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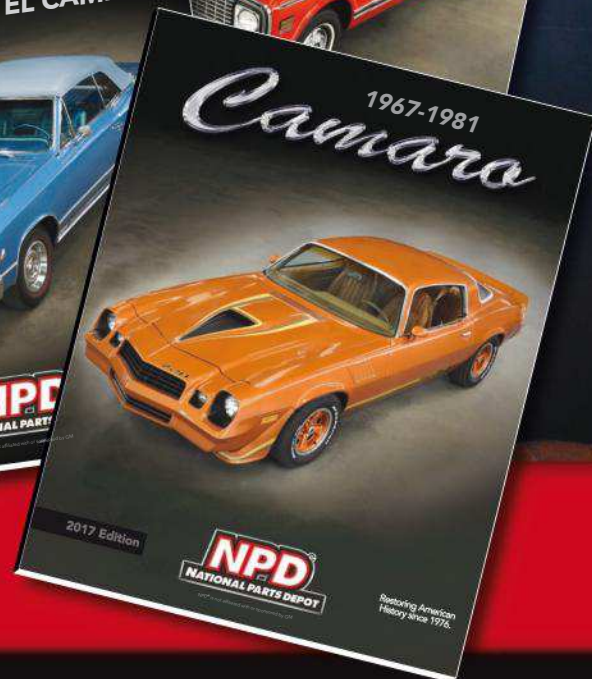
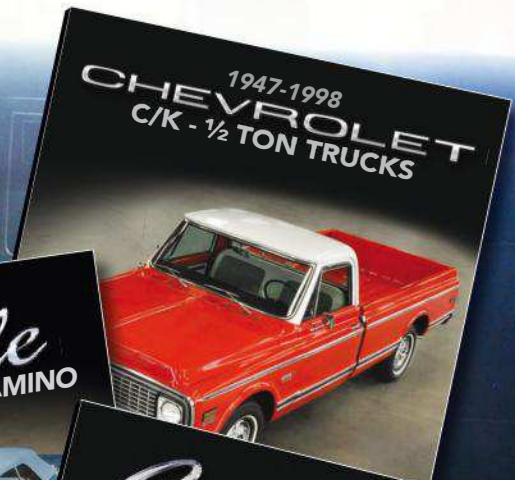
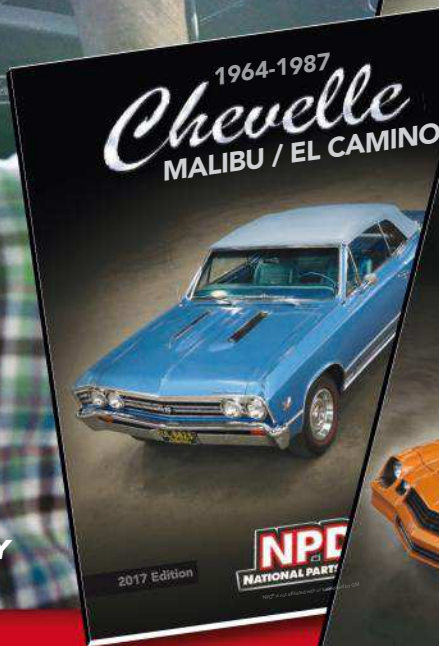
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• ON THE COVER

Don Houser decided he wanted a kick-butt second-gen Camaro, the problem was getting it to stand out from all the other Camaros in the scene. Instead of going with a common color scheme, he took a chance on brown. All indicators in the muscle car world pointed toward a seemingly boring color for any Pro Touring build. But as you can see from the cover image, this gorgeous car rises above just about any other 1970 Camaro on the planet. Check it out starting on page 14.

Photo by Robert McGaffin

• TOC

With Pro Street cars once again gaining traction with vintage car owners and builders, the appetite for massive rear rubber stuffed inside the quarter-panels of classic hot rods is fueled by today's engine technology, which allows these cars to function on the street without issue. Joseph Silhan's '66 Chevy II is the epitome of today's new age Pro Streeter. Check out the feature on page 28. **Photo by Richard Prince**



FIRING UP

Nick Licata NLicata@enthusiastnetwork.com



Driving the 2018 Camaro SS

For the most part, I'm a vintage car guy. I appreciate new cars and all, but to me the classic stuff is where it's at. With that said, I recently had the pleasure—yes, I said pleasure—of taking a Hyper Blue Metallic 2018 Camaro SS off the showroom floor. Seriously, I actually fired it up and drove it out of the Guaranty Chevrolet showroom in Santa Ana, California, through one very skinny door opening (talk about being nervous) and out for a “spirited” testdrive. Now, I've driven quite a few fifth-gens (2010-'15)—both stock and highly modified—so I was familiar with the late-model platform and its driving characteristics, or so I thought. It appears the Camaro has gone through quite a few upgrades since 2015.



*Even in stock form, the 2018 Camaro's sporty looks and style come through. Once we lower the car, it will give off quite a bit more attitude.

For starters, the sixth-gen Camaro features four driving modes: Snow and Ice, Tour, Sport, and Track. I didn't venture into the Snow/Ice mode, well, because California. I did give the other three modes a go and, surprisingly, I could really tell a difference in the handling response each mode offers while just driving on the street. In Tour mode the car felt smooth yet still precise, while Sport and Track modes really firmed up the ride and offered quicker reaction in the corners. I'm sure the difference is even more apparent while on an autocross or road course. Unfortunately, venues of that nature weren't available at the time.

What I found the coolest of all was the Active Rev Matching, which does a great job of matching your rpm while downshifting regardless how mellow or aggressive you are driving at the time. That was just plain awesome. The only bummer is how all the hours I spent working on my heel-toe shifting

technique just became less valuable.

The instant throttle response of the 455hp 6.2L DI (Direct Injection) LT V-8 is pretty amazing. Not that there is anything wrong with the previous Camaro SS's LS3 powerplant but the '18 Camaro's throttle response seemed more immediate.

Even though I really enjoyed driving the new Camaro, I still dig the loud and aggressive nature of my 600hp '71 Camaro, even with all its vintage muscle car idiosyncrasies. With the '18 Camaro there are no distinctive noises, rattling window glass, and you can actually hear the radio from the driver's seat—it's just a very nice-driving sporty car. I like to call it a consumer-grade muscle car—a bitchin ride that offers plenty of performance and a good amount of comfort for a wide user appeal.

So, the purpose of me getting behind the wheel of the new Camaro and spending some time becoming familiar with it wasn't for the sole purpose of having fun,

although it was that, for sure. The plan with that exact car is to upgrade it with some performance options from Chevrolet Performance. On tap are a lowering suspension (because it's gotta look cooler), stiffer front sway bar (because it's gotta handle better), six-piston brakes (because it's gotta stop quicker), cold-air intake (because it's gotta breathe easier), and cat-back exhaust (because it's gotta sound badass). After we get all those goodies bolted on, we'll strap the car on a chassis dyno to get some comparable horsepower numbers between a stock Camaro and our hopped-up car, then we'll take it out on some twisty roads to put the new suspension components to the test. We'll follow up with a full report on how the car's look and attitude improved.

We are really looking forward to letting this muscle car really flex its muscles.

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- 05/26/18 **LIVE! 24H GT Series/24H Touring Car Endurance Series, 12H Imola - Race Part 2**
- 05/28/18 *Dirt Every Day, Ep. 76*
- 05/30/18 *Ignition, Ep. 192*
- 05/31/18 **FIA World Rallycross, Great Britain**
- 06/02/18 **LIVE! DTM Championship, Hungaroring**
- 06/02/18 **LIVE! Formula Drift, Wall, NJ**
- 06/03/18 **LIVE! Blancpain GT Series Endurance Cup, Paul Ricard**
- 06/03/18 **LIVE! Trans Am Series, Detroit**
- 06/04/18 *HOT ROD Garage, Ep. 64*
- 06/06/18 *Head 2 Head, Ep. 103*
- 06/07/18 **British Touring Car Championship, Thruxton DTM Championship, Lausitzring**
- 06/09/18 **LIVE! TCR Europe Series, Spa, Belgium**
- 06/10/18 **LIVE! TCR Europe Series, Spa, Belgium**
- 06/11/18 **Ferrari Challenge Europe, Misano**
- 06/13/18 *Junkyard Gold, Ep. 9*
- 06/14/18 **FIA World Rallycross, Norway**
- 06/16/18 **LIVE! Virgin Australia Supercars, Darwin**
- 06/17/18 **LIVE! Virgin Australia Supercars, Darwin**
- 06/17/18 *Roadkill, Ep. 78*
- 06/18/18 *Roadkill Garage, Ep. 32*
- 06/20/18 *Engine Masters, Ep. 35*
- 06/21/18 **DTM Championship, Hungaroring**
- 06/23/18 **LIVE! DTM Championship, Norisring**
- 06/23/18 **LIVE! GT4 European Series, Misano**
- 06/23/18 **LIVE! VLN Endurance Championship - Round 3, Nürburgring**
- 06/24/18 **LIVE! GT4 European Series, Misano**
- 06/25/18 *Dirt Every Day, Ep. 78*
- 06/27/18 *Ignition, Ep. 193*

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SPOTLIGHT

❖ TEXT & PHOTOS: **Bruce Biegler**

California Classic Gassers

◆ California's broadband and creative drag racing scene is well known for its regional strength for A/Gas race cars. And within that subgenre, there are two nicely configured Chevrolets that are perfect representatives. Both Steve Keefer (Discovery Bay) and John Hansen (Concord) are active participants in the NHRA Hot Rod Heritage Series and West Coast Pro Gas Association circuits.

Steve Keefer runs a very versatile '67 Nova that was built by East Bay Muscle Cars. Steve uses a 632ci Reher-Morrison engine when running the 7.60-indexed A/Gas class, but he also dips into "fast bracket" mode from time to time where he employs a Chevrolet LSX 454R crate engine with help from FH Dailey Chevrolet. Steve's car has runs in the 7.5-second zone at 183 mph to its credit. The truly great-looking, matte silver-wrapped Nova uses a two-speed Powerglide with either an ATI 8-inch or a Coan 9-inch converter, depending on the engine being employed. This is a full chromoly tube chassis car that features 50/50 weight distribution. Steve takes his inspiration for the race car build from his former partner, the late Dick Maas with whom he raced Novas for many years. Team support comes from East Bay Muscle Cars, Floyd Amerino, Delta Lending Group, Mayeda Motorsports, DJ Safety, his crew chief Jim Poindexter, and from his supportive wife and great group of friends.

John Hansen debuted his remarkable Yenko-themed '69 Chevelle in 2014 as a B/Gas car. It was originally purchased as an unfinished roller with construction following over the winter of 2013-'14. After racing two years in that configuration John stepped it up in 2016 to A/Gas. It is a double-framerail car that has 6-second chassis certification. Currently, John's team runs an all-aluminum 665ci, 1,390hp engine that features



12-degree Pro-Filer heads and an HRE sheetmetal intake with two Pro System 1,250-cfm carbs. The transmission is a Mike's two-speed Reid Case with a Coan converter. Unchecked, the car has run 7.38 e.t. at 187 mph. During the 2017 drag racing campaign, John prevailed to

win a very hard-fought overall series title for the 10-event West Coast Pro Gas Association. Sponsorship comes from engine builder Roy's Racing Engines, and his crew is comprised of Deane Hudson (crew chief) and his drag racing mentor Roy Castagnetto.



Cool COPO Clone

◆When Portland, Oregon-based drag racer Dan Cyr brings his '69 Camaro to the starting line, drag racing fans are being afforded a nice historical flashback. Dan has owned his meticulously maintained car since 2000. After acquiring it as a roller without an engine, what was originally a daily driver for a high schooler was converted for drag racing. Dan has moved forward with a 427ci engine (prepped by Darrell Wikle) and can run in A or B/ Stock Eliminator. A terrific aspect to Dan's Camaro is its

pure appearance, which is not by accident. Dan tried to recapture the "showroom stock" look—the essence that was available from Chevrolet by special order only. This car is not a real COPO but instead a tribute made to look exactly like one. Dan runs a TH350 transmission with all lightweight components along with an A-1 converter. He is a frequent runner within the Pacific Division NHRA Lucas Oil Drag Racing Series as well as at his home track: Woodburn Dragstrip.

Keeping a Corvette Killer

◆"Flyin Ryan" Bell, a former professional MX/SX motorcycle rider, is now an avid participant within the NMCA fast street car racing scene. A resident of Edmonton, Alberta, Canada, this dedicated circuit racer campaigns a very impressive '76 Corvette that he has owned since 1988, which is configured for the NMCA's N/A (naturally aspirated) 10.5 class. This super-quick Corvette, which has run in the 8.0-second zone, spends much of the year based south of the border in Arizona, where it is overseen by Ryan's primary crewman Al Alguire and influenced by Gary Hansen (of Hansen Race Cars). Over many seasons, Ryan's car has been the recipient of constant upgrades and improvements. It is now powered by a 417ci small-block that uses a single carburetor and a Proflite three-speed transmission. Ryan is



coming off a rewarding 2017 season in which he captured his first-ever event win during an NMCA West race held at Auto Club Dragway in Fontana, California. That gratifying moment came after four previous career event runner-up efforts. Ryan funds his team via his business (Dispensing Systems Inc.) and is also an expert engine builder who does all of his own engine programs.

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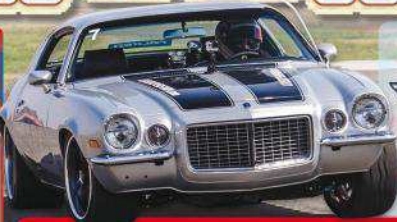


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CHICCA



RIDES

★ **Don Houser** is a logistics manager for Caterpillar, Inc., so he's used to dealing with that Big Yellow on ton-over-tons machinery. Man, the stuff's not bashful. This elephant in a phone booth probably pushed him in a certain direction when it came to building his Camaro. Don had a serious yen to exhibit his work in closed-course series. He built the Camaro to compete in autocross and at track day events.

He craved a stick shift. And how did that occur? His loving father planted the seed deep and early. When the kid was 5, his old dad would perch him on the transmission hump and let him shift from Low to Second in an old four-speed car. Don's young brain schizzed. He realized that one of his synapses refused and would no longer

close ... and that somehow he would be hooked on this stuff inextricably. Years passed. Adulthood couldn't be ducked.

He settled in for the long haul—a trip that encompassed four years of angst and joy. He did it with people close to him: his son Henry, cousin Jeff, and his agents on the outside:

Tony and Chris Smith (Smitty's Custom Automotive) and the talent at Trent's Trick Upholstery.

He bought his project in 2012. There were three reasons that framed his mind: it was original, it was solid, and it was a real RS/SS. It had a 1970 Duke University parking permit on the rear bumper. "I called the guys at Detroit

NERVY

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◆ TEXT: **Ro McGonegal** | PHOTOS: **Robert McGaffin**



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Chicanery

Speed and they recommended Smitty's. I spoke to Tony Smith for a few minutes and he invited me to the shop.

"After seeing the quality of the work and speaking with Chris, I knew they were going to complete the build," said Houser. At the very beginning of the vortex he was happy with the Camaro's exterior styling but he wanted to make something that would really stand out in the Second-gen crowd. "That's when I decided on the color brown when most others are silver, orange, black, or some shade of blue." Ambient light is the delineator; without it this car could be all the way black, but certainly not brown. For an unusual contrast, instead of dressing the interior in tan rags, he was drawn right to the red. And see how well it works.

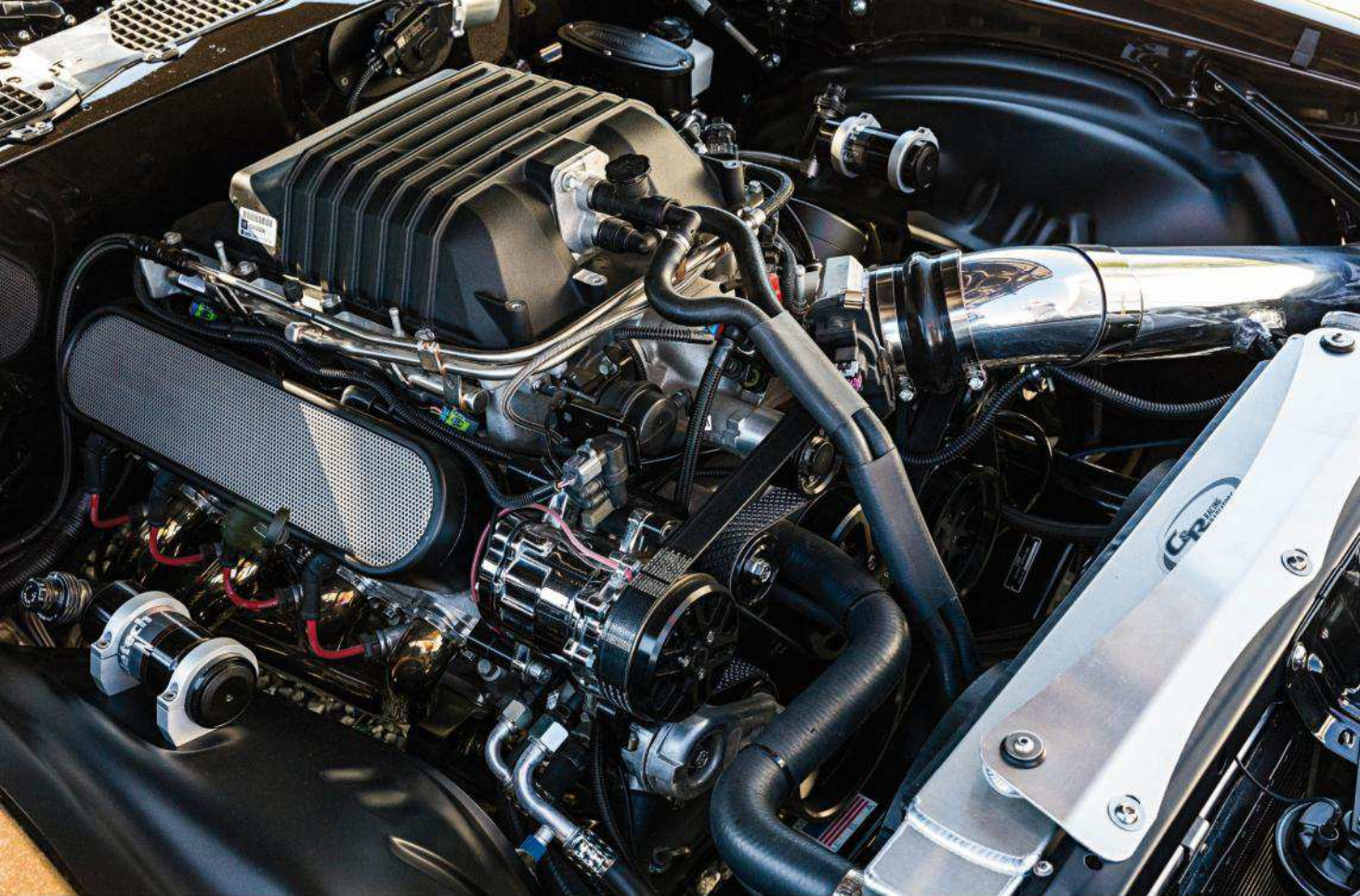
"Thanks to Trent VanArsdalen's guidance, the interior turned out incredible and has elements I've never seen ... stainless wire in the [custom] door panels, the pattern stitched in the seat cushions and headliner matching the stainless wire pattern in the door panels. Then the harness bars that were fabricated by Dan Dreisbach." Since the Camaro's rear seats are just package

trays, Don and Trent elected to eighty-six 'em altogether, but they didn't want to stuff the crater with the usual camouflage panels. So why not put the crater to work instead?

Dreisbach and VanArsdalen created the aluminum harness bars, the likes of which we've never seen before, and anchored them in the rear seat wells. Though Don might have other thoughts about the exclusivity of his Camaro, anyone who sees that hairy solution is likely to remember the car more for that than its tasty dark-brown crust or its unlikely hot-red center.

Since the project was far from inexpensive, whenever Don had opportunity he was respectful to his wallet. Rather than gather components and scratch-build a bullet and worry the details, he plucked a projectile from Chevrolet Performance that was dressed out from the top of the intercooler to the bottom of the oil sump. Since a six-speed manual was always part of the plan, Don inserted a Chevrolet Performance steel flywheel and twin-disc clutch assembly and attached the gearbox to the supercharged LSA with a







Chevrolet Performance bellhousing and hydraulic linkage.

The formula for the car had to include a willful stance highlighted by the most complementary rolling stock in the universe. Unfortunately, the de rigueur components have become common to and popular with this ultra-roadworthy Pro Touring genre. The profile embraces dusky and decidedly un-cute Forgeline wheels paired with brutal Nitto skins. These things look like they'd rip ass all the way to Fayetteville without breaking a sweat and be just as bloody useful on the way back out.

Wherever the car is you can be sure that Don will be in it, not thrashing but enjoying and almost relaxing. Though we're no fans of crimson, the execution and the particular shade of red is, however, soothing. There's urgency there but it doesn't dominate or tend to crank up the subconscious.

Any thoughts Don has about the project are dominated by what he should have done in the first place. "Start with a rendering," he opined. "After picking the odd body color I had an idea to make the interior tan, but everybody does that. I wanted something different ... and I was lost. Thanks to Trent for his professional guidance."

Underneath it all, the kid wobbling on the transmission hump all those years ago confides: "In my heart, I built the Camaro as a tribute to my dad." **CHP**

TECH CHECK

Owner: Don Houser, Clayton, North Carolina
Vehicle: 1970 Camaro RS/SS

Engine

- **Type:** Chevrolet Performance LSA crate engine
- **Displacement:** 376 ci
- **Compression Ratio:** 9.1:1
- **Bore:** 4.065 inches
- **Stroke:** 3.622 inches
- **Cylinder Heads:** L92 style ports, 2.16/1.59 valves, as cast with 68cc combustion chambers
- **Rotating Assembly:** Forged steel crankshaft, powdered steel connecting rods, hypereutectic aluminum pistons
- **Valvetrain:** Investment-cast roller trunnion 1.7:1 rocker arms, Greening Auto Company rocker covers
- **Camshaft:** Hydraulic (0.492/0.480-inch lift; 198/216-deg. duration at 0.050), OE roller lifters
- **Induction:** 1.9L Eaton supercharger, C&R Racing water-to-air intercooler, Rick's Tanks fuel cell
- **Ignition:** Chevrolet Performance LSA controller kit
- **Exhaust:** Ultimate Headers stainless steel 1 7/8-inch primary pipes, 3-inch system, Flowmaster 40-series mufflers
- **Ancillaries:** Camaro ZL1 wet-sump oil pan, Concept One accessory drive, C&R Racing aluminum radiator, American Autowire loom
- **Tuner:** Lingenfelter Performance Engineering
- **Output (at the wheels):** 540 hp at 6,100 rpm, 520 lb-ft at 3,800 rpm

Drivetrain

- **Transmission:** TREMEC T-56, Chevrolet Performance Super Magnum bellhousing, Chevrolet Performance steel flywheel and twin-disc clutch assembly
- **Rear Axle:** Moser Engineering 9-inch, Wavetrac torque-sensing limited-slip differential, 3.70:1 gears, Moser 35-spline axleshafts

Chassis

- **Front Suspension:** DSE hydroformed subframe, DSE spindles, RideTech triple-adjustable coilovers, remote fluid reservoirs, DSE splined antisway bar
- **Rear Suspension:** DSE QUADRALink; RideTech triple-adjustable coilovers; remote fluid reservoirs; modified housing to incorporate Corvette ZR1 axle bearings; DSE antisway bar, Panhard rod, mini-tubs
- **Brakes:** Wilwood 14-inch rotors, six-piston calipers, front; Wilwood 14-inch rotors, four-piston calipers, rear; Wilwood master cylinder and proportioning valve

Wheels & Tires

- **Wheels:** Forgeline RB3C 18x10 front, 19x12 rear
- **Tires:** Nitto NT05 275/35 front, 335/30 rear

Interior

- **Upholstery:** Trent's Trick Upholstery (Baltimore, OH)
- **Material:** Leather, Dynamat insulation
- **Seats:** Custom built by Trent's Trick Upholstery, Schroth Racing harnesses, aluminum safety harness anchors by Dan Dreisbach at Naked Sculpture (Baltimore, OH)
- **Steering:** Flaming River tilt column, Momo wheel
- **Shifter:** C&R handle and ball
- **Dash:** Stock
- **Instrumentation:** Dakota Digital gauges
- **Audio:** Kenwood KDC-X599 head, Diamond Audio amplifiers, 4-inch speakers (front), 6x9-inch speakers (rear), 10-inch subwoofer installed by Trent's Trick Upholstery
- **HVAC:** Vintage Air

Exterior

- **Bodywork:** All seams welded, smoothed firewall, gaps aligned by Smitty's Custom Automotive (Tiffin, OH)
- **Paint By:** Smitty's Custom Automotive
- **Paint:** PPG custom-mix brown
- **Grille:** Stock
- **Bumpers:** Stock

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TAKE THE SHOT

Installing Holley's Sniper TBI Fuel Injection

✦ TEXT & PHOTOS: **Jeff Smith**

A huge component of performance is control. If we can more accurately control the timing of fuel and spark to the engine we will achieve a happier, more powerful engine. For older muscle cars, this kind of control used to require a huge investment in electronic fuel injection; a large, separate ECU; an anaconda-sized wiring harness; and plenty of esoteric electronic skills. But not anymore.

Holley's entry into the self-learning, TBI-style fuel-injection category is the Sniper. The ECU is built right into the body, which eliminates much of the wiring harness hassles. In fact, connecting the freestanding wires required a mere seven connections. It doesn't get much simpler than that. There were other connections for the water temperature sensor, the oxygen sensor, and the connector for the 3.5-inch display, but those were simple plug-ins. The Sniper TBI unit comes with an integrated fuel pressure regulator. The Sniper uses four 100-lb/hr injectors and will feed up to a 650hp naturally aspirated engine. The mounting flange offers a dual bolt pattern, and with an adapter

can even be used on a spreadbore-style manifold.

We decided to install the Sniper on our friend Eric Rosendahl's 468ci big-block El Camino, figuring that a stout 525hp Rat would put the Sniper to the test. But before we started the EFI install, we first had to ensure we had an excellent fuel delivery system. We can't overemphasize the point that good performance from any EFI system starts with a professional fuel delivery system. We opted for Holley's RetroFit fuel pump assembly. Our assembly came with a 255-lph



01 Eric Rosendahl's 468ci big-block had been running a modified Holley carburetor with some success, but it was time for an upgrade. The Rat sports iron, oval port heads and a Comp hydraulic roller cam making 525 hp and 560 lb-ft of torque.

Put the Hammer Down.



*You don't cut corners
or accept compromises.*

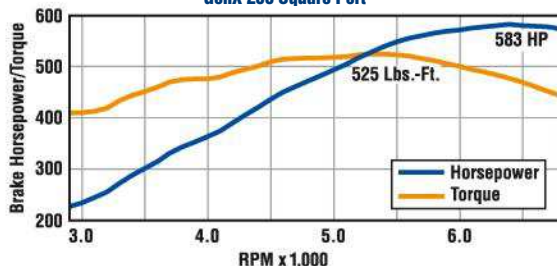
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Dyno Results GenX 255 Square Port



Test Engine: GM 6.2L LS3 short block with 10.43:1 compression, Trick Flow GenX® 255 square port cylinder heads (TFS-3261T002-C01), Trick Flow Track Max® hydraulic roller cam (TFS-32603001), stock L92 intake with 90mm throttle body, Kooks headers with 1½" primaries, and dual exhaust with 3" Flowmaster mufflers.

Airflow Results GenX 255 Square Port

Lift Value	Intake Flow CFM	Exhaust Flow CFM
.100"	71	59
.200"	146	113
.300"	231	171
.400"	294	215
.500"	334	240
.600"	363	252
.700"	382	258

Tests conducted at 28" of water (pressure).
Bore size: 4.065"; exhaust with 1½" pipe.

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02-03 | The Holley Sniper throttle body comes in polished, a slick gloss black, or the traditional dichromate look shown here. The bolt pattern is universal so it will bolt to nearly any four-barrel intake manifold. The standard Sniper uses four 100-lb/hr injectors and will feed up to 650 naturally aspirated horsepower.



04 | A couple of weeks before we began the swap, Rosendahl purchased a new fuel tank from OPG to which we added a Holley in-tank fuel pump kit. We don't have the space to detail each step but the conversion took less than 2 hours. This kit uses a 255-lph pump that can feed 550 naturally aspirated EFI horsepower. The kit includes the Holley Hydramat pickup/filter that prevents loss of fuel pressure due to low fuel conditions.



05 | To finish the fuel tank conversion, with the module in place we added a pair of 3/8 NPT to -6 male fittings for the pressure and return connections and also fitted the power and ground connections with a two-pin Weatherpak connector.

06 | Since the Sniper requires a return-style fuel system, we elected to plumb the El Camino using Earl's new UltraPro convoluted -6 fuel line. This PTFE fuel hose is impervious even to nitromethane and offers an outstanding bend radius so it won't kink, but it does require its own specific fuel fittings.



pump, billet aluminum mounting flange, and Holley's unique Hydramat filter/pickup that will pull fuel from any point of contact in the tank. This means if there's even just a gallon of fuel in the tank, the Hydramat will pick it up.

We installed that pump assembly in a new fuel tank and also retrofitted the car with a complete new UltraPro

convoluted PTFE -6 fuel line. In the past, rubber-lined fuel hose has had difficulty maintaining its integrity over a long period of time. The rubber hose eventually becomes brittle and begins to leak. Earl's recently released a new fuel hose material made from polytetrafluoroethylene (PTFE) that is impervious to methanol, ethanol, all those nasty additives like

benzene and toluene in gasoline, and even to nitromethane. The hose is convoluted (ribbed), which offers an excellent bend radius and makes it very flexible and easy to route.

The trade-off for this durability is the UltraPro hose is a little more difficult to assemble than normal cloth-covered hose, requiring a specific ferrule and hose ends. But once you've assembled a couple of the fittings, they go together fairly easily. The beauty of this hose is that once it is assembled, it should last the life of the vehicle.

We plumbed a brand-new UltraPro line for the high-pressure delivery side line and re-used the original 3/8-inch fuel line in the car as the return, replacing a section of the line that had been damaged after 50 years in the car. We also included a Holley 10-micron fuel filter located roughly halfway between the tank and the engine so that it could be accessed easily for removal and cleaning.

With the Sniper unit installed



07 | The UltraPro fuel line requires specific fittings using this sealing ferrule between the fuel line and the fitting. The tapered end is threaded onto the convoluted line, which seals between the hose and the fitting.

on the engine and the fuel lines plumbed, we took this time to wire the remainder of the electrical side. As the Sniper instructions suggested, we elected to control fuel only at this point. We will convert later to full electronic control over the ignition. So the only wires we had to connect were the two large (12v+ and 12v) dedicated power leads directly to the battery, switched power, and an rpm sensor to the ECU. Rosendahl had previously purchased a dual-terminal battery that provided a place to connect the power leads directly to the side terminals.

The ECU also has a large blue wire that is the power lead (using an internal relay in the ECU) to drive the fuel pump. We decided to run a dedicated ground wire from the electric fuel pump all the way forward to the battery to ensure that the pump had full electrical power. We also chose to build a two-wire Weatherpak connector at the fuel pump to make servicing easier with a simple plug-in connector.

With all the electrical connections created, we were ready to start the ECU configuration, but the heads-up display informed us that our ECU was not properly configured. This required removing the small SD card from the heads-up display and to plug it into a computer card reader to download the most current software from Holley's website.

This demanded quite a bit of effort on our part as the first two card readers we tried failed to make a connection to the Sniper SD card. We tried a different card and ultimately a third different SD card reader in a third computer before all the electronic devices were talking to each other. We've installed



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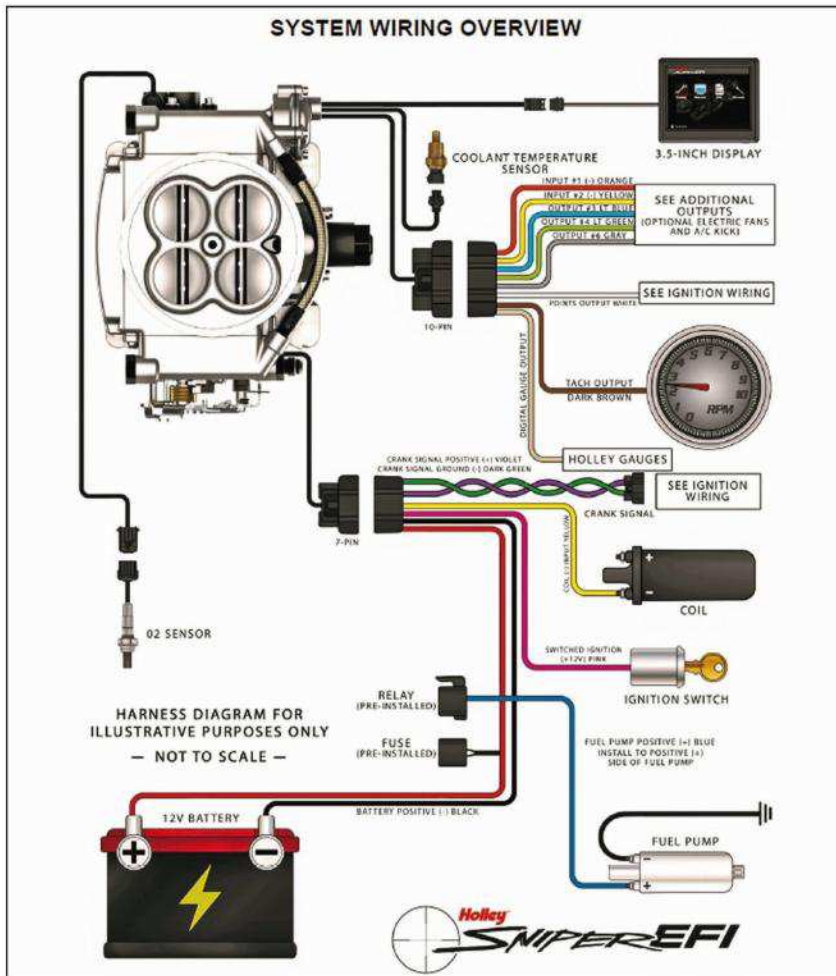
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08 | The Sniper allows you to control both fuel and spark but Holley suggests you start with just the fuel using your original ignition system, which is what we did. So this requires only connecting the heavy red and black wires to the battery, the yellow to the negative side of the coil, the pink wire to switched 12 volts, and the heavy blue wire directly to the fuel pump. On the upper connector, the only one we used was the brown lead to trigger the tach.

09 | All self-learning EFI systems like the Sniper require a wide-band oxygen sensor. Prior to our install, Rosendahl had his exhaust shop weld in an oxygen sensor bung into the exhaust. This bung is preferable but Holley supplies a clamp-on system that does not require welding.



10 | The only hiccup in the installation was after first powering up the system, an error message required downloading updated software from holley.com that had to be transferred onto the SD card in the 3.5-inch display. We had to try three different SD card readers before we eventually managed the transfer.



several other self-learning throttle body systems and this was the only one where we had to upload new software in order to even to begin the process. This really should have been accomplished before we obtained the system.

After eventually downloading the software and jumping through the appropriate electronic hoops, the appropriate icons appeared on the handheld device and we quickly input the necessary information. After all that, we noticed we had no fuel pressure. A short investigation revealed the author had wired the fuel pump backward despite checking to make sure the connections were accurate. A simple switch of the ground and power leads solved that dilemma and the engine immediately fired up and settled into a comfortable idle.

After setting the default idle air/fuel ratio at 13.7:1 and allowing the engine to fully warm up, the only other adjustment was to finalize the idle air control (IAC) numbers to bring them in line per the instructions. On the handheld device, we had commanded the idle rpm at 850 yet the IAC was reading much higher at 30-35 counts rather than the 3-8 counts that the instructions mentioned. The solution might sound counterintuitive, but in order to reduce the IAC counts (which is actually a percentage of the IAC opening), we needed to open the curb idle adjustment on the throttle body—much like on a normal carburetor.

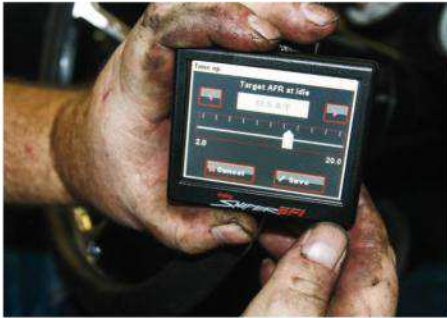
By opening the throttle blades slightly, this allows more air into the engine and the computer then will command the IAC motor to close slightly, reducing the IAC count. After a couple of back-and-forth adjustments, we managed to quickly achieve a stable 850-rpm idle speed in Neutral (not in gear) that delivered an IAC count of 5-6.

We then went for a quick test drive and Rosendahl immediately noticed that the throttle response was much crisper than with the Holley carburetor—even with the same ignition timing. The Sniper throttle bores are the same size as the recently shelved 750 double-pumper carburetor, so the only explanation was that the Sniper offers slightly better off-idle control over the fuel, which improved the engine's response to throttle.

We had also fitted Rosendahl's big-block with a new portable,



11 | The 3.5-inch touchscreen color display is easy to use and allows you to quickly input the basic information into the screen. Once we input the required data, the engine started immediately and settled into a decent idle. Here, the coolant is not up to temperature but with closed loop feedback, Sniper is still removing 20 percent fuel from the initial tune at this engine temperature.



12 | At first we used the default idle air/fuel ratio at 13.7:1, then 13.5:1 (shown) and eventually to 13.2:1. Feedback from our EMS five-gas exhaust analyzer told us that this richer setting produced a more efficient idle quality for this particular engine.



13 | We set our desired idle speed at 850 but noticed that the idle air control (IAC) count was higher than the desired 3-8-percent setting. While this may seem counterintuitive, turning the idle speed screw clockwise increases the amount of air past the throttle, which decreases the IAC count.

five-gas exhaust analyzer that we were using as an evaluator for both engine efficiency and just how close the air/fuel ratio was to what was commanded. The Sniper delivered nearly right on target for almost all the part throttle and idle commanded air/fuel ratios. Using this analyzer, we discovered that the engine seemed to idle more efficiently with a slightly richer air/fuel ratio at idle.

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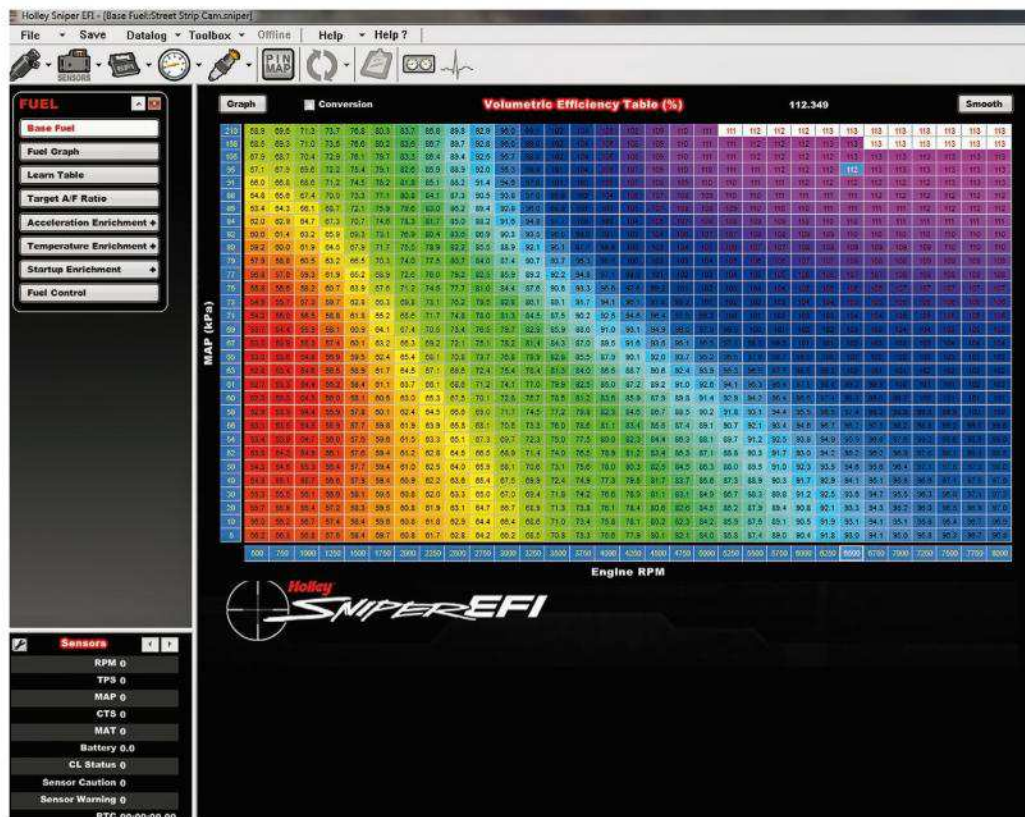
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Take the Shot

14 | The Sniper works great, but we've still got some final touches to perform with help from the free Sniper software we downloaded. Small changes to cold start and after-start enrichment will dial in this system specifically for this particular engine. This is the volumetric efficiency table. Unless you have specific tuning experience, it's best to leave advanced tuning on these tables to a tuner with EFI experience.



15 | Here's the Sniper installed and after it had run for an hour or so. The only bit of fabrication we had to do was to build a new throttle linkage arm out of 1/4-inch aluminum rod and add a pair of female spherical joints we found at the hardware store.

Initially, we commanded 13.7:1 but discovered that by running slightly richer at 13.2:1, the engine actually idled more efficiently with higher CO2 readings. Our theory is that since the heads on this engine are older iron oval ports, the chambers are not the best in terms of efficiency and need a little more fuel to command a better idle efficiency.

We also noticed that on deceleration the engine seemed to run much richer than we anticipated. We called Holley and discovered that the default for the base Sniper system does not enable the deceleration fuel cutoff. This is a small thing, but should contribute to better fuel

PARTS LIST

Description	PN	Source
Holley Sniper TBI Gold	550-516	Holley
Holley in-tank fuel pump kit	HLY-12-130	Summit Racing
Holley billet fuel filter, 10 micron	HLY-162-550	Summit Racing
Holley billet fuel filter bracket	HLY-162-574	Summit Racing
Earl's UltraPro -6 convoluted fuel line, 20'	EAR-682006ERL	Summit Racing
Earl's -6 straight AN fitting, UltraPro (4)	EAR-620106ERL	Summit Racing
Earl's -6 90-degree AN, UltraPro (4)	EAR-629106ERL	Summit Racing
Earl's -6 male to -6 male adapter (1)	EAR-AT981506ERL	Summit Racing
Earl's -6 to 1/4 NPT adapter (2)	EAR-AT981606ERL	Summit Racing
Earl's -6 to 3/8 NPT adapter (2)	EAR-AT981666ERL	Summit Racing
Earl's -6 tube nut Ano-Tuff	EAR-AT581806ERL	Summit Racing
Earl's -6 tube sleeve Ano-Tuff	EAR-AT581906ERL	Summit Racing
Earl's 1/4 NPT to 3/8 male (return)	EAR-AT984006ERL	Summit Racing

mileage—which is a minor concern with this big 468ci Rat. This can be easily enabled by going on Holley's website and downloading the free Sniper software. This will then allow us to configure the Sniper to enable decel fuel cutoff and then load that change onto the global configuration file using the SD card. The best thing to do is to read the Sniper instructions and follow the published procedure. The next time we have access to

Rosendahl's car, we plan to make this change. This will be most noticeable during in-town driving since that's where decel fuel cutoff will likely have the most impact on fuel mileage.

Now that Rosendahl has put a few hundred miles on the combination, the next step will be to configure the ignition system for digital control. This will allow us to make far more finite changes to the ignition in order to dial in the perfect ignition curve



16 | Road testing the Sniper included evaluation with the portable EMS five-gas analyzer. We noticed that the Sniper default settings do not enable closed throttle fuel cutoff—as evidenced by high HC readings on deceleration. A Sniper engineer showed us how to access this and enable the fuel cutoff using the free, downloadable Sniper EFI software.

for this engine. This does require the distributor advance to be locked out. The Sniper will control either a standard inductive ignition system or a CD, and both are easy to configure.

The Sniper also offers dual electric fan controls, a couple of rev control features, digital wet nitrous air/fuel ratio control, data logging, as well as boost control. These are advanced features that can be individually configured but do require some tuning experience, so make these changes only if you are sure of the modifications you are inputting.

Overall, the Sniper installation went smoothly and required only a minimum of tuning to drastically improve the engine's throttle response and driveability. We took our time converting over to the Sniper and it all went smoothly—especially after we figured out we had wired the fuel pump backward.

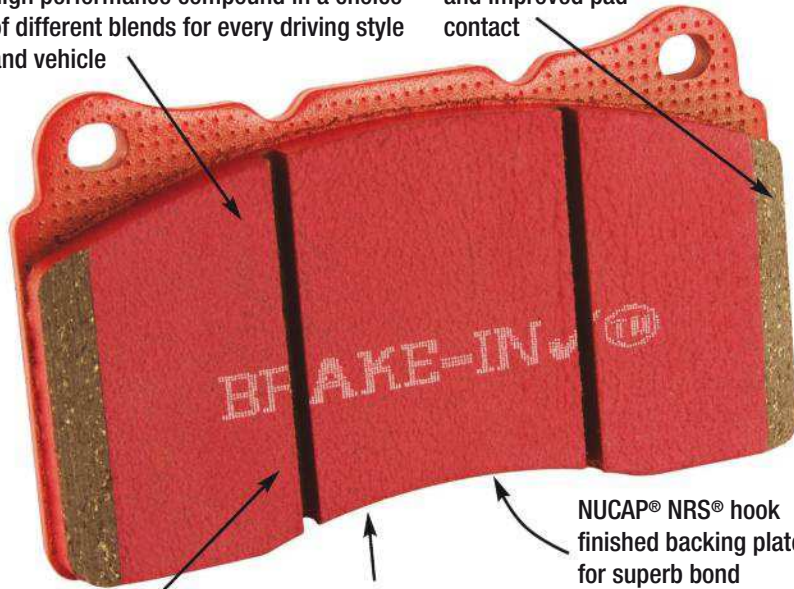
After driving the car, we do have one critique. It appears that Holley has used a different throttle linkage arm on the Sniper that shortens the distance from the throttle shaft to where the throttle pedal connects. This quickens the ratio and increases the effort. This makes the car hard to drive in close traffic as pedal effort is dramatically increased. This makes it easy to open the throttle too far. Holley makes an adapter but we will probably just make our own extension.

We still want to convert to full ignition control, and there are some minor cold-start tuning items we'd like to address, but we'll save those for another story. In a single highway mileage test, the big-block did knock down 14.7 mpg. Not bad for a 525hp Rat. With a little bit of fine-tuning on the ignition side, it might get a little better. **CHP**

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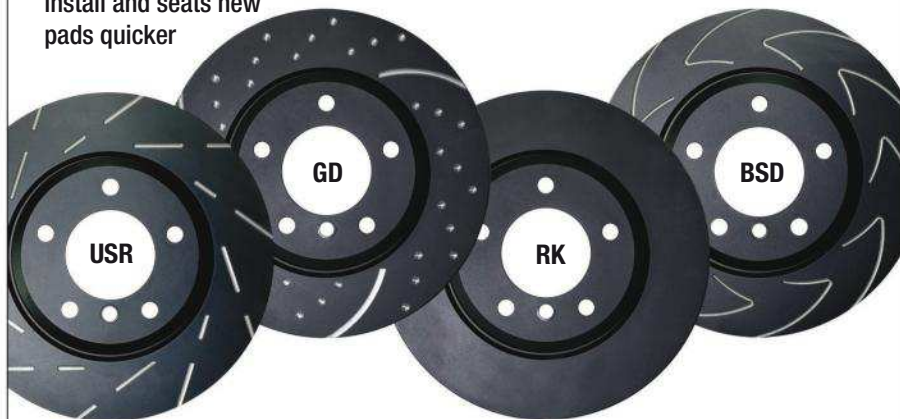
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ROUND T

RIDES

Joseph Silhan buys back his 1966 Chevy II for a second time

◆ TEXT & PHOTOS: **Richard Prince**



TWO



★ **When GM initially conceived** of the Chevy II in response to Ford's Falcon, they aimed right for the middle of the bell curve in order to appeal to as many buyers as possible. The Chevy II was introduced in 1962 and it was immediately clear that they hit the bull's-eye, creating a car that did everything reasonably well but nothing exceptional. In a few short years, however, designers and engineers would transform the ordinary into something extraordinary, beginning with the introduction of V-8 engines in 1964 and then a substantial second-generation restyling for the '66 model.

The sharper-edged bodywork introduced for the '66 model year was immediately popular and helps make the second-gen Chevy II a favorite to this day, especially with Pro Street enthusiasts. The styling was certainly a prime motivator for Joe Silhan, who bought our feature car on two separate occasions, and swears he'll never part with it again.

This particular Chevy II was built by Stephen Agnello, who happens to be a restaurateur by trade, but who clearly knows his way around a MIG welder and spray gun. Agnello bought the car as a roller from an Internet website and, working in his basement shop, immediately stripped it down to a bare shell. He then sandblasted every inch of the body and replaced most of the car's sheetmetal, including the quarters and floors. After fabricating huge tubs and a custom transmission tunnel and adding a rollcage, he did all of the finish bodywork, and then sprayed it with a custom-mixed PPG two-stage urethane.

Motive power comes from a Central Valley Machine Shop 548ci big-block, built up using a Dart block and heads. The cam and valvetrain are a Comp Cams setup. An 8-71 supercharger from The Blower Shop is configured to deliver a very modest 4 psi of boost for comfortable street driving. The engine's power goes through a JW Performance Turbo 400 equipped with a trans brake. CV Machine built a custom driveshaft that initially channeled the engine's power to a 4.56:1-geared spool, which was good for the track but "too crazy" for street driving. To make the car more user friendly, a Yukon Gear posi rear with 3.73:1 gears replaced the spool. Strange axles cut down by Moser spin the big Mickey Thompsons.

To both help the car hook up and improve overall handling and ride quality, a Heidts subframe/crossmember package was installed up front and a TCI Engineering four-link setup to the rear. The new frontend's Mustang II rack-and-pinion was coupled with a circle track power steering pump and remote reservoir sourced from Behrent's Performance Warehouse.

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As with the exterior, the car's interior is low-key, with an emphasis on functionality. The fabricated sheetmetal dash holds a full array of AutoMeter gauges. R.J.S. Racing Equipment seats provide just the right balance of support and comfort. OEM-type carpet and basic door panel trim give the inside a more finished feel without adding a lot of extra weight.

After a solid year of work, Agnello enjoyed his Chevy II on the street and at the track, where it clicked off 10.0-second quarters at 137 mph all day without breaking a sweat. He was always careful to not dip below 10



seconds because he didn't want to have to install a certified 'cage.

In 2013, Agnello sold the car to Joe Luppino, who fell in love when he saw it at a car show in Bear Mountain, New York. Like Agnello, Luppino enjoyed driving the Chevy II very much, but his ownership was cut short after only five months when he and his wife went their separate ways. That's when it went—the first time—to Joe Silhan, who also fell in love the moment he saw it.

A year after Silhan bought the car, Luppino called to ask if he'd consider selling it and the timing was right so





it went back to Luppino. Over the following year he made a number of changes, starting with the installation of Wilwood front calipers in place of the Mustang II calipers that were part of the Heidts subframe kit. He also installed Billet Specialties wheels, a Harwood Industries cowl-induction hood, a transmission cooler, and electric fans.

Just when he had the car fully dialed in, looking and performing exactly as he wanted, Luppino got a call from his old pal Silhan,

asking—you guessed it—if the car was for sale? Coincidentally, Luppino had just lost his job, so he reluctantly agreed to sell, but with the promise that when Silhan was ready to part with it he'd call him first.

"If I ever want to sell it, I'll call Joe," Silhan tells us. "But realistically speaking, I don't see that happening because this car is so nice. I would actually call it perfect. It's a great driver that my son Francis and I enjoy very much, so I don't anticipate selling it again!" **CHP**

TECH CHECK

Owner: Joseph Silhan, Bay Shore, New York
Vehicle: 1966 Chevy II

Engine

- Type:** Dart Big M big-block
- Displacement:** 548 ci
- Compression Ratio:** 8.5:1
- Bore:** 4.530 inches
- Stroke:** 4.250 inches
- Cylinder Heads:** Dart Pro 1 aluminum
- Rotating Assembly:** JE Pistons forged aluminum pistons, Pro Seal rings
- Valvetrain:** Comp Cams hydraulic roller
- Induction:** The Blower Shop 8-71 supercharger, hand-ported The Blower Shop intake manifold, dual Barry Grant Mighty Demon 850-cfm carburetors
- Ignition:** MSD 6AL box and coil, Moroso wires
- Exhaust:** Hooker Super Competition headers
- Ancillaries:** BDS 8-71 drive kit, twin Holley electric fuel pumps, Powermaster alternator, Behrent's valve covers
- Output (at the crank):** 900 hp at 5,800 rpm, 815 lb-ft at 4,400 rpm
- Machine Work:** Central Valley Machine Shop
- Built By:** Central Valley Machine Shop

Drivetrain

- Transmission:** JW Performance Turbo 400, TCI Automotive torque converter, B&M shifter, transmission oil cooler and fans
- Rear Axle:** Yukon Gear & Axle Dana 60, 3.73:1 gears, Strange Engineering axles (cut down by Moser)

Chassis

- Front Suspension:** Heidts subframe with independent front suspension, California Custom Roadsters adjustable coilover shocks and steering box, ididit steering rack
- Rear Suspension:** TCI Engineering four-link, California Custom Roadsters adjustable coilover shocks
- Brakes:** Wilwood 11-inch discs and four-piston calipers, Classic Performance Products master cylinder and power booster

Wheels & Tires

- Wheels:** Billet Specialties Street Lite 15x4 front, 15x14 rear
- Tires:** Mickey Thompson Sportsman S/R 24x5.00R15LT front, 29x18.00R15LT rear

Interior

- Upholstery:** R.J.S. Racing Equipment seat covers, custom door panels, stock carpet
- Seats:** R.J.S. Racing Equipment seats and five-point safety harness
- Steering:** ididit column, Grant GT wheel
- Shifter:** B&M Automatic Pro Stick
- Dash:** Custom aluminum
- Instrumentation:** AutoMeter
- Rollcage:** Eight-point fabricated with chromoly steel tubing
- Audio:** None
- HVAC:** None

Exterior

- Bodywork:** Stephen Agnello
- Paint By:** Stephen Agnello
- Paint:** PPG two-stage, custom color
- Headlights & Outside Mirrors:** Camaros & Classics
- Hood:** Harwood Industries cowl-induction
- Grille:** OEM
- Bumpers:** OEM from Ground Up

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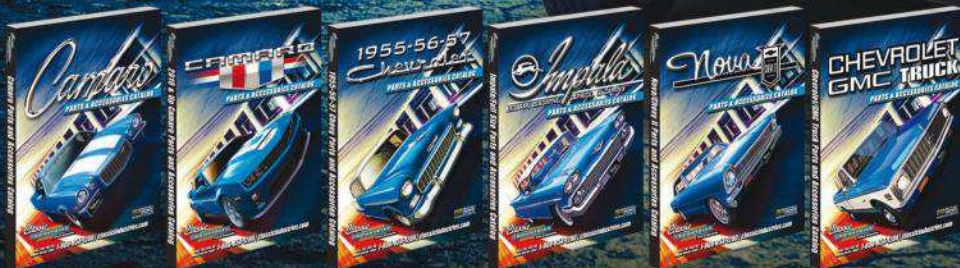
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MOTION CONTROL

Improve the handling of your vintage muscle car by installing urethane body mount bushings

♦ TEXT & PHOTOS: **Nick Licata**

When it comes to upgrading the suspension of your classic Chevelle—or any muscle car for that matter—the number of options is pretty much unlimited. It can range from bolting on a set of aftermarket control arms, spindles and lowering springs to a performance coilover conversion kit, larger sway bars, or even going all-in with a complete aftermarket chassis.

But if you aren't quite ready to jump into any of those suspension upgrades, you can still get better handling performance by merely replacing the original rubber body mount bushings with a fresh set of urethane bushings. In fact, if you do plan on making suspension upgrades, it makes even more sense to go the urethane route.

Brian Cox, a member of our team here at *Chevy High Performance* owns a '67 Chevelle that has a stockish suspension, sporting aftermarket springs, shocks, and sway bars. Brian's Chevelle was still outfitted with the original 50-year-old rubber body mount bushings, which on their best day offered sloppy handling, undesirable vibrations during highway driving, and strange noises and squeaks when Brian pulled the car in or out of his driveway—all common symptoms associated with cracked and worn rubber body mount bushings. It was definitely time to upgrade.

We went to Prothane Motion Control in Placentia, California, for their 1965-'67

Chevelle, El Camino, Monte Carlo Urethane Body Mount Kit. Launched in 1991 with fewer than 100 products, Prothane now makes more than 5,000 kits and parts ranging from engine mounts, transmission mounts, leaf spring pads, control arm bushings, strut arms, shocks, and more for domestic and import vehicles—all proudly made in the USA.

While rubber components offer a soft ride for a limited amount of time, they tend to deteriorate rather rapidly from the extended exposure to the elements, which contributes to premature failure, resulting in a "spongy" ride and a reduction of ride quality and performance handling. Prothane's urethane bushings are impervious to gas and oil, are stronger than rubber, and will offer a better overall performance driving experience, especially in a vintage 1960's muscle car.

All these benefits are just what we were looking for, and the longevity is very appealing, as we don't plan on doing this exercise again anytime soon. As Prothane puts it, "Rubber will rot, urethane will not."

So let's dig into this ride and get rid of those vintage rubber bushings. **CHP**



01 | *Chevy High Performance* account manager Brian Cox's '67 Chevelle was rocking the same body bushings it came with from the factory so the car's less-than-stellar ride was starting to wear on him. We brought the car into the *Chevy High Performance* tech center where installation technician Chris Arriero handled the wrenching.



02 | Prothane Motion Control's 1965-'67 Chevelle body mount kit (PN 7-121) comes with all the new urethane body bushings, sleeves, and washers and are a direct replacement for the original, cracked, 50-year-old rubber bushings. They come in red or black; there is no difference in quality between the two colors—red just photographs better.



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03 | Arriero got started by hitting all the body mounts with good dose of spray lubricant to help loosen the stubborn nuts and bolts. Every bit helps when you are dealing with nuts that haven't turned in over 50 years. Once done with the spray process, all of the body mount bolts were slightly loosened before starting the replacement process.



04 | Arriero got started at the core support by removing mount #1 (Prothane numbers all the mount locations in the instructions to ensure the correct bushings are used) with a 5/8-inch socket. Note, this is the only mount with the slim bottom bushing. We removed and replaced one mount at a time (one on each side) to keep the body square to the subframe.



05 | The stock bolts were a little too short for the new body mounts so we called an audible and went with Grade 8 bolts that were 1/4-inch longer to help make installation easier.



06 | We applied a little antiseize to each bolt for good measure.

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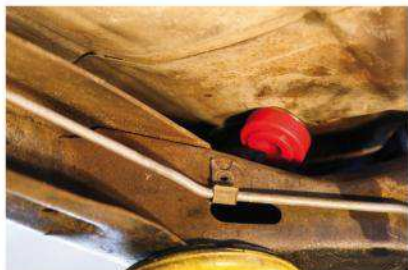


07 | At this point, with all the body mount bushings loose, Arriero used a pole jack and a length of 2x4 to carefully raise the body on one side. You'll have to further loosen the body mount bolts on the side you are working on in order to raise the body enough to remove the old bushings and slide the new ones into place. For safety purposes, be sure the chassis remains fully supported, in our case with the lift.

08 | Due to the stock #2 body mount having the top washer and a portion of the sleeve integrated as one piece, we had to raise the body a little higher in order to get it out over the top of the subframe. This photo illustrates how long the original body mount sleeve is compared to the new Prothane bushing that will replace it. Again, it's important you slowly lift the body to make sure the door gaps don't tweak too much and that the frame is still fully supported.



09 | As you can see here, the stock #2 bushing's washer and rubber are integrated together (black arrow), making it more difficult to remove. We yanked on it for a while before realizing it wasn't coming out without a fight and the help of a cutting disc.



10 | The new Prothane bushing slides in between the body and subframe. It went in a whole lot easier than getting the stock piece out.

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11 | As you go through replacing all the bushings, just hand-tighten each one until all are in place.



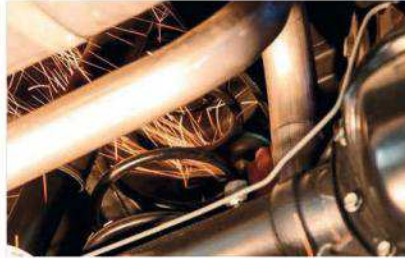
12 | Moving on to body mount #3. Keep in mind this body mount bushing is the one with the larger bore. It's important to use the correct mounts in the designated positions per the supplied instructions. Bushings #2, #3, and #4 can all go in at the same time at this point. Again, be sure to hand-tighten for now. We'll torque them all down at the same time as to not upset the door and fender gaps.



13 | Raising the body at the rear of the car enabled us to get bushings #5, #6, and #7 installed.



14 | Just when we thought it was smooth sailing, the body mount bushing (#5) near the rear upper shock mount also has an integrated washer and inner sleeve like #2.



15 | It was not possible to raise the body high enough to remove the body bushing so Arriero did some cutting on the bottom part of the sleeve. That worked.



16 | And here it is after. This shows how much was cut off in order to get that nasty thing out.

17 | It was a little tight, but we were able to get in the new Prothane body mount bushing and hand-tighten it for now.



18 | Compared to the #2 and #5 bushings, replacing the rest were drama free.



19 | With all the new bushings installed, Arriero carefully lowered the body back in place and torqued each bushing bolt to 40 ft-lb or when the bushing just begins to bulge, per the Prothane instructions. It's a good idea to start from the middle of the car and work your way to the front and rear bushings. Prothane also suggests re-torquing the bolts once you hit the 1,000-mile mark.

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Before: Brian tells us the car had annoying squeaks and rattles, and every bump in the road upset the car, making it feel loose and unpredictable, which wasn't very safe. Taking freeway onramps at any sort of speed was dicey due to the sloppy handling characteristics. Basically, the thrill was gone.

After: Brian informed us that when he drove the car off the lift he noticed an immediate improvement in stability, and when he pulled out of the driveway the car felt way more solid. Gone were the annoying squeaks and unexplainable noises and the car was more in tune with the road, offering instant driver feedback. The unpredictable nature of the car at highway speed was also absent and he was much more confident stepping on the gas pedal and taking corners more aggressively. Quicker steering response was also noticed, and as Brian put it, "This car is just way more fun to drive now."



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THE ACCESSORY ANSWER

An accessory drive solution for any LS swap situation

✦ TEXT & PHOTOS: **Wes Duenkel**

Newsflash: GM's excellent Gen III and Gen IV (often lumped together as "LS") small-blocks are great for engine transplants. They make great power, don't weigh a ton, and are so compact it's hard to find an engine bay that won't accept one. Since everyone is doing it, it must be easy, right?

Well, the cussing starts when you want your LS engine to do more than just spin the transmission. The LS engine is plenty compact, but the stuff bolted on the front is usually anything but. Most LS accessory options fit into three problem categories: ugly, impossible, or expensive.

Holley solved all three problems with their new Mid-Mount Complete Accessory System. Finally, an accessory drive solution for any LS engine swap situation. It's a complete water pump, alternator, power steering, and air-conditioning package that matches the diminutive exterior dimensions of the LS engine.

But the Holley Mid-Mount Complete Accessory System isn't just about *where* the accessories are mounted, but *how* they're mounted. Everything attaches to the innovative water pump casting—nothing bolts to the cylinder heads.

Having struggled themselves with LS engine swap headaches over the years, Holley's designers took a clean sheet approach with their latest accessory drive solution. It's clear that Holley replaced, rethought, or reengineered everything.

Take the alternator. While its mounting provisions are common with a fourth-generation Camaro, the battery stud is on the side so it fits tightly to the

cylinder head. The alternator's unique casting utilizes the latest hairpin/square wire, six-phase technology to deliver 150 amps.

Below the alternator is a Type II power steering pump, which includes a brilliant banjo to -6 AN hard line adapter. The piece relocates the pressure outlet to make the installation compact and plumbing a breeze.

And there's no need to ditch the comforts of cold air conditioning with the Holley Mid-Mount Complete Accessory System. It includes a compact and modern SD7 compressor that bolts to the water pump casting with a handy slotted mount.

Speaking of the water pump casting, it includes a proprietary pump insert using the same technology from the latest Corvette, including a complex



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⚡ The Accessory Answer



01 | The Holley Mid-Mount Complete Accessory System for LS engines includes an alternator, power steering pump, and air-conditioning compressor that all mount to a sophisticated, patent-pending water pump casting.



02 | The water pump casting accepts both straight and swivel thermostat housings (swivel housing sold separately), and two heater hose locations maximize installation flexibility.



03 | Holley offers kits with two different crank dampers: an OEM-style (left), and an SFI-approved assembly (right).



04 | The kit we installed on a 5.3-liter swapped '69 Camaro used the Holley OEM-style damper (left). Though it appears similar to a truck damper (right), the pulley is roughly 3/4-inch longer to position the accessories in front of the cylinder heads.



05 | The 5.3-liter-swapped Camaro used a Corvette front accessory drive. While everything fit, the setup was messy and cumbersome.

06 | The Corvette accessory drive positioned the power steering pump awfully close to the upper control arm.



07 | Likewise, there wasn't much room between the air-conditioning hoses and the inner fenders.



ceramic fluid seal to survive the rigors of high-rpm operation.

Besides including provisions for all of the accessories, the sophisticated, patent-pending water pump casting includes two heater hose mounting

options to accommodate virtually any engine compartment situation. Additionally, the casting accepts standard and swivel thermostat housings.

The Mid-Mount Complete Accessory

System is offered with a proprietary but OEM-style crankshaft damper (PN 20-185) or a "Premium" kit with an ATI crankshaft damper (PN 20-180).

Considering an LS engine swap? You're officially out of excuses. **CHP**



08 | This photo says it all. The Holley Mid-Mount Complete Accessory System (top) is dramatically more compact than the Corvette system (bottom).



09 | We began the process by installing the Holley harmonic damper with a special tool we borrowed from our local auto parts store. (Don't try it without one or you could strip the threads inside your crankshaft.)



10 | The included thermostat housing and side heater hose ports worked best for the '69 Camaro.



11 | The cartridge-style Holley water pump is a similar design to that used on the LT4 engine in the Corvette, though the two are not interchangeable. The internal ceramic seals are designed to survive sustained high-rpm operation.



12 | The sophisticated water pump casting bolts to the block using OEM-style gaskets.



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⚡ The Accessory Answer



13 | Holley's 150-amp alternator tucks in tightly to the water pump and features the latest "square wire, six-phase" technology.

15 | We used a power steering pulley installer borrowed from a local auto parts store to install the pulley. Don't even think about installing it any other way!



16 | The power steering pump tucks up nicely under the Holley alternator.



14 | To make the power steering pump installation as compact and simple as possible, Holley designed this unique adapter tube that utilizes a -6 AN fitting.

17 | While the air-conditioning compressor is a common SD7 unit, the mounting method is unique. The slotted inner mount makes installing the compressor a breeze.



18 | The spring-loaded belt tensioner installs just below the air-conditioning compressor.



19 | With all the accessories mounted, we installed the included serpentine belt.



20 | Holley also offers a nifty steam tube kit, which includes brilliant blocks that rotate to accommodate virtually any engine configuration and intake combination.



21 | The Holley Mid-Mount Complete Accessory System occupies virtually half the space used by the Corvette system.



22 | For those that are aesthetically inclined, Holley also offers a billet aluminum cover kit for the pulleys and tensioner.



23 | With everything buttoned back up, the Holley Mid-Mount Complete Accessory System is right at home in the bay of this '69 Camaro.



24 | There are now acres of space between the power steering pump and the upper control arm.



25 | On the other side, the space gains are equally as impressive. Maybe enough room for a turbo or two in there ...

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MUSCLE

RIDES

John Provenzano's 1968 Pure Stock time capsule

❖ TEXT: **Ro McGonegal** | PHOTOS: **Grant Cox**

***For more than two** hundred million years, dinosaurs pummeled the Jurassic landscape. Yikes, they were all over the place. They thundered. They bellowed. They shook the ground. They shook the trees and really were omnipotent. But their packaging was wrong. Their sheer size ultimately doomed them due to inefficiency; “natural” causes brought them down and eventually turned the muck into fossil fuel.

The time was right and the price was cheap, but if

you've just plowed into your 40s you weren't around when American dinosaurs roamed the realm. Their manic popularity represented an orgy of national insecurity juxtaposed with national pride and cursed by carcinogenic entrails. Yikes, but they were raising hell all over the place. Even in our limited and primitive view of the world, we had a nagging suspicion that this stomping, snarling pig iron just wouldn't make it. In the end, it was geopolitics and overzealous insurance wanks driving four-cylinder turds that brought them down.



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THE CAR





You'll have to remember that part about beauty being in the eye of the beholder.

Maybe John Provenzano will start a trend here. His Chevelle is an original SS 396 and he intends to keep it that way. Though it may represent stock, all primary systems have been rebuilt to fight physics. Out there on the Kansas plains John isn't excited about flogging his Chebby beyond anything that would have gone down when it was showroom new. These boats ripped wonderfully as long as the line was straight, but their brakes weren't very good and their suspensions didn't yield much beyond rudimentary "handling." The bias-ply tires were laughable.

What is the car's most endearing quality? Simply that it doesn't shout. It whispers. To see it today as it was when it came out of the oven is sobering. We've been captured (trained) by the ideas and the handiwork of many, many thousands of hot rodders driven to change everything to personalize their rides so it's a little unsettling to see a new build that has been updated and looks fresher, but really is no different. So you add some familiar cues, like the period-correct Cragar S/S chromies and the tall aspect-ratio BFG raised white letter Radial T/A tires that faithfully maintain a soaked-in-the-'60s aura.

You keep looking for the big changes. You look closer; check out the engine bay. Cast-iron logs. No headers. But being who he is, John Pro just couldn't keep his hands off the engine. Nowadays, the smooth,



streamlined firewall has become a neutral backdrop, a foil to celebrate the almighty fire-breather and compared to what we've experienced for the last 15 years or so, the clutter here seems incredulous. Still, John could do no less than revive the original (C60) HVAC system that included a 61-amp alternator, heavy-duty radiator, and a temperature-controlled fan.

John's almost 60 now and has been lassoed by this stuff since he was a young teen. "My brother, who is eight years my senior bought a new '69 Chevelle SS, which he still owns, and I wanted a Chevelle SS, too." So he found the car in a penny pincher pulp. It was his first one and had 63,000 on the clock. He liked it because the body was sound. In August 1974, his parents

laid out \$1,500. "It wasn't the highest bid," said John with a wink, "but the owner thought I'd take care of it." He got it the day he turned 15. In the first sweaty hours, he pedaled it more than 100 miles. He says that the most challenging part of the history was building the car the way he wanted it.

John's main man in all of this is Mark Bauer, whose stellar constellation whirls in Wichita, Kansas. His shop handled the critical chore. In 2005, Bauer performed a body-off restoration. They elected to replay the original and repainted the SS with PPG Tripoli Turquoise (GM Code KK). It is simultaneously chilling and cathartic to see this car now as it was 50 years ago. Look at the interior. To us it's still familiar and unsullied but looks heavy



and a little overbearing. There's not a drop of humor or whimsy peeking out of that featureless sea of N.O.S. black.

As for that big-block: roughly 97 percent of the SS cars built in 1968 were equipped with the RPO L35 325-horsepower version of the 396. For modern life, Tracy Pedigo did the

updates. He gave the cylinder block a quarter-inch cleanup poke to make the total 402. He stuck a flat tappet cam in it. He sealed the bores with Edelbrock cylinder heads and capped the pile with an Edelbrock Performer manifold. He iced that cake with a Proform carburetor.

"Now, I enjoy driving the car on dry, sunny days and I dust it off once a month," said John. "I do take it to local shows and I drive it very carefully, but test its limits now and then, if you know what I mean. This is my own piece of Americana." **CHP**

TECH CHECK

Owner: John Provenzano, Wichita, Kansas
Vehicle: 1968 Chevelle SS 396

Engine

- **Type:** Mark IV (RPO L35)
- **Displacement:** 402 ci
- **Compression Ratio:** 10.25:1
- **Bore:** 4.125 inches
- **Stroke:** 3.760 inches
- **Cylinder Heads:** Edelbrock RPM 454-0 oval port, 2.19/1.88 valves, 110cc combustion chambers
- **Rotating Assembly:** OE forged crankshaft, OE connecting rods w/ 3/8-inch SPS bolts, forged Speed-Pro pistons
- **Valvetrain:** Comp valvesprings and hydraulic lifters, Magnum 3/8-inch pushrods
- **Camshaft:** Comp High Energy 268H (224/230-deg, duration at 0.050; 0.515/0.520-inch lift)
- **Induction:** Edelbrock Performer RPM intake manifold, Proform 750-cfm carburetor
- **Ignition:** PerTronix Ignitor III
- **Exhaust:** Cast-iron manifolds, 2 1/2-inch exhaust system, MagnaFlow mufflers
- **Ancillaries:** Be Cool radiator

- **Machine Work:** Wickle Performance (Wichita, KS)
- **Built By:** Tracy Pedigo at Pedigo Performance (Wichita, KS)
- **Tuner:** Tracy Pedigo
- **Output (at the crank):** 450 hp

Drivetrain

- **Transmission:** Coan Turbo 400, B&M torque converter
- **Rear Axle:** Original 12-bolt, Positraction differential, 3.73:1 gears

Chassis

- **Front Suspension:** Original rebuilt, Delco shocks
- **Rear Suspension:** Original rebuilt, Delco shocks
- **Brakes:** 11-inch rotors, two-piston calipers

Wheels & Tires

- **Wheels:** Cragar S/S 15x6 front, 15x8 rear
- **Tires:** BFGoodrich Radial T/A 215/60 front, 255/60 rear

Interior

- **Upholstery:** Scott Downey, Downey's Auto Upholstery (Wichita, KS)
- **Material:** Vinyl
- **Seats:** Original
- **Steering:** Original
- **Shifter:** Original
- **Dash:** Original w/ N.O.S. insert
- **Instrumentation:** Original
- **Audio:** Original AM/FM
- **HVAC:** Original GM

Exterior

- **Bodywork:** Mark Bauer, Bauer Auto Restoration (Wichita, KS)
- **Paint By:** Mark Bauer
- **Paint:** PPG Tripoli Turquoise (GM Code KK)
- **Hood:** Stock
- **Grille:** Stock
- **Bumpers:** Stock

ZERO TO HERO!

Bring a dated and dirty engine bay back from the brink of disaster in a weekend

❖ TEXT: **Jim Smart** | PHOTOS: **Steven Rupp & Jim Smart**

The Chevy Nova and Camaro have a lot in common. Well, sort of. The Chevy II/Nova started out as a humble, economical compact platform in 1962. It was a simple, affordable ride you could do a lot with and for not much money. By 1968, the Chevy II/Nova was more sophisticated with a new platform and a groovy bolt-on subframe shared with the all-new Camaro ponycar.

It is true that the Nova shares a lot of sheetmetal with the Camaro, though not always immediately apparent. What the Nova and the Camaro don't have in common is numbers. There are more surviving Camaros than there are Novas today. This makes the Nova desirable as a dream project because not everyone has one. When they roll into a show or cruise they catch the eye. We like the wavy, slippery lines of the 1968-'74 Nova, and being they aren't as pricy as a Camaro they are out there waiting for the savvy buyer.

Joel Rode of Hot Rod Specialties in Upland, California, picked up this '69 Nova for a song, hauled it home, and went right to work on it. Because he bought it for chump change he had more room in his build budget than he would have if he bought a comparable '69 Camaro.

Because the car spent most of its years near the ocean there were rust issues, which Joel took care of in his shop. With most of the bodywork handled, Joel decided it was time to do something about the ugly engine bay. The car was originally a six-cylinder Nova, as most of them were, but at some point

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had a small-block swap. A closer examination revealed a 350 with double-hump heads and aftermarket intake and a Holley carb.

Joel has removed the Nova's front end sheetmetal for easier access and to show us what's possible even on a tight budget.

Let's get started. **CHP**



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Zero to Hero!

01 | Joel Rode of Hot Rod Specialties started with this ugly and dated engine bay, which was an I-6-to-V-8 conversion in need of a fresh appearance and better mechanicals. That long, flexible upper radiator hose is a hoot and the wiring is frightening.



02 | We haven't the faintest idea where this electric cooling fan came from. However, it needs to go, along with the zip-tie fasteners. AutoRad will help us with the radiator and fan combo.



03 | Not only is newer, better wiring a matter of aesthetics it is also a matter of safety. Exposed wiring strung all over the place can be very unsafe and make a crispy critter out of your Nova in short order. We're going to fix this with a wiring loom from American Autowire.



04 | Joel has removed the Nova's front end sheetmetal and prepped and painted it in a forest green metallic. Chevrolet thought of everything when designing these sporty compacts to be easy to service, as the wheelwells and fenders bolt on as a single unit.

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05 | Removing as many components as possible—especially the engine—makes it easier to do a professional job of detailing the engine bay. Joel took this thing down to the subframe and made everything like new again.



06 | Energy Suspension provided us with new polyurethane subframe mounts, which will isolate engine and driveline harmonics as well as road noise.



07 | Joel stripped the Nova's 350 down and did a nice detail job on an engine that ran well but looked like hell. Beneath the SEM satin black paint is a suitable street engine with plenty of power on tap. If you're restoring a driver, this makes a nice weekend job because it gets you back on the road by Monday.

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08 | Eddie Motorsports provided this complete serpentine drive system in billet aluminum. We like the compact nature of this system where nothing extends beyond the engine's perimeter.



09 | The ceramic-coated, long-tube headers from Doug's Headers are a nice touch for this Nova's engine compartment. They're easy to install and the ceramic coating keeps destructive heat energy where it belongs.



10 | The affordable Doug's long-tubes are a perfect fit, dropping cleanly inside the framerrails without interference issues. What's more, they do a nice job of exhaust scavenging, which nets more power. These tubes give Joel's Nova a nice throaty sound under acceleration.



11 | Joel decided to take advantage of this engine bay update to also install an 800-cfm Holley carburetor and a tall, single-plane intake manifold.



12 | Ignition comes from a fiercely reliable PerTronix billet street distributor with vacuum advance and the Ignitor III inside. The Ignitor III has all the advantages of the original Ignitor and Ignitor II, yet with a built-in rev-limiter.



13 | The prepped and painted front fenders and wheelwells are carefully installed. It's a good idea to protect front end sheetmetal with blankets or towels. No matter how careful you are, there's always the risk of paint damage.

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14 | Eddie Motorsports billet aluminum fasteners make this front end pop. Don't fully tighten the fasteners until you are sure about fitment.



15 | Very few front ends go back together without shims to get things true. Joel carefully installs shims to where they will be out of sight and fitment will be just right.



16 | You've got to love these billet hood hinges from Eddie Motorsports. They look terrific and they offer a mechanical advantage via this beautiful mechanical motion. Nitrogen-filled struts will provide the assistance, making hood opening and closing easier.



17 | In front is a twin-fan, dual-row custom aluminum radiator from AutoRad. This is a really nice piece designed specifically for the 1968-'74 Nova. Joel has installed his own custom coolant recovery system using components from AutoRad. Joel tells us his 350 barely makes it to operating temperature even on the hottest of days.



18 | Joel opted for these Eddie Motorsports valve covers for his 350 with the extra-added Hot Rod Specialties logo scribed mid-cover.



19 | The Eddie Motorsports fasteners really make the ride because they are so uncommonly sharp. There's a nice contrast between the fastener in black and the perimeter washer in billet aluminum. The billet aluminum hood bumper is fully adjustable and a nice accent.



20 | The American Autowire engine compartment wiring loom yields safety and outstanding quality. It is a nice fit because it plugs right into factory connectors and switches.



21 | Look at what you can accomplish over a weekend. Add in the Eddie Motorsports fender braces and we have good looks, safety, and durability in a cool, classic Nova. The Nova gives Joel a nice blend of a weekday cruiser and Saturday night drag racer.

BURIED TREASURE

Kent Kennedy's '69 Camaro is proof barn finds are still out there

◆ TEXT: **Evan Perkins** | PHOTOS: **Grant Cox**

***If you're a Chevy High reader** and you can honestly say that you've never had eyes for a '69 Camaro, we can't be friends. Also, you're lying. The '69 is an icon, with style decades ahead of its time, an amazing assortment of factory-offered performance options, and a face every generation of Chevy gearhead from grandad to grandson salivates over.

Most of us want one; few of us will ever have the chance. If you had asked Kent Kennedy if an original '69 Camaro Z/28—hidden away on the other side of town, no less—was in his future, he probably would have laughed. But when a customer informed him of a little-known specimen tucked away in a warehouse he jumped at the opportunity. This scenario proves two things: barn finds of all makes and models still dot this planet and if you have a chance at a '69 Camaro ... you take it.





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Buried Treasure



"A friend of mine told me about the car," said Kennedy. "It was truly a barn find, tucked in the back of a building." The car had been sitting for several decades, collecting dust and acting as an involuntary rodent hotel. "It hadn't been licensed since 1981," he said. "I still have that little piece of paper: a safety inspection sheet from the state of Missouri."

It took over a year to finalize the purchase of the car from the owner, but he persevered. When the haggling was done and Kennedy wheeled his trophy home it became clear it wasn't the dust-off-able time capsule he initially thought it was. "It looked like a pretty solid car but

when we got it home we realized it was a mouse nest," he said. "I mediablasted it ... it got a lot worse."

Kennedy enlisted the help of The Restomod Store on the build and they replaced every bit of sheetmetal except the quarters, cowl, and roof. In the process they also mini-tubbed the rear.

What do you do with a genuine Z/28? It's quite the fork in the road. Ultimately, Kennedy came to two conclusions: he wanted to make it what he likes and he wanted it to look like a muscle car. Oh, and he didn't want an LS engine.

"Everybody does this LS motor stuff and I just wanted to stay so far

away from that," said Kennedy. "I kept it carbureted; an old-school, orange small-block like I wanted."

"When we found [the car], the 302 was missing," said Kennedy. "The Muncie transmission was still attached to the crossmember, and the tachometer was missing, too. Somebody knew what they wanted to take."

To fill the DZ302-shaped void, a 400ci small-block engine was sourced from a '69 Chevelle. It's a stock-style rebuild with iron heads, roller rockers, and 10:1 compression. Kennedy's carburetor of choice was a 750-cfm Holley double-pumper. Billet Specialties valve covers add some

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flare to the “orange” small-block and a PerTronix distributor with Accel wires handles the ignition duties. Up front, a March pulley system takes care of the various utilities.

Behind the engine is the original Muncie M21 transmission and a stock-style flywheel with a Centerforce clutch and—of course—a Hurst shifter. A stock driveshaft funnels power to the original 12-bolt differential, which is packed with 3.73 gears and Moser axles. Kennedy says it gets a little buzzy on the freeway with those gears and no overdrive, but that doesn't stop him from driving the car.

There was so much that Kennedy loved about the car, but the original suspension didn't make the cut. “I left the original crossmember after cleaning up the welds, but everything else is modern.”

Tubular Detroit Speed upper and lower control arms replaced the factory stampings, and big, four-piston Wilwood brakes adorn each corner. The factory coils, shocks, and leaf springs are gone, and in their place live QA1 coilovers. Out back resides a TCI torque arm suspension that gives the car far better handling dynamics than '60s' engineers could have imagined. The rolling stock consists of Boze wheels wearing Nitto

TECH CHECK

Owner: Kent Kennedy, Lee's Summit, Missouri
Vehicle: 1969 Camaro Z/28

Engine

- Type:** Small-block
- Displacement:** 409 ci
- Compression Ratio:** 10:1
- Bore:** 4.165 inches
- Stroke:** 3.750 inches
- Cylinder Heads:** GM Iron
- Rotating Assembly:** Stock GM
- Induction:** Holley 750-cfm carburetor, Edelbrock intake manifold, stock air cleaner
- Ignition:** PerTronix distributor, Accel primary wires
- Exhaust:** Dynatech headers, MagnaFlow mufflers
- Built By:** The Restomod Shop

Drivetrain

- Transmission:** Original Muncie M21, Centerforce clutch, Hurst shifter
- Rear Axle:** Original 12-bolt with Moser axles and 3.73:1 gears

Chassis

- Steering:** Stock
- Front Suspension:** Detroit Speed tubular control arms, QA1 coilovers
- Rear Suspension:** TCI torque arm suspension, QA1 coilovers
- Brakes:** Wilwood disc brakes (front and rear), Wilwood master cylinder

Wheels & Tires

- Wheels:** Boze 18x7 front, 19x12 rear
- Tires:** Nitto Invo 245/40 front, 345/30 rear

Interior

- Seats:** Procar By Scat
- Upholstery:** The Restomod Store
- Instrumentation:** AutoMeter Cobalt
- Steering Wheel:** Leather-wrapped OEM style
- Carpet:** OE-type, black
- Shifter:** Hurst

Exterior

- Paint:** Custom Axalta Blue
- Hood:** Classic Industries Cowl
- Grille:** Stock

Invo tires, 18s front and 19s rear to give the car an aggressive rake.

Inside, Kennedy wanted to retain as much of the '69 Camaro vibe as possible. “I tried to stay as close to original as I could, other than converting it to black,” he said. “It was just too much blue.” The only exceptions are a complement of AutoMeter Cobalt gauges and a set of Kenwood speakers—vitals and tunes.

Overall, the project took three years to complete. On its first outing, to the World of Wheels show, the Camaro placed Second in its class. “It wasn't even finished yet,” laughed Kennedy. “We just wheeled it in there and won.” Since then, the car has been to several other events, and Kennedy keeps racking up the miles. “It's a real Z/28, but I just drive it and enjoy it.” **CHP**

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ON THE LITE SIDE

How to professionally install windshields and backlites

✦ TEXT: **Jim Smart** | PHOTOS: **Brian Brennan**

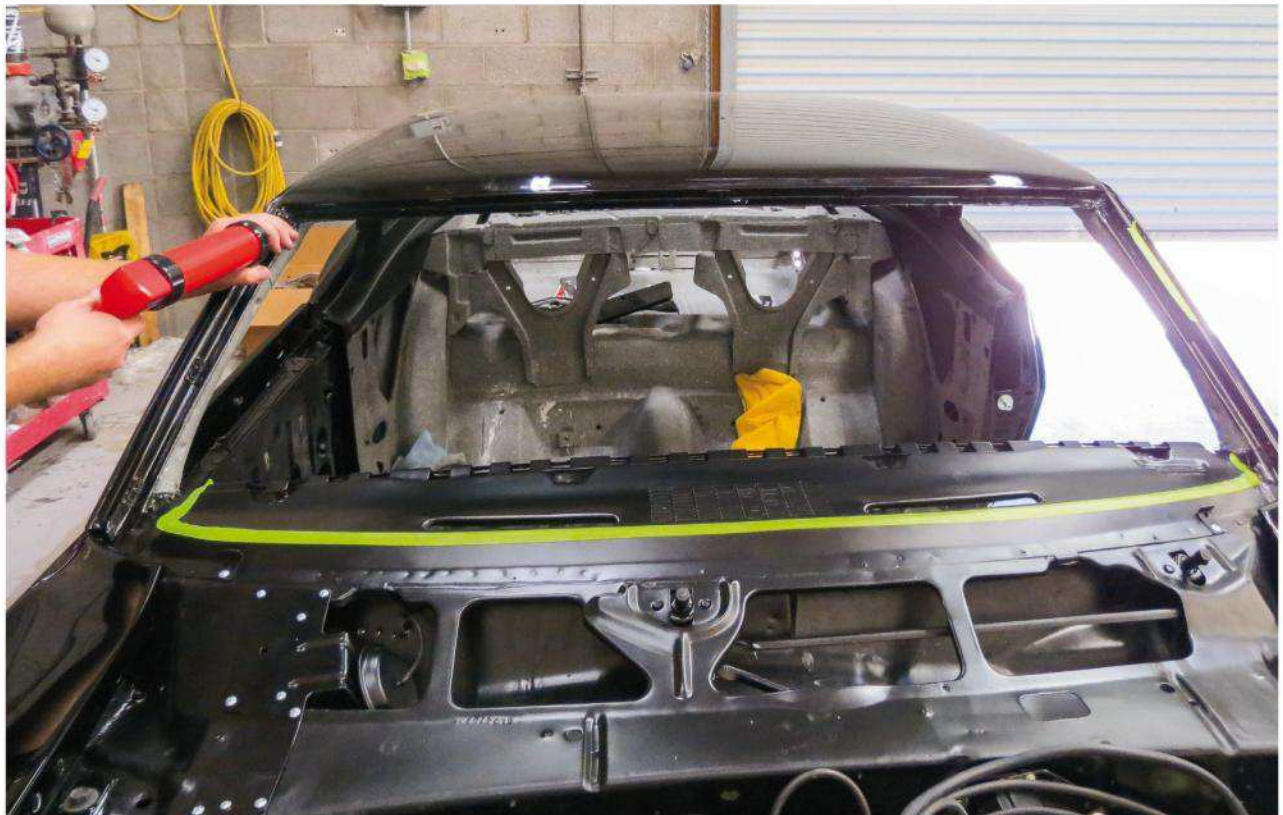
Windshield and backlite replacement has always mystified enthusiasts because it is the wild/weird science of laying laminated and plate glass onto a steel frame hoping it will successfully seal out the weather *and* look good. For ages, windshields and backlites were secured with a continuous rubber seal and non-curing gooey black sealant. In the 1960s, GM went to glue-in windshields and backlites that not only didn't leak but also stayed secured to the body in a collision in the interest of safety. Windshields and backlites held in with a rubber gasket had a tendency to pop out in collisions, placing occupants in great danger.

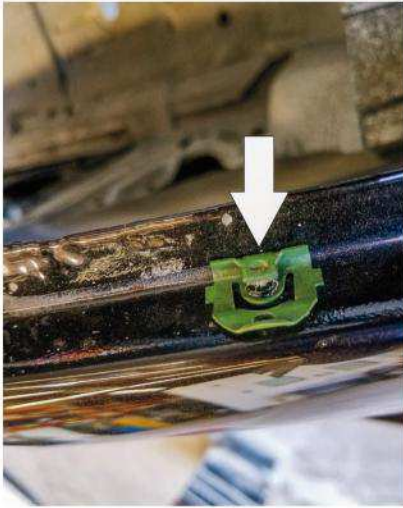
When you're installing glue-in glass, follow the manufacturer's instructions to the letter. 3M makes great auto body prep products, which are available through a lot of sources, such as Summit Racing Equipment. We're working with 3M's Fast Cure Auto Glass Urethane (PN 08690), which is a fast-curing urethane windshield adhesive and sealer designed for use with glue-in windshields and backlites.

We've found that 3M Fast Cure Auto Glass Urethane is a single-stage moisture curing urethane providing rapid strength build-up. You don't have

to wait for it to cure because it is a high-strength adhesive designed for use in full cutout installations without damming materials. It provides the bonding strength required for the installation of vehicle windshields, backlites, and sidelites. When fully cured, the 3M glass urethane meets the OEM strength requirements specified by Chevrolet.

We're at Hot Rods by Dean in Phoenix where we're going to show you the basics of how to install glue-in windshields and backlites on a first-gen Camaro. You must first begin by thoroughly cleaning the contact surfaces and removing all of the old





01 | Once you have cleaned all the windshield contact surfaces to where they are hospital clean—including the glass and pinch weld surfaces—carefully install the windshield molding clips. We got ours from Classic Headquarters. The challenge here is to install the clips without scratching the paint. Note where the clip seats against the pinch weld and the tip that secures the stainless trim.



02 | Test fit all glass before applying the 3M Fast Cure Auto Glass Urethane sealer. Windshield installation is nearly foolproof because GM provides glass supports at the base of the windshield. This approach beats the socks off of the old rubber seals we used to work with in classic Chevys. It was also a safety issue because rubber gasket windshields and backlites could pop out in accidents. It also took less labor time to install on the assembly line.



03 | The backlite installs the same way, with supports (arrows) at the base of the glass, which ensures proper glass placement. Check the fit before laying down the adhesive. The guys at Hot Rods by Dean use masking tape as a good reference line.

05 | The sealer/adhesive is applied in conservative amounts because you don't want the stuff oozing out around the perimeter. Lay down a 1/4- to 3/8-inch bead and, with a helper, lay the glass in. Once the glass is laid in, using the palms of your hands, carefully press the glass into place around the perimeter. Trim away any excess sealer with a razor blade before the sealer has a chance to completely cure.



04 | Hot Rods by Dean uses 3M Fast Cure Auto Glass Urethane sealer because it is very forgiving and cures quickly. Follow 3M's instructions closely.

adhesive and any glass fragments. The surfaces must then be primed with the appropriate 3M primer compatible with 3M's Fast Cure Auto Glass Urethane sealer. The primer seals any scratches at the pinch-weld where the glass sits to prevent rust. Once the primer has cured, make sure the glass contact surfaces are clean. With good surface prep you're ready for glass installation, which must be methodically performed with close attention to detail. Hot Rods by Dean will show you how. **CHP**

On the Lite Side



06 | Here you can see the windshield has been carefully pressed into place and is allowed to set up.



07 | Classic Headquarters provided us with new stainless windshield molding, which is protected with a blue film. The blue film will be removed during installation.



08 | The backlite has been firmly pressed into place and the 3M sealer has been allowed to cure. We're ready for stainless installation.



09 | The stainless trim installation begins at the bottom. Use your palms to carefully press the molding into place. Listen for the *click* of the trim clip. Make no mistake, this is not easy. You will run into clips and molding that won't seat together easily. The ease of installation depends upon body construction to begin with, any collision damage not properly repaired, and how much sealer you used. If you used too much, it gets tricky. Press evenly with your palms and do not pound on the molding.



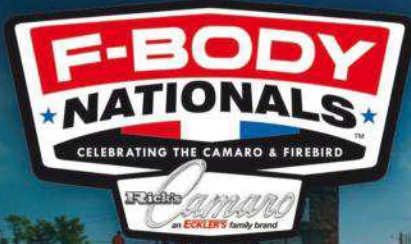
10 | You can see how the windshield molding is installed. Bottom molding first, then top, and then sides. Again, press firmly and do not pound.



11 | Hot Rods by Dean has done an excellent job of installing the glass and seating the molding. There are no dents in the molding because we haven't pounded the trim—just pressed the trim into place using open palms. It works.

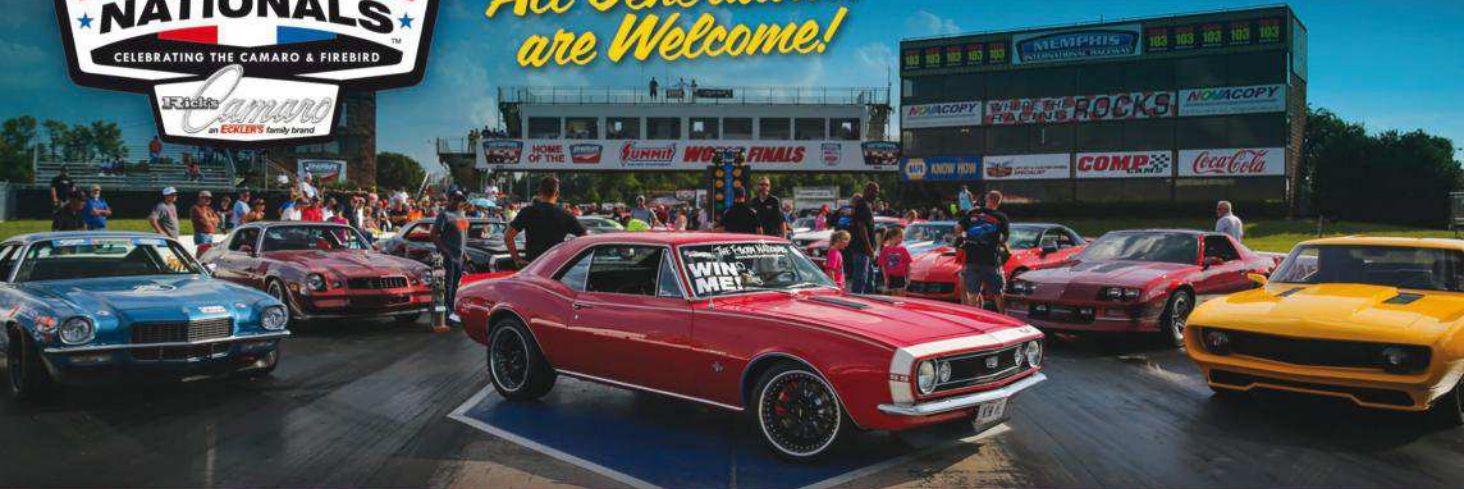
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by Nick Licata

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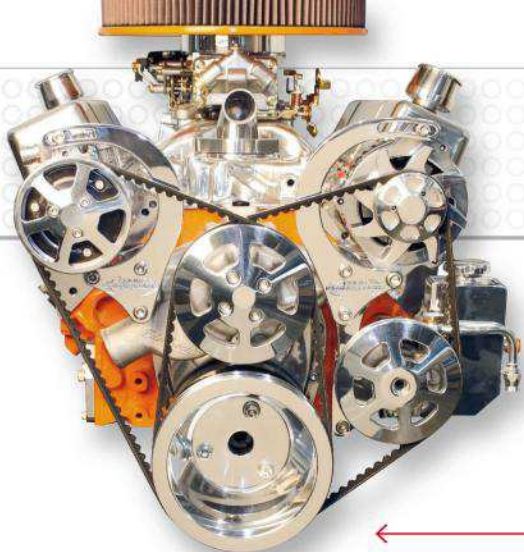
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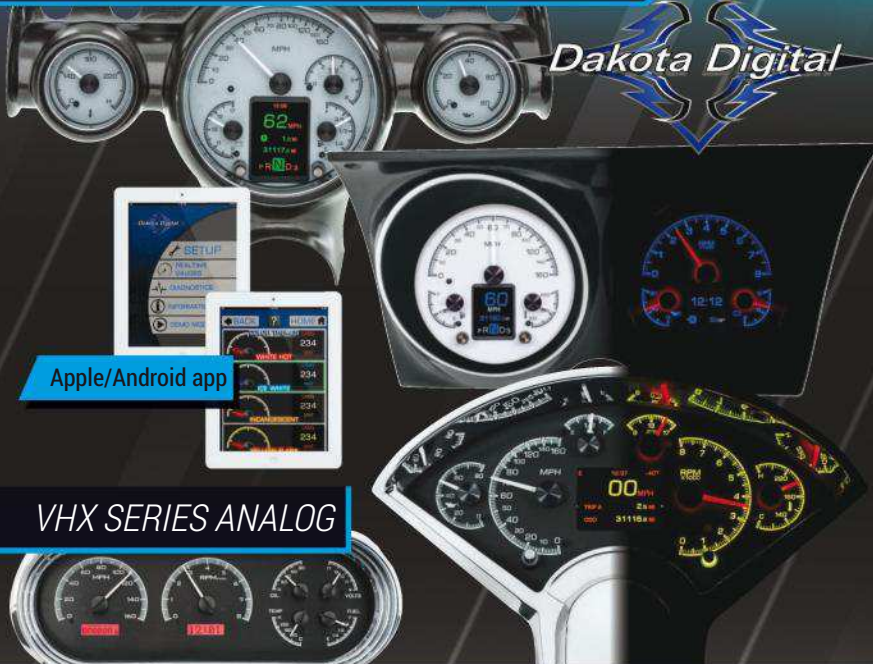
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BY: Brian Lohnes



America's gearhead classrooms are disappearing

▶ Like lots of kids in their formative years, I had a couple of huge influences in growing my love of cars and making them faster. The first was my dad, who was a racer and hot rodder long before I showed up on the scene, and the second was my job at a gas station while in high school where I worked the pumps and served as assistant, wrench grabber, floor washer, and sacrificial teenager. It was there that I learned so much about what to do, what not to do, and how to get your balls busted into oblivion by mechanics that actually did this stuff for a living and were reliving their own misspent youth through the kids that worked at the station. That place was less a garage and more a classroom. It gave me the best education ever. Thousands and thousands more like me got the same education with varying levels of profanity, secondhand smoke, and frustration. Sadly, these classrooms are a dying breed.

I love gas stations. Those most humble of American institutions are one of the things I pay attention to while on the road. We're not only losing gas stations ... we're losing COOL gas stations. Places where generations of gearheads spent time learning how to fix stuff and get around a garage or shop. They are being gobbled up by convenience stores where crummy food, crummy coffee, and aisles of crap have replaced lifts, lube racks, rows of cheap tires, and gleaming-red Snap-On toolboxes.

The very station I worked at and screwed around at as a kid has been gutted. That once-great shop is now a store where lottery tickets are now in the very spot where we used to sneak beers in our high school years.

In my time there, about half a dozen guys worked, learned, and went on to make a success of themselves with their hands. Any vestige of the old-school gas station where someone actually took a modicum of care in the condition of your car is gone. Back then we checked oil, filled tires, and used a squeegee or the old man who owned the place would chew our asses. Believe me, there was incredible personal value in that.

But you're rolling your eyes and taking pity on this old man writing the words because you know that there's loads of technical schools, training programs, and hand-holding that will take anyone and make them a master mechanic in

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a few short months. You know, the types of places you pay tens of thousands of dollars in order to have the opportunity to learn, whereas I was paid to be there every day.

While I am not discounting the value of an education, I am telling you that many hot rodders, gearheads, and racers have learned more by doing than by sitting in a classroom. These old gas stations, with their two-bay garages, were the perfect classrooms for a generation of interested kids that lived, ate, breathed, and dreamed about hot cars. Today, they are a place to buy Ho Hos.

How are tomorrow's rodders getting the proper hands-on education in a semi-professional environment they need? They're not. Instead, they rely on YouTube videos and forum posts of varying levels of "expertise" to make their buying decisions and influence their mechanical work.

I am not an ace wrench, but if I didn't have three years of watching Manny Fernandez work his magic at

the Shell station, I'd be way lesser for it. Those amazing do-all service station mechanics are a dying breed. The variety of machines they had to diagnose and fix would flummox most guys today. My kids don't believe my stories of helping with engine swaps and other big jobs at the gas station. In their world, such a thing doesn't exist.

The last real shame is that the great station garages were the spot where people with cool junk would hang out and bench race late into the night. The classic American gas station has served as a launching platform for so many others like myself. Their departure/absence leaves a big void in the development of the next generation of hot rodders.

Is this something we can fix?
Maybe it's just a sign of the times.
Just Sayin'

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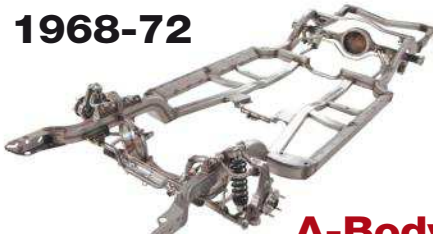
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