride Tech's Bret Voelkel built a Supercar-Shaming '33 Hot Rod, and We Tested It.

[1] Exotic Racing (ExoticsRacing.com) in Las Vegas has been very cool to us, letting HRM use its Lambo, its driver, and its track. You can join a session at Exotic Racing to drive any number of high-end supercars.

Elana Scherr
Wes Allison and Jessica Walker


Factory Five Racing

Poor little Italian supercars. We just can't stop picking on them. Are we bullies? Is it just meanness that makes us beat up a Lamborghini Gallardo with Bret Voelkel's RideTech '33 Factory Five Hot Rod? Nah, we just want to show you that it isn't just imported supercars that can tear up a track, and sometimes a kit car and some clever upgrades are all you need to build a formidable bullfighter.

Suspension company RideTech has a whole stable of impressive R&D cars. A quick web search brings up a long list of the company's muscle cars, from Mustangs and Camaros to wagons and even AMCs, all of which have claimed trophies and honors at various autocross and Pro Touring events around the country. Bret wanted more. He wanted to build something more traditional in appearance but with all the modern handling and power that Pro Touring muscle-car owners have embraced. What he ended up with was a '33 Ford Factory Five kit car that went way beyond the initial plan, becoming a serious racing machine capable of tackling Italian grudge matches as well as our most recent HOT ROD Flog Test. This is the car that outran the Lamborghini Gallardo LP-550-2 on Exotic Racing's test course in Las Vegas, as seen in the test of Factory Five cars in last month's issue. We had to know how it was done.

Originally, Bret planned to just "build something light, throw something together, and go fast," so he started with a Factory Five '33 chassis and body and some leftovers from the RideTech shop. Of course, Bret's leftovers tend to be a little more exotic than most—unless you happen to have aluminum blocks, NASCAR transmissions, and six-piston brakes just lying around in your storage shed. The car very quickly succumbed to what Bret calls "the 'what-if' syndrome." What if we tried this? What if we changed that? The RideTech team made many changes from the original Factory Five kit, some for more performance, some for increased safety, and some just to show off. You do these sorts of things when you have a complete CNC machine shop, sheetmetal fabrication facilities, and a group of talented builders who never know when to stop.

The fiberglass body kit and custom sheetmetal interior pretty much covered the "light" part of the original build plan—the complete car is a featherweight 2,590 pounds—but Bret still needed some horsepower. He found it in a 427ci Ford small-block built by Sunset Racecraft. Bret says the focus of the engine was a "big, fat torque curve," and we saw that in our dyno results—where the torque topped 400 rear-wheel lb-ft from 3,240 rpm all the way up to nearly 6,000 rpm—and in the track tests, where our driver reported that the car pulled well at both low- and high-rpm ranges. The basics of the engine are an aluminum Dart block topped with hard-core Brodix/Al Neal heads and a Holley Dominator EFI. RideTech did some custom work on the fuel rails, accessory drive,

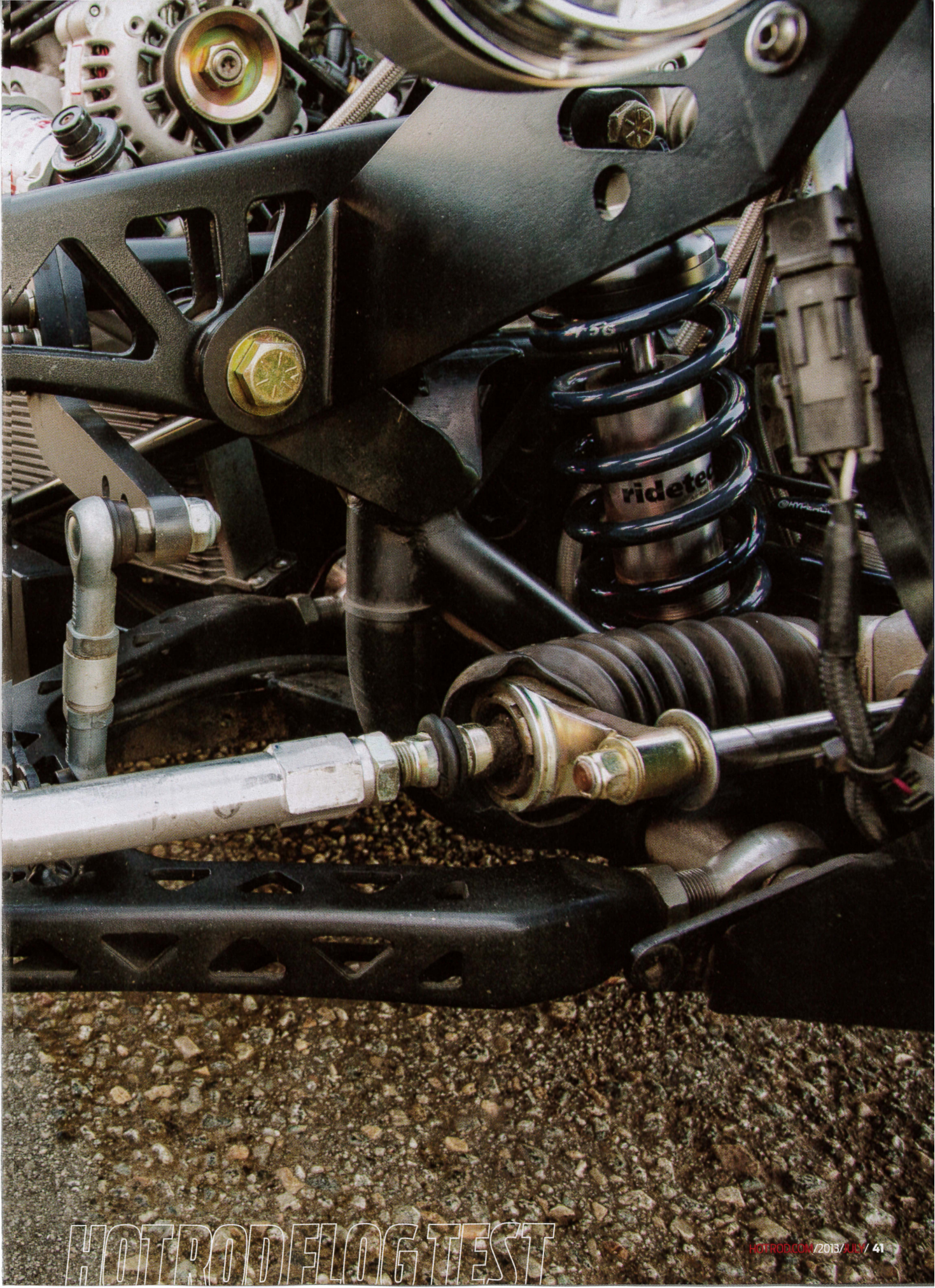
and cooling system since there was little chance of finding off-the-shelf parts to fit in the chassis. Fabricators Greg Schneider and John Hochegsang built the mounts for the alternator, power steering, and the thermostat-housing mechanism. Brake and clutch reservoirs are Ring Brothers components on more custom mounts. Greg built the stainless headers and the oval, stainless exhaust system and then turned it over to Kurt Blackgrove for the stainless exhaust tips. Even Flowmaster did custom work for the car, providing Bret with a set of specially sized mufflers, also in stainless steel.

These days, nobody wants an automatic in their race car, but we aren't all so lucky as to have a spare magnesium-cased, clutchless four-speed on the shelves. The Rankin transmission came from Jasper Engines to Bret's shop as a leftover from Jasper's NASCAR racing days. "Clutchless" is sort of a misnomer: A driver still uses the clutch pedal to start the car moving, or around tight corners, but most shifts can be done without use of the pedal. Bret took some time figuring out the best clutch disc to use in the car; the original choice of a 5.5-inch carbon unit seemed cool, but the light clutch and the high horsepower made the power delivery hard to control. "It was a conscious effort to not spin the tires on corner exit," Bret explains. "It made the car accelerate violently. It was interesting, but unpredictable." Eventually, he replaced the finicky, small disc with a Centerforce DYAD dual-disc, and says it made all the difference; the car became a well-behaved racer—which isn't to say that it's mild mannered, as HRM staffer Brandan Gillogly found out when he got behind the wheel in Las Vegas before the Lamborghini matchup. "I had no idea I was approaching the limits of the car," Brandan says. "It just kept getting faster and faster, and then the rear end decided it wanted a better view of the racetrack, so it came around." This is why we don't let Brandan drive. Our official driver, pro drifter Mike Essa, found the '33 to be nicely balanced, with neutral steering characteristics and a flat, even cornering ability.

The rearend is a Winters quick-change, with a 4.56:1 ring-and-pinion and spur gears that can alter the final drive from 3.01:1 to 6.11:1. Bret chose the quick-change more for his own amusement than out of actual need. "I'd never used a quick-change before," he tells us, "But I wanted to try one for the light weight and the tunability of quick gear changes. In reality, we've only changed gears two or three times and have found the current 3.04s to perform the best."

The brakes use more goodies from previous projects, with Baer six-piston calipers fitted with Hawk blue pads and 14-inch rotors. They are quite effective, with Bret reporting 110-foot stops from 60 mph. He won the Speed-Stop Challenge at the Optima Invitational in 2012 and regularly brings the '33 back down to cornering speed on straightaways from up to 150 mph. "Every time I do that, I

[RideTech used the Factory Five front spindles and attachment points for the control arms, but the arms themselves are custom built to be functional and attractive. Bret says it took about 70 hours of CAD work, cutting, welding, and finishing.



want to give Hal Baer a big 'Baer Hug,'" he says.

Inside the car, a Racepak dash gives the driver all the necessary info once he's parked in the modified and leather-trimmed aluminum Kirkey seats. Bret says he has yet to explore the full potential of the system's options, choosing mostly to leave it in "street mode," which displays basic mph, rpm, oil pressure, water temp, and fuel level. He doesn't even bother checking oil pressure because he says it never changes. The car is controlled via Tilton pedals and an ididit tilt steering column, and passengers feel nice and safe enclosed in the full stainless rollcage. RideTech offers a bolt-in stainless 'cage for muscle cars (see TigerCage at RideTech.com) but had to fab up the bars in the '33 from scratch. The rest of the interior is also one-off, and Bret estimates they have more than 500 hours in the insulated aluminum panels, trim, hinges, bezels, and 'cage. Positioning the steering wheel, pedals, and shifter were also time-consuming elements. There's nothing kit-car about anything inside the Factory Five shell.

So we know the car is fast and that the interior should be featured in a Steampunk decorating magazine, but what really makes it special is the handling. Bret used the '33 as a test bed for some suspen-

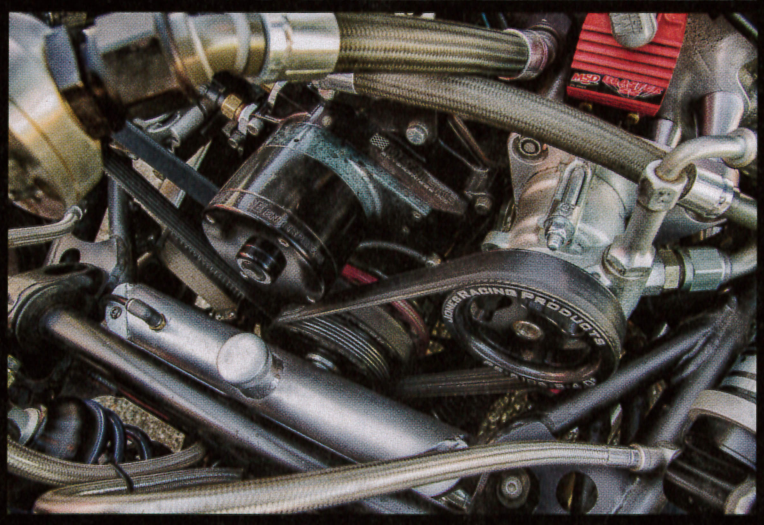
[The original shifter linkage was too close to the driver, so the shifter is moved back 8 inches and toward the right, just over the front U-joint.

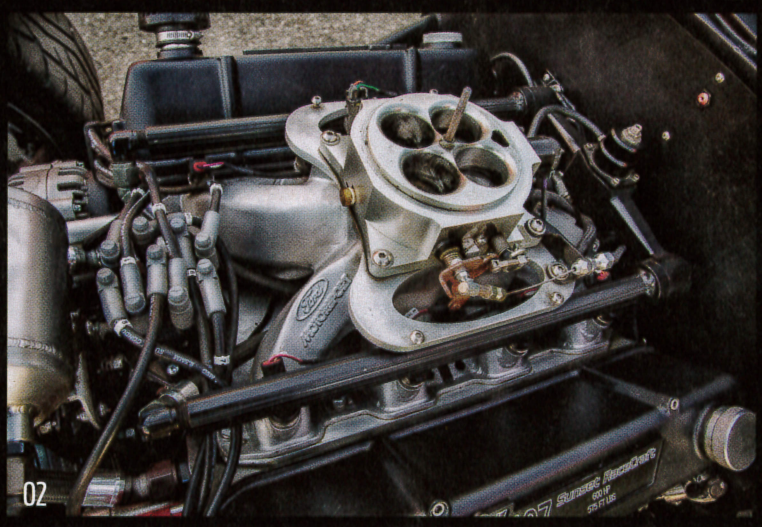
[On the other side of the triple masters is a Tilton floor-mount clutch and brake-pedal assembly.

sion ideas he'd been mulling over. The rear wishbone design consists of two bottom links and a single A-arm on the top to control both lateral and axial rotation. On paper, the rear roll center seems a bit high, something that engineering students would tell you causes instability, yet in practice the car is stable, predictable, and fast. This willingness to experiment with setups that seem outrageous on paper is one of the reasons RideTech systems can be found on so many winning builds. Bret says these kinds of results are why they build and test cars rather than relying solely on computer data.

In the front, the original Factory Five mounting points are kept, but Bret wanted to showcase the suspension, so RideTech built lovely, lightened upper and lower control arms with Delrin bushings and replaceable ball joints. A huge change from the Factory Five setup was altering the steering system from a manual rear-steer rack to a Woodward front-steer power-steering system. Because it was a completely custom installation, the guys were able to rearrange the rack location and steering-arm design to reduce the bumpsteer to less than 0.050 of an inch through 6 inches of suspension travel. The result is more than capable of bossing around the 315mm Falken Azenis on 18x12 Forgeline CF3C wheels.

01





02

BEHIND THE FLOGGING

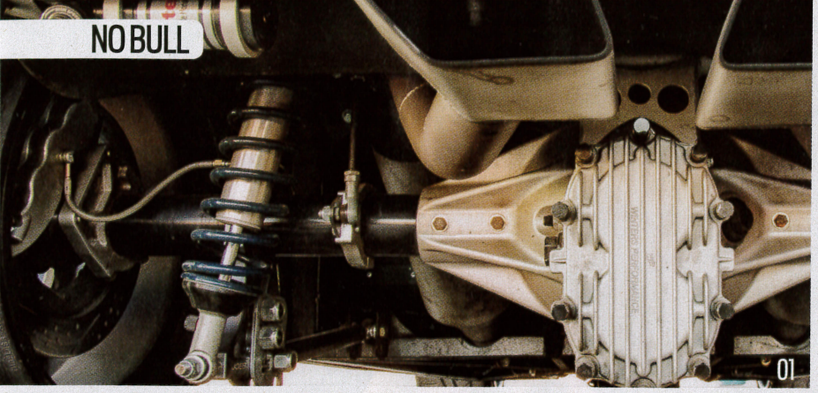
Our HOT ROD Flog Test series of car reviews began in the March '13 issue, and up until this month, the handling portion of the program was held at our own autocross on the old runways of the former Marine Corps Air Station El Toro. Our deal there is kaput, so handling testing has been moved to the Streets of Willow track at Willow Springs International Raceway, which has been in Rosamond, California, since 1953. We run the short version of the track. Having this facility will give us much more consistent results as well as a better point of reference for cars' performance. Our dragstrip testing happens at Auto Club Famoso Raceway near Bakersfield, California (site of the March Meet), and the chassis-dyno testing is at Westech Performance in Mira Loma, California. — David Freiburger

01 | Bret says the original engine plan for the car was an Ecotech four-cylinder, but when they realized the 427 Dart block was nearly as light, they had to go V8. We're glad they did.

The Factory Five setup uses heavy spring rates to control roll, and no sway bars. Bret felt that created a sacrifice in road comfort, so his team cut the recommended spring rate in half and built front and rear sway bars. The result is that the car not only performs well on the track, but it also rides comfortably and is very tunable to a variety of track conditions via shock, sway bar, and tire-pressure adjustments. Since the car is mostly used on autocross tracks, that is its usual setup, but for our dragstrip date, the guys adjusted the shocks and tire pressures to softer settings.

The road from build to bull-beater wasn't smooth. The team ground the teeth off distributor gears, wasted a clutch, chattered tires in the front, and suffered electrical gremlins as they tested the car at various Goodguys events, Optima races, and road trips. One of the reasons we at HOT ROD encourage people to drive so vigorously is because it's the best way to find and fix all the weak points in a project car, a philosophy Bret completely agrees with. By the time we had the car at our Flog Test, the RideTech guys knew it inside and out, and Bret had no doubts that it could match up against any supercar. "Heck, I'd run it against an F1 car just to see how we'd stack up," he says. Think we can get one in time for our next test?

02 | The small-block is fed by a Holley Dominator EFI, with custom fuel rails and a regulator built by RideTech. MSD controls the spark from a crank trigger.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HOT ROD UNLIMITED

SEE THE VIDEO!
Watch the RideTech Car school a Lambo in an episode of HOT ROD Unlimited. Go to YouTube.com/MotorTrend and search for "HOT ROD Unlimited Episode 27."


02


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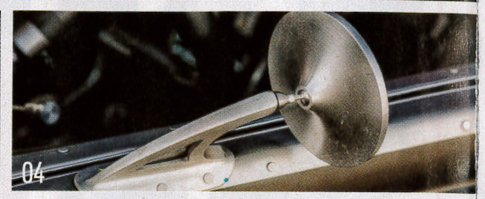
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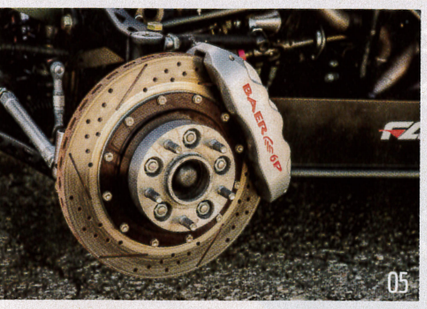

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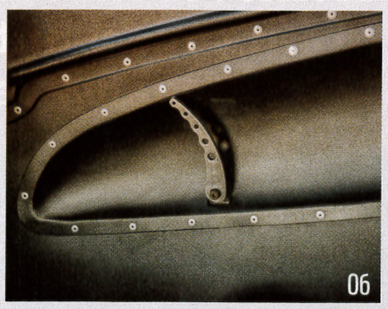
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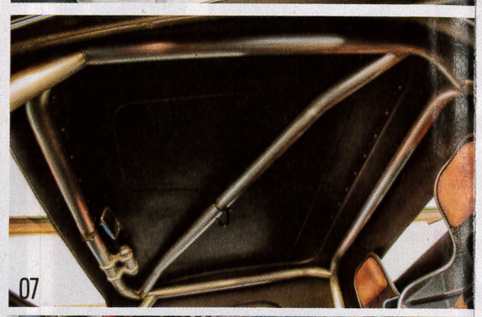
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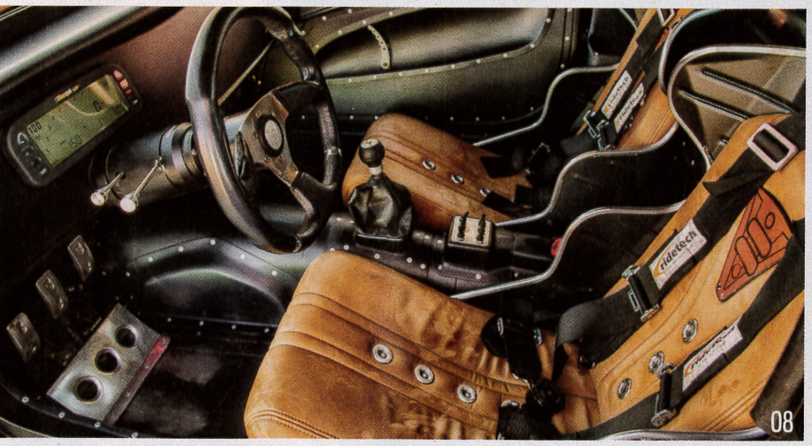

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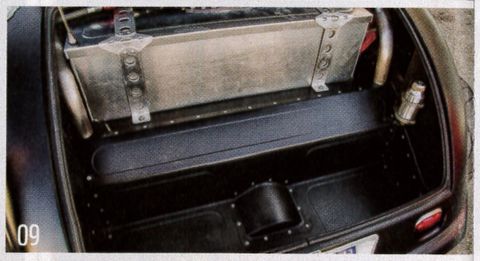
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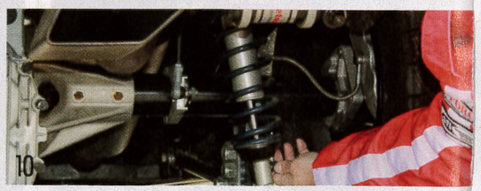
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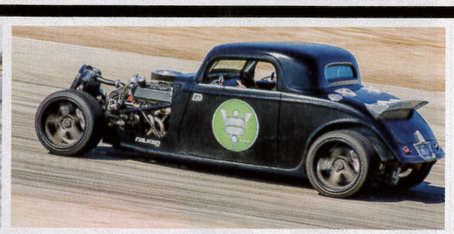
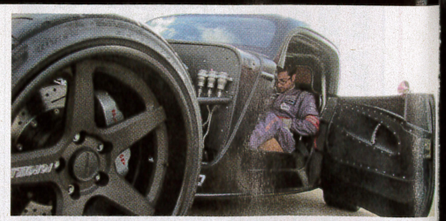
[RideTech had to move the radiator and grille shell forward 5 inches to clear the front steer rack.



[On the road course and the skidpad, Essa says the '33 was responsive, with little body roll in the corners and good, even power delivery in the straights.



[Mike Essa had never been in the seat of the RideTech car before the Lamborghini matchup in Las Vegas, but he's a quick learner.

01] Bret says the quick-change doesn't get much use. The car is so light and the torque curve so broad that it goes well with almost any of the common ratios. Currently, they are running 3.04s that puts cruising rpm at about 2,800 at 75 mph.

02–04] All the little details around the car are custom made, from hinges to the side-view mirror.

05] The six-piston, 14-inch Baer Brakes are overkill for such a light car on the autocross, but they clearly work, bringing the '33 from 60–0 in 110 feet.

06] The interior is made up of a layer of aluminum, topped with a layer of 3,000-degree insulating material, a layer of plywood, another layer of temp insulation, and, finally, the finishing top skin of aluminum.

07] Bret says 304L stainless is his preferred material for rollcages because it has just the right amount of yield to absorb energy in case of a crash. Also, it looks really nice. RideTech's Greg Schneider did the bar work for the '33.

08] Bret is a not a small man, and he wanted to be comfortable in the car, so rather than using the Factory Five pedals, steering, and shifter locations, the RideTech guys adjusted everything to Bret's driving preferences. The ididit shorty tilt steering column is raised nearly 3 inches over the original location.

09] Because he knew from day one that the car would spend a lot of time on the racetrack, Bret decided to upgrade the Factory Five–supplied gas tank to a FuelSafe fuel cell.

10] The rear triple-adjustable RideTech coilover shocks allow Bret to soften the suspension for the dragstrip and stiffen it for the road course and slalom. He says most customers don't need so many adjustment options for a street car, but RideTech offers several levels of shocks to meet mild and wild build needs.

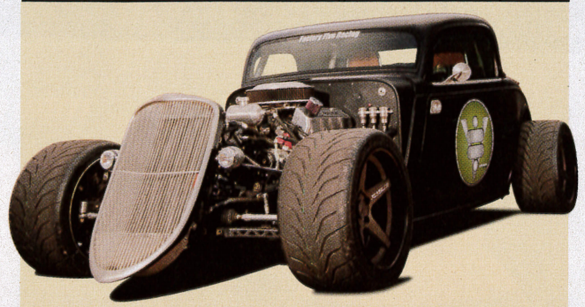
WOULD YOUR CAR STACK UP AGAINST THE LAMBO?

'11 LAMBORGHINI GALLARDO LP-550-2

Engine : 5.2L (317ci) DOHC V10
HP: 542 at 8,000 rpm
TQ: 398 at 6,500 rpm
Frame and Body: Aluminum
Suspension: Aluminum double-wishbone
Dry Weight: 3,042 pounds
Top Speed: 199 mph
How Many Produced: 944
Cost: $200,000–$240,000

[On the dragstrip, the '33 spun off the line, with 60-foot times in the weak 1.9-second range. Once the 315/35/18 Falken Azenis hooked, the car ran quick and straight at 11.62 and almost 126 mph.

HOT ROD FLOG TEST RESULTS



PERFORMANCE AS TESTED

Rear-Wheel Horsepower: 440 at 5,744 rpm
Rear-Wheel Torque: 439 at 4,500 rpm
Time on HOT ROD Road Course: 01:11.17
420-Foot Slalom: 6.15 seconds at 46.56 mph
Skidpad: 0.98 lateral g
Quarter-Mile: 11.62 at 125.56 mph
60–0 Braking: HOT ROD did not test this; RideTech claims 110 feet

HRM STAFF AVERAGE RANKING ON A SCALE OF 1-10, 10 BEING BEST:

Competence vs. Purpose: Bret built the '33 to showcase RideTech products at events. It certainly makes them look good. It was also meant to dominate at the autocross and scored the Pro-class points championship in the '12 Goodguys series.
Ranking: 9

Performance vs. Potential: With a custom build, there's always more possible, and given the low weight and high horsepower, we'd like to see quarter-mile times that are quicker by almost a second. We wouldn't be surprised to see Bret better all our numbers the next time out.
Ranking: 8

Dares to be Different: Building a '33 Ford–looking hot rod isn't so rare, but campaigning it on autocrosses and road courses (and winning) is pretty unique!
Ranking: 7

Fabricated vs. Bolted Together: It may have started as a kit car, but there's not much on it that you could find on a shelf. Every detail has been worked over, modified, and optimized.
Ranking: 8

Fit and Finish: The build quality is brilliant, far above the average race car. We're getting a little over flat-black, though.
Ranking: 7

Cool Factor: 7.5 of these points are because Bret offers rides at Goodguys shows and other events, and there is nothing cooler than seeing someone get out of the car laughing, or in the case of one news reporter who got a better ride than most, shaking and traumatized.
Ranking: 8

Bang for the Buck: Big downer: Bret estimates that with parts and labor, it would take close to $305,000 to replicate the car. A '13 Lambo Gallardo is $190,000 to $250,000.
Ranking: 5

Practical Streetability: You could certainly take it on the road; it's legal, and the interior is comfortable and insulated, but the transmission is loud, the brakes are set up with road-course pads and the visibility is race car–esque. You probably wouldn't want to brave city traffic on a daily basis.
Ranking: 6

Overall Score: 7.25 HOT ROD