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# **FEATURES**

- **GOOD CAR-MA** A great '56 Bel Air made better by a frequently overlooked option: Respect
- **SURE THING** Man versus challenge: There's more than one way to skin a '63 big body
- FROM SURVIVOR **TO SHOWSTOPPER** This 1971 Camaro is no longer just a numbers-matching muscle car
- **BAD IN BLACK** Brandon Pursley mobs his Third-gen just like downtown

# **TECH**

- **ROCK STEADY PART 3** We finish up our 1967 Nova suspension overhaul with parts from Detroit Speed and Strange Engineering then hit the track
- **GREAT SKIDS** A rotor and pad upgrade that won't break the bank
- **NO MORE PEG LEGGIN' FOR THIS PIRATE** Upgrading a 10-bolt rearend with a limited-slip
- STYLISH INTERIOR **FOR A '69 CAMARO** We walk through the process of installing a full interior for a first-gen Camaro

#### ON THE COVER

Tri-Five Chevys continue to climb in popularity, and with climb in popularity, and with their timeless, attractive body lines they're making their way into the Pro Touring world as is evidenced by this beautiful 1956 Bel Air built by Chris Holstrom and his talented crew at Chris Holstrom Concepts in Puyallup, Washington. The full feature starts on page 16. Photographer: Chris Shelton.

# **DEPARTMENTS**

#### **FIRING UP**

It's a numbers game why there are fewer Nova, Chevelle, Tri-Five, etc., features. Not to get all DHS, but if you see something cool being built, say something so we can "swarm, swarm, swarm."

**STRAIGHT LINE SPOTLIGHT**The baddest drag racing Chevys: 2016
Championship edition

#### **PARTS BIN**

Things you need for your ride

#### **JUST SAYIN**

Sidekicking it through the gearhead life



We couldn't get away with just a four-page feature (page 34) on Bob Moorhouse's super-cool 1963 Bel Air, so we took the opportunity to use this gorgeous shot by photographer Grant Cox as this month's TOC image.

# FIRING

Nick Licata NLicata@enthusiastnetwork.com



# Camaro, Camaro, Camaro

When Jan Brady, the middle sister from *The Brady Bunch*, expressed jealously for the accomplishments of her more popular older sister, "Marcia, Marcia, Marcia" became the most famous quote derived from the popular late '60's and early '70's family television sitcom. That TV moment was later mocked in a Snickers commercial that first aired during the 2015 Super Bowl (look it up on YouTube; it's classic).



JB Granger broke the standard **Pro Touring** mold with his LS-powered 1966 Corvair.

Comparatively, readers of *Chevy* High Performance are of the opinion the staff and I favor the Camaro due to the fact that there is one in just about every issue of the magazine, and chevyhiperformance.com houses a fairly large library of Chevrolet's most popular model—most notably the '69. It's not because we are so dedicated to the Camaro, but being that the car was in production for 36 years (took a break from 2003-'09) and has been going strong for the past eight years, we now have six generations of Chevrolet's "favorite high-performance offspring" cruising the streets and racetracks all over America. Needless to say, that gives us an abundance of Camaros to choose from.

And within each of those generations, car guys/gals of various ages tend to gravitate to the one Camaro that most played an important part of their life growing up-either as an owner or remembering a friend or family member who had or has one. I'm betting most of us can relate to at least one sweet F-body sitting in the

high school parking lot that rocked a cool paintjob, had a wicked stance, and rolled on just the right wheels.

Being part of a generation that grew up in the 1970s, it was the first- and second-gen Camaros that sparked my muscle car interest. And when I graduated high school in 1980, the first-gens were just a tad over 10 years old and still affordable to a kid bagging groceries at the local Alpha Beta (remember that grocery chain?). Those cars struck a chord with just about every one of us who had the slightest bit of interest in '60's muscle. I remember car magazines from the 1970s portraying first-gen Camaros as muscle car royalty. Sure, the automotive publications were sprinkled with a fair amount of Chevelles, Novas, Mustangs, Dusters, Challengers, and Tri-Five Chevys, but the Camaros really got my attention.

Without getting into actual sales numbers of vintage Chevy muscle, consider this; the Nova was around from 1962-'79 (no, 1985-'88's don't count); the Chevelle rocked the streets

from 1964-'78; and that includes the big-ass Laguna, and the Tri-Fives (hence the term) consisted of cars built for only three years (1955-'57). Those owners continue to reinvent build styles for that platform every 10-or-so years. Needless to say, there are way more Camaros roaming the streets than any other Chevys out there.

Thankfully, there are still a few guys who will go the extra mile and venture into an interesting build like an early 1970's Vega with a big-block shoehorned between the 'rails-much more effort goes into that than simply dropping a 427 into an early Camaro, Chevelle, or Nova, that's for sure. And I, for one, appreciate the effort.

And for those who really understand the concept of extra work, check out JB Granger's amazing LS-powered 1966 Corvair ("FnNader," Mar. '17). Dude went totally off the rails on that build. As he explained to me, "I wanted to build something totally different—something that no one else has." Well, JB, mission accomplished.

So before you shout "Camaro, Camaro, Camaro," just remember, we can only feature and report on the cars that are being built around us. If it doesn't exists, we can't cover it. So when you think about your next build, feel free to venture a little outside of the box. And if you come up with something unique and of the quality we are known to feature in Chevy *High Performance* magazine and on chevyhiperformance.com, we'll be right there with camera in hand ready to shoot it ... just after we get done photographing the next Camaro.

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# STRAIGHT LINE

TEXT & PHOTOS: Bruce Biegler

## Kina COPO

Alabama's Jeff Strickland earned a very significant milestone for the Chevrolet Racing brand last year when he prevailed to win the first-ever NHRA World Championship title for the fifth-generation Camaro. Racing the GMPartsNow/Berger Chevrolet-sponsored 2015 Camaro owned by Gray Motorsports within the Factory Stock/C category, Jeff prevailed in the hard-fought season chase for Stock Eliminator glory, clinching the title during NHRA's final national event of the 2016 season (the AAA Auto Club Finals) held in Pomona, California. En route to his championship, Strickland's 350ci-powered car combined two event wins on the NHRA national event trail with a Second Place finish within NHRA's Southeast Division to



claim NHRA's coveted Lucas Oil Drag Racing Series points title. Strickland's prowess as a skilled driver was very much on display all season as evidenced by the fact that he pulled off an extremely rare feat by winning NHRA's national championship for the Top Dragster class, too (in a Chevy-powered

#### **New Era Domination**

♦NHRA drag racing's new era for Pro Stock (now including mandatory EFI, 10,500-rpm rev limiters, shortened wheelie bars, and flat hoods) debuted during the 2016 racing season. To say that Chevrolet Camaro race cars dominated the class would be an understatement. In total, Camaro entries won 23 of the 24 races during the season! At the top of that performance pinnacle was the truly formidable Summit Racing Equipment two-car Camaro team featuring superstar drivers Jason Line and Greg Anderson. The duo built up an insurmountable points lead early in the season when either one or the other prevailed to win the first 13 events, which the race team would never relinquish. Line, now a three-time world champion, finished the year with a career-high eight wins in 14 final-round appearances while Anderson notched seven wins over the course of the season. It was truly a backbreaking performance display much to the dismay of the rest of the NHRA class competitors.



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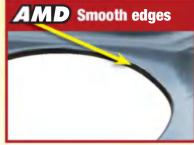






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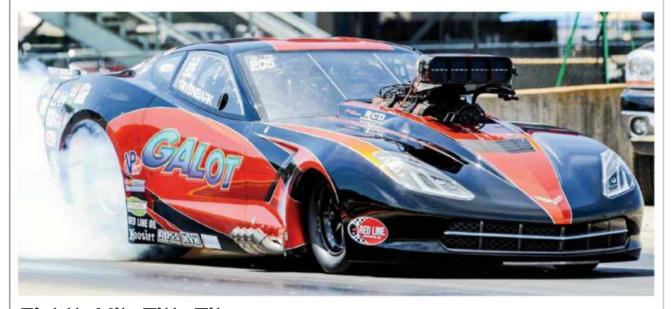
#### STRAIGHT LINE SPOTLIGHT

## Classic Claims Championship

Proving that you don't necessarily always have to have the very latest in technology to prevail within drag racing was Rochester, New York's Pete D'Agnolo. Racing his super sanitary 1967 Chevrolet Camaro, D'Agnolo secured a hard-fought IHRA series Super Stock World Championship for 2016. D'Agnolo prevailed in that circuit's unique Summit Tournament of Champions race held late last season in Tennessee. That specialty annual race pits head-tohead ferocious competition for an elite-only field of qualifiers to determine its World Champs. This S&R Automotive D'Agnolo Brothers race car is pretty much a legend within the Northeast USA having been



active in that area of the country for many seasons and in many configurations. The present-day championship version car features a high-winding 336ci engine program and chassis work by ATE Race Cars.



## **Eighth-Mile Title Titans**

◆Drag racing's premier eighth-mile circuit, the Professional Drag Racing Association (PDRA), featured a clean sweep of its national Pro points championships by Chevrolet brand drivers during 2016. Arguably its most dominant team overall was the North Carolina-based GALOT Motorsports team, that fielded two drivers within the PDRA's Pro Boost class (aka Pro Mod-legal cars): Kevin Rivenbark and John Strickland. It was an unprecedented season for that team, as those two racers won every event offering last year. Driving his supercharged and deadly consistent Corvette C7. Rivenbark began the year winning three times in a row before Strickland took over winning the next three. But then Rivenbark would repeat the last half of the year, sweeping the final three events to lock up his first-ever championship. Strickland, driving the supercharged GALOT Motorsports Camaro, finished second in final Pro Boost points. Rivenbark was joined by fellow Chevrolet racers Brandon Snider (Pro Extreme) and Tommy Franklin (Pro Nitrous) on the PDRA's season-ending celebration stage.



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RIDES

# GOOD CAR-MA

A great '56 Bel Air made better by a frequently overlooked option: Respect

TEXT & PHOTOS: **Chris Shelton** 

In the upper end of the old-car hobby, particularly the part with the historically significant cars, possession isn't so much regarded as ownership as much as stewardship. It's a slightly selfless philosophy that respects the chain of people who possess a vehicle over its lifespan. In it, a person basically acknowledges the fact that their time with a vehicle is temporary—the car almost always existed before they came along and it will possibly outlive them; they're just taking care of it for the time being.









It's an idea that probably never occurred to Jeff Zirkle when he went to look at a 1956 Bel Air that was up for sale. "The guy had the car for a long time," he begins. "He was really into it; he made this rotisserie and whenever he'd have something chromed he'd put it on the car to check it then take it back off. He stashed parts in every nook and cranny in his house—under the beds and in various rooms. Like I said, he was really into it.

"But then someone special in his life—someone who was a big part of the car—passed away," Jeff continues. "He got the project moving a couple of times but just decided it was

time to sell it. I went to look at the car but I think he was actually interviewing me. He was trying to find that person who he felt deserved it."

Even if Jeff wasn't aware of the philosophy, he understood the significance behind it. "I have this 1955 convertible that I wanted to put on an Art Morrison chassis so Chris Holstrom arranged a ride with Art in his '55," he continues. "He took me to North Hill (a long, sweeping road north of Chris' shop). He hammers down and I'm holding on to the seat asking if it's going to break loose," he says. "Jeff came back, 'I wouldn't take my BMW up



#### Good Car-Ma



that hill that fast!"" Chris says, chuckling. "But I got to thinking of that convertible—I just couldn't bring myself to tear that apart," Jeff admits. "I didn't want to be that guy. I mean, yeah, I would've ended up with a nice car, but I would've started with a nice car."

This realization was what led Jeff to cross paths with Brian Beers, the Bel Air's caretaker. Solid, with two of almost everything—most of that already finished—the car was going together as a hot rod. "It was even minitubbed," Chris indicates. "He was going for more of a

driver but I told him what we planned," Jeff says. "He was all right with that."

Starting with the chassis, it's one of the Art Morrison GT Sport editions but with Baer six-piston calipers and 14-inch rotors. Those mount behind a set of 19x8 and 19x12 Forgeline CF3C wheels with 245/35 and 325/30 Michelin Pilot Sport hides, respectively. Jeff popped by the local Chevy dealer for a GM Connect & Cruise package: the LS3/4L65E combination.

The Chris Holstrom Concepts crew adorned the mill



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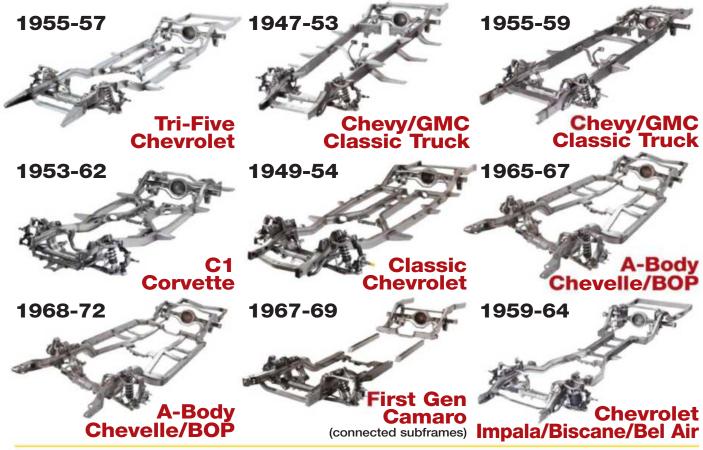
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#### Good Car-Ma









with a Precision Metalcraft intake, Clayton Machine Works rocker covers, and a Vintage Air Front Runner accessory drive system. It also replaced the whole core support with an AutoRad combination radiator/support. A set of Morrison's spec-fit headers feed 3-inch pipes with DynoMax mufflers.

Rather than just put a cone filter at the end of a bent tube, Holstrom's guys made a duct system that goes to an airbox immediately ahead of and below the radiator. Holes in the panel just below the radiator reveal the Porsche 928 filter element.

Externally, the car remains entirely stock. And it's easy to understand why. Chris says, "It's all factory trim on the car, nothing aftermarket except the grille [most likely a stainless unit from Eckler's]. Every part had a story. He was real particular about that and he worked hard."

The inside tells a different story. Chris Greene flattened the firewall, made inner fender panels, and finished the





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#### **348-409 BB Chevy ("W" Engine) D.U.I.**

Performance Distributors has applied their ignition expertise to the 348-409 engines with their new D.U.I Distributors for these applications. This new D.U.I. (Davis Unified Ignition) is specifically designed for the 348-409 BB Chevy ("W" Engine). Performance Distributors calibrates the advance curve on a distributor machine to accommodate the timing requirements of these unique engines.



#### **Deluxe Chevy D.U.I.**

The Deluxe D.U.I. has 4 terrific features included in one Davis Unified Ignition package. First the new Cross-Fire Cap allows you to route your plug wires neatly on each cylinder bank. Makes plug wire routing easy. Second, is the Adjustable Slip Collar. The unit features a slip collar with 7/8" of adjustability. Insures a precise installation. Third, a Carbon Ultra-Poly composite gear is used. It is compatible with any camshaftsolid, hydraulic, factory roller, or steel billet roller cam. Unmatched durability! Fourth, every D.U.I is calibrated on a distributor machine, providing a super smooth advance curve.

#### Adjustable Slip Collar Chevy D.U.I.

Performance Distributor's Adjustable Slip Collar D.U.I. Distributor features a slip collar with 7/8" of adjustability. This is great if you have decked your heads or milled your block, which changes the distance between where your distributor rests on the intake and where it meshes with your cam gear. This will insure a precise installation, while preventing engine damage from the distributor being out of alignment.



#### Computer D.U.I. Distributors

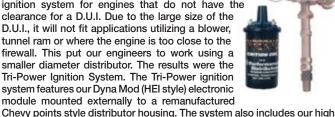
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the distributor (1981-1991 Chevy V8). Both the L-clamp style cap and the screw hold cap style are available. The distributor is also available for 1987-1996 GM V8's which has the 8 pin Dyna-Module built inside the distributor and takes a remote mounted coil-preferably our Screamin' Demon Coil (Screamin' Demon Coil must be ordered separately). This unit is easy to install, plugging directly into your factory wiring.



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This is a small diameter high performance electronic ignition system for engines that do not have the clearance for a D.U.I. Due to the large size of the D.U.I., it will not fit applications utilizing a blower, tunnel ram or where the engine is too close to the firewall. This put our engineers to work using a smaller diameter distributor. The results were the Tri-Power Ignition System. The Tri-Power ignition system features our Dyna Mod (HEI style) electronic module mounted externally to a remanufactured



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#### Good Car-Ma











trunk with more tin paneling, all things done largely for function.

Doug's Auto Collision Center prepped and shot the car. "I think everybody wrestles with color," Jeff proposes. At one point he bought some touch-up paint in Space Grey, a contemporary BMW color. "I was on my phone on a business call when I painted the top of my stapler with it," he says. "I still have that staplerthere's my color combo: gray and black!"

The Dakota Digital VHX gauges plug directly into the drivetrain

harness. Like that gauge combo, the rest of the interior appointments add function without necessarily altering the car's image. If you didn't know it, you'd swear the Vintage Air's panel and vents are factory, the same for the Custom Autosound head unit. Nobody's aware of the power window origins, but the Electric Life switches use the factory handles. Finally, Jamie at McFarland Custom Upholstery trimmed the cockpit in a combination of solid and perforated leather from a Mercedes-Benz application.

Jeff Zirkle will tell you that he

#### TECH CHECK

Owner: Jeff Zirkle, Lake Tapps, Washington Vehicle: 1956 Bel Air

Type: Chevrolet Performance LS3 (Connect & Cruise)

Displacement: 376 ci (6.2L)

Compression Ratio: 10.7:1 Bore: 4.065 inches

Stroke: 3.622 inches

 Cylinder Heads: GM aluminum L92 style, 2.165/1.590-inch valves, 68cc chambers

 Rotating Assembly: Nodular iron crankshaft, powdered metal rods,

hypereutectic pistons

Valvetrain: Investment-cast roller trunnion

rocker arms, 1.7:1 ratio
•Camshaft: Hydraulic roller; 0.551/0.522inch lift; 204/211-deg. duration at 0.050inch lift

Induction: Precision Metalcraft intake manifold, custom tubing and airbox

•Exhaust: Art Morrison Enterprises

headers, 3-inch pipes, DynoMax mufflers
• Ancillaries: AutoRad radiator, Clayton

Machine Works rocker covers

Output (SAE rating): 430 hp at 5,900 rpm,

#### 424 lb-ft at 4,600 rpm

Transmission: GM 4L65E (Connect & Cruise)

•Rear Axle: Art Morrison Enterprises 9-inch with Strange centersection, 3.73:1 gear, and helical-gear carrier

•Frame: Art Morrison Enterprises GT Sport

•Front Suspension: Art Morrison

Enterprises Sport IFS

 Rear Suspension: Art Morrison triangulated four-link

Brakes: Baer 14-inch rotors and sixpiston calipers front and rear, Wilwood master cylinder

Wheels & Tires
Wheels: Forgeline CF3C 19x8 front, 19x12 rear

•Tires: Michelin Pilot Sport 245/35 front, 325/30 rear

Upholstery: Jamie McFarland, McFarland

Custom Upholstery (Puyallup, WA)

•Material: Mercedes-Benz-spec red leather with GM Daytona Weave carpet

Seats: 1956 Chevrolet

Steering: Eckler's 15-inch wheel

Shifter: ididit (column shift)

Instrumentation: Dakota Digital VHX

Audio: Custom Autosound head unit

Bodywork: Doug's Auto Collision Center (Bellevue, WA)

Paint By: Doug's Auto Collision Center

Paint: Black and BMW Space Grey

Hood: Ringbrothers hinges

didn't set out to satisfy anyone but himself by doing the things he did to his car. But it shows that doing good for yourself needn't be at odds with respecting a car and its other owners, past and future. Just don't hold your breath waiting for him to turn it loose. Chances are he's gonna call it his for some time to come. CHP





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Sport Muscle SM1 20





























# **ROCK STEADY-**PART 3

We finish up our 1967 Nova suspension overhaul with parts from Detroit Speed and Strange Engineering then hit the track

◆ TEXT: Steven Rupp AND Nick Licata | PHOTOS: Steven Rupp, Jason Scudellari, AND Nick Licata

ot rodding is a game of compromise when it comes to deciding what your comfort level is in terms of chassis modifications. You could go the bolt-on route, and while it's easier, quicker, and less expensive, there are certain small compromises you need to accept. The other route involves cutting, welding, and permanently altering your Chevy, but this route—while far more labor intensive typically results in superior performance.

The latter route was the one we took on our 1967 Nova project with the installation of a Detroit Speed Inc. (DSE) rear chassis and suspension system. The system is composed of three kits designed to work together to maximize performance. The main player is the four-link QUADRALink system, which offers all the benefits of coilover shocks and vastly improved suspension geometry. Including the DSE mini-tub kit allowed us to stuff massive Falken

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through-the-floor subframe connectors tied the front and rear of the Nova together, providing much-needed chassis stiffness.

The install process involved a lot of cutting, so if you're not up to using cutoff wheels and doing copious amounts of welding, then you might want to farm this out to a shop. Still, if you take your time and carefully follow the detailed instructions from DSE you'll save a bit of money and end up with a rock-solid and track-proven rear suspension



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#### Rock Steady - Part 3



**O1** Before the new parts could be stitched in place, Justin got started by removing a few vestigial brackets that were in the way, like this e-brake cable tab. We also drilled out the spot welds and removed the brace in front of the e-brake cable tab.



O2 And here's the area cleaned up and ready to go. Removing the forward bracket left holes in the frame (from the spot welds), so we busted out our Miller 215 MIG/TIG welder and filled them in.



**03** With the holes filled in, the areas where we would need to weld the Detroit Speed Inc. (DSE) torque box were ground down to bare metal.



**O4** After holding the new DSE torque box in place and scribing a line around its edge, Justin made a series of holes in the floor. These will be used later to further weld the torque box to the car.



**05** The DSE torque box was then tack-welded in place. All the parts were tacked in until the project was finished. That way if we needed to make an adjustment it would be easy to reposition a component. In the end it was all fully perimeter welded.



**06** Remember the holes we put in the floor? Well, now was the time to move to the interior and do a bit more welding.



**O7** These preformed and ready-to-rock brackets from DSE are for attaching the long, lower links to the bottom of the Nova.





under the Nova. They ended up bridging the seam between the factory framerail and the new torque box. A bolt through the bracket and the factory leaf spring bracket helps to locate and secure the bracket. The same was then done on the passenger side of the Nova.

O9 The DSE Swivel Links are pretty cool assemblies. The big benefit is they don't bind and aren't noisy

more tire clearance.

bind and aren't noisy like Heim joints. The system also incorporates longer (than those typically found in four-link systems) upper arms for better pinion angle control, and it has improved antisquat geometry. The lower links are offset inboard for even

system under your Chevy.

As we mentioned, the process is fairly involved so we broke down the install into two parts. In the previous installment, Justin Smith and Mike Rossi from Thunder Alley in Mesa, Arizona, knocked out the mini-tubs and started on the floor modifications for the QUADRALink.

In this final installment, Justin and Mike got our Nova ready for the track by finishing up the four-link install and stitching the subframe connectors to the floor. We finished the car off by bolting up the rear brake system featuring Baer 14-inch drilled and slotted rotors and 6P six-piston calipers. We topped the car off with shiny new rollers from American Racing. Their new VF498 wheels in a polished finish (18x10 front. 18x11 rear) offer the car a bit of a modern look while maintaining the car's oldschool vibe. CHP





10 The longer, lower links were then bolted to the forward link brackets as shown.



11 The upper links were bolted to the tabs on the large floor plate we installed in the first part of this story. With that done, all four links were in place and ready for the rearend.



12 DSE has quite a few shock options based on the driving plan for your car. We opted for their JRi/DSE-valved billet shock system. After doing some math, we went with 11-inch, 175lb coil springs.



13 \ On the driver's side, the bracket to the rear of where the top of the shock assembly bolts up provides a point on the chassis to mount the adjustable Panhard rod. Again, everything was tackwelded for now.



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#### Rock Steady - Part 3

14 This is where a lift and a transmission jack would have really been handy, but we made due with our Harbor Freight floor jack. In our case, the brackets came installed on our new Strange Engineering rearend housing but they weren't welded in place and spun on the axletubes. This meant we needed to use the jack to position the rearend precisely under the Nova at about the right pinion angle so we could tack the brackets to the rearend housing. In hindsight, we should have just had DSE weld these brackets in place for us to save the extra work.





15 When everything was perfect, we busted out the Miller 215 and MIG-welded everything in place on the driver-side of the housing.



16 The same was then done on the passengerside. It's critical that everything be square and all the angles perfect before doing this, so measure, remeasure, and measure one more time.

17 | The last bracket we put in place was the large one that provided a mounting spot on the rearend housing for the Panhard rod. Once squared up, it was tacked in place.





18 With the QUADRALink tacked in place, we moved on to the DSE subframe connectors. They will tie the front of the Nova to the rear framerails of the car, and since they pass through the floor, they provide even more chassis stiffening.



19 Included in the DSE subframe connector kit are the brackets for mounting to the front frame of the Nova.



# IMAGINE THE POSSIBILITIES



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#### Rock Steady - Part 3



20 Using the supplied template, we marked where the subframe connectors would pass through the floor and made the necessary cuts. We advise that you cut small and work your way up until the connectors fit snuggly through the floor. This will make welding them in easier and they'll also look better when done.



21 Here you can see how the DSE brace passes through the floor of the Nova. The process was: testfit, trim, test-fit, and repeat until perfect.



22 Using a pole jack, we held the front in place so we could mark where the brackets would meet the bottom of the Nova.



23 With the brackets located, we removed the connectors from the Nova and welded the brackets to the subframe connectors.



24 Before putting the subframe connector assemblies back under the Nova, we made sure to grind off the old undercoating so we could weld. The tab with the four slots is for mounting the DSE transmission crossmember. Once clamped in place, we fully welded the brace to the floor.



25 We then went to the rear and welded the subframe connector to the floorpan. We then welded the end of the subframe connector to where it butted up against the DSE torque box installed earlier. This step is crucial since it's what ties the entire system together for maximum strength.



26 Here's the installed subframe connector fully perimeter welded, seam-sealed, and given a coating of paint.



27 To finish off our install, we slid the Strange 31-spline axles into the tubes and began installing our rear Baer brake kit, starting with the parking brake pads and radial caliper mounting brackets.



28 A pair of 14-inch rotors and some beautiful silver Baer 6P rotors finished off the install.



29 We finished off the look of our Nova with a set of American Racing VF498 wheels with a polished finish (18x10 front, 18x11 rear).

30 And here's our DSE QUADRALink system fully welded in place, seamsealed, painted, and ready for the track. You can also see the adjustable Panhard rod and DSE sway bar system installed. Installation of the kit is somewhat involved, but once we got the Nova on the track, all the extra effort paid off with a huge improvement in handling. And given how grippy our new Falken Azenis RT615K 315/30R18 tires were, the extra chassis stiffness was a big help.





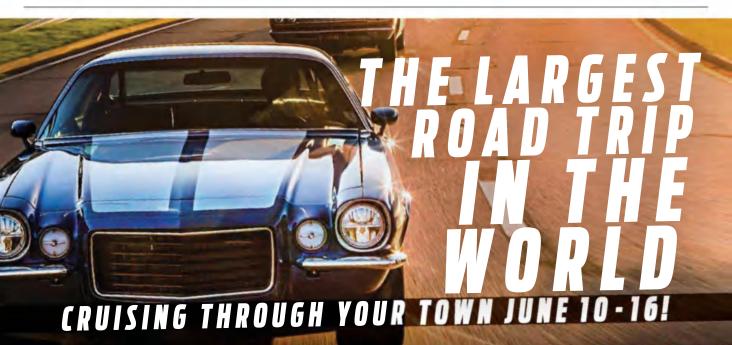


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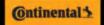


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#### Rock Steady - Part 3

#### TRACK TIME

To get some baseline performance numbers on the Nova, we headed out to Fontana and put our test driver, TEN Tech Center Manager Jason Scudellari, behind the wheel to navigate our 420-foot slalom course (six gates, cones 70-feet apart) in the parking lot of Auto Club Speedway. As we suspected, hitting the course in pre-suspension upgrade form and on less-than-stellar tires, the car was quite a handful as Jason was only able to squeeze the car through the cones in 7.14 seconds, which translates to an average speed of 40.3 mph.

We also did some before and after 60-0 brake testing with the car to record the improvement from the existing front disc and rear drum brakes that were on the car when we started.

As expected, the car lacked the braking prowess we've become accustomed to in our upgraded classic muscle cars. Needless to say, it was quite challenging to get the car to stop smooth and straight. With Jason attempting to modulate the brakes during braking, it was difficult to get the car to slow down without having one of the wheels locking up throughout the process. On the first attempt it took 200.4 feet to get the car to stop from 60 mph. Not



"Before" testing through the slalom shows excessive body roll, which translates to a sloppy driving experience. The front tires look as though they want nothing to do with this kind of aggressive lateral movement.

good. Each subsequent attempt got worse as more heat got into the pads and in the brake fluid.

#### AFTER

With the full Detroit Speed suspension system bolted in (front subframe, QUADRALink rear, and subframe connectors), complete with JRi shocks and Strange rearend, we were ready to hit the track, but not before we strapped on our larger Falken rubber (275/35R18 front, 315/30R18 rear). As expected, the car improved greatly through the slalom by rewarding us with a 5.95-second average time through the cones, which translates to 48.5 mph. That's a 1.19-second and 8.2-mph improvement from our baseline numbers.

We continued testing and moved on to get final braking numbers with the Baer 14-inch rotors and six-piston calipers. It was no surprise that the numbers were way better, and with a best 60-0 stopping distance of 118 feet, we shaved 82 valuable feet off our stopping distance. That's a huge improvement when you relate it to having to come to a quick stop on the highway or when you want to dive deeper into the corners on a track day. Not only did the braking distance-wise improve, but the repeatability without brake fade was a massive bonus. Keep in mind, being able to stop quickly is an important factor when it comes to safety, and being able to repeat the process numerous times without experiencing brake fade will keep you out on the track longer, as well.

Although we did not perform before and after drag testing, we have to report that the Strange rearend armed with 3.73 gears gets the Nova off the line much quicker and we now have absolute confidence this rearend will hold up to tons of abuse and just about anything we throw at it power-wise.

While the focus was on performance testing with the Nova, we would be remiss if we didn't report on how the car's driveability improved on the street as well. The car no longer feels sketchy



- "After" testing shows the car has much less body roll and is able to attack the slalom at a much faster pace than before. The Falken tires are right at home in this environment and provide plenty of grip. All of this translates to a much better driving experience.
- Here you can see the car before we installed the Detroit Speed Inc. suspension. It's got an old-school muscle car rake, but not much there will help it perform on the street or track.
- With the new suspension, wheels, and tires, the car has a more aggressive look and a lower stance-all the things necessary for a more fun driving experience. And since this photo was taken, we've addressed the low-slung headers with a new set from Doug's Headers that tuck up tighter to the chassis.

driving down the highway at speed and we gained tons of confidence in traffic. The DSE rack-and-pinion steering is not too quick for the street, yet performs as expected on the track. The car is now a blast to drive and we are able to take





corners more aggressively, like we would in a late-model car. Overall, our '67 Nova is much more fun to drive ... on the street and at the track. After all, driving a muscle car that can actually flex some muscle is what this hobby is all about.





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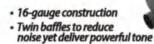




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RIDES

Man versus challenge: There's more than one way to skin a '63 big body \* TEXT: Ro McGonegal | PHOTOS: Grant Cox

This story just might qualify for a Strangely Believe It! segment, so keep reading. Nothing here makes any real sense until you align it with the records that corroborate. Bob Moorhouse is a mockup builder employed by Cessna Aircraft in Wichita, Kansas. Although he's been stuck on hot rods and similar creations for about 50 years, his history includes body shop experience of more than 22 years. He was a metal man and a painter and he had his own business for a dozen years. Maybe that's why he relied on the rest of the world to do the project car work for him; maybe he was just weary of doing for others.

While winding down that path, he got to know Ridler winner Roger Burman, who hails from the "Golden Buckle of the Corn Belt," Rockwell City, Iowa, and not coincidentally, runs Lakeside Rods & Rides. A man of no small accomplishment, Burman's Radster 1935 Ford won several national awards in 18 months: named Goodguys Texaco/Havoline America's

Most Beautiful Street Rod for 2007 at the 21st West Coast Nationals in Pleasanton, the coveted Ridler award at the Detroit Autorama in 2006, and America's Most Beautiful Roadster at the Grand National Roadster Show in Pomona. Such credentials don't come easily. Roger really knows how to do it right. But that Ridler constitution shines through.











#### Sure Thing



Bob saw the '63 Bel Air attracting offers on eBay and it inspired him to act. He's a Burman radical, had already owned three of Roger's progeny, so he couldn't resist this out-of-B-body experience. After loving the roundness of the iconic bubble top, many enthusiasts deemed the '63's lines somewhat caustic and pretended they did not see them at all.

As that full-on side shot reveals, the thing is dreadfully sanitary, laser-straight lines, and nary a cob or a kernel to interrupt continuity and the visual flow. Burman achieved that sentiment by shaving the emblems, door handles, and



the antenna mast. He hopped up the hood with "vents" lifted from a '66 SS Chevelle. He filled in the cowl vent, removed the wipers, and excised the wing windows. The brooming continued. Burman sectioned the three-piece bumpers, pulling the pieces together to form a single unit, meanwhile eradicating all evidence of mounting hardware.

Burman maintained the scent of the era, framing the fullsize Chevrolet with Budnik Muroc rims, a distinct nod to the original Halibrand magnesium castings. The headlamps are stock but the taillights are from a Chevrolet



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## Sure Thing



HHR. Call us as loony as a tin-foil hat, but that paint makes the car absolutely luminous, something we can probably blame on the right light for the camera as well as the pearl medium floating in the PPG Silver-Green.

The Bel Air's gut entertains pertinent changes that are immediately apparent. There's that platoon of TPI engine meters riding on the dashboard. The custom console running below is made from a composite strain. The seats are from some Dodge Intrepid or another, cut down and resized to fit the tableau. Burman fixed the door panels and those surrounding in Ultraleather. For the tiller, he inserted an ididit tilt column and capped it with a '57 Chevy repop steering wheel. In defense of the mechanicals, Burman fixed the Ram Jet crate engine with an EFI unit from Arizona Speed & Marine that looks pretty much like the old distributordriven Rochester piece of record ... but it works a whole lot better.

"I bought the car as you see it," said Bob. "I put custom [read minimal] outside mirrors and visors on it and that is all. It was 40 miles north of Boston." It arrived in Wichita inside of a semi trailer. That caused a stir about 12 years ago. Yes, a dozen years back. And for us, it still causes a stirring silhouette. Dropped to the deck by virtue of RideTech air, the Bel Air's Budniks are sucked up tight, right cozy with the wheelwells.

Bob said that it took five people working 40-hour weeks for almost a year to bring it to fruition. He thought about what he'd be doing with the car and saw no reason to go beyond the power of the Ram Jet or the 700-R4 transmission or set it with a more dedicated suspension system. It's a stylish driver and doesn't pretend to be anything more. CHP







### TECH CHECK

Owner: Bob Moorhouse, Wichita, Kansas Vehicle: 1963 Bel Air

- Type: GMPP Ram Jet 350
- •Displacement: 350 ci
- •Compression Ratio: 9.4:1
- •Bore: 4.00 inches Stroke: 3.48 inches
- Cylinder Heads: Vortec, 1.94/1.50-inch valves, 64cc combustion chambers
- Rotating Assembly: Cast-iron crankshaft, powdered metal rods, high-silicon pistons w/ offset pins
- Valvetrain: Aluminum roller rocker arms,
- 1.5:1 ratio, chrome silicon springs
  •Camshaft: Hydraulic roller; 0.435/0.460-inch lift, 212/222-deg. duration at 0.050inch lift
- Induction: Arizona Speed & Marine Drop
- Top Superjet EFI
  •Ignition: MEFI 4B ECU, HEI distributor, 8mm Packard primary wires
- Exhaust: Hooker block-hugger headers, 1.625-inch primaries, 2.5-inch collector,
- 2.5-inch stainless steel system, Flowmaster Super 40 mufflers Ancillaries: March Ultra Drive accessory
- Output: 350 hp at 5,200 rpm, 400 lb-ft at

### 3,500 rpm

- Transmission: 700-R4
- Rear Axle: Stock, 3.55:1 ratio, Posi-Traction differential

- Frame: Stock, powdercoated
- •Front Suspension: Fatman dropped spindles, RideTech ShockWaves, tubular control arms

 Rear Suspension: RideTech ShockWaves •Brakes: Wilwood vented 13-inch rotors, four-piston calipers front; Wilwood 12-inch rotors, two-piston calipers rear

#### Wheels & Tire

- Wheels: Budnik Muroc III 18x7 front, 20x10 rear
- •Tires: Hankook Ventus V12 evo2 235/40 front, 275/35 rear

- •Upholstery: Roger Burman, Lakeside Rods
- & Rides (Rockwell City, IA)
- •Material: Ultraleather
- Seats: Modified Dodge Intrepid
- •Steering: ididit column, 15-inch 1957
- Chevrolet repop wheel
- •Shifter: Lokar •Dash: Stock with gauge insert
- Instrumentation: TPI
- Audio: Sony head unit, CD, Kicker amps and front and rear speakers and subwoofer
- •HVAC: Air-Tique

- Bodywork: Roger Burman •Paint By: Roger Burman
- Paint: PPG Silver-Green and Black
- •Hood: Stock with 1966 Chevelle vents
- •Grille: Stock, chromed
- Bumpers: Stock three-piece narrowed to one-piece front; stock three-piece narrowed to one-piece rear



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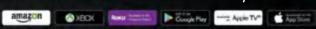


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### A rotor and pad upgrade that won't break the bank

◆ TEXT & PHOTOS: Jeff Smith

verybody needs brakes. Even a mildly warmed-over 305 Malibu needs to be able to come abruptly to a stop when necessary. You may find your stock brakes are not up to the task, especially if you run your car on a dragstrip with a short shutdown area or at an autocross or track day exercise where you have to really lean on those brakes. Or maybe the pads are just wiped out and it's time for an upgrade.

The brake catalogs are full of exotic 15-inch rotors and six-piston calipers that are cool. But those systems are expensive and usually demand bigger wheels and tires. What if you only need a minor upgrade and your budget is closer to Top Ramen instead of Top Gun? We have a couple of suggestions that can satisfy all those requirements.

Some enthusiasts think that the only way to improve your braking is to add larger rotors and multi-piston calipers. But we'll make a case for moderation based on reality. Not everybody is ready or willing to run their car on a road course for 20 laps and put enough heat in the brakes to melt the rotors.

01 | Not everybody needs a \$2,000 front disc brake package. Our V-8 S-10 is light enough at 3,100 pounds that an upgrade to EBC dimpled and slotted rotors combined with a set of YellowStuff pads drastically improved braking efficiency with a simple bolt-on.



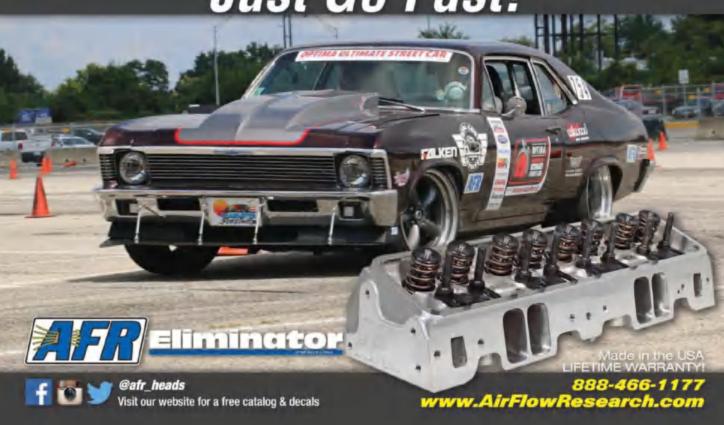
#### Parts List

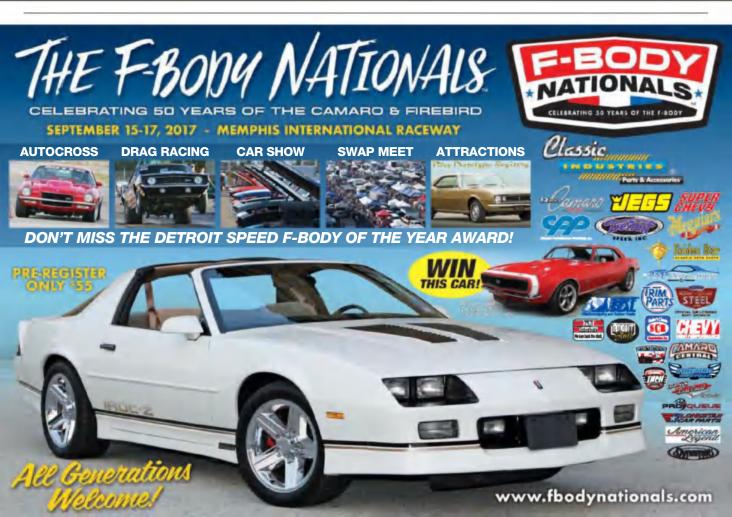
Description	PN	Source
EBC brake rotors	GD7000	Summit Racing
EBC YellowStuff pads	DP41146R	Summit Racing
EBC OrangeStuff pads	DP91146	Summit Racing
EBC GreenStuff 2000 pads	DP21146	Summit Racing
EBC GreenStuff 7000 pads	DP71146	Summit Racing
Timken wheel bearing, outer	SET34	RockAuto
Timken wheel bearing, inner	SET 6	RockAuto
National wheel seal	NS8871	RockAuto
Dorman brake hose, front	H38107	RockAuto
Lisle disc brake spreader tool	LIL-24400	Summit Racing
AMSOIL Brake Fluid DOT 3, 12 oz.	BF3SN-EA	AMSOIL
AMSOIL Brake Fluid DOT 4, 12 oz.	BF4SN-EA	AMSOIL



02 We selected a set of EBC GD Sport dimpled and slotted rotors with a corrosion-resistant black finish. Rotors with fully drilled holes tend to develop stress cracks around the perimeter of the holes, so EBC merely dimples the rotors and uses slots to help the pads evacuate pad dust and allow extra cooling.

Just Go Fast!





### Great Skids

O3 After hand-packing our new wheel bearings, we installed them in the new rotors and finished them off with new wheel seals. The rotors are marked left and right as the slots and dimples are directional.





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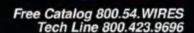
custom printed with the circuit identification as well as using GM color codes for easy installation.

20112 - 26 Circuit Direct Fit 1970-73 Camaro Harness 20113 - 26 Circuit Direct Fit 1974-77 Camaro Harness 20114 - 26 Circuit Direct Fit 1978-81 Camaro Harness



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O4 Note the reddish finish on the friction surface of the YellowStuff pads (left). This is EBC's high-friction Brake-In coating that's intended to clean old rotors and help condition new rotors. That's why you should put at least 5-10 miles of cautious street driving before attempting to put heat into any new brake pads. The OrangeStuff pads on the right do not come with the abrasive coating as they are intended for competition use.

Instead, let's look at a typical, metric Chevy brake system that could be helped by just adding new rotors and performance brake pads.

The late '70's to late '80's Chevys almost universally used a 10.8-inch metric rotor and caliper system for its midsized cars like the Malibu. Camaro, Monte Carlo, and even the S-10 pickups. The best way to enhance this package without spending a ton of money is to retain the rotor diameter and add more aggressive pads to the caliper. But regardless of how much clamping load you can produce, the bottom line is still the interface between the tire and the road surface. For brakes that are not abused on a 2.5-mile road course for an hour at a time, production-size brakes will get the job done if they are set up correctly with the proper rotors and pads.

The key to maximizing brake efficiency even from a smallish 10.8-inch rotor is to start with fresh, straight rotors and use a performance pad that won't disintegrate under high heat. English Brake Company (EBC) offers a ridiculous number of options when it comes to disc brake pads and suggests combining these pads with a performance, dimpled and slotted rotor. Our test victim is a V-8 S-10 we built a couple of years ago that uses the same front disc brake package as a typical mid -'80's Monte Carlo or El Camino. EBC separates its six different pad materials by using different colors, plus a couple of more stock replacement pads. We created a chart that uses online descriptions for each of these different colors that may help you decide which is best for your application.

We intended to use our S-10 for a combination of mostly street driving



O5 | The YellowStuff pads also came equipped with these noise reduction shims on the backside of both pads. These are a common addition for pads normally intended for street use. Noise is the result of vibration that is sometimes generated with performance pads, so these shims help prevent the noise.

with perhaps a couple of forays at our local autocross. With that approach, we opted for the YellowStuff pads as they appeared to be the best combination for our application. In the old days, race pads generally employed steel fibers to increase the coefficient of friction. Unfortunately, these pads also tended to literally eat rotors. We ran a set of these pads back in the '80s on an early Camaro and destroyed a set of rotors in less than 10,000 miles! Today, nearly all performance non-asbestos organic (NAO) pads use Aramid or Kevlar fibers that promote friction and are downright friendly to rotors.

The reason race pads are not a good idea for the street is because they are generally intended to be used in extremely high-temperature situations. As such, these pads do not necessarily offer good low-temperature friction so in short runs on the street, these pads usually require higher pedal effort when they are cold. This is why EBC offers so many different pad combinations in order to offer the best performance for your application.

The best way to ensure that the combination of brake rotor and pads maximize their potential is to carefully bed the pads and rotors. Few enthusiasts know this, but the rotor achieves its maximum coefficient of friction only after sufficient pad material has been transferred from the pad to the rotor. With both new rotors and pads, the bedding-in procedure requires a few more miles and heat cycles.

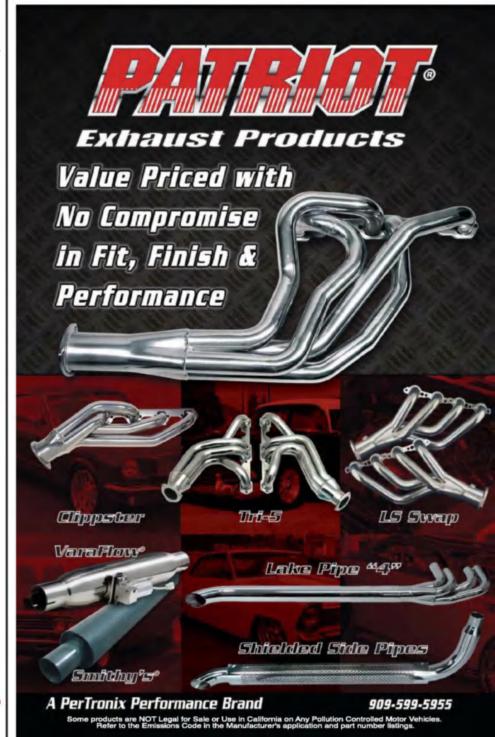
Most EBC street pads come with a thin, abrasive surface that is used to remove all of the previous pad material from a used rotor and/or to condition the rotor surface. That's why the car should be carefully



**06** We bought this Lisle tool many years ago and it works great for pushing the piston(s) back into the caliper in order to fit the new pads over the new rotor. Just remember to check the fluid level in the master and remove some fluid (if the reservoir is full) before you push the pistons back into the calipers.



**07** Do you think these brake hoses need to be replaced? They weren't leaking, but clearly they needed upgrading. We found news ones at a great price through RockAuto.



### Great Skids



08 One look at our black, original brake fluid told us we needed to completely flush the system of the old fluid. Brake fluid absorbs water right out of the air, which drastically reduces its boiling point. This stuff would probably boil at 225 degrees F!

09 With the new rotors and pads in place, we put less than 100 miles on the brakes just to evaluate how well the break-in procedure was happening. EBC says that when you can see a light blue hue across the entire face of the rotor, the pads and rotors are properly bedded. While difficult to see in this photo, it appears that the rotor is seated and there is a light blue tinge across nearly the entire face of the rotor.







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driven for the first 5 to 10 miles to ensure this material has worn off and the rotor is conditioned to accept the new pad material. Then, EBC recommends a series of light brake applications to gradually increase the heat in the rotors as the best way to condition them. This means no hard. aggressive braking within the first 200 miles so that the new rotors can gradually be conditioned. EBC says it may take as much as 500 miles or more of street driving to fully bed the pads. This can be judged by a light blue tinge across the entire pad face swept area of the rotor.

While we were swapping the pads and rotors, we also noticed that the original brake fluid in the master cylinder was a nasty black color. It well could have been the original fluid from over 20 years for all we know. We extracted all the fluid from the master and then carefully purged the entire system front and rear with new, AMSOIL DOT 3 brake fluid. AMSOIL's synthetic fluid is strong enough to handle whatever heat we put into it, but they do make a race style DOT 4 fluid that's rated at a higher wet and dry boiling point in case that ever comes up. Note that DOT 4 fluid is quite a bit more expensive than the DOT 3 so it's not necessary unless you are into racing.

We looked up the specs and the wet minimum boiling point for DOT 3 fluid is 284 degrees while AMSOIL's synthetic tests with a wet minimum of a much higher 304 degrees. As you might expect, the DOT 4 race fluid's number is higher than the DOT 3, and AMSOIL's DOT 4 wet minimum is also higher with 379 degrees versus the DOT 4 minimum of 311 degrees. These are really good numbers, especially since the AMSOIL DOT 3 fluid's

### **Disc Brake Crossover**

Chevy is famous for crossbreeding many parts across several different models of cars. This is also true for the brakes. The following is a list of all the cars that use this exact same 10.8-inch rotor, caliper, and pad assembly. What we didn't include was all the Buick, Oldsmobile, Pontiac, and GMC vehicles that also use this same brake package.

1978-'87 El Camino 1978-'83 Malibu 1978-'88 Monte Carlo 1982-'02 S-10 1982-'92 Camaro 1983-'94 S-10 Blazer

price is only slightly higher than offthe-shelf fluids you would find at the auto parts store.

Brake fluid boiling points are rated in both wet and dry conditions because even in a sealed master cylinder, brake fluid will tend to absorb water out of the atmosphere. Once absorbed into the fluid, the water reduces the fluid's boiling point. That's why it's not a bad idea

#### Pad Selector Tool

Pad	Driving Style		
GreenStuff	Spirited driving on the street - lighter cars		
RedStuff	Spirited driving on the street – heavier cars		
YellowStuff	Faster street car and some track use – also some 4x4 and towing		
GreenStuff 7000	SUV, 4x4, light trucks		
BlueStuff	Some street use - mainly road course, track		
OrangeStuff	Not intended for the street - track use and race applications		

to change your brake fluid every couple of years to maintain the brake system's performance.

It's difficult to put a price tag on safety, but that doesn't mean you have to spend a ton to get great performance. We added up the bill for a pair of EBC rotors, YellowStuff pads, new wheel bearings, seals, brake hoses, and brake fluid and the whole package came to roughly \$450. We may not be able to keep up with the big boys after 20 laps at Willow Springs or Road America, but we do have some great brakes now.

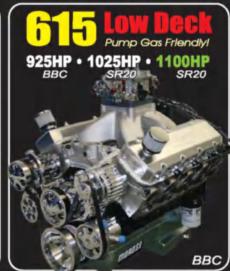
A looming deadline prevented us from laying down 500 miles on our V-8 S-10 to deliver a long-term evaluation of these pads. But once we completed the transfer of pad material and the rotors had been subjected to multiple heat cycles we could easily tell there was significantly more brake potential here than with the previous junk pads. When the pads are stone cold, they do require slightly more pedal effort, but after only a couple of stops and there is heat in the pads, they feel great. This adds tremendously to the trust you put in the brakes whether you're charging a tight corner on an autocross or just jumping on the brake pedal in response to a quick red light. It's all about confidence in the brake pedal. CHP



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This 1971 Camaro is no longer just a numbers-matching muscle car

BY Taylor Kempkes | PHOTOS: Jorge Nunez

**Finding an all-original muscle car** from the late '60s or early '70s is a great place to start, but what you do with the car next is up to you. Some people like to relive the car's glory days by leaving it in, or restoring it to, its factory condition while others want a little more out of their American muscle. Steve Aguilar wanted a little more out of his newfound 1971 Camaro Z28.



In 2012, Steve started out looking for a Pontiac GTO, but when he came across this '71 survivor on eBay, he just couldn't resist. The car was all original and had full documentation from when it left the factory over four decades ago, even after having gone through six owners before Steve got his hands on it. He contacted the owner, haggled the asking price down an impressive \$4,000, and took the

Camaro home. So much for the GTO; this was much better.

From the beginning, Steve knew he would be changing a few things up. First of which was the interior and paint. "I wasn't crazy about the color combo," recalls Steve, which consisted of blue paint with black stripes and a gaudy blue-cloth interior. Before the year was over, Steve had the Camaro in the shop for new paint and interior.







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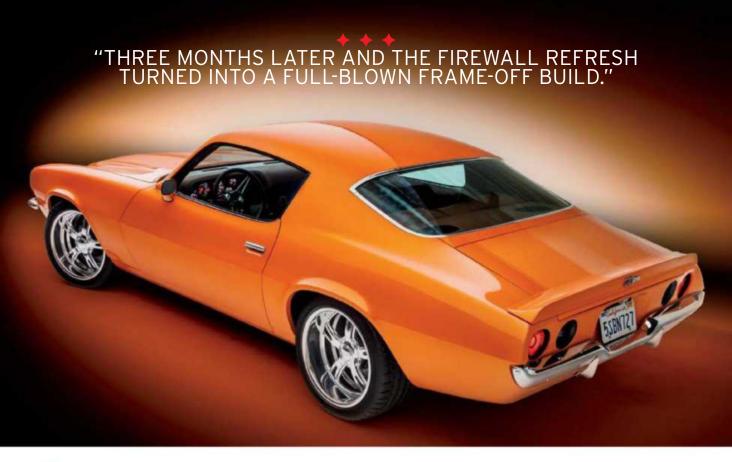
Six months later, he got the Z28 back and enjoyed it for a year and a half, taking it to various car shows near his home in Fullerton, California, and winning numerous awards.

In December 2014, Steve went over to Brian Stone and Leo Vargas of Showtime Paint in Gardena, California, to have them smooth out and paint the firewall. Three months later and the firewall refresh turned

into a full-blown, frame-off build.

Steve decided to go full restomod with his Z28. He had the frame detailed, primed, and painted while the body was stripped down to bare metal. Hours of body line matching, filling, and sanding ensued until the car looked just like a perfect clay model. The side markers and door locks were filled in and smoothed and then House of Kolor Sunset Pearl





## From Survivor to Showstopper

Orange paint was generously applied. The front and rear bumpers were triple-coated and buffed by La Habra Plating in La Habra, California, to produce a show-quality chrome finish.

The modifications continued under the hood where the firewall was in fact smoothed like planned. The wiring was rerouted in custom-fabricated tubing to make it all disappear.

Although Steve took the Z28 quite far from its state as an all-original car, he did leave behind one important part of the car: the engine. He opted to keep the numbers-matching 350 small-block LT-1 but did freshen it up with Brodix aluminum heads and an Isky camshaft and hydraulic roller lifters. The engine draws in air via a 750-cfm Quick Fuel carburetor atop the stock LT-1 high-rise, dual-plane intake manifold that was ported

and machined by L & R Engine in Santa Fe Springs, California. The MSD Pro-Billet distributor and plug wires are the only parts of the ignition system visible in the engine bay as the coil and MSD box are hidden in the cabin under the dash.

Expelling the exhaust is handled by Lemons long-tube headers feeding into a 3-inch custom stainless system with a crossover pipe. Before the roar of the LT-1 makes it out of the tailpipes, dual MagnaFlow mufflers quiet things down a bit.

Behind the small-block sits a TREMEC T-5 manual transmission with a Centerforce clutch in between. Power continues to the rear wheels through a 10-bolt rearend built by J & S Gear of Huntington Beach, California. Braking is taken care of by Wilwood 12.8-inch rotors all around with six-piston calipers in the front and









## From Survivor to Showstopper







four-piston calipers in the rear. Steve had CH Topping in Long Beach, California, install the Wilwood Hydraboost system to give power to the disc brakes.

When the engine and powertrain were all accounted for, Steve took the Camaro to Westech Performance in Mira Loma, California, for some dyno tuning. The end result was 400 horsepower to the wheels—a substantial increase over the LT-1's stock output.

Underneath the Z28 is a heavily modified suspension from Hotchkis, which includes coil springs, shocks, and sway bar up front. In the rear, Steve kept the leaf spring system but upgraded to Hotchkis springs and shocks.

Inside the car is where Steve really takes this oncestock Camaro to the next level. He happened to know the concept interior designer for Tesla Motors, Juan

(Lucas) Reyes, who was able to put together a custom yet cohesive interior. The whole dash was built out of fiberglass and reengineered to eliminate the glovebox. The single-piece dash was then covered in Bentley leather and double-stitched to match the rest of the interior. In the dash lives a clean set of gauges from Auto Meter. The center console was also hand-fabricated to conceal an electric parking brake, ridding the need for the foot parking brake and assembly. On either side of the center console are Scat Procar seats reshaped and covered in matching leather by Lucas.

At the end of it all, Steve is more than satisfied with the way the car turned out. We asked him if there was anything he would do differently, and his answer? "NOT A THING." CHP

#### TECH CHECK

Owner: Steve Aguilar, Fullerton, California Vehicle: 1971 Camaro Z28

- Type: Small-block LT-1 (numbersmatching)
- Displacement: 383 ci
- Compression Ratio: 10.8:1
- Bore: 4.030 inches
- Stroke: 3.750 inches
- •Cylinder Heads: Brodix BP IK 210 aluminum
- Rotating Assembly: Scat crankshaft
- •Valvetrain: Isky hydraulic roller lifters •Camshaft: Isky; 0.600/0.600-inch lift, 292/294-deg. duration at 0.050-inch lift
- •Induction: 750-cfm Quick Fuel carburetor; ported and machined 1971 LT-1 high-rise, dual-plane intake manifold
- •Ignition: MSD Pro-Billet distributor, plug
- Exhaust: Lemons long-tube headers, custom stainless 3-inch pipes, MagnaFlow mufflers
- Ancillaries: Powermaster 140 alternator; Billet Specialties Tru-Trac serpentine
- Output: 400 rwhp at 6,000 rpm

- Machine Work: L & R Engine (Santa Fe
- Springs, CA)
- •Tuner: Westech Performance (Mira Loma, CA)

- •Transmission: TREMEC T-5, Centerforce
- •Rear Axle: 10-bolt built by J & S Gear (Huntington Beach, CA), 3.70:1 ratio

- •Frame: Stock
- Front Suspension: Hotchkis springs,
- shocks, sway bar, aluminum endlinks
- Rear Suspension: Hotchkis leaf springs and shocks
- Brakes: Wilwood 12.8-inch rotors with sixpiston calipers front; 12.8-inch rotors with four-piston calipers rear; Hydraboost system installed by CH Topping (Long Beach, CA)

- Wheels & Tires
  •Wheels: Schott Mod 5 EXL 18x8 front,
- 18x10 rear
- Tires: Michelin Pilot Super Sport 245/40 front, 285/35 rear

- •Upholstery: Juan (Lucas) Reyes •Material: Bentley leather
- Seats: Scat Procar reshaped by Lucas
- Steering: ididit column, Budnik Velocity wheel
- Shifter: Original Hurst shifter
- Dash: Custom
- Instrumentation: Auto Meter
- Audio: Alpine head unit, amplifiers, 6x11inch speakers, 10-inch subwoofer
- •HVAC: Vintage Air

- Bodywork: Leo Vargas of Showtime Paint (Gardena, CA)
- Paint By: Leo Vargas
  Paint: House of Kolor Sunset Pearl Dance
  Hood: Stock, Billet Specialties hinges
  Grille: Black, factory 228

- •Bumpers: Factory front and rear bumpers coated and double-buffed by La Habra Plating (La Habra, CA)













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Upgrading a 10-bolt rearend with a limited-slip

◆ TEXT: Tim Sutton, Joel Rode | PHOTOS: Tim Sutton

5 o you have your dream car and are working on it just about weekly. You plan to do some autocross and take it out to the dragstrip on Thursday nights for some grudge matches in the quarter- or eighth-mile. You spent your money where it counts: in the engine and trans. So once on the highway, you are absolutely flying, but stop sign to stop sign your ride is a bit sluggish off the line. Well, son, that peg leg 10-bolt has gotta go.

The right rearend gear and a tight converter can really wake up your car. If you've been driving around with the same 3.08 gears that your mom enjoyed back in the 1960s, it's time to make a change.

It's just no fun unless you get your excitement driving on long road trips or boring rides to the local market for some pop. Face it, that's not who we are. As performance enthusiasts, we live a little more

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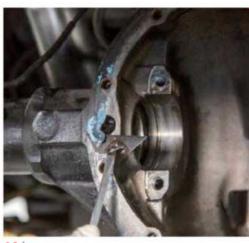
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## No More Leg Peggin' for this Pirate



O1 Once the old differential and axles are pulled from the housing it's time to use a long punch and knock out the bearing races for the pinion bearings.



02 | Cleanliness matters when you're dealing with the internal workings of your car. Make sure all the old seals, glues, grease, and grime are scraped away and cleaned. After the initial cleaning, hit the internals with some brake cleaner and wipe everything down. This goes for the axletubes as well as your housing.



**03** The first step is to remove the main bearing off of the pinion and pull the shim. The main bearing comes off with very little effort using a pinion bearing remover and an impact gun. Once it's off, you will find this shim. Ours was OEM and a bit worn. Usually they will have a stamp showing the size. Ours didn't so we had to pull out the micrometer to find out ours was worn to 0.0030 inch.



**04** With the housing completely clean, we installed the pinion bearing races with our bearing race tool.

on the edge and want a whole lot more out of our hot rods.

Our friend Joel Rode owns a 1969 Nova (the same car we did some recent bodywork articles on) that needs a little waking up, so he went to Oceanside Driveline (Oceanside, California), and talked to Paul Headrick who clued him in on what it would take to make Joel's powerhouse stick to the road and make two black streaks instead of one without breaking the bank.

Joel and Paul came to the decision that it needed a limited-slip differential from Auburn Gear, a 4.10

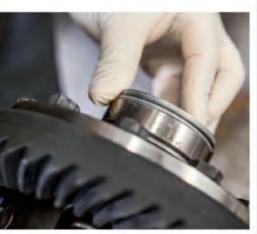
ring-and-pinion from Richmond, and a slight girdle for the main caps. This would provide Joel with all new parts for worry-free driving.

The limited-slip, as you probably know, is a great run-around that offers the freedom to run in the rain to the store, yet clean up at the dragstrip. A full locker is really race stuff, but Joel plans to use his ride for the street and autocross as well.

So on we went to put this thing together. The idea of tackling this job might be a little intimidating, but Oceanside Driveline made it simple for all of us to understand. CHP



05 | Paul Headrick, who regularly rebuilds diffs, showed us this trick. He used a "tool bearing," which is an extra bearing that has been machined a few thousandths over on the inside diameter. In all other ways it is an exact match to the bearing we will be pressing on later. This gives us the opportunity to install and remove the pinion bearing to change shim size in order to get the correct backlash. Like before, our starting point on the shim under the bearing was 0.0030 inch. It was finalized at 0.0032 inch. If we had pressed on the bearing we wanted to use and taken it off a couple of times, it would have trashed the bearing. Some say to use the old bearing to get this adjustment, but that bearing has tons of hours and miles on it, so it will give an incorrect reading when assembled for test and assembly.



**06** With our 4.10 ring gear installed to the limited-slip, our end bearings can be pressed on and races can be held in place. The shims sit between the bearing race and the housing, sandwiched by two hardened washers. You'll take a measurement off of the ones that came out and start there with new shims. Be patient since you'll need to install the differential more than once, taking measurements each time, to end up with 0.0010-inch backlash.



## No More Leg Peggin' for this Pirate



**07** After getting to the 0.0010-inch backlash, the paint-wear pattern on the gears looked very uniform. It was then time to install the new bearing that came in our kit and put the "tool bearing" on the shelf for the next time. A thin coating of antiseize is used on the surface of the pinion where we will be installing bearings. This gives it just enough slip not to mar the bearing or the surface. Our 0.0032-inch shim was installed and off to the press we went.



08 With the new bearing and shim pressed in place, the new crush washer is installed on the pinion.



09 Our housing surface had a few burrs and nicks in it so Paul used a fine file to knock them down since they could mar the cast-aluminum cover we're using. If you were using the original tin cover it wouldn't matter as much as you would be using the gasket and a lot of RTV sealant.



10 On all bearing seals we used a coating of grease on the inside of the seal to keep the spring in place. This was a great trick for us as those springs, upon install, can come off and go bouncing around inside and make a real mess.



11 It was determined that the yoke was worn out so we needed a new one. This one used U-bolts instead of the stock straps for the U-joint. It's recommended before installation to lightly coat the yoke splines with RTV sealant to deter leaks.



12 The pinion bolt and washer both should get a liberal amount of antiseize on the mating surface, while the threads on the lock nut get thread locker.



13 Once the pinion is installed and all the bearings are seated, drive the yoke on with an impact gun. This will crush the bearing on the front to the crush washer. Don't go overly tight since the goal is to crush the washer so there's a 15 ft-lb drag on the pinion.







15 With the main caps and bolts clean, we applied thread locker and torqued to the manufacturer's specs.



As you can see, the mating surface of the ring to pinion is a clean wipe in the middle of the ring gear. If it was heavy on one side or the other, we would have made an adjustment by adding or subtracting shims.





**17-18** We are at 0.0010 inch of backlash, so the hard work and shimming is over.

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## No More Leg Peggin' for this Pirate



19 As you can see, the passenger-side axle has some severe wear and pitting. Paul recommended replacing both axles to lessen wear on the newly installed axle bearings and seals. It's common for the passenger side to get most of the wear as it is the spinner and warms up over time.



20 New axles were installed and the horseshoe clip keepers for the axles were put in place. The main set pin was pushed into place and the set screw, after getting some thread locker, was replaced.



21 A new seal was placed onto the aluminum cover with no sealant. It is a machine fit, so it will not leak. The cover was installed and the ARP bolts were torqued to 25 ft-lb per the instructions.





22 | The two main cap support studs were ran in until they touched the main caps then pulled out 1/2-inch, and lightly coated with RTV sealant.



23 Once they were coated, the support studs were ran back in and torqued to 10 ft-lb. The RTV helps keep a seal in the threads so the gear oil won't escape.



**24** The same torque specs apply for the lock nuts.

Looking for some cheap, easy power for his newly acquired 1969 Nova, Joel Rode dug up an old "boat anchor Chevy 350 Vortec he had living under one of the benches at his boat repair shop. A visit to JMS Racing Engines in El Monte, California, got the engine a simple rings and bearing refresh and the addition of a Comp Cams X4270HR hydraulic roller cam (220/224-degree duration at 0.050, 0.474/0.474-inch lift).

Joel added a PerTronix electronic distributor, Holley 800 doublepumper, and a set of Doug's headers. Joel also modified the tunnel of his Nova and installed a TCI Auto Outlaw shifter to change gears in the 700-R4 trans that came with the car. Out back was a peg-leg 10-bolt rearend with 3.08 gears.

Curious to see what he was working with, Joel hauled the Nova over to GTR High Performance in Rancho Cucamonga, California, where he put the car on their DynoJet chassis dyno. Not expecting



much, the car spun the rollers to a best of 254 hp and 290 lb-ft at 5,200 rpm.

Next up was to get the car some quarter-mile numbers, so Joel took the Nova over to Auto Club Dragway in Fontana, California, for some drag testing. After spinning the street radials like the car was on an ice rink, the first two passes ended at half-track when the car ran out of fuel on the top end, sputtering uncontrollably with the car barely breaking the 16-second e.t.

barrier. An ill-planned fuel system and loose ground wire on the electric pump proved to be the culprits.

With a re-plumbed and simplified fuel system, Joel ventured back out to Auto Club Dragway. While still not hooking up, Joel throttled the Nova to a best 60-foot time of 2.407, with quartermile numbers of 15.643 seconds at 87.69 mph. Even with only 250 hp at the rear wheels, it was obvious nothing was going to be accomplished without some traction.

## SMALL STEPS TO IMPROVED

Out came Joel's checkbook for a new set of Mickey Thompson ET Street S/S drag radials (size 255/60R15). Another trip to Auto Club Dragway yielded a best 60-foot time of 2.212 and a quarter-mile of 14.619 at 93.19 mph. The MT's did their job, as Joel was able to flash the converter to 2,000 rpm and leave the line with no noticeable tire spin.

The next step was to add some gear. Since the car was equipped with an overdrive trans, Joel wasn't afraid to get a little aggressive and step up to a 4.10:1 rearend ratio. A short day with Paul Headrick at Oceanside Driveline in Oceanside, California, left the Nova's rearend packed with a pile of goodies from Summit Racing, including an Auburn Gear High Performance series posi-traction differential, Richmond Gear ring-and-pinion set, Summit Racing cast-aluminum differential support cover, and a Motive Gear bearing kit.

Joel's next visit to Auto Club Dragway with the new, shorter

(numerically higher) gears and limitedslip helped to get the Nova down the quarter-mile almost 0.5 seconds quicker. The car's best run of the day netted a 60-foot time of 2.118 and quarter-mile e.t. of 14.17 at 95.48 mph. With the 4.10s and the 27.3-inch tall rear tires, the Nova went through the lights at 5,000 rpm. An unexpected result of the added gear multiplication was a 300-rpm reduction in stall speed.

A call to TCI Automotive and Sales Tech Manager Will Vance gave us a quick education on a gear ratio's effect on stall speed. Will told us that "stall is essentially slippage and it all comes down to making the car move. Just like a heavy car will gain more stall out of a given converter than a lighter weight car, more gear moves the car easier, so there is less load against the converter, which equals less stall." What this told Joel was that the car now needed a smaller/higher stall converter to get the Nova to leave harder.

So it looks like Joel has a little work cut out in order to get the Nova to the

next level. Stay tuned as we'll follow the install of the TCI Auto 10-inch Street Fighter converter and share the results from the dragstrip.

#### Testing By The Numbers Test 1

Falken ZIEX ZE950 AS street radials 60-ft time: 2.407 seconds Quarter-mile: 15.643 @ 87.69 mph 2,000-rpm stall 4,500 rpm through the lights

Mickey Thompson ET Street S/S drag radials (255/60R15) 60-ft time: 2.212 seconds Quarter-mile: 14.619 @ 93.19 mph 2,000-rpm stall 4,500 rpm through the lights

Installed 4.10 gears with posi 60-ft time: 2.118 seconds Quarter-mile: 14.17 @ 95.48 mph 1.700-rpm stall 5,000 rpm through the lights



25 With the driveshaft back in place, we tightened down the new U-bolts to secure it.



26 Friction Modifier is absolutely needed for limited-slip diffs. If you don't use it, you'll burn it up and waste every bit of your hard-earned dollars. Oceanside Driveline has been at this for a long time and has found that Motorcraft friction modifier has the best properties for a limited-slip diff. They add two 4oz bottles in the service port of the rearend and top it off with 85W-140 gear oil.



27 There you have it. Our new limited-slip diff and 4.10 gears are bolted up and ready to help improve the Nova's 60-foot times and lower e.t.'s. But before we hit the strip, Paul suggested we do a 500-mile break-in or there's a good chance we'll be repeating this dance sooner rather than later.

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RIDES

# ACK

Brandon Pursley mobs his Third-gen just like downtown

◆ TEXT: Ro McGonegal | PHOTOS: Tim Sutton

**When you sign on** for the ride, you probably think you have some idea of where the ride is going. But then again, you might not. Maybe you were lied to. But if it's just that it turned out to be a little rougher than what you had in mind maybe no one would blame you if you quit.

Brandon Pursley never had any notion that it wouldn't turn out well. He's been fooling with cars since he was a child, beginning and practicing at his father's trucking company. He says he has never worked in a position that didn't involve cars, so it was contingent upon him to learn the angles and anticipate the pitfalls.

This is how he tells it: "In 2000, I was going to quit my job and was travelling to an interview when I

spotted this car with a "for sale" sign on it in a parking lot. I had seen it before at a drag racing event. It was my mental dream car. I never went to the interview," he said. "I went straight to the bank, and paid the owner his asking price. I stayed at my automotive job, which led me to my current career and family."

He's championed this special child for 17 years now. "It was my dream car," he gushed. "This decision

literally shaped the direction of my life and my career from that day forward." He put bigger wheels on it and set the chassis with lowering springs. "I soon found that I enjoyed the challenge, that was much more exciting to me than trying to beat my friend's dad's wallets at the dragstrip so I focused on that as the primary direction." There was another big reason for his resolution: he just didn't have the bucks to build a good engine.



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But he knew that it was inevitable.

Even before the engine upgrade, there was the show car aspect. In 2003, Brandon focused on improvements that had to look as good as they performed, and if it didn't appeal visually, it must be modified to do so. As such, there



were many do-overs in the history of the campaign. He began with a 1998 Camaro donor, mainly for its coveted LS engine. Along the way, the stork delivered twin sons and upset the timeline for a long spell. Brandon simply parted out the Camaro and ...



studied on being a dad. Eventually, he went into the pit again and found a 2001 Trans Am, complete with a T-56 and got it for a steal.

He sent the lump to Lloyd's Machine Service for some mild but pertinent changes. Lloyd's balanced the rotating

### Bad in Black





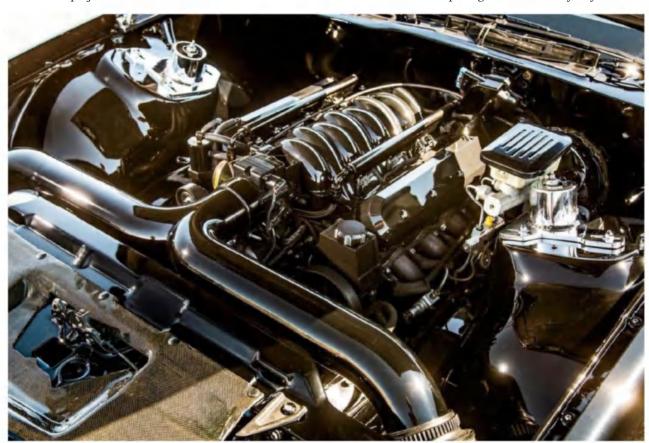
assembly and secured it with ARP fasteners. They tapped Advanced Induction for cylinder heads that were CNC-machined in selective areas. Then they spiked it with a livelier camshaft and added an LS6 intake manifold. They put the engine together. Then it sat for a year before Brandon (and friends Shawn Norton and Jeremy Wallis) had the time and wherewithal to move the project forward. "I



promised my wife [Danielle] that the engine swap would take as little family time as possible and I kept that promise by going into work at 4 a.m., working on my lunch break, and sneaking out after the kids had been tucked in and then working through the night during the weekend. That was the most challenging part, balancing being a good father and husband and carving whatever free time I could make to

work the car. And finding projects my kids would 'help' with and keep them entertained while I was working."

Meanwhile, Brandon's brain was cranking 6,000 rpm. With the engine temporarily mothballed, he concentrated on improving the appearance of the engine bay, erasing most of the cheap "stamped '80's" look. "I shaved the firewall, the fender side openings, and the battery tray and





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started filling holes. I put the customsized radiator under the core support to make room for the twin air intake snorkels sweeping toward the throttle body." He treated the maw with PPG Black, the first time he'd triggered a paint gun in nearly 16 years, and contrasted the work with a scratchbuilt carbon-fiber apron. There isn't a nook or a cranny on the Camaro that hasn't been stroked: there's so much stuff we don't have room to say it all.

So you've got an inkling of Brandon's veracity and his never-saydie demeanor. It's one thing to put all the pieces together and yet another to faithfully cycle them naked on the tarmac out in the world.

As for that part about signing on for the ride, Brandon's first excursion beyond his garage floor was an Optima USCA event at Pikes Peak International Raceway. "I drove the car all through the night back and forth from Wyoming to Denver to break the motor in. I washed it, changed the oil and did a thorough bolt check, then loaded it on the trailer and drove it to the track. The car ran great—OK, there were some small tuning issues, and I made some ride-height adjustments between sessions, but the late nights and the mad thrash worked out," he rasped. "At the Denver Super Chevy show it was able to take First Place in the 1989-'92 Camaro category."

Better yet for ol' Brandon, it put a big smile on Danielle's face when they went for the first banzai blast with the new drivetrain. Yup. Got that ride after all. CHP

### TECH CHECK

Owner: Brandon Pursley, Windsor, Colorado

Vehicle: 1991 Camaro

- •Type: 2001 LS1
- •Displacement: 346 ci
- Compression Ratio: 10.9:1
- Bore: 3.900 inches
- Stroke: 3.622 inches
- Cylinder Heads: Advanced Induction CNC-ported exhaust runners and intake valve seat area, 2.00/1.55 valves
- •Rotating Assembly: Stock nodular iron crank, powdered metal rods, hypereutectic pistons, ARP fasteners, Racing Innovations
- windage tray
  •Valvetrain: Stock 1.7:1 rocker arms w/
  Comp trunnion upgrade, Brian Tooley valvesprings, titanium retainers, chromoly pushrods, modified Proform rocker covers Camshaft: Advanced Induction (0.620-

inch lift, 229/233-deg. duration at 0.050-inch lift, 113-degree LSA)
Induction: Shaved and ported LS6 intake

- manifold, LS7 MAF conversion, Vulture Motorsports 85mm throttle body, Holley billet fuel rails, Bosch 42 lb/hr injectors, custom twin-snorkel intake, AEM filters, stock fuel tank with Holley HydraMat pickup conversion, Mike Norris Motorsports catch can
- •Ignition: Factory coils relocated, PerTronix primary wires, reprogrammed ECU
- Exhaust: Hooker BlackHeart headers 1 7/8-inch Cera-coated primaries, 2 1/2inch BlackHeart True Dual stainless system, Hooker stainless steel mufflers
- •Ancillaries: Engine harness by Mullet Machine Motorsports, Deka battery moved to trunk, dual SPAL fans, Champion threecore aluminum radiator
- Machine Work/Assembly: Roger at Lloyd's Machine Service (Fort Collins, CO)

  Output (est. at the wheels): 460 hp

- •Transmission: TREMEC T-56, LS7 flywheel and clutch assembly, Ringbrothers clutch fluid reservoir
- •Rear Axle: Moser 9-inch housing, Strange Engineering centersection, limited-slip differential, 3.89:1 ratio, 33-spline axles, 1LE aluminum driveshaft

- •Frame: Stock, powdercoated
- •Front Suspension: Modified Baer spindles, Ground Control weight jack system with 1,150 lb/in springs, powdercoated factory control arms with polyurethane bushings, Koni adjustable struts, Spohn antisway bar and billet upper strut mounts, Baer Tracker bumpsteer kit
- •Rear Suspension: Spohn weld-in subframe connectors Spohn adjustable links, Ground Control system with 275 lb/in springs, Koni adjustable shock absorbers, Founders adjustable torque arm, Spohn adjustable Panhard rod
- Brakes: Baer 14-inch rotors with 6S sixpiston calipers, front; Baer 13-inch rotors with PBR two-piston calipers, rear; Baer proportioning valve; Earl's lines

- Wheels & Tires
  •Wheels: Forgeline FF3 18x10 front, 18x11 rear
- •Tires: BFGoodrich g-Force KDW2 275/35 front, 295/35 rear

- •Upholstery: Brandon Pursley
- •Material: Leather, two-tone gray/dark gray
- Seats: Sparco Sprint, front; stock, rear •Steering: AGR quick-ratio, stock column,
- Shutt Tuning Y3 wheel Shifter: Hurst Billet Pro
- Dash: Stock
- Instrumentation: Factory plus Auto Meter 5-inch Pro Tach
- ·Audio: Pioneer Premier head unit, JBL 1,000K amp, Infinity 4x6 Kappa front speakers, 6x9 Kappa rear speakers, JL Audio W3 12-inch subwoofer, installed by Brandon Pursley
- •HVAC: N/A

- Bodywork: Trent Eastman (Cheyenne, WY)
- Paint By: Trent Eastman
   Paint: PPG Black and Bright Aqua Metallic
- •Hood: Stock
- Grille: Handmade carbon-fiber
- Bumpers: Stock, shaved, bolts hidden

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## STYLISH INTERIOR FOR A '69 CAMARO

We walk through the process of installing a full interior for a first-gen Camaro

**♦** TEXT & PHOTOS: **Taylor Kempkes** 

he engine makes all the great noises and power, the paint and bodywork make it nice to look at, but it's the interior where you spend most of your time. This 1969 Camaro had a Pro Touring makeover with all-new engine, paint, suspension, and wheels and tires - the whole nine yards. The only thing missing to complete the car was installing an interior, a responsibility handed over to the guys at TMI Products in Corona, California. We tagged along as they installed the sound deadening, the carpet, the dashpanel, the headliner, the seats, and more.

One of the benefits of going to TMI for your interior is getting a full interior for your ride that looks completely custom but actually isn't all that custom. Why is a non-custom interior so good? Well, if you are on any sort of budget, the cost savings will be much appreciated. Another perk with a

non-custom interior is that all the parts were already designed and built for your specific car, meaning it takes significantly less time for your interior to go from gutted to fully functional.

As you will see, some modifications may be required depending upon how far your car has deviated from its stock form, but for the most part it's as easy as one, two, three. CHP









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## Stylish Interior for a '69 Camaro

**O2** The floor started out pretty bare, save for a thin layer of Dynamat but would soon be covered in heatshield mats and carpet.





O3 | The shiny stuff are heatshield mats from Heatshield Products, which, as its name suggests, keeps unwanted heat out of the interior. It comes in a half-dozen individual pieces, and installation is as simple as spraying the backside with adhesive and padding it down into place.



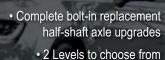
**O4** TMI now offers a new line of carpeting where individual pieces are used instead of a single molded carpet piece. This makes for an easier installation process and better fit for cars with custom transmission tunnels or other modifications where a stock, molded carpet would no longer fit correctly.



05 | The multi-piece carpeting wraps around the modified transmission tunnel of this '69 Camaro nicely and, like the heatshield, uses spray adhesive to keep it in place.

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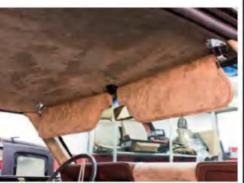
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07 Next up, TMI's headliner is designed specifically for each model vehicle and is held in place with a few tastefully placed screws around the edges.

**06** You can see how the individual carpet pieces give a lot more flexibility when it comes to alterations to the floorpan and trans tunnel, making for a perfect fit no matter the application.



08 Once the headliner is in place, the sunvisors and rearview mirror can be installed. This is done by cutting a few small holes in the headliner and screwing the fasteners into their stock locations.



09 | The rear interior panel slides into place over the existing steel structure and is cleaned up with rubber molding cut to fit.



## Stylish Interior for a '69 Camaro

10 The rear bench/buckets needed to be assembled next. Here is one of the four individual leather and suede covers used.





11 New stock Camaro rear seat frames are used, but the springs are ditched leaving just the ridged metal to which the foam and leather are attached.



























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12 Another important detail to take note of is whether or not the car has been mini-tubbed. This 1969 Camaro was, so the frames needed to be notched to fit the protruding wheelwells.



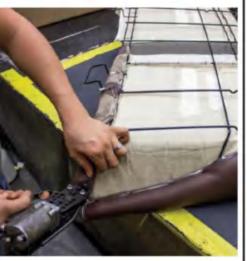
**13** Four individual foam pieces are glued onto the frames with spray adhesive—two on the bottom frame and two on the back frame.



14 Thin steel rods are cut and inserted into slots in the underside of the seat covers. These serve as mounting points to attach to the frame.



15 A steamer is used to soften the leather, making it easier to stretch over the foam and get rid of unwanted creases.



16 The covers are pulled over the foam and attached to the seat frame with an upholsteryspecific staple gun.



17 With the seat frame notched to clear the wheelwells, each seat assembly slides into place.



#### Stylish Interior for a '69 Camaro



18 | It is starting to look like an interior with the carpet, rear seats, center console, and rear interior panels all in their respective places.

**20** | The trunk is also gutted and ready for the matching carpet and panels to be installed.





19 | Moving toward the front, the door cards slide down over the inside of the door and then are secured by a couple of screws on the bottom side of the panel and underneath the interior door handle.

**21** | The carpet and trunk panels are set into place and attached with Velcro for easy removal in case more space is needed.





22 In just under a minute, the trunk of this 1969 Camaro can go from show-quality (with admittedly limited space) to open bare metal for throwing in whatever junk you need.



23 Before the front seats can go in, the center console slips in over the shift lever and rests on the transmission tunnel.



24 The matching front buckets didn't need to be assembled from scratch, but the sliders and mounting brackets had to be installed.

25 | Tada! Yeah, there are a few things missing, like the other front seat, but you get the idea. Everything you see here was provided by TMI and is available for your first-gen Camaro project, too.









# ARTSBIN

by Nick Licata



#### **Speed Cleaning**

Mothers is proud to announce their new Speed line of premium-quality car care products specifically designed to provide instant results with minimal effort. The heart of the new line is Speed Clay 2.0, their fastest, most durable, and versatile paint restoration and surface prep tool yet. This next-generation contaminant removal process is as simple as washing or spray waxing your way to a perfectly clean, smooth, and restored paint finish. Also included in the Mothers Speed line are Spray Wax, Interior Detailer, All-Purpose cleaner, Foaming Glass & Screen, and Tire Shine. To learn more or to find a retailer near vou. go to mothers.com or call 714.891.3364.

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#### LT1 Tri-Five Swap

Muscle Rods now offers everything needed to drop a new LT-based engine into your Tri-Five Chevy. Their bolt-in engine mount and crossmember kits are specifically designed for your car with an LT engine and support all early and late-model transmissions. A new oil pan was designed to meet the oiling requirements and fitment issues of the fifth-generation engine. Also offered are 1 7/8-inch 304 stainless steel long-tube headers with MLS gaskets. Current kits include 1964-'72 GM trucks and 1955-'57 Chevys with more kits available soon. Check out musclerods.com or give them a call at 770.751.0687.

#### Street/Race LS Heads

Edelbrock's new E-CNC LS3 cylinder heads feature altered valve angles and locations, spark plug location, and valve sizes along with all-new high-flow ports and chambers. The result is a versatile, high port velocity cylinder head that is an excellent choice for street or race LS1, LS2, and LS3 engines. Despite the geometric revisions, the stock LS3 rocker arms and 69cc chamber size are retained. The Edelbrock E-CNC LS3 cylinder heads utilize a valve size and location allowing it to fit within LS1 3.890-inch bore engines, while

leaving it unshrouded on larger-bore LS2 and LS3 engines. Testing showed these cylinder heads flowed 340 cfm, and outperformed the stock LS3 cylinder head by 20 hp on a 500+ hp engine. More information can be found at edelbrock.com or by calling 310.781.2222.





#### **Quite The Ride**

QA1's Pro-Rear Systems are used to add ride-height adjustable coilover shocks to a four-link or ladder bar suspension. Now available for both 3.00- and 3.25-inch diameter axletubes, these kits include two shocks in double- or single-adjustable valving or ride-sensitive non-adjustable valving. Buyers also have the choice of spring rates in linear or variable options. Mounting brackets and all mounting hardware is also included. Some welding is required for installation. Click on over to **qa1.net** or call **800.721.7761** for more info.



#### **Ultra-Duty Starters**

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Strange Engineering is proud to introduce two "streetable" C-clip eliminator kits for use on GM 10- and 12-bolt and Ford 8.8-inch rearends. These C-clip eliminator kits improve safety by retaining the stock C-clip axles into the housing in case of a failure. Each kit utilizes a tapered unit bearing that can handle the loads of everyday driving and independent seals that will eliminate any leakage issues commonly associated with using the drag race kits on the street. All kits include gaskets, mounting hardware, and complete installation instructions. For more information visit strangeeng.net or call direct 847.663.1701.



#### **Belt Traction S-Drive**

▶ Eddie Motorsports' new line of S-Drive Plus Serpentine Pulley Drive Systems utilize a high-performance, eight-rib belt configuration that is 33 percent wider than a standard six-rib belt, which improves belt traction and limits stretch in higher horsepower applications. The eight-rib configuration offers longer belt life by reducing the instances of span vibration (belt whip/belt waves) and can also handle increased torque loads 33 percent greater than a standard six-rib belt. The S-Drive Plus is available for Chevy small-block, big-block, and LS engines and can be ordered in raw machined or bright polished finish as well as a variety of anodized or Fusioncoated colors. Go to eddiemotorsports.com or call 888.813.1293 for more information.



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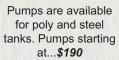
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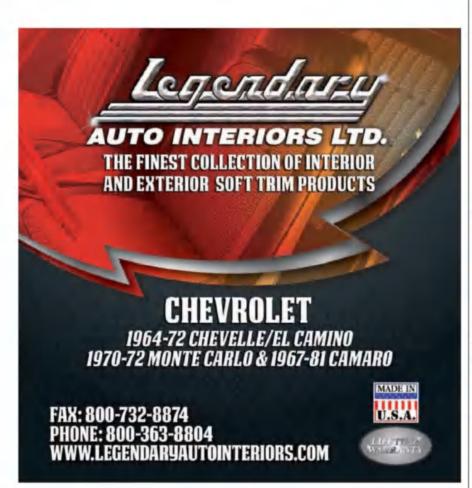
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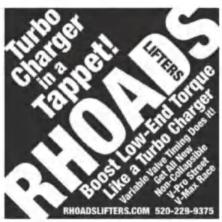
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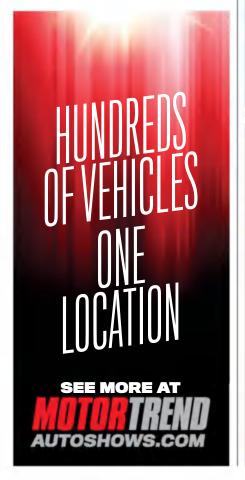
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## JUST SAYIN



#### **Sidekicks**

Most of the stuff that happens in the world of cars and hot rodding is not just the handiwork of one person. Normally, it's at least two people who have designed, created, or fabricated something cool or memorable. Basically, the sidekick is an integral part of this world we love to hang in and around.

I've always relished the role of sidekick. Whether it was working with my dad as a kid or working as a "color guy" on a two-man announcing crew, the role of sidekick always felt comfy for me. Make no mistake about it, there's not one drop of shame in the role. There are guys who have made successful livings as sidekicks, and they're laughing their way to the bank, even today.

When I first started to actively pursue this wacky world of automotive journalism in college, my wife was

my sidekick, sometimes willingly, sometimes not. She accompanied me to far-off racetracks in exotic destinations like Ohio. Kentucky, and the Carolinas. We'd pile into my pickup truck on a Thursday night and drive all night to get to a race. She'd read a book or take the truck around to see

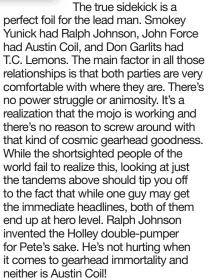
what the local area was like while I was at the track. Come Sunday afternoon, we'd pack up, drive all night and try to make it back in time for classes on Monday morning. In hindsight, I needed a sidekick back then, just someone to spur me on when it seemed everything I was doing was a waste of time. We did have our moments though, like the time I decided we'd head to a road race and camp out ... in March ... in New England. It was misery and there was no denying it, but we stayed long enough to get the job done. Without knowing that someone, anyone, had my back, I don't think I'd have ever gotten that plane off the ground.

With the addition of the two boys to our family I've gone from sidekick to front man in a lot of ways. I guess it's a natural progression, and frankly, it's a pretty cool feeling to teach my son Tom things like how to identify tractors by their color, how to tell the difference

between a big- and small-block Chevy, and how to operate a fork. He's my oldest sidekick and has been an everpresent companion on many adventures and gearheaded missions

over the last decade. My younger son Jack is effectively Tom's sidekick and the two of them get along like peas on a pod. It is a fun dynamic to watch, especially when scrappy Jack feels

> that his older brother has wronged him. The fur flies occasionally but that's the nature of brotherhood. I look forward to the days when both of the boys are old enough to be active participants, and not just along for the ride on our adventures.



Today's social media-driven culture means that many people relish their ability to steal nanoseconds of "spotlight" whenever they have a



chance to do it, no matter the cost. Their ego drives them so strongly to blurt something out first, proclaim something first, take credit for something first, and basically play the role of hero that they'll

go so far as to alienate the very people that helped them succeed. I personally love to see people get ahead, achieve goals, and make things happen but not without taking everyone that helped along for the ride as well.

Lots of people have trouble playing "second fiddle" as the old expression goes. I think that's their loss because they are excluding themselves from opportunities and experiences that they otherwise could be involved in. Part of being involved with a team is sharing in the success, even if it's just between two people. Look at the competitors on Drag Week. Lots of the racers travel with their right-hand man, or to overuse the term, their sidekick. They confront challenges together, solve problems together, and ultimately succeed or fail together. It's yet another neat factor that makes that event so special.

You never outgrow the role either. When I am at the track with my dad (which is not nearly often enough anymore), it feels the same as it did when I was 17, and frankly I love it. There's security in those feelings and a happiness of knowing your role and your job.

Never let your ego get in the way of a good time or memorable opportunity. Take whatever role you can to be involved. Who knows, you may just relish it for the rest of your life.

Brian Lohnes is an NHRA National Event Staff Announcer and co-owner of Bangshift.com.

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