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INSIDE

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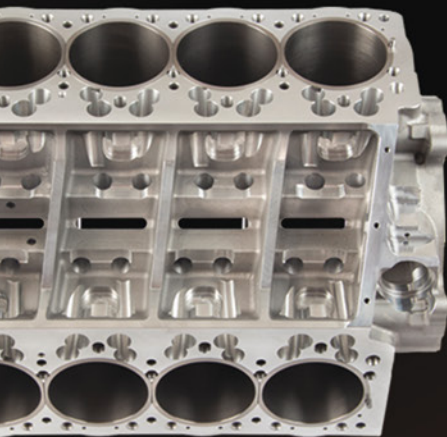
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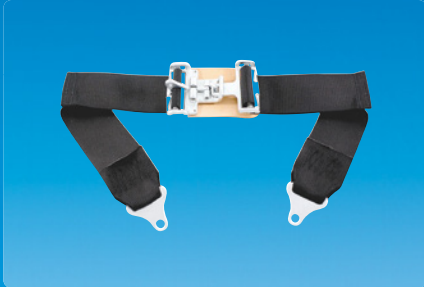
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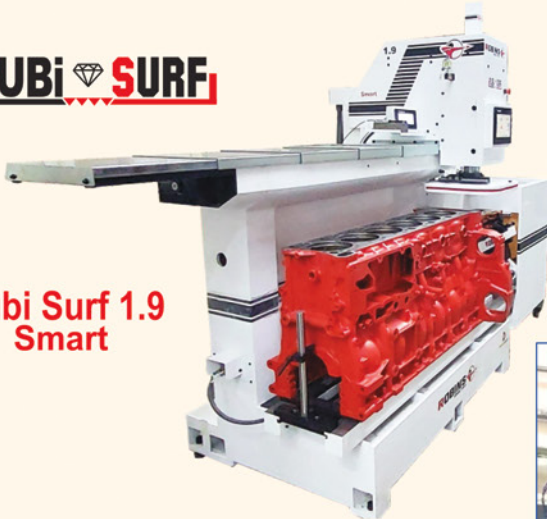
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FEATURED VEHICLES

Today's tuning techniques make it possible to drive a competitive Outlaw drag race car or truck legally on the street.





2002 HONDA S2000

THOMAS WEST | CLARKSVILLE, TENNESSEE

RACE SERIES/CLASS: Stick Shift Outlaw

ENGINE: 427ci engine built and tuned by Jonathan Atkins of JAC Engines & Tuning

CAR: Designed and built by Top End Fabrication

FEATURES: Nitrous Outlet, Tick Performance, Red Horse Performance, XS Power, Drive Shaft Shop, NXT Shift, Scott Performance Wire, Holeshoot Performance, Tennessee Transmission

FACTS: The car is street legal and capable of running 6s in the 1/4-mile.



2006 DODGE RAM 2500

CHRIS GELBAUGH | MECHANICSBURG, PENNSYLVANIA

RACE SERIES/CLASS: Diesel Truck Wars Singles Elite and Outlaw

ENGINE: 6.7L Deckplate Cummins engine built by D&J Precision

CAR: Built by Chris Gelbaugh with the help of Schmuckbuilt, Piranha Fabrications, SK Diesel Service, and Firepunk Diesel

FEATURES: CG Diesel Performance Transmissions, Goerend Transmission, Nitrous Express, Exergy Performance, Speedwire Systems, Garrett Motion, Sonnax, Beans Diesel Performance, AEM Electronics, Steed Speed, Vibrant Performance, Raybestos Powertrain, DNR Customs, On3Performance

FACTS: This is currently one of the quickest street-driven diesel trucks with more than 2,000 whp and runs mid 5s at 130+ mph in the 1/8-mile.

ASK THE EXPERTS

REMOTE COOLER TECH

Racing is hot business. A remote cooler will increase cooling capacity for vital fluids and offers a variety of mounting options.

By Drew Hardin

The name of the game is surface area.” In a nutshell, Tom Longo of Derale Performance in Los Angeles, California, described one of the two main benefits of installing a remote cooler for engine oil, transmission fluid, or any other drivetrain-related liquid prone to overheating in racing’s extreme environments.

“The main thing a remote cooler does is provide increased surface area for a high-temperature fluid to have contact with the air to remove heat,” added Derale’s Cameron Brandt.

The other benefit? “If you’re strapped for space in the front of your vehicle, a remote cooler can be mounted, well, remotely, to add extra cooling capacity in a different location,” explained Ryan Salata of PROFORM, Warren, Michigan. With an auxiliary fan attached to provide airflow, the cooler can be mounted anywhere, “even under the vehicle.”

“It doesn’t matter how fast you’re going or how slow you’re going, it’s going to get the same amount of airflow,” Longo pointed out. “That’s the main benefit of a remote cooler versus a ram-air cooler. It has its own airflow source.”

COOLER SIZING

Most remote coolers, including those made by Derale and PROFORM, are marketed based on external dimensions and also on how many cooling rows the unit has to pass fluid through. Both companies offer coolers that range from 10 to 40 rows.

“Most guys try to get the biggest secondary cooler they can that will fit,” Salata said. “Our 12- to 16-row coolers are the most popular, but if



you can fit the 40-row, do it.”

“Space constraints can limit the size of the cooler depending on where it’s going,” Brandt agreed, “but the more rows you have, the more surface area you’re pulling heat from. Engine oil you can’t over-cool, so whatever you can fit in the space available will be perfect.”

Sizing a transmission cooler is a little more complex, Longo said. “We look at a number of different factors, including the converter, stall speed, vehicle weight, horsepower, gear ratios, and other things.”

“For drag race applications, we will usually upsize the cooler if the car is using a trans brake,” Brandt said. “That way if you get caught sitting on the brake, you don’t burn down the transmission.”

If a racer has any questions about sizing an ATF cooler, “we recommend calling us,” Longo said. “The techs working in the department know what works and what doesn’t for similar configurations.”

The number of rows is important, as is their design. Many coolers have rows made of tube-and-fin construction, while coolers with stacked plate, or plate-and-fin, rows are becoming more popular. “Tube and fin is the traditional

affordable design with straightforward construction,” Brandt said. “It’s going to hold more fluid. But the main benefit of going with a stacked plate design is that it gets the fluid really thin to go through that plate, so you get a lot more surface contact. The efficiency goes up a lot.”

MOUNTING TIPS

Mounting a remote cooler is very straightforward. All of PROFORM’s coolers, and many of Derale’s coolers, come with built-in mounting brackets. “You pretty much take it right out of the box and bolt it up to the floor pan, inner fender, anywhere you’re planning to mount it,” Brandt said. “They are more or less set up to go out of the box.”

“It can be as simple as two cross braces that meet our mounting surfaces and you’re done,” Longo said. “It’s relatively easy for a racer to install a remote cooler, as most have some sort of a tube chassis or a roll cage to mount them to.”

One caveat mentioned in PROFORM’s installation instructions is to be wary of mounting the cooler to chassis or frame-rail components that may flex during vehicle operation, as that could lead to leaks or cooler failure. PROFORM recommends the use of rubber isolation mounts for installation.

The coolers from both of these companies that are fitted with fans also come with thermostats to control their use. “We pioneered the thermal switch in the 1990s,” Longo said of Derale’s inline thermostat, which automatically turns on the fan to maintain 180-degree temperatures. “It’s an important piece of the puzzle. How else do you turn it on otherwise?”

Space constraints can limit the size of a remote cooler “depending on where it’s going,” said Derale’s Cameron Brandt. “Engine oil you can’t over-cool, so whatever you can fit in the space available will be perfect.”

Most racers “try to get the biggest secondary cooler they can that will fit,” said Ryan Salata of PROFORM. “Our 12- to 16-row coolers are the most popular, but if you can fit the 40-row, do it.”





Derale's inline thermostat automatically turns on the fan or, in this case, fans, to maintain 180-degree temperatures. Derale's Tom Longo called the thermostat "automatic and super reliable."

A lot of guys want to run it to a manual switch, but if you do that, you can forget to turn it on. This is automatic and super reliable."

As for hoses and fittings to connect the cooler, "we sell thousands and thousands and thousands of remote coolers, and probably the majority are using rubber hoses," Longo said. Years ago, Derale struck a deal with Goodyear to supply "high-pressure, high-temperature rubber hose that would be sufficient for anything we'd throw at it." However, "most racers aren't putting on rubber hoses. It depends on the type of racing, and some classes require more braided lines than others, but anything in the middle to high end from us is coming with AN fittings on it. AN fittings are going to make a better seal, but the cooler will be just as efficient either way."

As a category, "remote coolers is our largest growing segment, and it has been for many years," Longo said. "Race cars spend a lot of time in the pits, they're at the start line, they're in cautions. There are a lot of times when they're not running at full speed. The beauty of a remote cooler is that you're getting maximum airflow at any vehicle speed. You're constantly maintaining temperature no matter what." **PRI**

SOURCES

Derale Performance
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SEALANT CHOICE

Advanced formulations can provide long-lasting seals and make servicing easier, but the appropriate tool must be selected for the job.

By Bradley Iger

The difference between one sealant and another may seem relatively inconsequential at first glance, but the end results can have a substantial impact on a race program. Most obvious are the hassles that leaks can cause while going through tech inspection, or the potential problems that seal failures can cause out on track. But it's also important to consider that sealant design has evolved significantly over time. These improvements have not only yielded products that are more use-case-specific, but they've also kept these formulas in line with the evolutionary changes seen in the components that they're being used with. As a result, specificity has taken on greater importance.

"One thing we often see is that people find something they like, and they want to stick with it forever," said Rene Levy of Henkel Canada Corp., Mississauga, Ontario, Canada, which makes the Loctite brand. "I've used this sealant for 20 years, and it's always worked great.

"IF YOU'RE NOT KEEPING UP WITH TECHNOLOGY, YOU'RE INTRODUCING A GREATER POTENTIAL FOR FAILURES."



So why should I change? But the issue is that, while that may have worked fine on the engine that they were using it on back in the day, the materials in today's components are vastly different than they were in the past. If you're not keeping up with technology, you're introducing a greater potential for failures."

As Eric Seibold of Permatex in Solon, Ohio, explained, a heedless approach can also make things harder than they need to be. "One of the significant differences between a street car application and a racing application is that, with a street car, you're usually sealing up two components with the expectation of never touching it again. You want to do the job once and be done with it. But generally speaking, racers are in and out of those components much more often. That should change the product selection."

Seibold told us that if components involve a separate gasket, a gasket

sealant should be used, not an RTV silicone product. "It's one of the biggest mistakes we see people make. There's a difference between a gasket sealant and a gasket maker. For a racing application, you'd want to use a non-hardening gasket sealant because it acts almost like Velcro—it holds the gasket in place and seals well, but when you want to remove it in the future, it can be easily peeled off. If you use RTV silicone, you likely won't be able to use that gasket again, and that can get expensive if you're opening up that engine every week."

Choosing the wrong product can increase the likelihood of a leak as well. "RTV silicones are extremely thick, so if you don't apply them evenly, you could introduce high and low points on the gasket," Seibold added. "Gasket sealants are much thinner, and they're designed to spread much more evenly. In some cases, they're even self-leveling."

Beyond serviceability and seal quality, Levy said that it's important to consider the operating temperature range of the components that the product is going to be used on.

When choosing the right sealant, there's a significant difference between the needs of a street car and a race car, said Eric Seibold of Permatex. "With a street car, you're sealing components with the expectation of never touching them again. But racers are in and out of those components much more often. That should change the product selection."

It's important to consider the operating temperature range of the components the sealant will be used on, said Loctite's Rene Levy. "There are products that will work fine on valve covers or oil pans, but you'd want to use a different product for an exhaust flange because the operating temperatures that it's going to see are much higher."

sealant should be used, not an RTV silicone product. "It's one of the biggest mistakes we see people make. There's a difference between a gasket sealant and a gasket maker. For a racing application, you'd want to use a non-hardening gasket sealant because it acts almost like Velcro—it holds the gasket in place and seals well, but when you want to remove it in the future, it can be easily peeled off. If you use RTV silicone, you likely won't be able to use that gasket again, and that can get expensive if you're opening up that engine every week."



“Every product has a heat range that it’s designed to work within, and you have to make sure you’re operating within that window. In terms of heat, there are products that will work fine on valve covers or oil pans, for example. But you’d want to use a different product for an exhaust flange because the operating temperatures that it’s going to see are going to be much higher.”

Seibold noted that with silicone products, there are essentially three universally color-coded types of products: black, grey, and red. “Black silicones are stretchy and flexible, and they’re designed to be used primarily where you have dissimilar materials—like if you have a steel pan mating with an aluminum block, for instance. Those two materials have different expansion and contraction rates, so you want that flexibility in the silicone. The black silicones also have the highest oil resistance, so that also makes them ideal for components like oil pans and valve covers.”

Grey silicones, on the other hand, are very rigid and are designed to hold components of the same type of material as securely as possible. “Those are made for places that will see a lot of vibration, but you really want the silicone to hold in place,” Seibold continued. “These also have the highest resistance to coolants, so it’s good for things like water pumps and thermostats. But if you use a very rigid silicone in an area where you actually need flexibility because the parts are moving around a bit, it’s going to try to hold them in place, and that can cause cracks in the silicone, which can potentially introduce a leak. So you have to really consider where you’re using it.”

Red silicone is used in high-temperature applications. “It’s not only sustained high-temperature, it’s also what I’d call ‘thermal cycling,’” he said. “A turbo, for instance, isn’t hot all of the time—it has bursts of heat. The red silicones are designed to expand and contract at the rate required to handle those

big temperature fluctuations.”

How the product is applied, and how the components are fastened back together, can impact the end result, Levy emphasized. “When it comes to surface preparation, cleaner is better, but we’re not looking for perfection. Our products will tolerate some surface contaminants, within reason, so I generally tell people to just do the best that they can. In terms of fastening the components back together, use the OEM-recommended torque values where you can. That engineering is done for a reason.” **PRI**

SOURCES

Loctite
henkel-adhesives.com

Permatex
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EDITORS' CHOICE

Hundreds of new product announcements cross the desks of PRI editors each month. Following are our top picks for July.

ACCESSORY STUD KIT

ARP

arp-bolts.com



ARP's accessory studs feature a rounded nut starter nose and are useful in a variety of applications, including securing bellhousings, carburetors, distributors, headers, timing covers, valve covers, and more.

"Saving time is important, and using these studs for attaching headers, oil pans, and other components makes for quicker race car servicing," said Chris Raschke. "Using studs lets you accurately position

the gaskets and hold them in place, while the special nose design makes for faster nut installations and no worry about cross threading. Both features are time savers."

The studs are available in either polished stainless steel or 8740 chromoly finished in black oxide. They're nominally rated at 180,000 psi tensile strength, which is 20% stronger than Grade 8 hardware. The kits come with washers and are available with either hex or 12-point nuts.

"The choice between polished stainless steel or black oxide chromoly is basically aesthetics," noted Raschke. "Both are rated at 180,000 psi. Of course, stainless steel is virtually impervious to the elements. So, that's an important benefit, especially for marine and salt-flat environments."

M8 and M10 metric studs are offered in a variety of lengths and are commonly used for intake and exhaust manifolds in sport compact applications. —Mike Magda

LSXHR INTAKE MANIFOLD INTERCOOLER

FAST

fuelairspark.com

Here's an easy solution to cool the air charge on a boosted LS engine. This FAST LSXHR air-to-water intercooler fits between the base and the top of a hi-ram style intake manifold, such as the composite FAST LSXHR 103-mm model.

"It's for heads-up and grudge racers with turbos or a centrifugal supercharger," said David Page.

The intercooler features large AN-16 water inlet and outlet fittings. With other styles, the intercooler is mounted remotely, which requires extensive plumbing. The FAST intercooler location minimizes underhood piping and simplifies the installation. Intense engineering went into designing the intercooler for performance applications.

"Having the water flow from right to left along the intercooler's longer, 16.4-inch side exposes the water to as many internal tubes and the shortest path as possible," said Page. "The average inlet temperature in testing was 272 degrees F, and the average outlet air temp was 83.8 degrees F with a loss of less than one psi across the intercooler."

The welded billet intercooler comes in a black powdercoat finish



and features O-ring sealing on both air and water sections. Additional components needed for the installation include reservoir, plumbing, pump, and short runner stacks for the FAST intake. —Mike Magda

GM L8T DAMPER

ATI PERFORMANCE PRODUCTS

atiracing.com

An ATI Super Damper is now available for the GM L8T truck and Gen V Ecotec3 applications. The L8T is heavily sought out by boost-crazy LS racers because of the extremely strong bottom end designed into the structure.

"This damper controls crankshaft torsional twist over a much wider rpm range than the OEM and other style dampers," said JC Beattie Jr. "It's American made and SFI approved for years of worry-free running."

The 7.480-inch damper is constructed with an aluminum shell and features a four-groove belt drive in the outer shell. This damper requires a bolt-on front pulley. Users can run a six-groove belt on any of the pulleys starting in the groove closest to the engine.

ATI offers a variety of front-drive pulleys in OEM diameter in under- and over-driven sizes, starting with 6.773-inch up to 9.770-inch diameter. Part number 917306 is the direct replacement for the GM factory part that comes on the 6.6L L8T crate engine.



The damper comes with laser-etched timing marks, a single 3/16-inch keyway, and 4140 heat-treated hub. —Mike Magda

G-BODY DASH PANEL FOR HOLLEY DISPLAY

CLASSIC DASH

classicdash.com

Modern firepower in a classic GM G-body platform has always been a popular street-performance and weekend warrior option. Now those racers with Holley EFI and viewing the company's 12.3-inch digital display can use a Classic Dash bolt-in panel to achieve a factory appearance while keeping tabs on the fuel system.

"Racers like the new 12.3-inch Holley screen because it's easy to read, and they can tailor the display to show those readouts that are most important," said Greg Wambold. "The widespread acceptance of this large screen has prompted Classic Dash to develop dash panels for many applications, and we will continue to do so."

With a large 1280 x 480 pixel high-resolution display, the Holley screen can be used to tune Holley Dominator, HP, Terminator X, and Sniper EFI systems. The unit can be programmed to monitor up to 238 functions, including a GPS speedometer.

The panels are manufactured in-house at Classic Dash's facility in Nevada using UV-resistant ABS composite material. The panels are



easily installed using common tools. Other applications include popular Chevy/GMC and Ford vintage trucks. A universal panel is available for fabricators building unique vehicles. Classic Dash also manufactures panels to accommodate other Holley, Racepak, Auto Meter, and AEM electronics in addition to analog gauges. —Mike Magda

PROCHARGER CONTAINMENT BLANKET

STROUD SAFETY

stroudsafety.com

An engine explosion of any kind is one of a racer's worst nightmares, knowing that debris can injure spectators or cause damage. A Stroud Safety containment blanket for a ProCharger centrifugal supercharger is a useful step to help ensure that damage is limited.

"This was developed in-house to safely contain impeller and housing parts from a failure on the race track," said John Gentry. "Without a blanket, damages could occur to body panels, fuel lines, fuel cell, tires, as well as leaving debris on the race track."

The blanket wraps around the supercharger to protect engine components under the hood in case of a failure. It features Kevlar straps and has SFI 4.1 certification.

"The motivation for this product is just to keep the racer on the track, and the person in the other lane safe," said Gentry.

Stroud also offers SFI-approved turbocharger blankets for both the hot and cold sides. —Mike Magda



LS CENTER-COUNTERWEIGHT CRANKSHAFT

EAGLE SPECIALTY PRODUCTS

eaglerod.com

Eagle Specialty Products has introduced a new billet center-counterweight crankshaft for GM LS engines.

“Crankshafts for Chevy LS are nothing new, but this is an important twist on what’s available,” said Alan Davis. “Eagle’s center-counterweighted crank will fit in a factory LS block without modification or clearancing around the number-three main that is typically required for other center-counterweighted cranks.”

The Eagle crankshaft is machined from 4340 billet steel. It is not a forging due to limited production quantities. The 4340 steel is the same high-nickel chromoly material used in all Eagle crankshafts, and it includes the same heat-treatment, nine-step salt bath nitriding, shot peening, and micro-polished journals.

“Center counterweights are very important for stability and reducing flexing in very high-horsepower and high-rpm applications,” added Davis.

The center-counterweight LS crankshafts will be available in 3.662- and 4.000-inch strokes. Also, reluctors are available in either 24- or 58-tooth. The main journals measure 2.559-inch with the rod journals at 2.100-inch. Weight is around 56 pounds. —Mike Magda



BILLET REMOTE OIL-FILTER ADAPTERS

AVIAID OIL SYSTEMS

aviaid.com

Aviaid is expanding its line of remote oil-filter adapters to include CNC-machined billet aluminum models for three popular sizes of OEM and aftermarket spin-on filters.

“Space considerations are important in setting up an efficient lubrication system. Remote adapters let you position the filter for easy access,” said John Schwarz. “Many racers also like the idea of using the more modern, small-diameter racing filters.”

For vintage applications, Aviaid is offering original Traco cast-aluminum adapters for the standard Chevrolet 3 5/8-inch filters. Traco engines were popular in the 1960s with Can-Am and Trans-Am racers.

Also, Aviaid manufactures special billet aluminum remote pressure regulators with mounts to accommodate 3 5/8-inch or 4 1/2-inch diameter filters. They come with a pair of 1/8-inch NPT female ports for use with oil pressure and oil temperature gauges. Plus, there are taps for accessories like a valve-spring oiler, turbo feed, etc.

The larger regulator for HP6 filters comes with a choice of 1 1/2x12 or 1 1/2x16 threads, AN-12 in/out ports, and an AN-10 bypass. The HP4-sized adapter comes with 13/16x16 thread, utilizes AN-10 line ports (plus AN-06, AN-10, or AN-12 hose adapters) and has an AN-8



bypass. They are designed for O-ring seal fittings. Two pressure-relief springs are included. —Mike Magda

FAST MOVERS

A look at some of the country's in-demand motorsports products and services by region and racing segment.

By Laura Pitts and Dana Ford

Motorsports retailers and service providers are tracking the latest parts and trends to give their customers a competitive edge. For the latest on which products and services are moving the retail needle, we present the following sales snapshots from shops across the US.

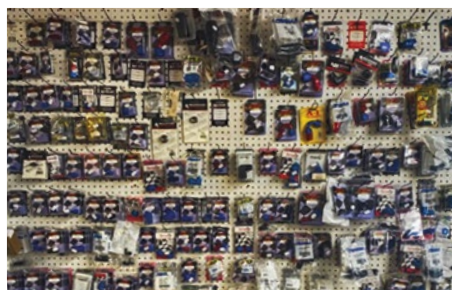
BRYANT RACING EQUIPMENT

Navarre, Florida

Thanks to high demand by owners of high-performance vehicles, fast-moving products for Bryant Racing Equipment, situated in the Florida panhandle, include Allstar Performance's rivets and body bolt kits and AN fittings from brands like Brown & Miller Racing Solutions (BMRS) and XRP.

"Companies like Bassett Wheel, Bert Transmission, Wehrs Machine, and Schoenfeld Headers also offer excellent quality products that we can sell in a competitive market," said owner Randy Bryant. The shop also carries DirtCarLift and VP Racing Fuels, and builds and crimps BMRS plumbing lines in-house.

In addition, Bryant Racing was busy supplying racers with safety items such as fire suits from RaceQuip and harnesses from Simpson Racing due to their price and quality, according to Bryant.



"We service pro and novice racers, from pavement and dirt Super Late Models to big block Mud Truck racers and everything in between," Bryant said.

DAN'S SERVICE CENTER

Three Lakes, Wisconsin

Dan's Service Center is a diesel repair/

fabrication shop, primarily handling turbochargers, injectors, head gaskets, transmissions, and related components. The majority of the business is diesel and automotive repair; however, performance work is an area the business wants to grow and is passionate about. Its specialty is diesel performance, and owner Dan Zelten is particularly proud of a Duramax-powered race truck the company has built to showcase and advertise the business.

In addition to diesel repair, regular maintenance work, and transmission swaps, the shop also installs engines in custom hot rods. The company uses S&S Diesel Motorsports parts for fuel systems because,



as Zelten stated, "they are some of the best fuel products out there." Other fast movers include products from Stainless Diesel and Midwest Turbos.

The main driver behind the customer's thirst for these parts and services is the business's known reputation for being honest, open, and up-front with everyone, and its practice of treating customer vehicles as if they were its own. This is a formula that has proven to be successful, as Sarah Zelten said. "We do not advertise. All our business is by word of mouth, which is something we take pride in. Additionally, our race program helps promote what we can do."

The race program includes a presence at No Prep and ODSS events at Rock Falls Raceway and Great Lakes Dragaway, which attracts both local customers and those from neighboring states as well.

HATHAWAY PERFORMANCE

Falcon, Colorado

Hathaway Performance is a brick-and-mortar performance parts store that does about \$125,000 per year in sales. In addition to parts sales, it also does shock repair and service, and it is a full-service fabrication shop, building and repairing primarily oval track race cars and hot rods. The shop has a varied customer base, covering dirt



and asphalt oval, drag race, and road race cars, with racers making up approximately 85% of its core business. Customers purchase products that provide better performance on-track, parts that produce more horsepower or better handling, parts required by new sanctioning rules, or as Mike Hathaway said, "they are copying what their buddies are winning with."

For new car builds, off-season repairs, and improvements, Hathaway pointed to products from Allstar Performance, Fragola, Driven Racing Oil, Wix Filters, and Racing Optics as his fast movers. He said his customers like the "quality, price point, and availability" of these parts. Hathaway said he keeps a large selection of the products in stock and has carried these products for a long while with no issues keeping the shelves stocked.

Although Hathaway does some social media advertising, the parts "mostly sell themselves through word of mouth and the brands' reputation." Most of his customers are regional and compete on the area's dirt oval tracks and Colorado National Speedway, participating in sanctioning bodies such as IMCA, NASCAR Weekly Series, NASA, and Colorado Hill Climb Association. **PRI**

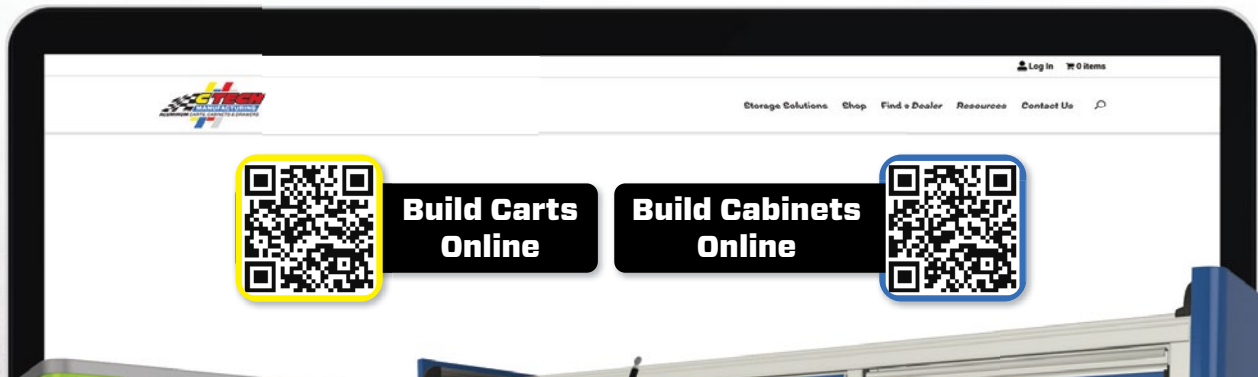


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NEWLY APPOINTED

CALLIE SULLIVAN

Recognizing the many roles she has been filling since starting with WISSOTA in 2001, this upper Midwest track promoter's association named her director of operations this year.

By Jim Koscs

Callie Sullivan should be a familiar face (and voice) to upper Midwest dirt late model and modified racers. She's served numerous roles for the WISSOTA Promoters Association since 2001, beginning as the WISSOTA Midwest modified point director in 2001, and later assuming the role of sprint car and late model point director.

She oversees several office staff handling all licensing, points, the WISSOTA 100, the Expo, the annual promoter meetings, national awards banquet, and many other needs within the organization. Recognizing all her roles, the organization named Sullivan director of operations in January 2023.

"I am doing the same crazy amount of work that I have been doing for the last 22 years, just with a more accurate title," she recently told PRI when sharing her story.

PRI: When did you realize there was a future in the racing industry for you, or did it always feel like you were a part of that environment and culture?

Sullivan: When I was growing up, my dad was a pit man for a sprint

car team, so I was introduced to racing at a very young age. I didn't have first-hand experience until about 1990 when my husband at the time bought a race car, which was an IMCA stock car. After winning an IMCA National Championship in 1992, an accident in June of 1993 left him a quadriplegic. In late 1994, we became track promoters at Fiesta City Speedway in Montevideo, Minnesota.

PRI: How would you say circle track racing has changed since you first got involved?

Sullivan: The biggest change I have seen is the cost on all ends. I came from a team where we had money, but we were in the shop building everything ourselves four nights a week to race two nights a week. Now, with the technology and advanced mechanics of these cars, people don't have access to the DIY methods much anymore. From a promoter's perspective, the cost of just putting on an event is much higher. We are competing against other hobbies and kinds of entertainment, and to do that we have to keep spectator and driver



CALLIE SULLIVAN

TITLE:
Director of Operations

ORGANIZATION:
WISSOTA

HOMETOWN:
Dassel, Minnesota

FAST FACT:
"As much as I love racing, softball is where my competitive spirit began," said Callie Sullivan. "My dad was the pitching coach for the Buena Vista University softball team in Storm Lake, Iowa, where I grew up. Before that, he coached me. I pitched from fourth through eighth grades and played for the University of Minnesota Waseca. I later coached my daughter's teams, from 8u to 16u."

costs as low as possible.

PRI: What is the biggest value you bring to your upgraded role?

Sullivan: I would say honesty. I have the experience and the knowledge to give people the kind and honest answers they need. I also know when I don't know the answer, and who would be a better resource.

PRI: How do you deal with disgruntled teams or racers?

Sullivan: My role in these scenarios is to listen and be consistent. I always look at situations from as many perspectives as possible before drawing a conclusion. Sometimes people have a good reason to be disgruntled, and some good ideas and solutions can come out of it.

PRI: How would you say membership has changed for WISSOTA within the last 20 years?

Sullivan: The biggest change in our membership that I have seen is the turnover in promoters and the interest in being involved. We are at a point where the track promoters are businesspeople, where they used to be hobbyists with more knowledge and passion for the technical aspects. That's great for the racing economics, but not as good for our rulebooks.

PRI: What would you say is the most difficult part of managing association operations that members might not understand?

Sullivan: Everyone in the sport is passionate about what they do at

"WE ARE COMPETING AGAINST OTHER HOBBIES AND KINDS OF ENTERTAINMENT, AND TO DO THAT WE HAVE TO KEEP SPECTATOR AND DRIVER COSTS AS LOW AS POSSIBLE."

their respective levels, and that can make it hard to make changes or modernize some practices. In the last few years, I feel like we have made great strides in the perception of our organization, and we are starting to see those changes impacting our promoters and drivers.

PRI: Who inspires you?

Sullivan: I am inspired by people who bring knowledge, drive, and creativity to their profession. Attending the PRI Show, walking around and listening to people with so much passion for their company or position inspires me to be the best version of myself for this organization and the industry.

PRI: If you could give a word of inspiration for future leaders in race operations, what would you say?

Sullivan: Work with people you like. This is an incredibly demanding and draining

“IN THE LAST FEW YEARS, I FEEL LIKE WE HAVE MADE GREAT STRIDES IN THE PERCEPTION OF OUR ORGANIZATION, AND WE ARE STARTING TO SEE THOSE CHANGES IMPACTING OUR PROMOTERS AND DRIVERS.”

industry, so it makes life easier when you have the right people around you. To female leaders in the industry, I would say that the road is rocky and difficult, but worth it. We have compassion and kindness, but we're not rugs. You are not incapable. You are not inferior. You are not powerless.

PRI: What cars would be in your dream garage?

Sullivan: I still have the 1968 Chevy Camaro convertible with a 327 and four-speed that I

drove in high school. Next, I would want a 1967–1971 Plymouth Barracuda and a 2023 Dodge Challenger SRT Hellcat Redeye.

PRI: Excluding your cellphone/tablet/computer, what's one thing you can't live without?

Sullivan: Family comes first, but my pets are a photo-finish second place. I was a veterinary tech for almost 30 years. I currently have a Great Dane, a rescue pit bull, and two cats. **PRI**

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INDUSTRY INSIGHTS

STEVE FRANCIS

World of Outlaws Late Model Series Director Steve Francis has seen the sport from both sides of the pit wall, and that's his strength. An adjusted purse structure, a more racer-friendly travel schedule, and the recent implementation of a national tire rule to control costs are just some of the ways he's looking to benefit fellow racers as well as the sanctioning body.

By Jeff Zurschmeide

Dirt late model racing has been the focus of Steve Francis' working life. When the World of Outlaws Case Construction Equipment Late Model Series was rebooted in 2004 after a 15-year hiatus, Francis was at the height of his game. Coming from Ashland, Kentucky, and driving the Moring Motorsports, Valvoline/Mopar No. 15, Francis won the very first race of the new series. He was part of the "Dirty Dozen" pack of drivers who brought the series back to prominence. Francis went on to win the series championship in 2007 and claimed 28 career wins in the Outlaws series, plus many more in other venues. In recognition of his skills, the "Kentucky Colonel" was inducted into the National Dirt Late Model Hall of Fame in 2014.

After starting his driving career at age 15 in 1982, Francis retired from driving in 2017 at age 50 and took a position as the Lucas Oil Late Model Dirt Series technical director. Then in mid-2022, he came back to the World of Outlaws Late Model Series as director of competition. This year, he's been promoted to series director. We caught up with Francis as he was on the road to a race, to ask him how he plans to develop the series in its 20th year.

"WE ADJUSTED ALL OF OUR PURSE STRUCTURES TO PAY MORE FOR 3RD TO 15TH POSITION TO KEEP MORE RACE TEAMS HEALTHY."

PRI: You've been the director of the World of Outlaws Late Model Series for about six months now. How's it going?

Francis: It's been busy. We've had a lot of really positive things. We started off at Sunshine Nationals with 23 drivers signed up to run the whole tour, which really caught me off guard. We pay 15 positions, and we wanted 15 teams healthy enough to run up and down the road with us.

PRI: That's going to lead to some tough competition for the money.

Francis: We're doing our best to shy away from the "Dolly Parton" purses, for lack of a better term. We did add some money to first place, but that's not what we want to be promoting. It seems like the racers have really got in behind us on that. Because you're only going to have one winner each night, so we adjusted all of our purse structures to pay more for 3rd to 15th position to keep more race teams healthy. That was goal one.

PRI: What else have you changed?

Francis: Goal two is to make sure that we keep our schedule where it makes the most travel sense. We can't be zig-zagging from Iowa to Georgia to Texas to Tennessee, back and forth. So we're doing our best to cut those travel expenses down. Now, we're not going to be perfect on that. But our goal is just to make as much sense as we possibly can.

You talk to any racer, and if he's gone from home, he does not want to be sitting at the hotel, or the Walmart parking lot, or something like that. He wants to race and be able to go back home. So we're trying to build a few little mini tours. You know, we have a

"WE'RE CONSULTING WITH A METEOROLOGIST, AND WE'RE LEARNING MORE ABOUT AREAS OF THE COUNTRY THAT YOU DON'T WANT TO BE IN DURING CERTAIN TIMES OF THE YEAR."

Pennsylvania deal where we go out there and to northeastern Ohio. I think we raced seven times in 10 days. Then we do the drive out to Kansas and wind up all the way in Minnesota, but that's seven races in nine days.

PRI: Did anything surprise you when you became series director?

Francis: The thing that did catch me off guard is there is a lot more, I don't want to say paperwork, but a lot more meeting and planning than I really gave credit for. I knew there was a lot of that, but there's a lot more behind-the-scenes things that happen than I expected. It's all the other things that go with being series director. You know, it's the meetings that you have to be involved in, making sure that you've got your staffing and your travel plans laid out for everybody. I knew it. I just didn't really, I guess, give it the credit that it deserved.

PRI: Are there things that you do differently from other series directors because of your experience as a racer?

Francis: I'm very, very fortunate in this aspect because I was a racer for 35 years, but my wife and her parents were promoters for that same timeframe. Sometimes I get maybe a little bit too much of a racer hat on, and sometimes I get too much of the series director hat on now. But even though

series director is my job, I still look out for the racer because I was one of those guys. I understand everything that they're going through, everything that they tell me. I can say, "Been there, done that, seen that."

PRI: Every series has been experiencing weather problems this spring. Are you getting what you wanted out of the early part of the season?

Francis: Well, no, and this is where we've learned a few things in scheduling. We've already moved our Illini 100 date at Farmer City, Illinois, for 2024. We announced that so everybody in that area of the country knows what our plans are in the future. You know, just a week to two weeks in Illinois generally makes a lot of difference in weather. We're consulting with a meteorologist, and we're learning more about areas of the country that you don't want to be in during certain times of the year. We had two early March events in Tennessee, and neither event got in. So that tells us that maybe those need to be late March events now, or early April. It's just learning things like that and still trying to balance the travel schedule and keeping it where it needs to be.

PRI: Let's talk about the fans. What does the World of Outlaws Late Model Series offer that competing dirt late model series might not?



Steve Francis brings a racer's perspective to his new role as series director for the World of Outlaws Late Model Series. "I was a racer for 35 years. I understand everything that they're going through, everything that they tell me. I can say, 'Been there, done that, seen that.'"

Francis: We have probably the deepest roster that's been built in recent years, probably all the way back to the "Dirty Dozen" group of the 2004 series. There are some strong rosters out there right now with other organizations, but I feel like we're stronger, deeper than anybody else. Having

been a racer, I want the racers to feel like we're in this together. It's not the series controlling the racers, and not the racers controlling the series. We're in this together, and united we stand, divided we fall. That's how we bring a better product to the table.

PRI: Are you doing anything new or innovative

to get the word out to fans about the series?
Francis: World Racing Group has developed a fan engagement team. Our motto is "Butts in the Seats." We're trying to do everything we can to get word out that the World of Outlaws are coming. Then we have Jumbotron video boards that we can set up at different locations. If you come to the race, part of the fan experience is you can now watch the Jumbotron and see the same replay the guy at home is watching.

We also provide the tracks with a lot of collateral. They get a ready-made

"Having been a racer, I want the racers to feel like we're in this together," Steve Francis said. "It's not the series controlling the racers, and not the racers controlling the series. We're in this together, and united we stand, divided we fall. That's how we bring a better product to the table."



commercial, posters, and whatever else they ask for. We try to make sure they have every tool available, and that generally gets to them 30 to 45 days in advance, so the race tracks have a chance to promote the events. Every promoter knows his market better than we do, so they know if TV or radio is going to be great, or the newspaper, or putting posters at the auto parts store. They know those things that we don't, so we try to provide them with the tools and let them make the best use of the tools.

PRI: How do you use social media or any new media? Do you encourage your drivers to be interactive with fans?

Francis: We're racing at 411 Motor Speedway this week. (Editor's note: This interview took place in April 2023.) A lot of our drivers are making posts about being at 411 yesterday and today on social media. Then we have a full-time PR person for every series of World Racing Group.

"THE PURSES IN DIRT LATE MODELS ARE THE BEST THAT THEY'VE EVER BEEN RIGHT NOW ACROSS THE BOARD."

His job is to make sure that social media is covered and our races are advertised. We have huge followings on some of those social media platforms.

PRI: What are you doing to bring the next generation of dirt late model drivers into the series?

Francis: Under our dirt car banner, we have the Comp Cams Super Dirt Series, which is a regional series in the Mid-South. We have the Hunt the Front series that's in the Southeast. We have the Iron-Man series that's in the Kentucky, Ohio, and Tennessee area. And we have the MARS series in Illinois. We have the summer nationals that are all their own

entities, but they all fall under the dirt car banner. Those are the regional series that we look to be the feeder.

For a driver, those are your stepping stones. You go from racing on Saturday night at your local race track to following one of those four series. They're generally 30 to 35 races a season, and then from there you branch out into the World of Outlaws full-blown tour. We had seven guys sign up for Rookie of the Year this year, and that's good for our sport. The purses in dirt late models are the best that they've ever been right now across the board. There's more opportunity to make money than there's ever been.



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PRI: What are you doing to keep the cost of competition down?

Francis: One thing is the national tire rule. That's just come up, and this is a very touchy subject in the dirt late model world. But the goal was to be able to run the same tire in only three compounds from Florida to California in a late model. That allows guys to travel more out of their area without having to spend \$2,000 on tires to do it.

PRI: World of Outlaws has great sponsorship. What does it take to land those big series sponsors?

Francis: It's value for dollar spent. We're all competing for the same dollars, and you have to prove that you are the best value for their dollar. That comes from what you can offer them. That's the biggest thing, just

“WE'RE NOT A COMPANY THAT'S ABOUT TAKING YOUR DOLLAR TODAY AND NOT PRODUCING. WE WANT THOSE RELATIONSHIPS TO BE LONG-TERM.”

making sure that you can provide what you do and keep them long term. I don't know that it's getting harder to keep a sponsor, because now there are so many other avenues to prove yourself with social media and YouTube channels and things like that. The direction is, if I'm going to spend major dollars on motorsports, what kind of following do you have versus what you're asking me for? I think everybody wants to see those numbers before they go spend dollars.

PRI: If you could offer one piece of advice to any racing business owner, and it could be any type of racing business, about how to get involved with your series, what would that be?

Francis: I think the very first thing they have to do is decide what market they are looking to get into. If it's the dirt late model world, then what we need to know from them is what they want to sell. Then we need to get with the marketing department and make sure that they can provide you with what you want. The one thing we don't want is “in and out” people. We want long-term relationships. We're not a company that's about taking your dollar today and not producing. We want those relationships to be long-term.

Steve Francis was one of the “Dirty Dozen” who helped bring the World of Outlaws Case Construction Equipment Late Model Series back to prominence in the early 2000s. He won the first race of the new series and captured the championship in 2007, when this photo was taken.





World Racing Group “is a business that has to make money and survive,” Steve Francis said. “But at the same time, we are a racing organization. Our main objective is our show. That is our business. We are a motorsports business; we have no other entities. To me, that makes us the best.”

PRI: Is there anything I haven't asked that you would want to talk about?

Francis: World Racing Group is a business that has to make money and survive. But at the same time, we are a racing organization. Our main objective is racing. We're here to help Case sell tractors and so on, but our main objective is our show. That is our business. We are a motorsports business; we have no other entities. To me, that makes us the best. We have more people, more ability to do more things from hospitality to race track, from big events to small events. We're kind of the one-stop shop, from our regional series all the way through our national series. We're all tied in, we all work together, we all talk to each other. So if you're a driver looking to come in, we can help you pick the series that's going to work best for you, to help you develop your goals and what you want to become. **PRI**



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ENGINE PERFORMANCE EXPO

On the set of the Engine Performance Expo. Photo courtesy of Total Seal.



SPECIAL REPORT

SELLING EDUCATION

MOTORSPORTS COMPANIES ARE MAKING BIG GAINS BY ADOPTING EDUCATION-FOCUSED MARKETING STRATEGIES.

By Steve Statham

In many ways, reaching customers has never been easier for motorsports companies thanks to global online networks and social media platforms that have been nearly universally adopted. Yet, in other ways, reaching potential customers remains a huge challenge. It's hard to cut through the clutter. Plus, there is plenty of marketing research available showing younger generations tend to filter out traditional advertising pitches. They place a high value on authenticity and social virtues that may seem slippery to grasp for marketing purposes.

One way savvy companies have navigated these waters is by incorporating more education, instruction, and training content into their marketing plans. These usually take the form of how-to videos, podcasts featuring industry experts, DIY articles posted on websites, and hands-on demonstrations at trade shows, but there are other creative ways businesses are meeting the challenge.

The upside for this type of approach can be huge. Showing the potential customer how to install a part the correct way, or sharing insider tips for better performance, can not only lead to a sale, but cut down on dissatisfaction and returns by customers who may otherwise have gotten in over their heads. It's a great opportunity for building customer loyalty: "They showed me how to do this, I'm sticking with them."

"The truth is, an educated customer is the best customer," said Randy Neal of CWT Industries, a manufacturer of balancing machines and equipment in Norcross, Georgia. "Education is the only way to sell. If you have that car salesman mentality, jumping up and down around the parking lot, 'This is great!' blah, blah, blah, no one wants to see that crap. People want to see product, they want to know they're making a good investment, and what they're really looking for is, 'Are you going to be here? Can you support me?'"



OTTLE



Educating its customers is a long-standing practice at Burns Stainless, said Vince Roman, seen here making an instructional video. “We’re not promoters. We’re not flashy salespeople. We’re technical people, and we’ve always wanted to help others enjoy their hobby or their sport,” he said.

Motorsports-oriented companies have been dabbling in educational and instructive content for some time. It’s not a new concept. But in recent years, more companies are taking advantage of technological advances and investing greater time and resources into creating their own informative content to reach customers.

“Three years ago, we started a podcast,” said Lake Speed Jr. of Total Seal, Phoenix, Arizona. “We sit and interview a respected engine builder. The idea was, let’s let these guys tell their story, how they got to be where they are in their career, their thoughts on engine technology, and they can tell other people about what their experience and perspective is about ring seal. Because ring seal is about way more than just piston rings—it’s honing, it’s the oil you use, it’s the

“Determining what content to produce is a collaboration across the entire company,” said Speedway Motors’ Kelsey Bugjo. “Our marketing team works closely with our merchandising, customer experience, e-commerce teams, and many others to identify the need for content.”

design of the piston. A lot of different things come in. So we began that as a way of being able to make the top minds in the industry more accessible to everyone else. It went really good right from the beginning. People really liked it; we got great feedback about it.”

Holley is one of the industry giants that has raised its investment in how-to content across its many brands. “Holley has been content marketing for over a decade,” said Mark Gearhart of Holley, Bowling Green, Kentucky. “We have a dedicated video studio, social media team, and our in-house digital publication called Motor Life.”

A rich library of educational content is also

a great vehicle for driving customers to a company’s website. “We launched our blog TheToolbox.com as an educational tool for our customers to answer common customer questions, provide in-depth details about products and explain common issues they encounter when working on their projects,” said Kelsey Bugjo of Speedway Motors, Lincoln, Nebraska. “Today, our blog is packed with how-to videos, automotive tech articles, and expert advice to help you with your project or race car setup. We’ve leveraged our 70-plus years of performance parts expertise to compile hundreds of technical articles in one easy-to-reference place.”

SHOW AND TELL

Our sources for this article listed a wide spectrum of motivations for why they’ve adopted a stronger educational/instructional approach to their marketing operations.

“It’s been our approach even before we went digital. Our catalogs used to have technical articles in them. It’s kind of always what we’ve done as a company,” said Vince Roman of Burns Stainless, Costa Mesa, California. “We’re not promoters. We’re not flashy salespeople. We’re technical people, and we’ve always wanted to help others enjoy their hobby or their sport. It’s a natural outgrowth of who we are as a company.

“With our product line in particular, what we like to tell people about is the theory of how exhaust affects engine performance,” he continued. “Number two, in terms of tubing, we want to educate them on the different types of tube that are available, what tubing is appropriate for what application. And



lastly, fabrication techniques and how you actually work with it.”

Racers are by nature a competitive bunch, and any company that can help them find an edge is going to earn fans. “I would rather see someone buy the right product, not just a product. To me, that’s the main mission behind it,” Speed explained. “People will work hard to come up with the money to be able to go racing, and they put all the time and effort into building the engine. If you’ve done 85–90% of it already, man, if you knew you could get way better results if you changed how you did that last 10–15%, just by simply choosing something different—choosing a different ring, choosing a different honing method, maybe choosing a different break-in procedure or lubricant for that process, and it would yield upward from a 2–5% increase in output? Yeah, give me some of that.”

The technical side of motorsports rarely sits still for long, so there are constant opportunities to report on the latest

“I WOULD RATHER SEE SOMEONE BUY THE RIGHT PRODUCT, NOT JUST A PRODUCT. TO ME, THAT’S THE MAIN MISSION BEHIND IT.”

techniques. “We’re just trying to put out the most current information,” Speed continued. “It’s easy to go, ‘Oh, this is how we did it 20 years ago.’ It doesn’t take any effort to do that. You’re not going to create any kind of controversy doing it that way. But the reality is, if you only follow the recipe from 20 years ago, then you’re going to have to use those same ingredients from 20 years ago. Which means you’re going to get the same result from 20 years ago. What we’re saying is, ‘Hey, we actually know what the recipe is for what’s winning today. We’ll show you how to do it, we’ll tell you where to go buy those parts so that you can make what’s now, not what was 20 years ago.’ That’s one of the big advantages of Total Seal working with

so many of the professional teams at the highest level.”

An educational focus can also be an effective tool for customer retention. “We, along with most other brands in the space, sell highly technical products,” Holley’s Gearhart said. “It’s our job to inform, educate, and help drive buying decisions through all forms of digital communication. It’s a delicate balance of surface to advance level education that allows customers to gain confidence and make the best decision for them. Depending on the delivery method, content can vary in length. For example, YouTube long form video views have been growing over the last decade as virtually all new TVs come with the app preinstalled.

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When sitting down to eat dinner, people don't want to jump through a series of three- to five-minute videos and this allows us to really get granular. But if you're browsing Instagram, TikTok or YouTube shorts, the content has to be quick and to the point, but normally has a call to action back to a longer video, article, product page, etc. Content is also a great way to reduce calls into your customer service team."

CWT Industries employs videos and other content to educate the customer, but its go-to strategy is a lot more hands-on. "You can talk until you're blue in the face

or you can visualize it through videos. Or, we actually do something a little different," Neal said. "A lot of times our clients will call up and they have an initial inquiry, and they'll have a few basic questions, and we'll certainly try to answer those. But what we're always willing to do, if they are bonafide in their interest, is send them a flight ticket and fly them to our facility. We have the only dedicated curriculum set up for balancing. The mission statement is to bring them in and let them know just what they are getting into and understand that it is not as hard as they think. They also get to see how our

"We, along with most other brands in the space, sell highly technical products," said Holley's Mark Gearhart. "It's our job to inform, educate, and help drive buying decisions through all forms of digital communication," as seen through this video produced by the Holley team.

machines are manufactured. It's a totally different approach. We started that in the last three years. We do it to the extent that if the customer comes down and we've made the presentation, and he says, 'Well, it's a little more than I want to bite into,' we say, 'Thank you very much. We appreciate the opportunity.' And we send him back home and pre-pay everything."

TRACKING SALES

Sharing knowledge is beneficial to the racing community in general, but ideally all those clicks, likes, and views should lead to sales. Our sources report considerable success in educational content moving the sales needle.

"You can look at the number of podcast and YouTube views each month," Speed said. "That correlates directly to the number of email inquiries we receive about products. And the number of email inquiries about products directly correlates to sales."

For CWT Industries, the time and resources devoted to flying the customer in so they can personally observe the in-house manufacturing of the company's balancing equipment from raw materials to finished product has paid big dividends. "Of all the people we've ever flown in, and this is over



Total Seal's podcasts, videos, and other educational efforts are aimed at "putting out the most current information," said Lake Speed Jr. "We know what the recipe is for what's winning today. We'll show you how to do it and where to buy those parts. That's one of the big advantages of Total Seal working with so many professional teams at the highest level."

a period of three years, I've only had 4% who've delayed—not cancelled—the sale," Neal said. "Most of the time the people who do go through this, they'll commit while they're here, or they'll go home and give it a little thought and then call back in a week and pull the trigger. The success rate is well worth the cost of marketing."

"We've seen a great benefit from creating educational content," Bugjo said. "A customer browsing our website can find content that outlines the product details more in-depth, answer additional questions about a product, or explain common issues. Installation or how-to content is a wonderful resource for customers who are ready to install a product. All of this leads to reduced customer issues and improved experiences with our company."

The customer loyalty benefit that can result from sharing educational content is no small thing. "When you're helping someone—not just trying to sell them something—now their affection for the brand is much greater,"

Speed said. "We have fans. Literally last night I ran into a guy who is a fan of the podcast. There's nothing he's going to have built that won't have Total Seal piston rings in it because he is a fan of the podcast."

"It's kind of amazing," Roman said. "All the time, people will just make mention of a YouTube video that I thought was a little trivial or not that exciting, but it provided a lot of information to somebody. I've never really gotten any negative feedback. It's always been positive."

NO HALF-MEASURES

Although our sources were enthusiastic about the videos, podcasts, how-to articles, and hands-on demonstrations they produce, a common thread we heard was the amount of effort and sheer work required to produce such content on a regular basis.

"There is an employee dedicated to it—me. I spend a lot of time," Speed said. "This isn't for the faint of heart. It's not something you can dabble with. It's something you have

to be strategic and make a decision and say, 'We're committing to this. We're going to do it.' It's easy for a week to turn into two weeks, three weeks, a month. We have a new podcast episode every two weeks and have been doing that for two years. We have a short format and a longer format YouTube video every week. We've been doing that for almost a year. It's a commitment to do that. You have to really work hard, build up content strategy, plan, have the resources in place to be able to have that level of production. It takes a while to get the pipeline filled with content so you're not having to scramble each week. Once you have that, it goes pretty good, but it takes a lot of effort to get to that point."

At CWT Industries, flying the customer in for a deep dive into the product requires cutting no corners. "This is full-blown first-cabin stuff that we intend the customer to get a feel for the depth of our company," Neal said. "It's one thing to have a mechanical device, it's another thing to have application support."



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At Speedway Motors, producing the how-to content is a company-wide effort. “Determining what content to produce is a collaboration across the entire company,” Bugjo said. “Our marketing team works closely with our merchandising, customer experience, e-commerce teams, and many others to identify the need for content. Content ideas come from common customer requests or issues, projects our employees are working on, and many other sources.

“Speedway Motors is fortunate to have many in-house experts with technical knowledge in a variety of areas. Our employees are in their own garages working on their projects or racing on the weekends. We lean on all of our experts to provide their insight and expertise to help our customers. We have a team dedicated to content creation that works alongside these experts to produce content from videos to how-to articles.

“We use a variety of equipment to produce content, from lighting equipment to cameras and video equipment for

producing video,” Bugjo continued. “We also have our own in-house shop/studio space that we use for creating content and building our own projects.”

Roman at Burns Stainless acknowledged the work that goes into educational content, but also believed that sometimes it’s counter-productive to overthink the process. “One thing I’ve found when looking at other podcasters and other people who put up videos, a lot of times the impromptu stuff is more valuable. You have to think about it, obviously, but I’ve kind of found that too much preparation makes for a poor video. There’s a balance there that I try to strike.”

“The advice I would give a company is, if the DNA of your company goes along the lines of what we’re talking about, and it feels right to you, and you’ve got the right people, then go for it,” Speed said. “I wouldn’t ever tell someone to just ‘give this a try’ if it’s not something they believe in, because it’s too hard. It’s way easier to buy ads. My life would be way easier if we just had an ad

budget, and I could just go buy ads and pay a creative person to come up with stuff, and just say, ‘We like that, we don’t like that.’”

Fortunately for racers, Total Seal and other companies are choosing the harder path and creating rich educational resources that will be useful for years to come. **PRI**

SOURCES

Burns Stainless
burnsstainless.com

CWT Industries
cwtindustries.com

Holley
holley.com

Speedway Motors
speedwaymotors.com

Total Seal
totalseal.com



C19/C20

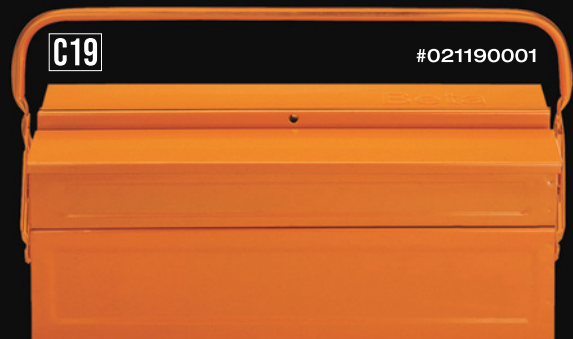
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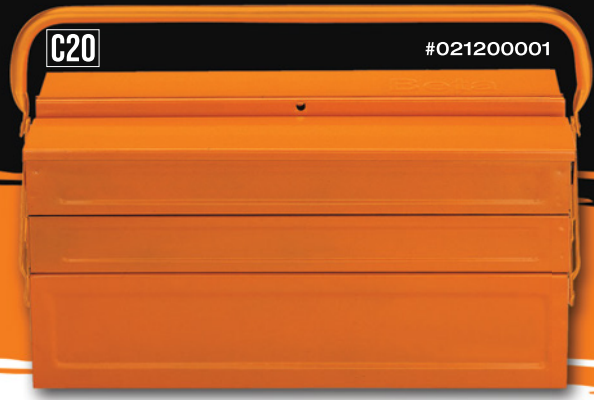
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CHANGING LANDSCAPE

As older drivers hang up their helmets and more modern vehicle platforms begin qualifying for the category, vintage race organizers are developing strategies to maintain the spirit of the sport while also attracting a new generation of competitors.

By Bradley Iger

Defining vintage within the context of motorsports has always been a highly subjective endeavor. Some picture the pre-war single-seater beasts that ran at Indianapolis when it was still paved with bricks, while others point to the heyday of production-based Trans Am racing in the late 1960s. There are also those who take a more pragmatic view, considering vintage to be essentially any platform that has aged out of the series for which it was originally intended.

All of these definitions are correct, and here in the United States, each is represented in some form under the banner of vintage racing today. But regardless of one's viewpoint, time continues to march forward, and a number of different factors in today's world are changing the landscape of vintage racing.

"These days you can't pick up a race-prepped Datsun 510 for less than \$50,000," noted Jeanette Bourke of the Vintage Auto Racing Association (VARA), Chino Hills, California. "For a lot of people, that just isn't achievable. But it isn't just about what's affordable—it's also about what's available. We don't want to make this type of racing exclusive for people who're over a certain age and have a certain amount of disposable income. We want everyone who is interested in racing with us to be able to do so."

But as Vintage Motorsports Council (VMC) president John Bechtol explained, that's not necessarily the primary objective of every vintage racing organization. "Each VMC member group has its own definition of what constitutes a vintage or historic race car. Some groups won't take anything newer than the early 1960s. We also have several groups that will take cars that are five years old or older under some circumstances, which means that a race car from 2018 would be eligible to run. There's a wide disparity in terms of what these organizations will allow, and a lot of that comes down to the ethos and goals of each particular organization."







The definition of a “vintage” race car is a moving target, not only because the various vintage racing organizations have different rules and goals, but also because as time marches on, even today’s race cars will become “vintage” in a few years.

THE CONTEMPORARY LOOK OF VINTAGE RACING

Part of what makes defining vintage a tricky endeavor within the context of motorsports is that the qualifications differ dramatically depending on who you ask. Often the motivation to get involved in vintage racing comes from a desire to campaign the types of cars that drivers lusted after in their youth. As a result, the criteria have naturally become more modern over time.

“When I came in at SVRA in 2012, the common definition for vintage racing was 1972 or older,” said Tony Parella of the Sportscar Vintage Racing Association, Southlake, Texas. “But my definition of vintage was different almost from the start. We believed that keeping an arbitrary year of 1972 or older wouldn’t work for our business model and our goal of becoming a national player. To us it was like, ‘What’s the magic of 1972?’ And secondly, if you want to attract new, younger people to the sport, it has to be in a car that they can relate to.”

Under Parella’s leadership, SVRA’s race calendar has expanded from just three annual race events in 2012 to nearly two dozen across the country today, with the series visiting iconic tracks like Laguna Seca, Sebring International Raceway, Road Atlanta, and Lime Rock Park. SVRA racers share the paddock with competitors in the

Trans Am and SCCA Pro series at these events, both of which run alongside the vintage races on those weekends as part of the SVRA SpeedTour.

SVRA’s class structures have also evolved significantly over the years. Cars are divided into classes within 13 different race groups, but Parella is quick to point out that this classification is not determined by lap times.

“Pretty much right from the get-go, we made our criteria for vintage five years or older,” he explained. “So today, in 2023, we would accept anything that’s 2018 or

older without question, and we’d have a class for it—that’s where the 13 race groups come from. But we also still wanted to pay homage to the 1972 and older cars that have been prepared to their original racing specifications, so we created the Gold Medallion program.”

Gold Medallion applicants are put through an extensive certification process, and those who are accepted into the program are given a special logbook and dash plaque, which acknowledges that the car is prepared as it would have been raced in that era. SVRA



When Tony Parella joined SVRA in 2012, “the common definition for vintage racing was 1972 or older,” he said. Since then, the SVRA changed its criteria to five years or older, and under Parella’s leadership, its race calendar has grown to nearly two dozen events across the country.

also has general classes for vehicles that are similarly prepared but benefit from upgrades that provide a performance improvement—like swapping out drum brakes for discs or installing a dry sump oiling system—while cars with significant development and race prep well above and beyond their original configuration are typically placed in the GT class.

“We have similar looking cars out in the same run group, but there are different classes within that group. It’s as fair as we can make it when we’re covering a hundred years of cars and so many different variations,” Parella explained. “Over the first few years we tried different recipes as we figured out what made the most sense for our business, and we feel this is the right approach in order to do this on a national level. My goal with this company is to remove the barriers of racing as much as possible for anybody who wants to compete, make it fair and consistent, and make it as safe as

you can make racing be.”

Bourke offered a similar perspective regarding VARA’s approach to vintage racing. “If you bring a car, we will find somewhere for you to race it,” she said. “People initially show up for the racing, but I think it’s the camaraderie that keeps bringing them back. We really focus on being inclusive, and that doesn’t offend others because everyone has their clearly defined classes. The vintage Volvos and Triumphs in the small-bore group are still going to get their classifications and everything like that, and then the first-generation Mazda Miatas have their own race. It’s quite fun to see the Austin-Healey Sprites and Miatas racing against each other—different classifications, but they’re all out there having a good time.”

In that spirit, VARA has given a home to a number of race cars that have been orphaned by various circumstances. Early first-generation Mazda Miatas, for example, are equipped with a 1.6-liter inline four-

cylinder engine, but a more powerful 1.8-liter engine replaced it just four years into the car’s production run. These 1.6-liter cars would not be competitive in the SCCA’s popular Spec Miata class, but VARA’s class structure has given these late 1980s and early 1990s sports cars a new venue to compete in. “We have four of them racing with us now,” said Bourke. “These cars can be picked up cheaply, and they don’t need a lot of maintenance to keep them on track. These are cars that people under 30 years old can afford to get into, and they can do most of the work on them if they have some basic automotive knowledge.”

Meanwhile, cars like the BMW 2002 and Datsun 510—which Bourke describes as breakthrough platforms for VARA—are now enjoying intense competition and strong sponsorship support. “Ten years ago, it would have been a dream for a sponsor such as Toyo to do a five-race series like the Toyo Challenge 2.5. With a little bit of work,

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| 16 | -3.0 | - |
| 24 | -4.5 | - |
| 32 | -5.5 | -5.5 |
| 32 | - | -4.5 |
| 40 | - | -3.5 |
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hopefully these Miatas and E30s will build up a similar following.”

For Boston, Massachusetts-based Vintage Racer Group (VRG), which was founded in 2004, the first significant eligibility expansion took place “at least 10 years ago, when cars up to 1979 were granted admission,” said president John Wood. About six years later, the standard shifted again to include 1989 and older production vehicles. “When we expanded [it] through 1989, we didn’t really know what was going to happen,” Wood recalled. “We figured that probably a bunch of first-gen Miatas would show up, that we would start to see a bunch of Volkswagen Golfs, some Nissans, maybe even some early Hondas.

“Well, we have seen a couple of those cars, but it wasn’t in large quantities,” he continued. “The vast majority of cars that make up most of our grids are still from the 1960s and 1970s. You see some 911s, you see the Bugeye Sprites, the MGAs. We see Alfa GTVs—both the early GTVs that most people think of, as well as the later ones



“We don’t want to make this type of racing exclusive for people who’re over a certain age and have a certain amount of disposable income,” said VARA’s Jeanette Bourke. “We want everyone who is interested in racing with us to be able to do so.”

that had the straight six in them. We do have some from the 1950s and some from the 1980s, but it’s clearly dominated by the 1960s and 1970s.”

Similar to VARA’s Bourke, Wood cited “the camaraderie element” as a key component of VRG’s operations. “When these guys

come off the track and they get back in the paddock, they go find each other, the people they were racing wheel-to-wheel with,” he said. “They laugh about it—they talk about different turns and where passes were made. And they’ll jokingly say things like, ‘I’m coming for you in the next session!’”

As to VRG’s level of competitiveness, “everything about it is formal in terms of a pace lap, cars side-by-side when the green flag drops—there’s no doubt it’s real, competitive racing,” Wood said. “But we also put a strong emphasis on situational awareness, knowing who’s around you at all times, making good decisions about when and where to execute a pass.... Everybody recognizes that the fun is drifting the car around turns and racing for whatever position with one of your friends, and then doing it all over again the next session.”

KEEPING IT REAL

While VRG, VARA, and SVRA are casting a wide net over road racing, Mark O’Day of the Vintage Sports Car Club of America

CONNECTING WITH YOUNGER DRIVERS

Vintage racing tends to be associated with an older demographic, but as those competitors eventually retire from the sport, there is an inherent need to engage with a new group of drivers. Jeanette Bourke of Vintage Auto Racing Association (VARA) in Chino Hills, California, said that this necessity has informed much of the series’ outreach strategy.

“The hill climb events and high-performance driving schools that we offer are part of that,” she explained. “Holding the schools at race weekends instead of by themselves allows these drivers to see the cars out there in competition and make the connection that, for a little more money, they could be doing that, too. It’s widening their perception of what vintage racing is, and what is feasible for them.”

VARA’s hill climb events are open to all types of cars, and since the cars are sent out on track one at a time, no competition license is required in order to participate. With minimal barriers to entry, VARA spreads the word to enthusiasts through a targeted use of social media and video platforms. “Facebook is still part of it, but we’re mainly focusing on Instagram, Tik Tok, and YouTube. And we’re always at Cars and Coffee events. Where people are interested in cars, that’s where we’re going to be,” said Bourke.

In addition to the organization’s strong social media presence, Sportscar Vintage Racing Association (SVRA) in Southlake, Texas, livestreams its events to connect with those who can’t be at the races in person. “When I came on (in 2012), SVRA didn’t even have a Facebook page,” said Tony Parella. “Last year we had 50-million impressions and 3.2-million engagements across our social media accounts. Facebook, Instagram, and Twitter are all part of our strategy. But YouTube is where our biggest growth is right now because we have SpeedTour TV, which streams our events so that fans, friends, and family can check them out, whether that’s an SVRA race, a Trans-Am race, or something else.” —Bradley Iger



Several vintage racing groups, including VARA, are actively reaching out to engage with younger drivers.

(VSCCA) said the New Britain, Pennsylvania-based organization chose a different tack from the outset. "VSCCA is essentially a vintage club that also runs races. We also run hill climbs and rallies mainly for fun, and we have social gatherings. Racing is what people tend to think of the most, but there's a strong social element to what we do as well."

Established in 1958, VSCCA's initial cut-off point for vehicle model years was 1954, and that was eventually extended to 1960. "Even then, some cars weren't allowed," O'Day said. "There were a lot of Bugattis, old Ferraris, and things like that. Things like MGs weren't eligible."

Recent years have seen the club loosen the reins, but only slightly. "Eventually the MG-Ts and MGAs became eligible," he continued. "If it was something like a Porsche 356—a design that debuted in the 1950s and continued into the early 1960s—those became eligible as well. We also started to allow Formula Juniors, SCCA



"Each VMC member group has its own definition of what constitutes a vintage or historic race car," said John Bechtol. "There is a wide disparity in terms of what these organizations will allow, and a lot of that comes down to the ethos and goals of each particular organization."

sedan-class cars, and small-displacement sports racers up to 1965, along with some rare cars between 1965 and 1970, based on approval."

VSCCA occasionally gives the green light to early-to-mid 1970s cars, too, but that's about as modern as it gets. Notably, the club

does not allow Porsche 911s, a decision that has more to do with performance than rarity or provenance.

"For example, there's a couple of guys who race 1973 Alfa Romeo GTVs with us," said O'Day. "They're not highly modified cars. They have racing equipment on

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them, but they're not like an Alfa GT-A or something like that—they're still street-legal, so they fit in very well with cars like the late 1950s Alfa Romeo Giuliettas in terms of their capability. That's something we're very mindful of. We don't want someone to come in with a car that just leaves everyone else behind. With this club it's not about winning. We don't provide trophies and we don't have season standings. We don't even have timing and scoring at some of our events. But some people are very competitive despite those circumstances, and we don't want them to feel like they need to modify their cars or get faster cars. That's kind of the trap that we're trying to avoid falling into: As you allow newer and newer cars, the older cars get left behind, and then people stop running them. Suddenly you're just left with a bunch of newer cars."

O'Day said the VSCCA is more about celebrating the cars and enjoying them rather than pushing these rare machines

to their dynamic limits. "The events are not huge," he added. "We'll typically get somewhere between 70 and 90 entrants for a race event. There are a lot of people in the club who have been doing this for a very long time, and a lot of good friendships have been made as a result. It's every bit as much of a social experience as it is about getting your car out there."

Bechtol pointed out that these two distinct approaches tend to complement one another within the realm of vintage racing, allowing would-be participants to choose a club that really caters to their interests as an owner and driver. "Some groups need to fill a grid. They typically don't have spectators, and there are bills to pay, so those groups are inclined to allow a broad range of cars to participate. On the other side of the coin, there are groups that are more show-focused. They have spectators at their events, and they have sponsors that are more likely to require cars that look

and act like they did back in the day. Both approaches have their place." **PRI**

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Despite facing significant challenges on several fronts, these companies continue to thrive in a highly nuanced segment where parts scarcity and cost concerns have always been part of the deal.

By Bradley Iger

Vintage racing clubs, sanctioning bodies, and other related organizations continue to see sustained interest in niche segments, while the roster of eligible platforms expands, and class structures change in turn. Increasingly, vintage race shops have become a crucial element in the overall health of the sport.

Some focus on the stewardship of iconic racing machines and the high expectations of discerning clientele, while others are tasked with breathing new life into vehicles that may not have seen track time

in decades. Although much of the latter can be attributed to the fact that more and more platforms are becoming “vintage” by definition with each passing year, there are other factors that have played key roles in reshaping this segment of the racing landscape over the past decade.

“One of the big things is that there are a lot of people who have built collections and have a lot of vintage racing experience who are starting to age out of the sport,” said Scott Drnek of Virtuoso



THE FIELD

Performance in Hayward, California. “Part of the reason that’s important is because most vintage racers buy the cars that resonate with them, specifically. So while someone in their early 60s might prefer F1 and sports prototype cars from the 1970s, that might not be the case for someone who is currently in their 40s. At least half of the people who are now coming into vintage racing aren’t particularly interested in the older cars. A Jim Clark Lotus might not mean much to them because their heroes are Mario Andretti and Alain Prost.”

Drnek added that the rising values of many vintage race cars has contributed as well. “Because many of these cars have gone up so much in value over the past 10 years or so, some of the owners just aren’t racing them anymore. When they originally bought it, it might’ve been a \$50,000 car. But now it’s a half-million-dollar car, and their personal economy just hasn’t appreciated at the same rate. Consequently, the prices of entry-level vintage cars have also gone up. Twenty or 30 years ago, people might’ve seen vintage racing as a

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“Part of the historical value of a car with an unusual or rare drivetrain is that unusual or rare drivetrain, so you have to develop some strategies to keep it going,” said Michael Clifford of Michael’s Vintage Racing. “You have to plan ahead. It’s always a good idea to make spares before you need them.”

less-expensive alternative to SCCA or NASA. That’s really no longer the case.”

As Michael Clifford of Michael’s Vintage Racing in Scottsburg, Virginia, pointed out, these developments have changed the look of today’s vintage racing events. “We’re seeing a lot more cars from the mid-to-late 1970s and early 1980s than we were just a few years ago—BMW E30s, Porsche 944s, first-generation Mazda Miatas, and things like that. Depending on the event that we’re at, we can see anything from the 1950s and 1960s-era cars that everyone’s used to seeing at vintage racing events all the way up to virtually new GT and prototype cars.”

Keeping such an eclectic mix of vehicles race-ready requires a specialized approach to each platform, along with the needs of the drivers who are piloting them. As a result, the shops that focus their efforts on the vintage racing market tend to adopt a strategy that’s purpose-built for the segment that they serve.

REVIVING THE PAST

When Steve Lathrop founded Citation Engineering in 1974, his goal was to put competitive Formula cars in the hands of more racers. Over the years, the Zionsville, Indiana-based company designed and produced cars that have won a dozen SCCA national championships across Formula Vee, Formula Ford, Formula Continental, and Formula Super Vee. Although interest in these classes fluctuated throughout the ensuing decades, Lathrop said that the recent rise of vintage racing has put a spotlight on these cars once again.

“Some of them never really retired. There are some guys who just kept the same car throughout the years,” observed Lathrop. “But with the onset of vintage, a lot of people are going around checking the garages and the barns, and are bringing some of these cars back out. They’re fetching a lot more money than they were when they were brand new.”

“THE CARS REALLY DO THE HEAVY LIFTING HERE—THEY LOOK COOL, THEY SOUND COOL, AND THEY’RE FUN TO WATCH. WE JUST HAVE TO MAKE PEOPLE AWARE OF THEM.”

“TWENTY OR 30 YEARS AGO, PEOPLE MIGHT’VE SEEN VINTAGE RACING AS A LESS-EXPENSIVE ALTERNATIVE TO SCCA OR NASA. THAT’S REALLY NO LONGER THE CASE.”

He told us that these days, Citation Engineering is more of a design firm than a traditional race shop, and there’s a good reason for that. “I’m seeing all of these cars for a second time—it’s a hell of a deal,” he said with a laugh. “Part of the reason is that some of the parts that these cars were originally built with just aren’t available anymore, so we’re trying to keep these things alive by redesigning parts of the car to work with components that are obtainable today. For example, the front uprights on the Z10 were originally from the VW Fastback, and we also used the spindle and bearings from the first-generation Golf. These parts are really hard to find today, so we’re making new uprights that accept the spindles from a third-generation Golf.”

Citation Engineering is also updating other elements of the cars to bring them into compliance with contemporary safety standards. “The rollbar rules have changed dramatically,” he said, “so we’re sending out drawings that explain how to modify the existing cars to meet the new rules. The big challenge is that we want to run the original bodywork on cars like the Formula Vee, and to build out the cage to modern standards, the bodywork requires some changes in order to make it fit. We’re also doing similar design work to put modern fuel cells in these cars without having to move the driver forward in the car. The generic wedge cells that people are using will move the driver forward about five inches at the shoulders, and I consider that to be an unsafe position because of the additional distance it puts between the driver and the rollbar.”

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The “arrive-and-drive” customer experience now goes beyond just car prep, said Scott Drnek of Virtuoso Performance, which maintains these cars spotted at the Acura Grand Prix of Long Beach. “It’s turned into more of a family experience, which causes you to re-evaluate the experience you’re presenting to your clients. You can’t just show up with a car that works anymore.”

SERVING THE MARKET

While Citation Engineering focuses on updating the designs of the cars in order to make them easier to maintain and safer to run, outfits like Virtuoso Performance and Michael’s Vintage Racing often work more directly with the end user on a long-term basis. As Drnek noted, the services of vintage racing shops that offer “arrive-and-drive” customer experiences go well beyond preparing the car for competition. Transportation of the vehicle to and from events, trackside assistance, maintenance, and even hospitality are typically intrinsic elements of this holistic offering.

“All of our stuff is done in-house—engines, gearboxes, paint, and everything else,” Drnek

said. “We have cradle-to-grave responsibility for these cars. And we use our experience and engineering knowledge to make engines that, in-period, might’ve lasted three hours at 12,000 rpm, now last four hours at 10,500 rpm. We can remove some reciprocating mass, we have more advanced materials and coatings, and we have better heat-treatments. You can’t just dial the engine back a little and call it good. If the engine was meant to run at 12,000 rpm, it probably didn’t start making power until about 9,000 rpm. You have to look at the whole package and consider things like cam profiles, compression ratios, fuel delivery—all of it.”

Beyond the durability expectations of his clients, Drnek noted that keeping these



Citation Engineering is more of a design firm than a traditional race shop, as “some of the parts that these cars were originally built with just aren’t available anymore,” said Steve Lathrop. “So we’re trying to keep these things alive today by redesigning parts of the car to work with components that are obtainable today.”

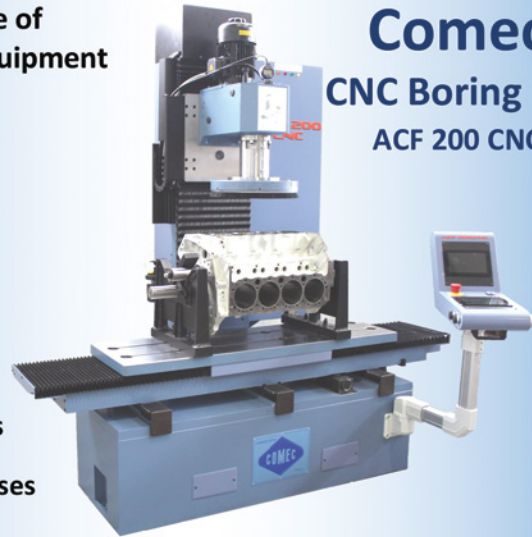
rare, historically significant engines intact is crucial for pragmatic reasons as well. "On a lot of these projects, the castings are simply irreplaceable," he said. "If you're racing a car that's powered by a small block Chevy and you put a rod in the side, it's a \$5,000 inconvenience. A block for a V12 Alfa Romeo F1 engine costs 20 times that. So you spend a lot of time doing everything you can to prevent the potential for catastrophic failure."

This zero-hassle imperative has also come from the changing expectations of vintage racing clients, he said. "The easiest way to understand our business model is to think about the way wealthy folks own horses. They don't have a dually or a trailer. They have people, and they have a horse. In our case, the horse is the car, and we are our clients' people. The cars are stored in our facility, and our clients tell us when and where they want to race them. They show up and the car is there, prepped and tested, and their driving gear is there cleaned and ready to go. Their wife's favorite chardonnay is in the refrigerator, and we know what they like on their sandwiches. We put the whole experience together. Twenty years ago, this was a way for guys to get out of the house for a weekend with a legitimate excuse to go hang out with their buddies and race cars. But that's changed. Today they want to bring their wife or girlfriend, they want to bring their kids. It's turned into more of a family experience. As a business, that causes you to re-evaluate the experience that you're presenting to your clients. You can't just show up with a car that works anymore."

When it comes to sourcing hard-to-find parts, Clifford said that there are a few different tactics that can minimize headaches. "Part of the historical value of a car with an unusual or rare drivetrain is that unusual or rare drivetrain, so you have to develop some strategies to keep it going. Ideally, if you're working with something that's impossible to get if it breaks, you'd at least want to photograph and measure, and if you can, do a CAD scan of the components. That way you have something to work with if that component gets vaporized at some point in the future. In most cases, there's a lot of information already available by now—blueprints at the very least, or historical

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Just like any professional race team at a major event that works through the night, here Virtuoso Performance is seen making repairs on a 2013 Oreca FLM09 LMPC car that ran as part of a support race with the 2019 US Grand Prix at Circuit of The Americas.

knowledge bases. If none of that exists, which is something you'd want to research ahead of time, you have to plan ahead. In situations like that, it's always a good idea to make spares before you need them."

MAINTAINING MOMENTUM

Although myriad different elements will play into the trajectory of the vintage racing market over the coming years, everyone seems to agree that keeping a steady flow of talent coming into the segment is paramount.

"So many modern series are moving to spec cars," said Lathrop. "That can make life easier for a team—they can run five or six cars, and all they really need is a chief mechanic; they don't have to have an engineer for each car. But I think the bespoke nature of vintage racing is attractive to people who're looking for something that's a little more unique, and the engineering itself plays more heavily into a team's competitiveness. But that requires

engineers who understand the platforms."

Those individuals are getting increasingly more difficult to find, Drnek said. "We've got to figure out a way to draw young talent. Part of it is a social issue; over the past 20 years or so, a stigma has been created against working with your hands. At first you might say, 'Oh, that doesn't seem like such a big deal.' But that changes when you try to hire a plumber, or you need to get your fence fixed. One thing we've noticed with younger folks who've, for instance, gone through BMW's Step program is that all they've learned to do is use a diagnostic computer and replace whatever the OBD system is telling them is broken. Maybe they've been at a dealership for a few years, and now they've gotten used to being the smart guy in the shop who all of the younger techs come to for help. But then they come here, and they discover that there's no diagnostic port, there's no wiring diagram, and there is no manual. You just have to figure it out the hard way. You have to understand

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Drawing younger talent into vintage racing—as drivers and mechanics—is paramount in keeping the sport vital. “I think better PR would go a long way,” said Michael Clifford of Michael’s Vintage Racing, seen here. “It would be nice to see a more concerted and unified effort to spread awareness about the cars.”

how these systems work, then you have to understand how they fail, and then you can figure out what you’ve got to do. As you can imagine, that’s not the easiest sell.”

And as Clifford emphasized, part of the problem is that vintage racing simply is not reaching young people as effectively as it could be. “I think better PR would go a long way,” he said. “Most of the people running these cars aren’t particularly concerned about advertising the sport because they’re doing it for fun and they’re not really looking at the big picture. So it would be nice to see a more concerted and unified effort to spread awareness about the cars. The cars really do the heavy lifting here—they look cool, they sound cool, and they’re fun to watch. We just have to make people aware of them.” **PRi**

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BUSINESS PROFILE

TROYERMISH INC.

WHEN TROY ERMISH FACED A CROSSROADS IN HIS BUSINESS, HE FOLLOWED THE VINTAGE RACING PATH TO BECOME THE "KING OF THE 510S."

By Dana Ford



The impact of the cars, products, and services provided by Troy Ermish Inc. can be summed up with these thoughts from satisfied customer Phil Hartstein: "There is just something so magical about walking up to a car and recognizing you are about to strap yourself into a purpose-built machine. There's only so many people who are going to look you in the eye when you stare through your helmet, and you wonder if this thing's going to work and perform as possible. When you see Troy on the other end of that, you certainly get that confidence that the car is built to do one thing: go around race tracks fast. That is truly a unique experience. I've never had a car built for me. I've never had my name painted on a car. This has been an absolutely over-the-top experience."

To fully understand this experience, it's helpful to have some background on the Datsun 510. When Nissan Motor Company set out to design the Datsun 510 in 1967, its aim was to produce an economical and reliable car. It was the influence of Nissan's US president, Yutaka Katayama, a motorsports enthusiast, that added the element of making the car fun to drive a part of the project. The end result was a car not only well suited for economical daily transportation, but also as a driver's car.

The driveability caught the attention of racers who soon learned the car was a perfect design for competition, specifically road rally style races. Luminaries such as Paul Newman and Pete Brock propelled the popularity of the car on the race track far above anything Datsun had ever



envisioned, especially after Brock's team won back-to-back Trans-Am championships with the car in 1971 and 1972. Fast forward a little more than 50 years and the unassuming little Datsun 510 is still wildly popular, now in the vintage racing circuit. A big part of the continued popularity can be traced to not only the timeless, reliable design, but also to a man referred to as "the King of 510s" by his customers, Troy Ermish of Troy Ermish Inc. in Tracy, California.

FROM ACCIDENTS TO OPPORTUNITIES

Ermish didn't start life with the goal of becoming a 510 guru. It happened almost by accident. He had a deep appreciation for racing cars, as he was actively involved in both the NASCAR Southwest and ARCA series. One day he saw a bunch of Datsun 510s at WeatherTech Raceway Laguna Seca and knew right away he wanted to have one.

Some of the qualities of the little car that stood out to him were, in his words, "They were really well designed and really well engineered so that they really didn't have any weak points. Seems like a 510 was ahead of its time. It was designed in 1967 and sold in 1968 in America with a five-year run ending in 1973. The only design changes made were super slight, mainly in the interior. Same engine, transmission, and differential, independent suspension with semi-trailing arm—it lent itself to be a great performance car."

Ermish had already been buying and selling cars, so it only seemed natural to add 510s into the mix. From there, he branched out into selling replacement parts to the people who were racing them. Quite unexpectedly, his 510 business started to grow.

"Sometimes funny things happen and

accidents spill into opportunity," Ermish explained. "For a good 10-plus years I was fixing cars for people, mainly street cars, and I continued to sell parts at swap meets to other race car guys or street car guys. That got me noticed and kind of on the map because people knew they could come to me when they needed to buy a transmission or a suspension piece or a body part."

Ermish built his first 510 race cars for himself and one of his crew guys and began racing the 510 while also still active in the ARCA series. It was his NASCAR experience that provided an important component to the success of his business. The experience of racing his stock car gave him an in-depth understanding of chassis development, geometry, and how to make the cars work and handle better, which translated perfectly to his work on the 510s. And customers noticed.

Loyal customer Daniel Wu stated, "The fact that he races them only adds to that understanding because he's doing R&D basically all the time. Every time he's out on the track, if something fails, he thinks of a way that's better. The suspension and brake packages sold through his shop are something he's developed over time

based on the fact he's got a lot of hours and seat time in these cars and kind of knows what they need best."

Fellow customer Hartstein agreed, adding, "I've really come to appreciate how much he understands these cars. I think he makes adjustments for specific drivers. He always seems to tailor his advice, guidance, and setup on the car based on what a specific driver needs."

In the beginning, there was some overlap, with Ermish running both vintage race cars and stock cars, but that changed around 2013 when he decided to focus solely on the Datsun business. From then on, the business really took off.

"It just kind of went crazy after that," he recalled. "It was odd because it was sort of like the buddy system. One guy would see a car, and I'd finish it, and then his friend would want one. These were guys who could certainly afford any kind of car they wanted. They had many other highly collectible, valuable cars, and they thought that 510s offered the best bang for the



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buck. The funnest car to drive, the most economical, entry-level, race-level race car they could own, and it required the least amount of maintenance—that's what drove them to wanting Datsun 510s. A lot of my early customers would have two cars, a 510 they'd campaign at a vintage event and in conjunction, they'd have a historic stock car, a historic Trans-Am car, all these other high-dollar cars, and they'd always migrate back to the 510 because it was so fun to drive."

Not only does Troy Ermish Inc. build vintage road race cars, but the company also builds street cars, with a current split of about 50/50 race cars to street cars. Occasionally, the shop will also do a special SEMA build. One such build was done for actor and auto enthusiast Wu. Wu's 510 was entered in the 2017 SEMA Battle of the Builders and placed in the top 10 of the Sport Compact division. Wu proudly stated, "The car is called the Tanto because it's the little, tiny knife brother of the katana sword. Just because it's small doesn't mean it's not deadly."

Wu first met Ermish when the Tanto car was built. He had considered other builders, but after carefully weighing all options, it just made sense to go with Troy Ermish Inc. At the time, Ermish wasn't known for building show cars, but together, Ermish and Wu worked on the project to create the ultimate 510 show car.

"With his expertise," Wu explained, "I had the vision for it, all the bright-work bronzed, the Porsche interior, a mix and match of everything. I made the aesthetic decisions, and he helped with the motor and build.



He is very meticulous and has worked exclusively on these cars for 25–30 years, so he knows them inside and out. It's a custom car, so it will have issues. There really weren't any, but he was there right away to take care of anything. He's a great guy and stands behind his work. A real, true expert on the 510. What we were doing with Troy was trying to do the highest end and build the ultimate 510."

In addition to building complete vintage and street cars, Troy Ermish Inc. can also take care of smaller jobs, too. "We fill in with guys who come in and just want a suspension package or an engine package," Ermish said. "We don't have to do a complete restoration. We're capable of taking care of a guy's small needs, someone who just wants a brake package, or suspension and brake package. Maybe it's someone who just



Troy Ermish Inc.'s 5,000-square-foot shop is within about 3 1/2 hours of four race tracks, which plays a key role in the success of the business.



The suspension and brake packages Troy Ermish sells “are something he’s developed over time based on the fact he’s got a lot of hours and seat time in these cars,” said customer Daniel Wu. “The fact that he races them only adds to that understanding because he’s doing R&D basically all the time.” Employee John Bionaz is seen here.

wants a daily driver, doesn’t want a race car and won’t do any track days, and just wants something that runs well and handles well. We’ll manufacture a lot of things to make those upgrades. We do our own sway bar packages, brake packages. We’ll buy calipers and rotors from Wilwood or StopTech, and we’ll make all of our own brackets, mounts, and those sorts of things.”

This touches on another key to the success of any of Troy Ermish Inc.’s builds: the strong, long-time relationship with Rebello Racing, a premier Datsun racing engine builder in Antioch, California, which is within 45 minutes of the Ermish shop. The two racing businesses work hand-in-hand, and Rebello builds all the engine packages for every single build Troy Ermish Inc. does.

“I’m not his only customer,” Ermish said. “He is super busy, but he and I struck up a great relationship. So for the last 15 or so years, he’s been an exclusive engine builder for me and is track proven.”

LOYAL CUSTOMER BASE

Troy Ermish Inc.’s shop is within about 3

1/2 hours of four race tracks, which plays a key role in the success of the business. The shop is designed to be efficient, just like the cars that come from it. It covers 5,000 square feet and includes four lifts. Besides Ermish, there is only one full-time employee in the shop, John Bionaz, and Ermish’s wife, Ashley, who handles all the shipping, receiving, bill paying, ordering of parts, inventory control, social media, transportation and towing of customers’ cars, paint, and most importantly, makes sure the lights stay on and the shop keeps generating positive cash flow. “She’s really involved,” Ermish emphasized.

Ermish lets the quality of his work do the promotion. “I’m a believer in what I build. I don’t have to gimmick it; I don’t have to over-promote it. I let the finished product speak for itself and let the customer satisfaction promote it.”

One of the benefits of this approach comes when a high-profile customer is involved. “They’re treated no differently than the guy down the street who just wants a brake job,” Ermish said. “It’s no different with the exception that a high-profile customer has more social networks.”

Exposure from those social networks allows anyone to search the Internet and find videos of these customers showing and racing their cars, sharing their satisfaction with the Troy Ermish Inc. experience around the world, typically capturing a larger audience than any special promotion ever could. As an example, Ermish built a car for Greg Elliott, who was the prop master for “The Tonight Show with Jay Leno.” Leno included a segment in his recent show, “Jay Leno’s Garage,” about Elliott’s Datsun 510, which can be found with other videos on Ermish’s website, ermish-racing.com. As Leno was test driving the car, he enthusiastically said, “This car’s going to be the ‘57 Chevy of the import world.” This sort of high-profile exposure is something that would be very hard for any ad campaign to match.

Every business faces its own challenges, and Troy Ermish Inc. is no different. In the early years things were simpler, as there was little overhead, and Ermish was governed by the amount of time and money

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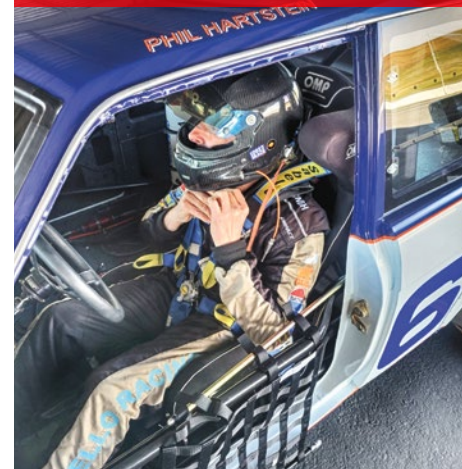

A key to the success of any Troy Ermish Inc. 510 is Ermish's relationship with Rebello Racing, a premier Datsun racing engine builder. "For the last 15 or so years he's been an exclusive engine builder for me and is track proven," Ermish said.

races as they want to do.

The cars are already shaken down for the race. "I take them to a track day," Ermish said. "I'll take them and dyno them so they're 100% prepared for these guys to come to the race track. We have an extensive spares package, so if something goes sideways, we have engines, transmissions, differentials. We had one customer last year who made a mistake, ruining his engine. We did an engine removal and replacement in three hours, and he didn't have to miss a track session. On average, we'd have three to four events with these guys, and we'd have to take four to six cars to the track. We'd have a couple of my crew guys from my stock car team come out and help because I can't take care of six cars and my own car at the same time, provide a crew for them, and take care of all the little problems. All they'd have to worry about is putting a helmet on and having fun."

Perhaps the depth of Troy Ermish Inc.'s commitment to customers and the sport can be typified in the experience of Hartstein. He got involved in racing as a hobby when he was about 40 years old. He started out in an Alfa GTV, spending about a year refurbishing it until it was safe to drive at speed. Upon getting it on the track, he soon discovered,

Troy Ermish makes a shakedown run of customer Phil Hartstein's 510. "To see my car perform before I ever actually got into it to drive it was really eye-opening to me. Really a fantastic experience," said Hartstein.



he had available, being the company's only employee. As the business grew, time management and meeting all the demands of the growing customer base became more important. For this, Ermish has a simple formula: "I don't want to overextend myself buying more lifts, getting more property, and hiring more employees. I don't want to be in a position where I have a chance for failure. I would rather take longer to do a job or miss out on one job to make sure I have three customers who are super happy and have the jobs get completed in a timely fashion."

Ermish also faces a common post-COVID-19 challenge, which is "finding motivated individuals who are doing the same kind of thing I am to stay afloat. People don't work as hard or as fast, and they're not driven. If I could find one more full-time employee, I'd probably hire that person. That person is getting harder to find. The skills needed for this job today are diminishing."

Customer support is always important for sustained longevity of a company, but what Ermish does for his customers could be redefining the term. For street car customers, he offers his three decades of experience and says he's always there to take care of a customer who has a question or a problem.

On the road race side of the business, Ermish has customers who fly in from different states and countries to race. He houses the cars, maintains them, provides track support, transportation, and then does it all over again, race after race, for as many

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while fun, the car was simply not competitive.

When looking for an alternative, Hartstein looked at all the cars in the B-Sedan class and settled on the Datsun 510. This was his introduction to the 510 world and to Troy Ermish.

Hartstein called Ermish and said, "I was about to buy a car. Would you mind taking receipt and delivery of this vehicle and just giving it a shakedown for me? Let me know if it's safe."

Indeed, Ermish brought the car up to racing standards, and Hartstein would go on to campaign that car for the next several years until the day came when Ermish told him the car had too many problems that couldn't be fixed easily. Hartstein decided it was time to build a car.

"We started talking," said Hartstein. "He explained to me what the process of developing a new car was. It took about a year [to build the car] while I drove my original car until we showed up at Thunder Hill for the first race this year. Troy arrived a day early. He wanted to make sure it was ready and safe, so he took it out for a cruise. To see my car perform before I ever actually got into it to drive it was really eye-opening to me. Really a fantastic experience. It was my first experience with true professionalism and performance dynamics of the mechanical limits of how these cars work."

Troy Ermish Inc. is strictly a high-performance business, so there are no warranties involved in the products, but Ermish still backs what he builds. "I'll be fair. We do our best to make the customer feel they didn't just waste a big pile of money. We work in good faith and make concessions. I like to say I'm pretty thorough, and we don't have mechanical issues. I like to think I'm a fair individual, and if we can make it right, we will."

The success of Troy Ermish Inc. boils down to his commitment to the quality of his work, the Datsun 510, his customers, and to the sport. This commitment is captured in this observation by Hartstein: "One of the sweetest things is he married his wife Ashley on 5-10, at 5:10 pm. Their wedding colors were the colors of his race car. It gives you a sense of how dedicated and committed Troy is to the 510." **PRI**

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BRAWN VS TECH

TRUCK AND TRACTOR PULLING HAS ALWAYS BEEN ABOUT BIG ENGINES AND MASSIVE TIRES, BUT ADVANCED TECHNOLOGY IS CREEPING INTO THE SPORT WITH OFFICIALS KEEPING A CLOSE EYE ON THE DEVELOPMENTS.

By Mike Magda

Tractor pulling may be the only segment in motorsports where if a racer is having a tough time in one class, they can just bolt on another engine and step up to a different class.

That's the option Bret Berg of Farmington, Minnesota, has when running his four-engine Renk Seed Money Maker tractor in the Modified class at events around the country. "In about 10 minutes in the pit, we can add a fifth engine for the Unlimited class," said Berg, noting that each engine makes about 2,500 horsepower on methanol.

There might be some boat-racing classes where adding another outboard motor changes classes, but colorful multi-engine setups driving 30-inch-wide tires are the big crowd pleasers and clearly differentiate pulling from other motorsports. It's also probably the only segment of motorsports

where wind-tunnel testing is completely useless; however, that doesn't imply that advanced technology isn't trickling down to tractor pulling.

Despite its roots dating back a century or so to a few Midwest farmers putting their steel-wheeled tractors to the test by seeing who could pull the most weight, the sport has now grown to include sanctioning bodies with well-defined rules and classes.

The goal today isn't challenging who can pull the most weight, but rather who can drag a sled over a dedicated course the furthest distance. The sled is designed to provide increased but controlled resistance as it is pulled down the track. The sled's movable weight box is flexible to increase the weight and resistance depending on the class. Key to a successful pull is having enough horsepower to overcome this

resistance and using special tires designed to grip the dirt track.

PULLING DEVELOPMENTS

Tractor pulling suffered a horrendous 2020 season during the COVID-19 lockdowns since so many of its events were tied to fairs and other activities that were either canceled or were heavily restricted. But that break in the action actually led to a surge of horsepower.

"During the pandemic, so many competitors found more horsepower," said Gregg Randall of the National Tractor Pullers Association (NTPA), Columbus, Ohio. "And now there are tires (see sidebar on page 66) that are getting a greater percentage of traction to the track."

Pullers are leveraging advancements made in supercharger and turbocharger



technologies to turn up the boost. Also, solid billet blocks and cylinder heads are giving racers more choices in engine configurations—and they're not afraid to lean on those engines to the point they can't come back for an encore pull-off.

"They're running so hot now, you're just not going to get them to come back. They're producing more power and getting it to the track with the tire technology. That said, they're running so much hotter that a second run is out of the question," explained Randall, adding that officials have considered moving all pull-offs to the end of the session to give the teams more time to

cool the engine and prepare for another pull. For teams with five engines and the need to change oil before another run, the time would definitely be welcomed.

David Visner of Visner Engine Development in Kentwood, Michigan, is one of those engineers pushing new engines in the sport. Currently, he is developing a hemi-head engine on a 5-inch bore-space block for which he is also producing a wedge-head option.

"The wedge has a valve orientation very similar to a GM DRCE3," said Visner. "Now that we're building our own blocks, we're doing some things different and continuing

to develop and compare the wedge and hemi. Valve geometry is the challenge because these engines have a 1.300-inch valve lift, which is very hard on the valvetrain. Pushrod angles are very important."

The blocks will be machined from solid billet, starting with a 675-pound chunk of 6061 aluminum. Large displacement engines will use blocks with a 12-inch deck height, and smaller engines will use a 10.400-inch deck height.

"We have some unique cylinder sleeve designs, and we have some unique water jacket designs that we're really excited about," added Visner.



Multi-engine tractors are a fan favorite and are somewhat the signature image of the pulling sport. Here, Bret Berg has all four butterflies wide open on his Modified tractor. Photo courtesy of NTPA.

CONSTANT LOAD

While pulling engines are influenced by drag racing technologies, the two sports have different needs.

"People don't realize what a pulling motor has to do," said Terry Hagedorn of Hagedorn Racing Engines, Thompson, Missouri. "Probably the only thing harder on a motor than truck or tractor pulling is offshore racing. You have constant load and running for an extended time. Our 800-inch motors have to run really good from 3,500 up to 8,500 plus. We get up to rpm in the first three seconds and may have to maintain that for 22 to 24 seconds. In drag racing, they're pulling chutes after five seconds. We generally have more oil and heat issues when you're loading the motor that severely."

While the engines have seen huge strides in horsepower levels over the years, only incremental changes have been made in chassis design.

"Back in the 1980s, we went from mild steel to chromoly and did a lot of engineering on the design then," said Tim Engler of Engler Machine & Tool, one of the leading chassis builders in the country, based in Princeton, Indiana. "But truthfully, the designs haven't changed much."

While most of the chassis have solid-mount axles, frames for some of the diesel classes are now being built with a front suspension. "It's more for if you hit a bad spot on the track. A spring front end will cushion it and not unload the chassis near as fast," added Engler.

Improved tires and greater horsepower have forced many competitors to adjust their gear ratios. "If the tires are better, we have to go to a little lower gear. And as they make more power you have to gear them back up," said Engler.

DATA ACQUISITION

Perhaps the most useful piece of technology that pullers have adapted is data acquisition. Sanctioning bodies heavily regulate electronics on pulling vehicles; however, data recorders are allowed.

"We really don't have much new technology on the truck besides our Racepak," said Carmen Foster, who races a 6,200-pound modified four-wheel-drive truck and was the 2021 national champion in her class. The truck runs a naturally aspirated 650-cubic-inch Sonny Leonard hemi that makes around 1,650 horsepower. "It tells us all the temperatures, throttle position, shock height, clutch slip, and more."

"For my own vehicle, I can download everything from the data acquisition," said Kurt Afdahl, who runs a Light Pro Stock tractor and is president of the Wisconsin Tractor Pullers Association. "We can read cylinder temp, exhaust temp, speed, oil pressure—everything about the engine. We can fine-tune everything for our next run. It's helped us make a lot more power, and also helps the longevity. If you've got a hot cylinder, you can do something before you melt that piston down. The technology has

helped out in a big way."

Keeping an eye on all the technological advances for the NTPA is tech director Marvin Epperson. He agreed with other observers in identifying tire advancements as the leading technology in the sport. But it's also the category where some are trying to slip past the rules.

"Right off the bat some of them went over the specs and tires were too big," recalled Epperson. "I had to shut them down, make them go back to the drawing board and narrow up the mold. Then they presented the tires to us again to be legal."

Tires originally were molded with a tread in place, and there was no problem with illegal width. But the new tires were molded as a slick with extra rubber.

"They can cut whatever tread they want, but I don't want to have to go measuring tires every day, so I wanted to catch them while they were brand new and then not have to worry about it," explained Epperson.

Turbocharger design tricks are also drawing the officials' attention. "The manufacturers are coming up with something new every day, and that's one that may be hard to police," admitted Epperson. "They're doing things that are hard to find, both with the turbine wheel and the housings. The horsepower they're gaining is just unreal."

Since tire interaction with the track is so critical, sanctioning bodies have a strict policy against traction control devices. Ignition timing can be preset, but any adjustment based on real-time feedback from engine sensors is not allowed. Also not permitted is electronic fuel injection.

"I'm sure it's coming someday, but as of now they've got too much horsepower. Once you go to EFI, it could be hard to police traction control," said Epperson.

Engler, who is also one of the nation's leading fuel-injection specialists, agreed. "I think [an EFI ban] honestly is a plus because I don't think we need to get into electronics," he said. "We build fuel injection for race car engines as well as tractors. Our mechanical fuel injection will still outperform EFI."

HOT TOPICS

Perhaps the hottest trend for the pulling market is the mini tractors. There are classes



Massive turbochargers, such as this diesel setup, are helping to push horsepower limits on today's pulling tractors and trucks. Many of the classes are dictated by the sizes of both turbochargers and superchargers.

for non-boosted small block engines, but the more popular vehicles sport blown big blocks. These racers stir up lots of dirt with all that power driving a smaller tire than the big tractors.

“A lot of people are switching from big tractors to the 2,050-pound mini rods with big V8s in them,” reported Epperson. “In some cases, high school and college kids are now driving them. Right now, we have an abundance of them.”

Benefits of the mini rod revolution include building and maintaining only one engine instead of three or more. The top class has a 565-cubic-inch limit with a 14-71 blower at 45% overdrive, or they can run 650 cubic inches naturally aspirated. “We also allow a single turbine with an 1,800-horsepower limit,” added Epperson.

They’re also easier to transport in smaller trailers, as the vehicle can’t be more than 76 inches wide, including tires and fenders. And, said Epperson, “the tires are cheaper.”



The number of pulling participants has increased appreciably since COVID-19 restrictions canceled so many shows three years ago. Sanctioning bodies are also considering new classes to help encourage racers to enter the sport.

One of the other hot topics for Epperson’s crew is testing diesel fuel. “You’ve got to watch these guys who will try and doctor the diesel fuel and make it a little hotter. We test the fuel with a dielectric meter. They’re allowed to mix biodiesel, but most of the time with our new numbers they can’t put

very much in, or it goes over the limit,” said Epperson. “The other stuff is the water, which they spray into the turbo system. Of course, they try to add stuff that will burn, so we check the water with an alcohol refractometer.”

Finally, the latest technology to enter the

continued on page 68

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POWER TO THE DIRT

Want to know what led to the sudden invasion of tire technology into the sport of tractor pulling? Sponsorship pride.

Around 2015, when Mitas was a privately owned tire company in Europe, it sponsored a popular tractor puller on the Eurocup circuit. When the owners attended an event and discovered Firestone tires on their Mitas-sponsored vehicle, they couldn't let that conflict continue.

"So they decided to build a pulling tire," recalled Jeff Miller of Mitas, which is now part of global giant Yokohama TWS. "From the very beginning, it was strictly

designed for pulling. What's unique about our pulling tires is that it's an actual slick. The competitors then groove their own tread patterns."

The tire is constructed with plenty of rubber depth to accommodate any design, and there are guide markings molded into the surface. These markings help the racer determine exactly how many treads or chevrons they want as well as the direction of each.

The first tires were given to three competitors with mixed results. Then a Modified racer tried one of those original sets of tires. "He immediately went from a mid-pack runner to competing for the win," explained Miller. "That got everyone's attention. Then others tried it and found a performance advantage."

The tire is offered in two sizes, and the compound has been updated, but no

specifics were released.

Offering an alternative to the traditional Firestone tire and also designing in specific elements to complement different classes is what drove Aaron Docter of Pro Puller Tires in Firth, Nebraska, to develop new product.

"Realistically, there had been only one tire offered until about six years ago," said Docter. "A tractor with 700 horsepower and a tractor with 7,000 horsepower had to make the same tire work. Our philosophy was that we didn't think that those two classes needed to use the same product. We saw the need for different products."

Docter adjusted ply ratings for lower horsepower classes and added strength to tires in higher horsepower classes. "We try to make the heavier ply tires so that the tire doesn't wrinkle too much and make the pan drop. Then you're going to be dragging dirt, which is just dead weight," explained Docter.

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The Mitas Power Pull tire gave racers a dedicated pulling tire that can be cut to their exact specifications. Note the guide markings molded into the tread surface. Photo courtesy of Dana Cerna/Mitas.

"If you're a lighter tractor, you don't need as heavy of a ply of the tire because you're not going to be wrinkling it down as hard. It's just finding that balance of where it will hook and give you traction."

Pro Puller currently offers four sizes in different compounds for tractors. The tires are the company's design but sourced from an outside manufacturer. As with the Mitas tire, tire cutters design and cut the tread pattern to each competitor's specifications.

"The cutter can change the angle to either shallow or steep," Docter said. "Also, they

start with a .400-inch-tall bar, and we're seeing some classes go down to .200-inch. Basically, we offer the closest starting point that you can get so that the cutters have an easier job."

Driving even more tire development, outside of offering more choices, is horsepower. "It's been a tremendous change in the last four or five years to where there are better designed tires," said Chad Mayhill of CM Pulling Tires, Reynolds, Indiana. "They were maxed out on power. The tires couldn't handle any more."

Mayhill owns five molds and has the tires produced at Specialty Tires of America, a company that specializes in bias-ply tires for aircraft, mining, and industrial applications. Mayhill is also an expert tire cutter.

"The largest tire we have runs on a mini rod or two-wheel-drive class. Then we have tires for the core market down to the garden tractors," said Mayhill. "We've also redone our four-wheel-drive tire to be more competitive." —Mike Magda

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continued from page 65



The mini classes, including this mini modified, are very popular today due to the attractive weight-to-power configuration and much lower maintenance and transport costs than a typical modified tractor. And the crowds love them for all the action they stir up. Photo courtesy of WTPA.

world of tractor pulling doesn't have anything to do with engines, tires, or chassis. "Now there's Full Pull Bet, so you can bet on truck pulling," said Foster. "There's an app that came out, and it's all fully legal."

Randall cautioned that negotiations with the developers of Full Pull Bet were continuing at press time, and that officials still hadn't seen the final version of the software. "It's kind of like a parimutuel style of wagering, so there are no odds against the house," said Randall. "Everyone's hopeful that it's going to be fruitful in getting more people to watch our sport and getting into NTPA TV."

"It's hard to say what it will look like," Randall continued. "But I know the people behind it certainly are trying to do things the right way."

FAMILY FOCUS

For the future, promoting the sport through social media and keeping the fans in the

stands informed will be priorities.

"The last two years have been phenomenal," said Afdahl. "Attendance is great, and we actually picked up several new pullers. I believe we've got 11 new vehicles coming into Wisconsin this year."

The association recently purchased a large portable video board for replays and posting driver data. Afdahl said by offering commercials during down time, more sponsors have come aboard. The group has also expanded its personnel roster to assist with entries and other duties.

"For us, it's a huge family. We're working really hard to bring the family aspect back into pulling," said Afdahl. "We're encouraging families to come to the events as well as our competitors. We encourage them not to show up as a single individual but to bring the entire family. Even in the advertising, we're incorporating families."

Priorities for the NTPA include scheduling up to 10 multi-day Grand National-style

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events, similar to NHRA and NASCAR that hold multi-day national events.

“Everything is lined up the same way,” said Randall, noting that currently there are three events that are five-session, three-day events. “There are two or three more that could be in that mix easily. It’s going to take some time, money, and sponsorship, and we’re working behind the scenes. Got a lot of exciting things in the near future.”

Finally, much of the success in tractor pulling these days is due to the economy in the agriculture market.

“Probably 80% of our clientele are farmers,” said Chad Mayhill of CM Pulling Tires, Reynolds, Indiana. “When the farming commodity prices are good, the pulling side’s always good.”

“The sport is agricultural-driven,” confirmed Berg. “The ag population of the US is less than 2%, and I think that affects the number of people in the stands. As far as the sport itself, there’s a lot more money

in the sport. I think the competitors have a lot more personal financial backing than 30 years ago when people were taking stuff off the farm and modifying it.

“It kind of went down the NASCAR road

where all the vehicles are specifically engineered to go tractor pulling,” said Berg. “There may be fewer pullers than 20 years ago, but the guys who are left are really serious about the sport.” **PRI**

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NUGGETS OF INNOVA



TION

Using input from sources as diverse as rulebooks, team requests, and computational fluid dynamics, shock absorber manufacturers continue to develop new products to meet racers' needs.

By Drew Hardin

Traditionally, racing drives innovation. Developments in the quest for greater speed, handling, safety, and reliability are typically born in race shops and on track and then eventually find their way to the transportation sector.

To a certain degree, the reverse is happening in the realm of shock absorber development. Cutting-edge damper technology—electronically adjusted shocks, active aero shocks, composite shocks—are found on some of the world's most advanced sports cars but are not allowed by most race sanctioning bodies.

"Honestly, some of these hypercars are more advanced than the race cars," said Aaron Lambert of Penske Racing Shocks, Reading, Pennsylvania. "They have the adaptable suspension that can be controlled electronically. You can interlink them front-to-back, side-to-side. But Formula 1 and other racing series have pretty much banned all interlinked suspensions, so you lose that advantage."

With OE and aftermarket divisions, Bilstein has "extensive experience with electronic dampers within those lines," said Keith Robertson with Bilstein's US division in Mooresville, North Carolina. Yet "since the circle track market prohibits them, we do not have applications active or planned with the capabilities. Bilstein saves that technology for the cars spectators drive to the race tracks."

"Much of this technology is just not legal" in racing, added Josh Slade of RE Suspension, Mooresville, North Carolina. "We don't really see that on the motorsports side until you get to the Formula cars and higher tiers like that." Slade, in fact, characterized recent shock absorber development as "pretty stagnant. The last thing that was really revolutionary and ground-breaking was more than 10 years ago, with Penske and the Inerter."

"That was the last big development," said Lambert of the Inerter shock. Engineered by Penske with McLaren for Formula 1, it contains an internal flywheel that creates energy as the main shaft is displaced. "Essentially, the flywheel is forcing the suspension to continue to work, kind of like a supercharger for your suspension," he

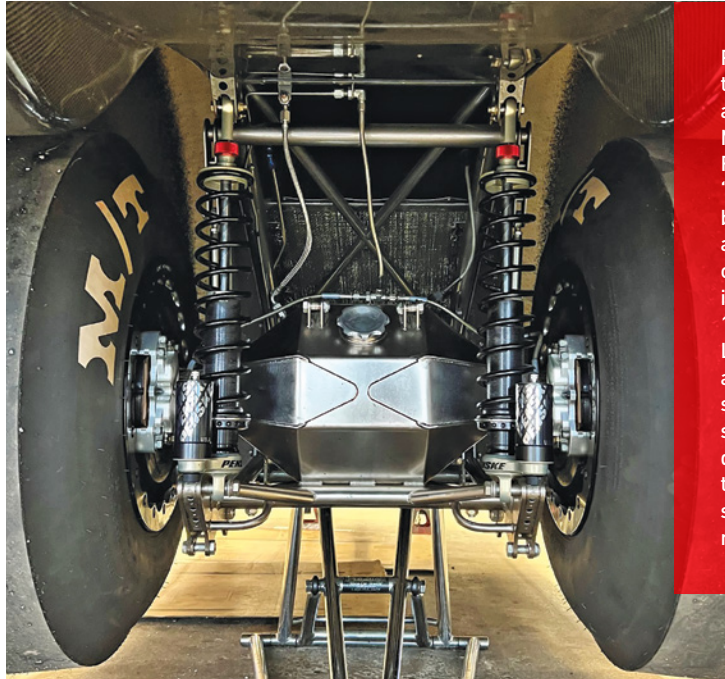


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Penske developed the Inerter shock absorber with McLaren for Formula 1, but "since then it's been banned in almost all forms of motorsports, including Formula 1," said Aaron Lambert. "IndyCar and drag racing still allow them, so we do some development there, but it's very specific for those markets."

explained. "Formula 1 banned it when the new car came out, which forced teams to find other ways to get that advantage. IndyCar and drag racing still allow them, so we do some development there, but it's very specific for those markets."

"At least in the circle track side of the racing industry, there's a general stability in the 'footprint' of the dimensions of the shocks," Robertson noted. "Car builders may play around with the mounting points and angles, but generally your lengths and mounting styles tend to be similar. As such, more of the focus can be on the tuning capabilities. That's often a 'cat and mouse' game, since the chassis builders are constantly evolving their product as well. Sometimes we can hit the moving target with a simple valve stack adjustment, and sometimes it takes some new technology. We need to be willing to try both."

Shock makers may feel stymied by the

limitations put on them by sanctioning body rulebooks, but those rules "are simply a framework," Robertson added. "The key to success is finding those nuggets of innovation within the details not specified in the black-and-white print."

PRODUCT INNOVATION TRENDS

Ben Baker of AFCO Racing Products in Boonville, Indiana, agreed that "as a whole, in the last 10 years, there's been very little difference between all the different shock manufacturers, both in piston design and valving. Everybody's gotten smarter, and we're narrowed down in a pretty small box right now." The changes that are made can be driven "by the racers, and what we see as market trends, issues we run into in the field. Some ideas come from the shock tuners we work closely with."

But, he added, "trends in chassis setup

"WE HAVE TO ACCOMMODATE SPRINGS, TWO-STAGE KITS, BUMP STOPS, AND ALL THESE DIFFERENT THINGS THAT WE DO TODAY. ALL OF THAT GOES INTO THE WHOLE SHOCK DESIGN."

influence us more than anything.” In the dirt late model world, “15 years ago, if you traveled the right front 3 inches, you had more than enough travel than you could ever want. In today’s world, if you don’t have 5 inches, you’re in the way. We have to accommodate springs, two-stage kits, bump stops, and all these different things that we do today. All of that goes into the whole shock design.”

Slade, too, said dirt late model racing “is the market that is driving the most changes, as they need different things to get all the travel they’re looking for. But they’re asking for a lot of different things than what they have had in the past.” For example, RE Suspension developed dual-spring sliders and lock-out nuts in two different heights for all the major shock brands “based on racer demand,” he said. “This is one of many products we developed with the racer to help accomplish what they are trying to do.”

For AFCCO, keeping up with the changes in drag race chassis setup has also spurred new thinking, Baker said. “We used to run a lot of drag cars in what we call squat—the car would squat when it would launch. In today’s world, we put a lot of anti-squat in them to where we try to make them really separate hard. As traction ramps up, and horsepower ramps up, and as the tires get better, and the track prep gets better, we have to get more aggressive with shock valving and shock design to accommodate that kind of power and that kind of force separating the car apart.”

“Drag racing in general has been a big learning curve,” said Lambert. “The Pro Mod and Pro Stock clutch packages have become quite a bit different. The way they deliver the power is much more efficient, which means your suspension’s working even harder. That’s a constant change between what they’re doing with motors, how efficient they’re making them power-wise, to how the drivetrains transfer that power. Every time a team finds ways to get power more efficiently to the rear wheels, it ends up changing what you’re doing with the shocks and how to adjust them.

“That’s where the shock setups really come from,” he added. “As these chassis builders continue to evolve and change

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"In the last 10 years, there's been very little difference between all the shock manufacturers, both in piston design and valving," said AFCO's Ben Baker. "Everybody's gotten smarter." Changes that are made are driven "by the racers, and what we see as market trends."

things, we just try to keep up with what they're after."

THE NAME OF THE GAME

For those markets that drive design innovations, "adjustability is always the name of the game," said Robertson. "Manual adjustments on the shocks have been around for a long time, but the offerings with more distinct tuning capabilities, like the Bilstein EVO RT and EVO RX five-way adjustables, are setting new standards."

There's no question that external adjusters have made shock tuning easier. But, cautioned Christer Lööw of Öhlins USA in Hendersonville, North Carolina, "in a lot of race series, as you go down in the classes, a lot of them are limited to using two external adjusters."

Öhlins had a situation where it needed to adapt an existing damper to fit the TCR touring rules. The damper had compression and rebound adjusters "and a blow-off valve as an additional adjuster for when they're hitting curbs." In some series that was considered a three-way adjustable damper and not allowed, "so we had to develop a new blow-off that was not externally adjustable just to meet the rules."

Robertson also noted that "there's been a lot more market interest in ways to optimize the damping characteristics at different points of shock travel. It's no longer just thinking about the velocity of the shaft, but also where the shaft is in its range of travel and what it's being asked to do at that point."

Penske, too, is developing new ways of affecting damping forces along the shaft's travel. "Regressive technology is big for us," said Lambert, referring to internal shock components "that allow us to tune a regressive curve a little more freely and apply that to different forms of racing."

By regressive, Lambert is referring to a damping curve that is what Penske calls "the next level" beyond a digressive-style curve (and the opposite of a traditional progressive damper). The regressive tuning enhances a digressive shock's ability to offer firm low-speed damping while reducing high-speed forces to not upset a chassis over high-speed bumps. Per a technical blog Lambert authored, the regressive shocks "become even softer at higher velocities than at low velocities."

Penske introduced this technology "in Formula 1 years ago," Lambert said, "and then we redesigned that packaging and came out with different pistons so we're running it in dirt late model, sports cars, Indy cars, even motorcycles."

TRICKLE DOWN

Many of the manufacturers we spoke to take higher-end technological advancements and apply similar strategies to lower-tier racing series. The technology behind Öhlins' TTX product line, a sophisticated twin-tube system that completely separates compression and rebound adjustments, "was designed for Indy car racing at first, back when it was CART," Lööw said. "That

technology has since trickled down, and now you can buy it for everything from track-day cars to motorcycles.”

Bilstein’s AS2-R Series shocks “were designed parallel to when we were breaking into the dirt late model market,” Robertson said. “As triple-adjustable reservoir shocks, these took a significant amount of testing and research to dial in the valving setups. With the working knowledge that was gained during that process, we did an analysis of our applications offered for the lower divisions that use the non-adjustable shocks, like the SZSL and SMX Series, and revamped our valving options to give the best options available.”

Bilstein also has the advantage of an OE division that can sometimes influence race damper design, Robertson said. “Our 46-mm digressive piston is a staple piece in many of our applications. It utilizes a check valve system that allows for a larger, regulated flow on one side of the piston, usually compression, but then restricts it on the opposite movement. Our OE division created this design to give a new level of comfort to street vehicles, but on the motorsports side it gave a totally new range of tuning. That same check valve system is now utilized in our linear/digressive motorsports piston design, and we also have another piston in the works that will share the same technology.”

COMPUTER TOOLS

As with everything in the racing and performance industry, computerized design and production tools are taking on a bigger role in shock development. For example, every one of the companies we spoke with utilizes additive manufacturing in its design and R&D processes.

“It allows us to do different flow paths and things that you normally can’t machine,” said Lambert. “We haven’t seen it cross into the majority of our other markets, but I would say in the next three to five years you’re probably going to see a big push on the additive side. As it’s becoming more and more available throughout markets, it’s bringing the costs down and making it more readily available.”

To date, these companies are using additive manufacturing just for development

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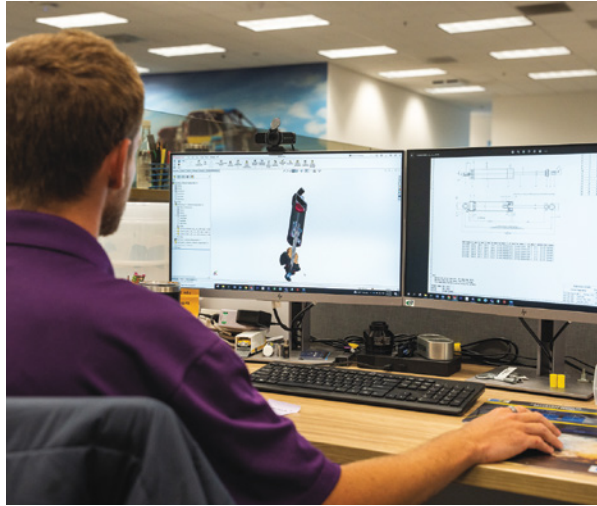
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Shock manufacturers are making greater use of computerized R&D, design, and manufacturing tools, from CAD to computational fluid dynamics. The use of additive manufacturing is growing, as well. Bilstein "utilizes 3D printers to create plastic prototypes for fitment and concept analysis," said Keith Robertson, though "we do not currently use metal 3D printing technology."

and prototyping. "We typically won't race them," said Baker, as "the materials we use aren't strong enough to do that. But there are certainly cases where a 3D-printed part helps fast-track an idea."

Lambert, though, predicted "there will be parts we're actually going to be racing. Possibly by 2024 there will be some additive manufacturing parts that are out in the racing world. And usually, a few years after that you see them trickle down into the vast majority of racing markets, whether that be a piston or an actual structural piece."

Beyond additive manufacturing, "we have way more computer tools easily available now, like FEM (finite element method) and CFD (computational fluid dynamics), that we're using when we're designing the internals of a shock," Lööw said. "We can use CFD to simulate the flow of the oil within a damper. That's driving a lot of the design work."

The manufacturers aren't the only ones using computers more often. Lööw said race teams "are more educated about what they want. They do more computer simulation work," which results in "more specific requirements. Maybe that, in turn, is driving the want for more adjustable dampers to meet their needs."

These teams are also asking for more data from Öhlins "that they can feed back into their simulations. We have the VRP, Valving Reference Program, which is software that predicts what kind of damping forces you would get for a certain valving. You put in

what valve combination you have inside a damper, and where you put your clickers, and it would produce a theoretical damping curve. They can then feed that into their simulation to see if a clicker setting would be any good for a particular simulation. They can run sweeps on the clickers from this software, feed that data into their simulation, and take which clicker setting they should start the race weekend. It's driving the damping design to be more flexible, for them to be able to run through all this stuff in a simulation, and match what they feel would be the best."

Computer simulation only goes so far, Lööw added. "In the end we have to test it." Among Öhlins' verification tools is a seven-post shaker rig, "kind of between pure computer simulation and going on the track. We can put a car on there and simulate any given track, simulate downforce, roll, braking forces, all that. Then we can, let's say, run a perfect qualifying lap, run that hundreds of times over a test in the exact same way. That way we can pick up tiny improvements in damping."

By "tiny," he means changes that might shave five-hundredths of a second from a lap. "You wouldn't be able to detect that on the track with everything that's changing—tires wearing, temperatures, and fuel levels changing—but you can find that here." Add up a few of those tiny changes "and now all of a sudden you have a tenth or two of improvement. Keep doing this and before you know it, you have gained a second or

more. Some of these changes would have been hard or impossible to verify on the track individually.”

NEW PRODUCTS

Several of these companies had just or were about to release new racing shock products.

As we spoke with Baker, he was assembling some new AFCO 81 Series shocks, which were released in April. These are “stock-mount gas shocks that are internally gas pressurized. You can fill the gas chamber through the floating piston. IMCA Hobby Stock rules don’t allow any external fill ports, and they have very specific length rules as well, so these have been tailor-made to their length rules.”

A second new shock series, due out in June, consists of “steel-body, take-apart shocks, bearing-to-bearing, kind of like our 74 or 84 Series,” Baker said. “This particular shock is going to have a base valve internally, so we don’t have to run exceptionally high gas pressures to make the shock not cavitate. The gas pressure typically takes feel away from the driver, so we’re trying to minimize that gas pressure.”

For the asphalt late model market, Bilstein just released “seven new shocks based on our AS2 and XVA Series offerings that are developed for the Late Model stock/LMSC market,” Robertson said. “For Northeast modifieds—big block, 358, and sportsman—we’ve released 16 new race-ready shocks based on the AS2 (for big block, 358) and SN2 Series (for sportsman).”

Robertson explained that “each new part release can have its own unique scenario based on the market we’re trying to reach. In the case of the modifieds, there’s both a series variation (XVA and SN2) to meet the rules specifications of different divisions and then also two sets of shocks within each of those series that are valved up specifically for each corner and ready to race. This gives our catalog dealers race-winning options they can sell right off their shelf. On the late models we also have two different series to meet rules requirements, but those are actually dry kits (no oil, nitrogen, or valve stacks) that are geared toward the shock tuners so they can build

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to their customers' specific needs.”

Öhlins has just released a new two-way adjustable TTX Advanced Trackday kit for the Porsche 992 GT3, Lööw said. The aluminum, two-way adjustable shocks are upgradeable to three- or four-way adjustability, and they utilize the factory top mounts. “The nice thing about it is, we have a version of it where they can retain their nose-lift system so they can still pull over a curb without hitting the ground.”

FINAL THOUGHTS

“One of my biggest pet peeves in racing in general, not just shock related but parts in general, is that a lot of people today think you buy speed,” said Baker. “If it costs more, they think it has to go faster, and that is definitely not the case. If the car is not right in general, I don’t care if you put a \$100 or \$10,000 shock on it, it’s not going to go.”

As a company, AFco “has always taken a lot of pride in having good, reliable, fast parts, but we try not to strangle a racer to death with pricing,” Baker added. “That’s something we definitely battle. They think we can’t be as fast as another shock because it’s \$100 cheaper.”

Looking at the racing shock market as a whole, RE Suspension’s Slade believes “it’s getting harder and harder to make any big changes. When you look at where

we started, with an old-school emulsion shock, to where we are now, that’s a huge advancement. But the products that these companies are releasing for the most part are really good, really reliable. You can take shocks from any one of the big-name manufacturers and win races with them on a regular basis. That’s different now compared to years past. You used to have one company that was pretty dominant, and it would kind of go in waves. It does a little bit still, but on a weekly basis, you see a much wider variety of what’s winning. Right now, everybody’s on their A game.” **PRI**

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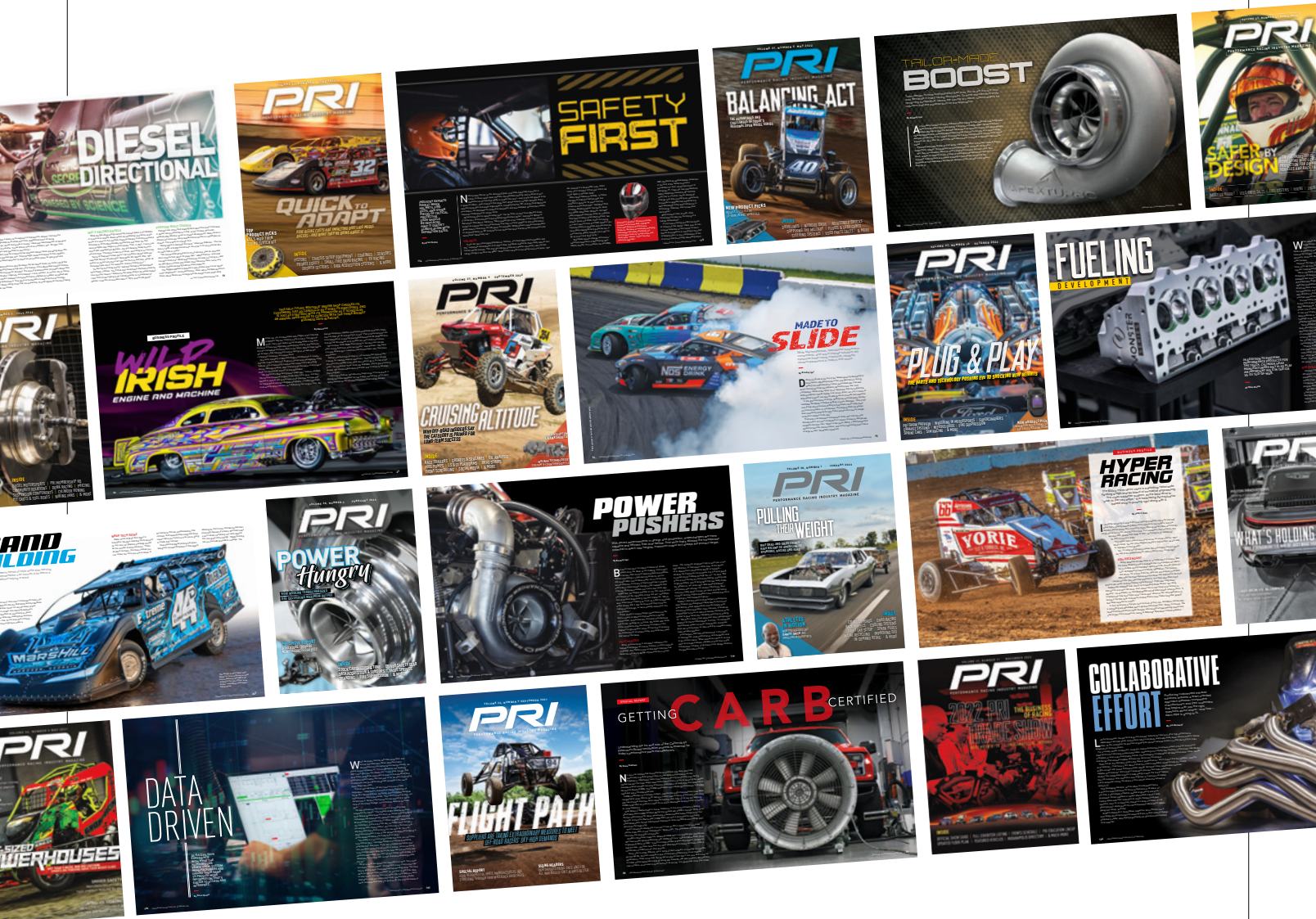
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“EVERYBODY SAYS, ‘IT WON’T HAPPEN TO ME.’ BUT IT’S SMART TO JUST ASSUME IT WILL AND GET THE BEST STUFF YOU CAN.”

SAFE INVESTMENT



Photo courtesy of The Joie of Seating



TODAY'S SAFETY-EQUIPMENT MANUFACTURERS OFFER SOMETHING FOR JUST ABOUT EVERY BUDGET, BUT SHOULD RACERS SPEND EXTRA MONEY ON SAFETY EQUIPMENT IF RULES DON'T REQUIRE IT?



By David Bellm

How safe is safe enough? That's the vital question all racers ask themselves at some point when making choices about safety equipment and how much money to spend on it. The question isn't easy or simple. But it can have profound implications.

Vehicle safety equipment across the board has dramatically improved in recent years, with the lessons of real-world incidents continually applied to making even inexpensive safety gear considerably better than that of a decade ago. Nonetheless, most categories of safety equipment offer numerous price points, which can cloud what exactly racers can expect to get from the added cost.

There are almost always diminishing returns. Spending twice the money rarely, if ever, adds twice the safety.

And the idea of increased safety itself is a nebulous, undefined pursuit that can, at times, be difficult to justify. Many racers routinely struggle to find enough money to even get to the track. So it can be a tough sell to get them to invest in upgraded safety equipment.

These same racers figure that as long as they're conforming with the bare minimum of the rulebook, they're safe enough, bolstered by the all-too-common sentiment that "It'll never happen to me." For those racers who do have the extra money to spend, many would rather put it toward making their cars faster.

So is it worth spending more on better safety equipment? To answer that question, we talked to some of today's leading experts on the subject. These sources have been in the business for decades. They've seen safety equipment evolve, improve, and grow vastly more sophisticated. Perhaps just as important, most of them have spent plenty of time behind the wheel, competing in motorsports ranging from drag racing to open wheel formula cars.

Along the way, some have felt firsthand the effects of serious crashes that would make even the most jaded spectators wince. These racers' opinions on safety equipment have thus been forged in the ultimate crucible—the real world of hard hits and battered bodies.

What we learned from these sources was surprising at times. Contrary to what many racers think, spending extra money on better safety equipment isn't necessarily a choice of safety over speed. In many cases, better safety equipment not only protects better, but it also allows drivers to go faster and race more competitively, resulting in better on-track performance.

CASH FOR CRASHES

Despite all the advantages of better safety equipment, much of it is still purely optional. Sure, rulebooks specify a wide array of different safety equipment, and more are added continually as new situations warrant. But rules often lag behind catastrophes that happen on track.

“Going beyond the rules is never a bad thing,” said John Gentry of Stroud Safety, Oklahoma City, Oklahoma. “There are a ton of things that still generally aren’t required, but they make it safer for the racer. Take, for instance, wheelie bar nets. They aren’t mandatory by any sanctioning body, to my knowledge, but we sell a lot of them. And that makes sense. If a car with wheelie bars has a parachute fail, it goes straight down, the air catches it, and it goes under the wheelie bars, which can make for a really bad day.”

When it comes to a fire suppression system, going beyond the rules is as simple as paying for greater capacity—money well-spent, said our sources. Again, most race rules specify just the bare minimum, but the dollars spent here could easily save the driver’s life in a fire.

“With fire suppression, a sportsman kit is going to have a 5-pound bottle,” explained Gentry. “A 10-pound kit can be more expensive, but it offers double the suppression and double the dispersion time. The quality is the same in both kits, but it’s just more capacity. Personally, I run 20 pounds in my car. Tommy [Cunningham], the owner of the company, runs 40 pounds in his car. We don’t want to catch on fire for any reason.”

Sometimes the cost difference in safety equipment is in the strength of the materials. With fuel cells, for example, bladders have greater strength at higher price points. This means more resistance to puncturing and rupturing in a crash. “FT3- and FT5-certified fuel cells have very different safety ratings and costs associated with each,” noted Ron Ross of Aero Tec Laboratories, Ramsey, New Jersey. “The difference is mostly based on what the bladder can tolerate as far as tear and puncture, being a single roto-molded bladder versus a reinforced ballistic nylon or a Kevlar-reinforced bladder.”

Along with these measures, additional fireproofing of equipment is a wise investment that can be a lifesaver in many situations. Sanction rules typically require only certain key components to be fire-resistant, but much equipment still isn’t generally required to be. Many of those items will burn readily, fueling fires, and possibly impeding drivers from making a rapid egress from a vehicle engulfed in flames. Our experts say that, wherever possible, it’s prudent to spend the extra money on fireproof versions of components, including safety belts, parachutes, and window nets.

COMFORT = SAFETY + SPEED

Our sources told us repeatedly that comfort is speed, and that additional money spent on it will yield heightened concentration, improved situational awareness, and faster lap times. The link between comfort and safety may not necessarily be obvious, but it’s a simple dynamic: If drivers are distracted by something, they’ll have a harder time concentrating on what their car is doing and what’s happening on the track, thereby reducing their ability to compete effectively.

“If you’re comfortable, your focus is going



Sometimes the cost difference in safety equipment is in the strength of the materials. For ATL, its FT3- and FT5-certified fuel cells have very different safety ratings and costs associated with each, said a company source. “The difference is mostly based on what the bladder can tolerate as far as tear and puncture, being a single roto-molded bladder versus a reinforced ballistic nylon or a Kevlar-reinforced bladder.”



to be more on the task at hand, which is driving the vehicle,” said Ben O’Connor of Impact Racing, Indianapolis, Indiana, which manufactures race seats, parachutes, and restraints. “In the back of your mind, you’re fidgeting with whatever it is that’s bothering you. So we always tend to look at comfort as another aspect of safety protection.”

Since every racer’s body is unique, the adjustability of equipment is vital in making it as effective as possible. Higher-priced safety equipment often allows more parameters to be adjusted and with greater precision. On custom seats, for example, drivers can have builders add air pumps in them so they can be adjusted for unique driving styles or changing conditions of the driver.

“If you’re a left-foot braker, for instance, we can put something in the seat’s leg area so that you can pump it up and give your leg additional support there,” explained Gayle Gaborsky of Speed Seat Factory, Delafield, Wisconsin. “That gives you support to keep your left leg pushed over. Otherwise, you’re engaging a muscle for the whole race.”

In addition, more expensive safety equipment is typically built with greater precision, using better materials and more sophisticated designs that allow a finer



Vehicle safety equipment has improved dramatically over recent years and the best place to comparison shop is at the annual PRI Trade Show. Buyers can investigate materials and manufacturing quality, and then be able to explain those enhanced features to their racing customers.

degree of adjustment. This can be vital to both driver comfort and overall safety. For example, safety belts provide maximum protection when they're as tight as possible. So if a safety belt can be tightened more precisely, with less effort, and it stays adjusted for the duration of the race, drivers are less likely to have loose, ill-fitting belts.

“GOING BEYOND THE RULES IS NEVER A BAD THING.”

“There’s definitely a cost benefit in a more expensive restraint,” said O’Connor. “It can be difficult to understand that. The customer may just be looking at a picture on the website and asking, ‘Why is this restraint \$200 and the other one is \$120?’ A lot of it



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A 10-pound fire suppression kit is obviously more expensive than a sportsman kit with a 5-pound bottle, but it offers double the suppression and double the dispersion time, according to one industry source. In fact, for peace of mind, a racer can even consider 20 or even 40 pounds of suppression coverage.

comes down to higher-quality webbing and better adjusters.

"We've spent quite a bit of effort on restraints," continued O'Connor. "Obviously, they need to work well in an event, but they should also be easy to adjust. Our adjusters are very smooth and easy to tighten. Entry-level restraints typically use basic, all-steel roller adjusters, and they can be a little difficult to get tight. They really take some effort, with weird angles and things like that."

Safety equipment that comes into contact with a driver's body can significantly influence his or her ability to sense what the car is doing and react appropriately. According to our sources, custom-made equipment that conforms to the driver's exact physique can therefore offer a tremendous advantage. Besides increasing safety, this

can result in reduced lap times and better performance.

"If you're not supported, and you're moving around, you don't know what the car is doing because half of it isn't the car, it's just you moving in the seat," said Gaborsky. "But when you're one with the car, you know exactly what it's doing. Our seats are a custom-molded product. We're molding you in your car, so you feel everything you may not have been aware of before.

"We're so confident in the way we position you and how you're going to be able to drive better, that we say you'll be one second faster no matter what," continued Gaborsky. "Drivers will come back, and we will ask, 'Well, how was the seat?' And they will say things like, 'On my home track, I was three seconds faster.'"

BUY IT ONCE

Higher-priced safety equipment can prove to be an investment over the long haul. Cheaper equipment is generally built with lower-quality materials, which aren't designed to have the same durability as premium materials. Of course, the upfront costs tend to be higher for better gear. But our sources agreed that, over the long term, it's an investment that pays off because racers don't have to keep re-buying these newer, yet low-cost items.

"There's no real lifespan on our seats," noted Gaborsky. "They're made of multi-impact, self-extinguishing, nonflammable resilient foams, so they'll move in an incident and go right back to the original shape. They're fixable—repairable. I've got a seat here that's nine years old. Yes, the cover looked quite worn after all that time. But we recovered it, fixed and repaired anything that needed to be done, and it's fine."

At the same time, lower-cost safety equipment can demand unexpected hidden costs. For example, most off-the-shelf racing seats are built with a square profile. They require a seat insert to conform the seat to the curves of the driver's body. In contrast, more expensive contoured seats and custom-made seats don't need this added expense.

"When you have a square seat, you can't do what I can with my seats by making the

"IF YOU'RE COMFORTABLE, YOUR FOCUS IS GOING TO BE MORE ON THE TASK AT HAND, WHICH IS DRIVING THE VEHICLE."

body fit," explained Randy LaJoie of The Joie Of Seating, Concord, North Carolina. "With a cheaper seat, you have to buy an insert to make your body be in full contact with the seat. Everybody knows that if your body is in 95% contact with the seat, you can take the load better. You're not going to have pressure points. Those inserts typically cost anywhere from \$150 to \$1,500."

That said, the advantages of better safety equipment go unnoticed if drivers don't know about them, or don't know how to use these components effectively. For this reason, the expertise of pros in the industry can be vital when choosing safety gear. Custom-made equipment typically provides the highest degree of input from such experts.



"We're experts on driver seating position," explained Gaborsky. "We're not going to put you in a position you're uncomfortable with, but we know where you have to be in the car. A lot of people really don't know where they're supposed to be, so we explain the entire process with drivers when we build seats for them."

Ultimately, drivers need to find their own most effective balance between safety and cost. Like anything, a virtually unlimited amount of money can be spent on safety equipment, and that's an extreme even the best teams avoid. But before choosing low-price safety equipment, racers need to pay close attention to what they're giving up by economizing.

Good safety equipment can allow drivers to go faster, compete more effectively, and

Plenty of safety equipment may not be "required" but should be considered for optimal protection. As an example, drag racers know to purchase and install parachutes, but may overlook the value of a wheelie bar net that can prevent the parachute from going under the wheelie bars in the event of a parachute fail.



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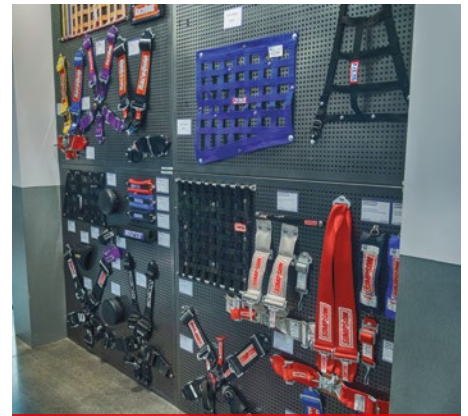
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Our sources emphasized that comfort leads to speed, and that additional money spent on it will yield heightened concentration, improved situational awareness, and faster lap times. Beyond the comfort level of using more expensive restraints, racers can also expect higher-quality webbing and better adjusters.

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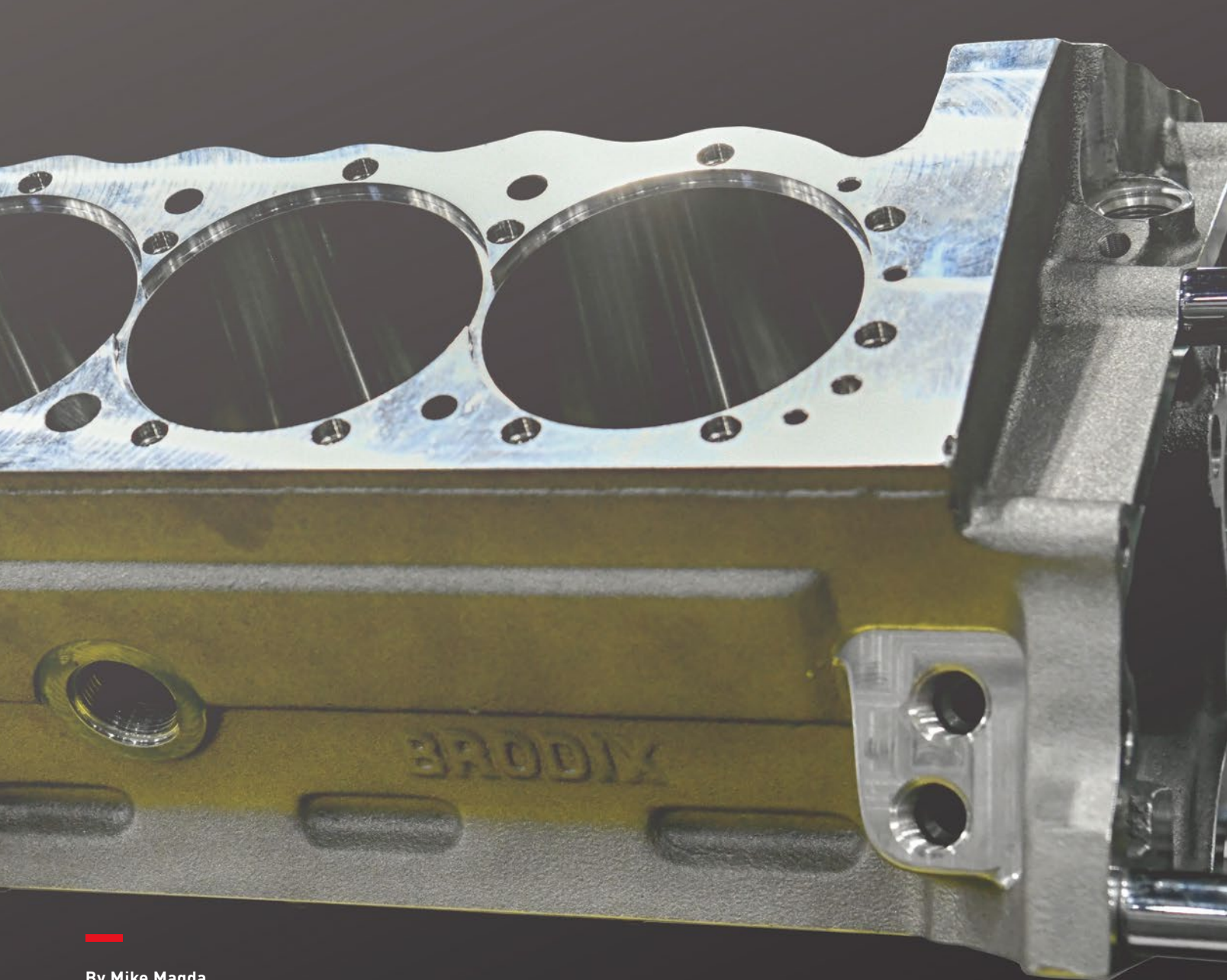
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By Mike Magda

One consistent takeaway can be drawn from talking with cylinder block manufacturers, engine builders, and race-industry observers this year: There is a significant demand for blocks. That statement can also be interpreted to mean there's an undeniable shortage of cylinder blocks in the performance market. It just depends on who's talking.

"There's definitely a shortage of blocks," said Carlos Inocencio of Concept Performance, Indianapolis, Indiana. "In fact, we just created new tooling for a big block Chevy because we have customers who cannot get BBC blocks. They've been hounding us to make a big block Chevy."

"We've had some blocks on order for over a year," added Ken McCaul of Borowski Racing Engines, Joliet, Illinois, adding

that availability of many popular blocks is returning to near-normal status. "But the specialty blocks that used to be four or five weeks out, well, I've had one order in since May 2021. Thankfully, I have customers who are understanding."

McCaul had the resources to plan ahead and make a six-figure purchase of blocks at one point. "We could see that the supply chain was becoming unpredictable," he explained. "It got worse than we thought, but fortunately, we still have 50 or 60 blocks on the shelf. It was very fortunate that we were able to do that. Otherwise, I don't know how you can make engines without engine blocks."

Aftermarket manufacturers are rebounding from the industry turmoil created by the pandemic. First, many foundries were shut

down due to COVID-19, and some didn't go back online or they severely reduced certain services following supply chain and labor challenges. Even if another foundry could be sourced, all new tooling had to be developed to work with that foundry's system.

At the same time that COVID-19 hit, thousands of racers and street enthusiasts were motivated to start new projects. Heavy demand was there, but product was hard to find. Many manufacturers had to put R&D projects on hold just to free up resources to fill orders.

"We're at about 110% capacity right now. We've had no time to develop new product because we're making blocks as fast as we can," said Mark Fretz of Brodix, Mena, Arkansas. Brodix has its own foundry for aluminum blocks and used to source

a limited number of iron blocks from an outside supplier. “We suspended all sales of iron blocks until further notice. We’re working on a new deal, but it’s probably six months out.”

“We don’t have anything new right now. I wish we did,” confirmed Jack McInnis of World Products in Louisville, Kentucky, noting his company did experience problems sourcing a foundry during the pandemic. “We’ve remained committed to getting our castings US-made and doing all the machining and finishing work here. I don’t think we have every part number available right now, but that’s probably true at any given time for anyone.”

Over at Dart Machinery in Warren, Michigan, the recovery is also bullish. “Supply is back with an increase at a minimum of 10% across all fronts,” reported Steve Rhodey. “Probably more like 20% on the iron.”

RESOURCEFULNESS

The demand for new cylinder blocks comes after a long period when racers actually sought out used, or “seasoned,” production iron blocks. Conventional wisdom at the time was that a used block would reveal any problems with core shift or porosity from the casting process before it was put into racing.

There’s the folklore of BMW Formula 1 engineers in the 1980s selecting only blocks that had been driven 100,000 miles in a production vehicle. They were building the legendary 1.5-liter turbo four-cylinder M12/13 engines that reportedly hit 1,500 horsepower in qualifying trim with 80 pounds of boost. Once a suitable block was found, it was then left outside in the elements so that the hot-and-cold cycling would stress relieve the iron.

Mythbuster rationale aside, even the best of seasoned blocks will eventually fail, and then availability diminishes quickly. That scenario led BluePrint Engines of Kearney, Nebraska, to develop its own block-manufacturing program.



Energy Manufacturing offers solid billet-aluminum blocks for LS, big block Chevy, and small block Ford applications. Alcohol Hemi and Top Fuel blocks are in the works.

“When we started pursuing more horsepower, we needed blocks stronger than those made in the 1980s by GM, Ford, and others. That really led us down the path to do our own engine blocks,” said Johnny McDevitt, noting that the company either manufactures or tools many of the parts that go into its engines. “It just helps us control our own quality.”

The thought of not having blocks for his specialty engine business led Tim Banning to purchase Keith Black Racing Engines, which traces its history back to the legendary engine builder Keith Black—who also eventually had to manufacture his own blocks to keep up with increasing horsepower demands.

“Now we operate the business to produce blocks for a dealer network that assembles engines,” explained Banning, who runs the Hemis Only engine shop and the KB operation out of Clearwater, Florida. “We also sell to a lot of independent engine builders in addition to the dealer network. One of the reasons I purchased KB was to

have a good supply of blocks.”

ONE-OFF BLOCKS

Designing and producing a one-off cylinder block is hardly an uncommon practice. All you need is an inventive mind, CAD software, and a big CNC machine. New clean-sheet designs with wider bore centers, taller or shorter decks, massive camshaft diameters and relocated lifters are available from numerous sources. One such pioneer is David Visner, who has an engine development shop in Kentwood, Michigan, and purchased a CNC horizontal milling machine a few years ago.

“We had some ideas that we wanted to try and prove out,” recalled Visner. “We thought we could build a better block and

thought it was an opportunity to fit into our program.”

Visner’s first project was a solid, 4.600-inch bore center small block Chevy. At the time, only one other company offered a similar block. Some drag racing rulebooks permit such a wide bore spacing but limit boosted engines to 500 cubic inches.

“So, we did a combination that had a 4.250-inch stroke. That put it just up right under 500 cubic inches. Then we did a taller deck deal for nitrous,” said Visner. “These were popular for grudge racers, no-prep, and so forth.”

Word of the block got out, and soon other customers with different needs approached Visner. “One of our first customers was Alan O’Brien with an AMC V8. People laugh when I tell them that we have an AMC billet combination. But it’s simply a customer who wanted that, and it was an opportunity,” said Visner. “With the late-model Hemi, they were having troubles. Tony Bischoff and Rob Goss were in X275, so we did those blocks. There again, it filled in the need, right?”

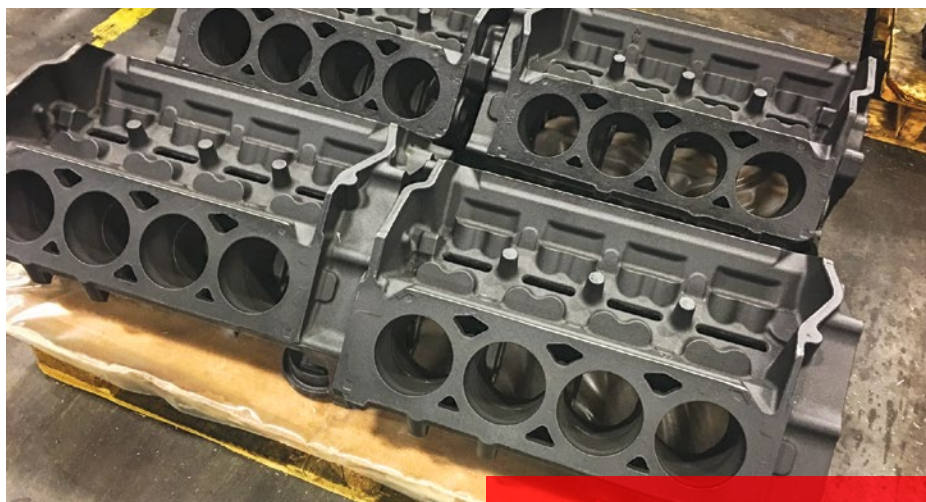
Visner used reverse engineering to develop the blocks, relying on measuring arms and laser scanners to gather the dimensions. “Then we modify it from that point to make it stronger, better,” he continued. “Most of the blocks are for power-

adder applications. The goal is always to make the block better—designing the mains in a way where it has more positive registers to eliminate cap walk and give it a lot of strength in the crankcase. It’s all about reliability.”

Another manufacturer of solid billet-aluminum blocks is Energy Manufacturing in Fremont, Ohio. The company currently offers big block Chevy, small block Ford, and LS blocks, each with standard or raised-cam options and a choice of aluminum or steel main caps.

“Now we’re working on an alcohol Hemi block and a Top Fuel block,” said Heath Norton. “We had started the Top Fuel but put it on the shelf to collect more data. We’ll be relaunching it later this year with both 2.750- and 3.000-inch mains. A Hemi variant of that block will be for Top Alcohol/Pro Mods.”

Norton admitted the Top Fuel block was delayed due to increased demand for the existing lineup during the pandemic. The Pro



Mod block will likely come out in Q3 this year followed by the Top Fuel in Q4.

“The Top Fuel block has been tested in the field with great results. COVID hit and the program stalled out because of other priorities,” said Norton, adding that there are new priorities in developing blocks. “We’re

“As a performance engine company,” BluePrint Engines “starts with a brand-new block. Everything is new,” said Johnny McDevitt. “There’s no reman content at all.”

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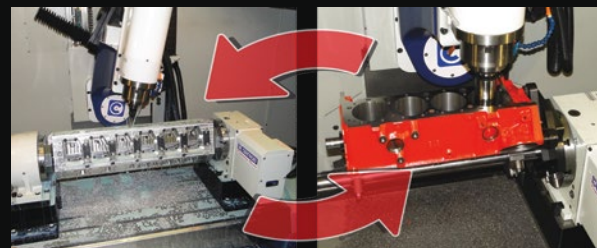
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Borowski Racing Engines recognized supply chain problems during the pandemic and responded by making a six-figure purchase of blocks, said Ken McCaul. "Otherwise, I don't know how you can make engines without engine blocks."

seeing a lot more horsepower across all platforms. This hockey-stick horsepower curve is changing how people look at engine builds and development. Everything we're doing now regarding parts is, how do you make it last? If you look at it from the 1990s when everything was naturally aspirated for the most part or a blower, everything lasted. Now it's less about weight reduction, more about stability."

"WE'RE SEEING A LOT MORE HORSEPOWER ACROSS ALL PLATFORMS. THIS HOCKEY-STICK HORSEPOWER CURVE IS CHANGING HOW PEOPLE LOOK AT ENGINE BUILDS AND DEVELOPMENT."

Complaints from racers dealing with block problems motivated Concept Performance to develop its own blocks, according to Inocencio. The company first produced the aluminum LSR with considerable reinforcements, upgraded A356 T6 aluminum alloy, and plenty of performance options. Concept is now releasing the LTR for the Gen V racers.

"A lot of basic dimensions are the same, but the accessory bolt holes are different," explained Inocencio. "We've taken the same priority oiling system from the LSR and put that into the LTR. We see these blocks making 2,000 horsepower, and the LSRs up to 2,500 horsepower."

The LTR blocks do not have active fuel management capability, so they are more suited to stand-alone race builds. They are poured in the company's foundry, which also serves many race teams and other manufacturers needing castings. That experience is helping Concept design the new BBC block mentioned earlier.

"The good thing about us is, all we've really done throughout the years is high-performance racing," said Inocencio. "I mean, we've made parts for tons of race teams, so we have the knowledge, and we have the foundry to do so. We're only limited by the hours of the day that my guys are willing to work. And we've not seen a cap on that so far."

The BBC project started in late October 2022 by researching the competition, asking racers what they liked and didn't like about specific blocks on the market.

"We then came up with our own plan," said Inocencio. "We started on the tooling around the PRI Show and had the first block at the end of April. The first blocks will go to selected builders. We have some very high-end builders who build large-horsepower engines, and that will be the testing phase.

"This block should be a beast," added Inocencio. "We're hoping to hit closer to 4,000 horsepower by the time we're done. Eventually, we'll have a tall deck and tall deck with a raised cam."

NEW LIFE FOR A BRAND

Reinvigorating the Keith Black brand started with all-new tooling that will be used at a foundry in Michigan. The goal is to eventually produce 300 blocks a year.

"We had to make new tooling," said Banning. "The tooling and whole infrastructure hadn't changed in 30 years. Everything was worn and outdated."

KB offers the Street Hemi in 4.240- and 4.490-inch bores, and it can be ordered with either 7/16- or 1/2-inch head studs. There's

also a Race Hemi block in both bore sizes with 1/2-inch studs and a raised 60-mm cam tunnel. Finally, the company offers Street and Race versions of blocks for Mopar wedge-head designs.

"We'll be reintroducing a solid blown-alcohol block soon," added Banning. "Also, we have CAD work done for the KB600, which is popular with offshore racers and truck pullers. It's basically a big block Chevy with Olds racing heads. We're getting a lot of calls on that."

KB is also considering a Gen III Hemi block, but as with the KB600 block, the market has to be evaluated to see if the sales numbers will justify the new tooling costs.

"Right now, the biggest demand is the alcohol guys wanting a solid block," noted Banning. "We're doing that as a casting. The castings are super strong. We have guys making 4,000 horsepower with the water-jacketed blocks. I'm not too concerned about the strength of those blocks at all, but if the class rules don't allow it, there's obviously a limit of where you can race it."

BluePrint Engines can produce 100 engines per day, and almost all of those engines will start with a BluePrint Engines' designed engine block. However, such a volume could not be filled by US foundries alone, especially after the COVID-19 turmoil. So the company also works with a state-of-the-art foundry in Germany to meet demand.

"We found those facilities met our standards," said McDevitt, noting that working with different foundries requires a strict quality control program when the blocks arrive at the plant for machining and assembly. "Everything that comes in the building goes into quarantine. They go through numerous inspections, both before we get them and after. Probably our smartest quality control movement is dyno testing every single engine. Even the long blocks get dyno tested."

BluePrint's block lineup covers all the popular platforms, including LS, and soon a Gen III Hemi will be added. Designing its own blocks allowed BluePrint to alter its business direction away from remanufacturing.

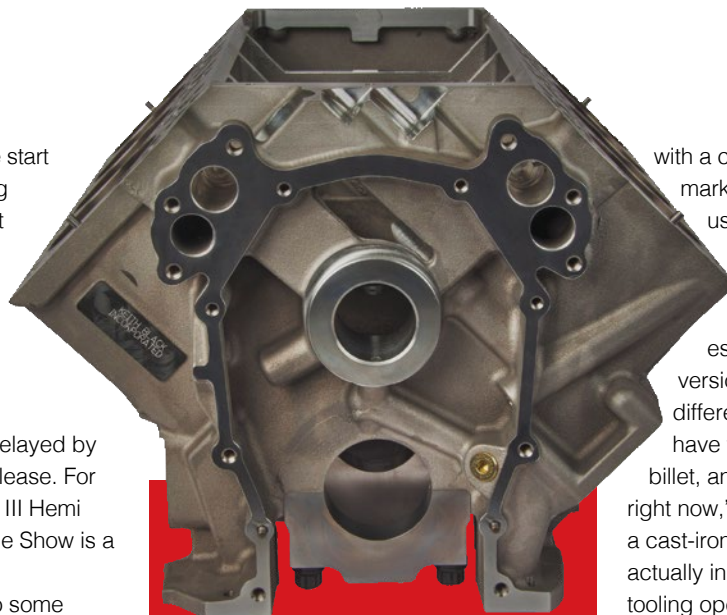
"We are a performance-based company—there's no reman content at all. As a

performance engine company, we start with a brand-new block. Everything is new," said McDevitt, adding that all the engines currently sport an iron block but that an aluminum program may be explored in the future.

DELAYS ARE ENDING

New block projects that were delayed by the pandemic are now close to release. For example, the Dart Iron Eagle Gen III Hemi block shown at the 2021 PRI Trade Show is a current priority.

"We are close. We've had to do some tooling, some engineering revamps a few times over from the original design, but we are on task to do sample trials by the end of May," explained Rhodey. "When we get about a dozen samples in, we'll get them machined, we'll cut them up, and make sure everything lines up where we want, and the cross sections are correct. We are working



Tim Banning, who now operates Keith Black Racing Engines, is reinvigorating the brand with all-new tooling that will be used at a foundry in Michigan. "The tooling and whole infrastructure hadn't changed in 30 years. Everything was worn and outdated," he said.

with a couple of engine builders in the market to build them and test them for us. We should be filling orders by the fourth quarter this year."

Another new block already drawing heavy interest, especially in social media, is Dart's version of the 2JZ. "We have a few different renditions of the block. We have the solid billet, we have a water billet, and we're taking pre-orders on it right now," said Rhodey. "Then we also have a cast-iron revised from the OE that we are actually in the final stages of getting the tooling operational now."




A few years ago, Dart created a new approach to block design with the LS Next—a block that would support LS heads but use traditional SBC components. The concept has been expanded through a number of LS Next iterations that offer a wide range of options and features. One of the latest versions is the cast-iron LS Next SHP

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READY TO RACE?

Just how finished do engine builders want to see their cylinder blocks from the supplier?

Advancements in CNC machining allow manufacturers to offer more options in cam-bearing size, lifter-bore size, fastener sizes, and more. In theory, a customer could have a race-ready block except for finish honing and final cleaning. In practice, however, some engine builders want to have full control over block preparation work, including advanced machining procedures such as O-rings.

"There are too many variables," said Brad Lagman of QMP Racing Engines, Chatsworth, California, one of the country's leading block machinists. "As far as race-ready blocks, there is no such thing."

"It's all relative to the goal," added Nicky Fowler of SDPC Raceshop, Lubbock, Texas. "Is it race ready for 1,000 horsepower or 2,500 horsepower? It's not just little things like fasteners that have to be up to par. It's the design of the block. Blocks, in general, by all manufacturers, have garnered the development over the years of what has made blocks better."

In other words, the actual fastener may be robust enough, but if there isn't enough metal in the block to support the threads, then a quality, high-priced fastener is no good with 30 pounds of boost.

Lagman agreed and pointed to the factory LS block as a perfect example. "The bulkhead underneath the deck is designed for a certain bore and 7/16-inch stud," he said. "So these guys try to put a half-inch bolt in, and you're really compromising that structure."

"Then there's the problem with turbochargers today," Fowler added. "The customer said he's only going to make 1,100 horsepower. But it's like the dial on a speaker—it's that easy to turn it up, and then they want to know why they lifted a head

gasket. Well, there's not enough clamping force."

Many engine builders have reservations about running high power levels in a cast-aluminum block and may set an arbitrary limit of 1,500 horsepower.

"It's tough to have that conversation because we've had customers making close to 3,000 horsepower and have no issues," explained Steve Rhodey of Dart Machinery, Warren, Michigan. "Then again, we'll have guys making 800 horsepower and they'll shoot the crank clean out of the oil pan. So it's hard to put a power number on a block because everyone is wanting max effort."

"That's a tough situation as a manufacturer, where the block failed because the tune-up was not correct, and it was pushing the envelope with the product in the first place," added Dart's Tony Hornak. "We continue to make upgrades where we see a failure and incorporate changes in either the way we machine an area or the way we cast it. We've made plenty of running changes throughout the history of all of these aluminum blocks."

The majority of leading engine builders would prefer to see more options or features for a block, as opposed to more finish machine work.

"Most of our resellers are machine shops, so they'll do all the final work," said Jack McInnis of World Products, Louisville, Kentucky. "We will have some customers that don't have that capability and ask about it, but at the moment we can't offer it."

"Most of our customers are high-end engine builders, and they want to do all the fitments themselves," agreed Mark Fretz of Brodix, Mena, Arkansas, noting that all the blocks are custom ordered at Brodix. "We keep nothing on the shelf so that everything we build is specific to the customer's needs."
—Mike Magda

Pro. It's constructed from 220 BHN iron and has many of the features favored by engine builders, such as priority main oiling, thick-wall siamesed cylinder bores, splayed outer bolts on the center mains, available 1/2-inch head holes, and it's clearanced for up to a 4.100-inch-stroke center-counterweighted crankshaft with steel rods.

Also new is the LS Next2 in both iron and aluminum. "These blocks offer a few options like Cleveland mains (2.750-inch diameter) and come with blind 1/2-inch mains and head-bolt holes," said Tony Hornak.

Other features of the LS Next2 block

include extending the cylinder barrels .375-inch at the bottom, priority main oiling with two lifter crossovers, choice of 4.000- or 4.125-inch bore, and scalloped water jackets. The aluminum version will be offered in three deck heights: 9.240, 9.450, and 9.750, while the iron version comes in either 9.240 or 9.450.

DRAG AND DRIVE

Although the total number of participants is relatively low compared to most motorsports, the expanding drag-and-drive movement is generating new product

technology and upgrades that allow high-powered engines to survive in a daily driving environment. Solid billet blocks are great for all-out drag racing but have limitations where engine cooling is required. There are a few water-jacketed billet blocks on the market, but they are expensive due to the extensive machining involved. That doesn't mean a solid block can't be used in drag and drive.

"With the block, most of the heat is trapped in the top end of the engine," explained Hornak. "The bottom really only has the frictional heat that's being created and which the oil typically removes. I know

of a few street cars, true street cars that are driven hundreds of miles a day that use a dry block and water heads, and they get away with it. I'm not saying that's for everyone. I'm just saying it's feasible.

"Aluminum is a pretty good heat sink. If you put an oil cooler in and have water in the

heads, you can probably cool the engine pretty well," said Norton. "Drag and drive is fraught with peril because it's usually a war of attrition, not necessarily a war of performance. It's who can get to the end, not who is the best.

"Everything in this business is trial and

error, and that's one of the things we're looking at," Norton said. "With cast heads and a billet block, you get the stability on the bottom half and still maintain cooling around the plugs and the top of the cylinder. I'm not saying it's bulletproof, but some people are trying it." **PRI**

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MEMBER CHECK-IN

NASCAR

This PRI Founding Member brings NASCAR's brand of short-track Friday- and Saturday-night racing to local venues across the US and Canada, while working to preserve the health and future of all motorsports.

By David Bellm

As one of the largest sanctions in worldwide racing, NASCAR has tremendous reach among racers, fans, and businesses that support the industry. The Daytona Beach, Florida-based sanction is celebrating its 75th anniversary this year and looks to draw on its rich tradition and history as it commemorates the milestone throughout the 2023 season.

Some of racing's most famous names are part of this legacy. Given that fact, it's impossible for NASCAR not to look to the past for inspiration. But at the same time, the sanction is looking to the future, adding technical innovations, new tracks, and even entirely different forms of racing from the classic paved-oval format.

Most of the public spotlight is on NASCAR's marquee Cup, Xfinity, and Craftsman Truck Series. But the organization also hosts its Weekly Racing Series, which adds depth and dimension to the sanction's roster, while providing a means for up-and-coming drivers to gain entry into NASCAR.



Bringing people together and fostering a connection is the value PRI brings to NASCAR and why the sanctioning organization joined as a PRI Founding Member, according to Brett Tisdale, senior manager, Weekly Racing Operations at NASCAR.

The NASCAR Advance Auto Parts Weekly Series races at more than 50 tracks throughout the US and Canada and boasts well over 10,000 members. Brett Tisdale helps manage weekly racing operations for this series, where he has worked for more than a decade. "We're your short-track Saturday night racing," he said. "We're grassroots racing—at Saturday night shows from New Smyrna Speedway to Alaska Raceway Park—all across North America."

Hosting a mix of long-term sportsman and career-oriented younger drivers, the NASCAR Advance Auto Parts Weekly Series operates as both a standalone series and as a feeder series for NASCAR's upper ranks. "It's definitely both," said Tisdale. "Everyone has to start somewhere in racing, and that usually means local racing on Friday- or Saturday-night short tracks at one point or another. But on the other side of that, we have our diehard hobbyists. They don't play golf. This is what they do for their hobby, and they enjoy the competition and camaraderie."

According to Tisdale, the NASCAR Advance Auto Parts Weekly Series is running smoothly, having finally made it through the pandemic into some sense of normalcy now. But even "normal" can be a lot of work for a series of this scale.

"With COVID-19, there were some strange things with all the shutdowns, and it was a slow crawl back," he explained. "But, to be 100% honest, this has been a great year, so far, going back to the end of last season. We've got a lot of momentum coming into this season, with 12 new race tracks coming on board, a great partner in Advance Auto Parts, and a great streaming platform with FloRacing. So I can't say there's been a lot of bumps in the road recently. NASCAR was first to lead the charge back to live



sports, and that itself should speak for the organization as a whole."

Throughout his motorsports career, Tisdale has been an avid supporter of PRI, regularly attending the Trade Show and being involved in the organization whenever possible. He noted that PRI's value to NASCAR has always been in bringing people together—fostering connection. This enables the sanction to better stay in touch with racers, suppliers, and tracks, which is invaluable as the organization navigates changing tastes and shifting attention in its core audience and the general public.

"PRI is great at bringing people together who all have the same goals," said Tisdale. "That's not just strictly NASCAR, but motorsports as a whole." Through the Trade Show, professional "racers can come and see vendors, meet sponsors, and connect with sanctioning bodies like NASCAR."

With the long history of PRI involvement for Tisdale and NASCAR as a whole, it made sense for NASCAR to join the organization when the chance to become a Founding Member was presented. Tisdale credits Tom Deery at PRI with reaching out to NASCAR and demonstrating the value of membership and what it could do for the organization. "We always looked at PRI from a vendor

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Hosting a mix of long-term sportsman and career-oriented younger drivers, the NASCAR Advance Auto Parts Weekly Series operates as both a standalone series and as a feeder series for NASCAR's upper ranks. More than 50 member tracks participate, including Colorado National Speedway, seen here with its Late Model division.

trade show standpoint," recalled Tisdale. "I've known Tom my whole 12 years here at NASCAR, so it came about organically. It was a natural fit."

The NASCAR Advance Auto Parts Weekly Series plays a key role in the development and overall health of racing throughout the US. But Tisdale emphasized that, despite the strength of the series, motorsports in America is under fire from forces that could significantly curtail the sport. To that end, he urges PRI Members to support legislation that protects motorsports, while getting out and seeing a local race whenever possible.

"I think everyone, especially us, wants to see weekly short-track racing grow. There's nothing better than being live and local. So spend your Friday or Saturday night at a short track when you can." **PRI**

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PRI TECH

USED OIL ANALYSIS

What can be revealed by performing a used engine oil analysis.

By Lake Speed, Jr.

With the cost of engines increasing and the lead time on parts getting longer, there may be no better time to start utilizing used oil analysis to protect these valuable assets.

Used oil analysis quickly and easily reveals the health of an engine. By taking a three-ounce sample of used oil from your engine, the experienced analyst can determine the amount of wear, metals, fuel dilution, and other contaminants in the oil. In fact, every Formula 1 team analyzes their oil at the race track to know when an engine or gearbox should be changed.

The process is as simple as capturing the sample in the bottle provided in the oil analysis kit, completing a form with the details of the sample, dropping the sample in the mailbox, and reading the report that comes via email. Those results can come in as soon as three days if needed. If everything in the report has green check marks, then you are good to go. If not, then you know where to look for a potential problem. It is that easy and effective.

How can used oil analysis pay for itself? By detecting particles and contaminants that are smaller than 10 microns (a human hair is 40 microns in diameter), used oil analysis can see things that we can't with our eyes.

Because motor oil moves all through the engine, picking up "souvenirs" along the way, used oil analysis takes advantage of that fact and counts these souvenirs, so it can tell us, for example, if the



bearings are wearing by counting the parts per million of the bearing materials (copper, tin, and lead) in the used oil.

In fact, a recent oil analysis revealed why one of my dad's (Lake Speed) old engines had overheated during a vintage stock car race at Daytona in 2003. It also helped explain a corresponding loss of 200-plus horsepower when we revisited the engine last summer.

CASE STUDY: DAD'S ENGINE

Even though he was able to nurse it home for the win, my dad and his team knew that his Ford C-3 NASCAR engine was in rough shape.

As mentioned, last summer we came across the dyno sheets for that engine, and I couldn't help wondering if it would still run after sitting for two decades. And if it did, how much power would it make?

The dyno sheets from 20 years ago showed the engine made a peak of 690 hp at 7,800 rpm. When we put it back on the dyno last year it only made 477 hp at 7,700 rpm, and it "pegged the needle" on the blow-by gauge.

So, it was indeed damaged. But

Dennis Borem from PME is seen here putting together Lake Speed's Ford C-3 NASCAR engine. A freshening and contemporary fluids helped it to make more power than it did 20 years ago but didn't answer the question of why it overheated. Used oil analysis provided clues.

Because oil moves throughout the engine, picking up particles and contaminants along the way, analyzing that oil can point to potential trouble spots. Here, it prevented a bearing failure by detecting this premature wear caused by debris.

where did more than 200 hp go?

We took the engine off the dyno and pulled it apart that day, but we couldn't find any "smoking gun" that would explain why the engine had overheated or why it had lost so much power.

Our next line of attack was to see whether a refresh would bring the engine's power back. Although we kept the same heads, manifold, block, crank, and rods, we did "modernize" the hone, pistons, pistons rings, and valvetrain. We also ditched the old conventional 20W-50 oil for a modern 5W-20 synthetic racing oil.

After some honing work to create the specific plateau finish required for our TiN coated rings, we put our engine back on the dyno, installed some break-in oil, and began the break-in process to properly seat the piston rings.

After 30 minutes and a few break-in pulls, the engine was making more than 750 hp. With a few more tweaks—race carburetor, race fuel, and race oil—the engine belted out 778 hp at 7,600 rpm!

Not only had we recovered the lost 200-plus horsepower, we





Analysis of the oil in Lake Speed's NASCAR Ford showed water in the oil, which came from a tiny crack in one of the intake runners. The engine is now back from the dead and making more power than ever.

gained almost 90 hp over the original build. But we still didn't know why the engine had overheated in the first place.

Fortunately, we took used oil samples from that dyno session—one from the break-in oil and another from the race oil. The analysis of those samples revealed the culprit of the overheating: We found water in both samples, and the amount of water was increasing with each sample.

The crazy thing was that no water was visible in the oil, and the blow-by was very low. However, we trusted the used oil analysis data, so we investigated the likely areas of the leak.

In the intake runner of cylinder number 3, we found a small crack that would only show up when the cylinder head was torqued down on the engine block. Now that we found the crack and fixed the leak, we had to go back to the dyno one more time.

With everything fixed, the engine made 791 hp at 7,800 rpm. Our used oil analysis had detected water levels that we could not see when we changed the oil on the dyno. This simple test not only prevented overheating the engine again, it also saved us a bunch of money. We were about to buy a new radiator, which was not necessary. Having data saved the day and a bunch of dollars!

ADDITIONAL APPLICATIONS

Beyond catching a coolant leak, I've seen used oil analysis detect the initial stages of cylinder scuffing when no other test showed

that problem.

Porsche engines from the 2000 to 2020 era came from the factory without traditional iron liners or a Nikasil plating. These Alusil (aluminum and silicon alloy) cylinders can suffer from bore scoring. When this happens, the engine will eventually begin using oil, smoking, and ultimately fail the cylinder/piston interface. By taking samples of the used oil and applying trend analysis, cylinder bore scoring can be detected. When the levels of aluminum and silicon begin to rise together, that's the sign bore scoring has begun. By catching it early, the bore scoring can be dealt with before the engine is destroyed.

I've seen oil analysis save a championship in a series that uses sealed engines. Because the engines are sealed and can't be opened for inspection between races, used oil analysis provides a faster and effective health check for these engines. A few years ago, the trend analysis showed an increase in iron, aluminum, and chromium from a sealed engine customer. Those materials indicated abnormal piston and liner wear. Based on the used oil analysis results, the team didn't run that engine in the next race. Utilizing the results, the team was able to have the engine inspected, and that inspection revealed a failure was in progress. If the team had used the engine again, it would have failed and cost that team the series championship.

That three-ounce sample and \$100 expedited analysis saved a \$35,000 engine and a championship paycheck. I'd say that's a good investment and great practice to add to your maintenance program. **PRI**

The son of a former NASCAR driver and World Karting Champion, Lake Speed, Jr. holds both STLE CLS and OMA 1 Certifications. While working for the Joe Gibbs Racing NASCAR team, he led a development team that employed the science of tribology to NASCAR engines and drivetrains. Following the sale of Joe Gibbs Driven Racing Oil (now known as Driven Racing Oil), Speed moved to Total Seal piston rings to continue the application of tribology for the purpose of improving engine efficiency.

ADVOCACY CORNER

Tracking legal, legislative, and regulatory developments impacting the racing and performance industry.

Edited by Laura Pitts

PRI's Washington, DC-based legal and advocacy teams work continuously to protect and support motorsports venues, sanctioning bodies, and businesses around the nation. We are tracking several initiatives this month, including growing support for internal combustion engine (ICE) technology and sales (plus how readers can get involved), a new bill that would bolster motorsports venues across the nation, and special events to support the industry.

SUPPORT GROWS FOR BILL DESIGNED TO PREVENT ICE BANS NATIONWIDE

Support continues to expand in the U.S. House of Representatives for H.R. 1435, the "Preserving Choice in Vehicle Purchases Act," which was introduced in early March by U.S. Representative John Joyce (R-PA), Gus Bilirakis (R-FL), Bob Latta (R-OH), and Jay Obernolte (R-CA). At press time in early May, the bill had already secured 72 co-sponsors who agree that Americans should have the right to choose the technology that powers their motor vehicles.

H.R. 1435 is a direct response to the California Air Resources Board (CARB), which plans to ban the sale of new ICE-powered vehicles by 2035. If enacted into law, the Preserving Choice in Vehicle Purchases Act would directly prevent this by restricting the U.S. Environmental Protection Agency's (EPA) ability to issue a waiver, which is required since states are currently not allowed to enact emissions standards for new vehicles.

"CARB can only implement its zero emissions vehicles (ZEV) mandate—which outlaws new ICE-powered cars in the state by 2035—if the EPA allows them to. Remember, 17 other states around the country have followed all or part of the CARB's proposals and policies to date, so preventing California's ban now would protect millions of Americans' rights to

choose their vehicle technology across the nation," said Eric Snyder, PRI Senior Director, Federal Government Affairs.

As a reminder, if the EPA issues its waiver, CARB would require 35% of new cars, SUVs, and small trucks sold in California to be zero-emissions starting in 2026; 68% in 2030; and 100% in 2035.

Motorsports—from the upper echelon of the sport to the grassroots—create jobs for skilled workers, boosts local and national economies, spurs new innovation, helps test and develop new technologies, fosters a community spirit, educates fans and the next generation, and offers "something for everyone" with its huge variety of racing vehicles, styles, classes and personalities. Also, most classes of racing rely on ICE power as their foundation.

This is why your voice must be heard. It's not too late to preserve Americans' right to ICE and alternate vehicle technology. Keep an eye on how you can support the Preserving Choice in Vehicle Purchases Act by subscribing to the weekly PRI eNewsletter at performanceracing.com and getting involved at semasan.com/join.

U.S. REP CLAUDIA TENNEY REINTRODUCES MOTORSPORTS FAIRNESS ACT

U.S. Representative Claudia Tenney (R-NY) has reintroduced the Motorsports

Fairness and Permanency Act (H.R. 2696). This PRI-supported bill, which at press time had eight co-sponsors, would make permanent the seven-year cost recovery period for investments in motorsports entertainment complexes. Currently, this tax incentive expires in 2025. The bipartisan bill would also provide certainty to businesses that invest long-term in racing facilities.

The bill is essential to race tracks around the country, and Rep. Tenney's support for Oswego Speedway in Oswego, New York, was a motivating force behind the decision to introduce the bill. "The family-owned Oswego Speedway has been operating for more than 50 years, creating jobs and promoting economic investment in our community," said Congresswoman Tenney. "The Motorsports Fairness and Permanency Act incentivizes more investments in motorsports facilities like this in New York and around the country by...allowing the industry the certainty it needs to thrive, grow, and continue creating prosperity."

TEXAS GOVERNOR SIGNS NEW LAW TO PREVENT ICE BAN

Texas Governor Greg Abbott has signed into law PRI-supported legislation (S.B. 1017) to ensure consumer choice of vehicle powerplants and fuel. The new law will prevent a county or other local government in the state from limiting access to certain types of power sources, including the internal combustion engine (ICE). This action will go into effect on September 1, 2023.

"Texas' commitment to preserving the freedom of choice in transportation is a clear victory for the motorsports businesses. With the recent law banning bans on gas- or diesel-powered cars,

Texas paves the way for continued growth and innovation in the motorsports industry,” said Christian Robinson, PRI Senior Director, State Government Affairs & Grassroots. “By upholding the right to embrace traditional fuel technologies, the state ensures that motorsports businesses can thrive, attracting enthusiasts, supporting local economies, and fostering a vibrant ecosystem for automotive enthusiasts. This legislation reinforces Texas’ position as a hub for automotive excellence, where the exhilarating roar of engines and the competitive spirit of motorsports can continue to captivate audiences for generations to come.”

Remember, the fight to protect ICE technology across the country is far from over. Get involved at semasan.com/join. For more information, contact Christian Robinson at christianr@sema.org.

NORTH CAROLINA ADVANCES BILL TO PROHIBIT ICE BAN

North Carolina has included PRI-supported amendments in its annual budget (H.B. 259) that would prohibit the state from adopting and enforcing a ban on the sale of new ICE vehicles. H.B. 259 has passed the House of Representatives and awaits consideration in the Senate Appropriations/Base Budget Committee.

“Preserving the freedom of choice in transportation fuels unleashes the power of competition and innovation, driving economic growth and creating opportunities for businesses in the motorsports industry,” said Robinson.

For the latest updates on this bill, visit <https://p2a.co/zq92FkP>. For more information, contact Christian Robinson at christianr@sema.org.

PRI PAC TAKEOVER AT INDYCAR GRAND PRIX

The mid-May IndyCar race at the iconic Indianapolis Motor Speedway (IMS) not only showcased thrilling high-speed action but also brought together industry leaders



PRI Political Action Committee (PAC) donors at the IndyCar Grand Prix.

and supporters of the Performance Racing Political Action Committee (PAC) for a memorable event. PRI PAC donors were granted exclusive access to a suite with breathtaking views of the track and pit passes, providing them with an up-close and personal experience of the adrenaline-fueled world of IndyCar racing.

As PAC supporters cheered on their favorite drivers, they reaffirmed their commitment to the industry’s growth and advancement by raising over \$30,000 for the PRI PAC. The PRI PAC plays a crucial role in advocating for the motorsports industry’s interests in the political landscape. Through voluntary contributions from individuals, PRI PAC provides financial support to candidates who champion policies and legislation that promote the growth, innovation, and success of the motorsports industry.

“The only way we can fight back is together. PAC events such as this are essential to fostering the relationships and connections needed for industry leaders to ensure a strong, unified voice,” said Alicia Steger, PRI PAC Manager, Government Affairs.

For more information on how to support these efforts or attend similar events, contact PAC Manager Alicia Steger at alicias@sema.org.

PRI HOSTS MEMBERS FOR SPECIAL INDY EVENT IN MAY

PRI hosted its valued members during an event in Speedway, Indiana, on May 25, ahead of the legendary Indy 500 later that weekend. Along with prizes and giveaways, attendees were treated to an open house of the 42,500-square-foot facility that houses the PRI Membership team alongside the working Bryan Herta Autosport race shop and a Bell Helmets facility.

Members, keep an eye on your Member Monday newsletter for upcoming events and gatherings. Meeting space is also available for current members. For more information, contact PRI Membership Sales Manager Julie Freier at julief@performanceracing.com.

PRI Membership is available to both businesses and individuals. For more information, including how to join, visit performanceracing.com/membership.



INDUSTRY NEWS

STRANGE ENGINEERING FOUNDER BOB STANGE, 84

Henry Robert “Bob” Stange, the founder of Strange Engineering, has passed away. He was 84.



Bob Stange

Stange started the high-performance and drag racing steering and suspension parts manufacturing company in 1964. He was inducted into the International Drag Racing Hall of Fame in 2010.

“My father loved this way of life in the racing community. The racing, the industry, the innovation, and most of all, the people who make it all come alive,” said Stange’s son Jeff.

USAC HALL OF FAMER GALEN FOX, 84

Champion car owner, mechanic, engine builder, and crew chief Galen Fox has passed away. He was 84.



Galen Fox

Fox was inducted into the National Sprint Car Hall of Fame in 2002 and the USAC Hall of Fame in 2021. He was also honored with USAC’s Mechanical Achievement award in 2003.

HALL OF FAMER, FORMER VOLUSIA TRACK OWNER DICKIE MURPHY, 81

Veteran race track and car owner Dick “Dickie” Murphy has passed away at the age of 81.

Murphy was the longtime owner and promoter of Volusia Speedway Park in Barberville, Florida, and helped propel Florida Speedweeks to today’s legendary event. He purchased the track in 1982.

Murphy was inducted into the National Dirt Late Model Hall of Fame in 2020.

WILWOOD RACING DIVISION REP. CARL BUSH, 67

Wilwood Engineering—the Camarillo, California-based designer and manufacturer of high-performance disc brakes and components—has announced the passing of Carl Bush, the longtime racing division representative for the company. He was 67.



Carl Bush

Bush first joined Wilwood in 1998. He previously worked at AFco Racing Products, where his brother, Mark Bush, helped found the company with Jim Scales.

SRI INDY ACQUIRES SPA TECHNIQUE FIRE SUPPRESSION

SRI Indy—the Brownsburg, Indiana-based provider of high-performance racing parts and accessories and a subsidiary of SRI Performance with headquarters in Charlotte, North Carolina—has announced that it has acquired the exclusive distribution rights for SPA Technique fire suppression systems in the US, Mexico, and Canada.

UNSER RACING MUSEUM, SPEEDWAY MOTORS MUSEUM OF AMERICAN SPEED ANNOUNCE MERGER

The Unser Racing Museum in Albuquerque, New Mexico, and the Speedway Motors Museum of American Speed in Lincoln, Nebraska, have announced plans for a merger. As a result, the Unser Racing Museum will be relocated to Lincoln.

The Speedway Motors Museum of American Speed will honor existing Unser Racing Museum memberships and continue to showcase engraved brick sponsors in the new location. In addition, new Unser and Pikes Peak displays are also slated to be available for viewing in 2024.

TRACKHOUSE ANNOUNCES OWNERSHIP OF NC KARTING MOTORPLEX

Trackhouse Entertainment Group—the owner of the NASCAR team operated by Justin Marks and Armando Christian Pérez (Pitbull)—has announced ownership of the kart racing facility in Mooresville, North Carolina. The 7/10-mile paved track, formerly GoPro Motorplex, is now known as Trackhouse Motorplex.

TRAVIS PASTRANA, THRILL ONE SPORTS & ENTERTAINMENT UNVEIL NEW NITROCROSS BRAND

Nitro Rallycross—the motorsports property created by Travis Pastrana and Nitro Circus—has officially become Nitrocross. The change reflects the dynamic property’s evolution, having grown beyond its rallycross roots into a unique discipline “unlike anything else in motorsports,” organizers stated.

BENDPAK ANNOUNCES NEW AGOURA HILLS, CALIFORNIA HEADQUARTERS

BendPak—the manufacturer of wheel service equipment, pipe benders, air compressors, and the QuickJack portable car lift—has new global headquarters in Agoura Hills, California.

The company will move to a 23,000-square-

foot net-zero energy building on a 15-acre property just west of Los Angeles.

SPAL AUTOMOTIVE ANNOUNCES NEW MANUFACTURING, OFFICE FACILITY IN ANKENY, IOWA

SPAL Automotive—the designer and manufacturer of high-quality electric fans, blowers, and fluid pumps for vehicles and equipment—has announced plans to construct a state-of-the-art manufacturing and office facility in Ankeny, Iowa.

SPAL USA, the North American subsidiary of SPAL Automotive Srl, has been providing products from Italy since 1989. The company's newly planned facility will join its current 40,000-square-foot sales and distribution center in Ankeny.

Construction is expected to begin this year, with the first of three possible stages set for completion in early 2025.

MEYER DISTRIBUTING ANNOUNCES BELLINGHAM, WA LOCATION

Jasper, Indiana-based Meyer Distributing has announced the addition of its Bellingham, Washington, cross-dock. The facility will have access to a direct feed from Meyer's Hermiston, Oregon, distribution hub.

BREMBO COMPLETES MEXICAN PLANT EXPANSION, ANNOUNCES GLOBAL EXPANSIONS

Brembo—the Italian designer and manufacturer of high-performance braking systems with a North American office in Plymouth, Michigan—has completed its latest plant expansion in Escobedo, in the state of Nuevo León, Mexico. The 322,917-square-foot expansion doubles the facility's aluminum caliper production output and is expected to create 500 new jobs through 2027.

In addition, Brembo announced it would expand its brake system manufacturing plant in Nanjing, China, which is expected to begin in the second half of 2023.

Brembo also announced plans for a cast iron foundry in Dąbrowa Górnicza, Poland,

where it currently houses a facility for brake disc production and sales.

BOSCH ANNOUNCES NEW BOSCH MOBILITY BUSINESS, PRESIDENT OF AMERICAS REGION

Bosch has announced a realignment of its global mobility business, which, beginning in January 2024, will be known as Bosch Mobility. A significant focus of the realignment is strengthening the regions to “serve existing and new customer needs even better and faster with customized technologies and solutions,” a company rep stated.

In addition, a new regional board led by Paul Thomas was appointed to oversee the mobility business in North and South America. Thomas will manage technology, strategy, and sales for the Americas region, including the Farmington Hills, Michigan, subsidiary.

FORMULA E ANNOUNCES LEADERSHIP TRANSITION

The Board of the ABB FIA Formula E World Championship has announced that Jamie Reigle will step down as CEO and will be replaced by Jeff Dodds.

Reigle—who oversaw the introduction of a new sporting format, the launch of the GEN3 car and more—will move to an advisory role for the remainder of the season.

HOLLEY APPOINTS MATTHEW STEVENSON AS PRESIDENT, CEO

Holley—the platform for performance automotive enthusiasts based in Bowling Green, Kentucky—has announced Matthew Stevenson as its new president and CEO. He replaces Interim President and CEO Michelle Gloeckler, who will remain with Holley as a board member.

NASCAR ANNOUNCES PINTY'S SERIES PROMOTIONS

NASCAR has announced the promotion of Doug Gonder to series director of the NASCAR Pinty's Series. He previously served as assistant series director under Cherie Putnam, who retired at the end of last season.

HIGH PERFORMANCE METALS FOR THE RACING INDUSTRY



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ALI RUSSELL PROMOTED TO MANAGING DIRECTOR OF EXTREME E

Officials with Extreme E—the off-road racing series featuring electric SUVs and founded by the same team behind Formula E—have announced the promotion of Ali Russell from chief marketing officer to managing director. He will oversee all aspects of the series' structure, including commercial operations, race logistics, and stakeholder management.

SPEEDWAY MOTORS PROMOTES JOSH DURHAM, JEREMY ORLOWSKI

Speedway Motors—the Lincoln, Nebraska-based manufacturer, retailer, and distributor of automotive parts and racing products—has announced the promotions of Josh Durham and Jeremy Orłowski.

Durham is now chief financial officer (CFO), and Orłowski is the director of purchasing.

MAHLE MOTORSPORT HIRES ROB KINNAN AS MARKETING MANAGER

MAHLE Motorsport—the performance division of Fletcher, North Carolina-based MAHLE North America—has announced the addition of former HOT ROD Editor Rob Kinnan as the company's marketing manager.

WILWOOD ENGINEERING HIRES BRIAN COX AS MEDIA RELATIONS MANAGER

Wilwood Engineering—the Camarillo, California-based designer and manufacturer of high-performance disc brakes and components—has appointed Brian Cox as its new media relations manager. Cox comes from MotorTrend Group, where he worked on HOT ROD.

NITERRA NA NAMES DIRECTOR OF INFORMATION TECHNOLOGY

Niterra North America, formerly known as NGK Spark Plugs (U.S.A.), has announced the appointment of Hemant Damani as the director of Information Technology (IT). Damani, a Niterra associate for over two

years, will lead the IT function and manage the infrastructure, technologies, and data that enable digital transformation.

MASTERCAM'S CNC SOFTWARE APPOINTS NEW MARKETING DIRECTOR

CNC Software—the developers of Tolland, Connecticut-based Mastercam—has announced Liz Shovlin as its new marketing director. She began her career working with a Mastercam reseller.

PAUL 'ZIGGY' HARCUS HONORED WITH ROBIN MILLER AWARD

Longtime IndyCar crewmember Paul "Ziggy" Harcus of Andretti Autosport was awarded this year's Robin Miller Award, which honors an "unheralded individual who has devoted a significant portion of their life to IndyCar racing while bringing unbridled passion and unrelenting work ethic to enrich the sport."



Paul "Ziggy" Harcus

Harcus was celebrated during a ceremony as part of the Miller Lite Carb Day at Indianapolis Motor Speedway. Harcus is the first Robin Miller Award winner who is not a media member.

POWER AUTOMEDIA APPOINTS THREE KEY HIRES

Power Automedia—the media and automotive digital publishing company based in Temecula, California—has announced three new sales and editorial hires.

Sean Lea and Jennifer Petraitis have joined the company, both as business development associates. Meanwhile, Chris

Friend will help create content for Power Automedia's YouTube and video content segment named Power + Performance.

KYLE PETTY CHARITY RIDE RAISES \$1.7 MILLION FOR VICTORY JUNCTION

Officials with the Kyle Petty Charity Ride Across America have announced it raised more than \$1.7 million following the 27th Anniversary Ride, which took place on April 29–May 5. Funds directly benefit Victory Junction, a camp in Randleman, North Carolina, serving children with chronic medical illnesses.

MOTION ANNOUNCES TWO EXECUTIVE PROMOTIONS

Motion Industries (Mi)—the Birmingham, Alabama-based distributor of maintenance, repair, and operation replacement parts and industrial technology solutions—has announced the promotions of Joe Limbaugh to executive vice president/chief operations officer (COO) and James Howe to executive vice president/chief commercial officer (CCO)/chief technology officer (CTO).

Both will continue to report to Motion President Randy Breaux.

PIKES PEAK INT'L HILL CLIMB PARTNERS WITH USAC

The Broadmoor Pikes Peak International Hill Climb (PPIHC), brought to you by Gran Turismo, has announced a partnership with the United States Auto Club (USAC).

While the PPIHC remains a self-sanctioned motorsports event, USAC will provide added safety oversight and best practices, resulting in streamlined operations and cost savings for the historic "Race to the Clouds."

USAC had previously served as the sanctioning body for PPIHC for nearly 25 years from 1956 to the early 1980s.

PORSCHE, DELUXE CORPORATION EXPAND FEMALE DRIVER DEVELOPMENT PROGRAM

Porsche Motorsport North America (PMNA) has announced Deluxe Corporation

has expanded the Porsche Deluxe female driver development program with two more drivers, Chloe Chambers and Madeline Stewart.

Chambers and Stewart will receive a full-season entry with Sabré Cook in the Porsche Sprint Challenge North America by Yokohama, a set of Yokohama race tires each event weekend, as well as direct access to PMNA competition advisor and Porsche Junior Program North America driving coach Patrick Long.

NASCAR DIVERSITY INTERNSHIP PROGRAM ANNOUNCES 2023 CLASS

NASCAR has announced its 22nd NASCAR Diversity Internship Program (NDIP) class of 37 undergraduate and graduate students who will join a 10-week program that offers hands-on experience across various roles in the motorsports industry.

The 2023 NASCAR Diversity Internship Class

Intern Name/ Department/ School

- Abhishek Cherukara/ NASCAR Aerodynamics/ Cranfield University
- Alexandria Samuel/ Sonoma Raceway/ Columbia University
- Angelina Davila/ NASCAR Communications/ DePaul University
- Aniya Misher/ Joe Gibbs Racing/ North Carolina A&T State University
- Ava Hartsell/ Hendrick Motorsports/ Virginia Tech
- Brisia Briones/ NASCAR Sourcing and Procurement/ University of Houston
- Chandler Love/ NASCAR Human Resources/ University of Miami
- Daniel Zakhary/ NASCAR Public & Govt. Affairs/ University of Florida
- Darren Henderson/ NASCAR Multicultural & Youth Marketing/ Temple University
- DeNashia Robinson/ NASCAR Legal/ Howard University School of Law
- Didier Attipou/ NASCAR Corporate Accounting/ Morehouse College
- D'Vante Siler/ NASCAR Sales Academy/ Fort Valley State University
- Elijah Patterson/ NASCAR Marketing Services/ Johnson C. Smith University
- Elizabeth Yaboni/ NASCAR Social Responsibility/ Columbia University
- Ester Ferreira/ NASCAR International/ Nova Southeastern University
- Gift Pendleton/ Chicago Street Race/ University of Central Florida
- Haley King/ Worldwide Express/ Prairie View A&M University
- India Martin/ NASCAR Consumer Strategy/ Oglethorpe University
- Jayden Carrillo/ NASCAR Brand Marketing/ University of South Carolina
- Juliana Ashrifeh/ NASCAR Social Media/ Wayne State University
- Juliet Campbell/ NASCAR Productions/ The Ohio State University
- Lauren Allsbrook/ 23XI Racing/ University of North Carolina at Charlotte
- Lauryn Carlton/ NASCAR Partnership Marketing/ Elon University
- Leticia De Freitas/ Rev Racing/ Savannah College of Art & Design
- Maya Ellison/ Motor Racing Network/ Florida A&M University
- Meg Cabras/ NASCAR Licensing & Consumer/ Florida State University
- Miranda Romero/ The NASCAR Foundation/ New Mexico State University
- Nicolas Caldwell/ NASCAR National Sales/ West Virginia University
- Niraj Panthi/ NASCAR Media and Event Technology/ Wingate University
- Oscar Casasola/ NASCAR Gaming and Esports/ University of Maryland
- Phalgunmihir Eyunni/ Hendrick Motorsports/ Florida State University
- Phillip Hall/ NASCAR Weekly Racing Operations/ St. John's University
- Salaah Khan/ NASCAR Sports Betting/ The George Washington University
- Sidney Brown/ Team Penske/ Bethune-Cookman University
- Syeda Ghazal Qadri/ NASCAR Research and Insights/ Boston University
- Tyra Blue/ NASCAR Diversity & Inclusion/ Briar Cliff University
- Victor Jackson/ Roush Fenway Keselowski Racing/ Florida State College at Jacksonville

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US 7,726,919 B1 | US 17879818 | US 17892165 (Patents pending)



RUBI SURF 1.7 SPECIFICATIONS

X-axis workhead travel: 42 inches (1065 mm)
Cylinder head length: 34 inches (865 mm)
Cutter head diameter: 14.0 inches (356 mm)



Caterpillar C15
Cylinder Head

RUBI SURF 1.9 SPECIFICATIONS

X-axis workhead travel: 56 inches (1400 mm)
Cylinder head length: 47 inches (1200 mm)
Cutter head diameter: 16.5 inches (420 mm)



SCAN TO WATCH
Rubi Surf Video

 **YouTube**
Robins Machines

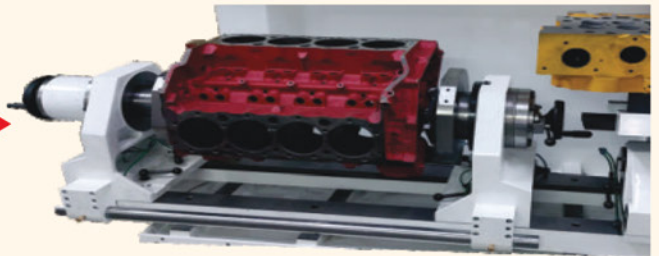
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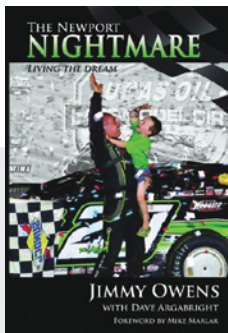
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The Newport Nightmare is 280 pages of events and places that led Jimmy Owens to become a beloved racer in dirt late model competition. Owens pulls back the curtain to share the highs and lows of his eventful career, providing readers with a rare behind-the-scenes look at a racing life and beyond.

Contact: 317-219-5716



DESIGN ENGINEERING, INC.

designengineering.com

DEI's AN-sized Heat Shroud Sleeves for 20, 16, and 12 AN sizes are an ideal way to reduce heat strain and abrasions on lines, hoses, and wires, damage that could result in failure of all three of these components. They are constructed from a high-temperature rated, glass-fiber fabric with an insulating inner layer and a heat-reflective outer surface.

Contact: 800-264-9472



EDELBROCK

edelbrock.com

The Victor CNC 11-degree six-bolt cylinder heads for GM LS3 applications are designed for high-horsepower, naturally aspirated and boosted applications. These heads are compatible with the GM LSX block and all aftermarket iron or aluminum six-bolt per cylinder LS race blocks. The six-bolt design offers increased clamping capacity over the standard four-bolt configuration and improves head gasket sealing.

Contact: 800-416-8628



HOLLEY

holley.com

Holley EFI 220 lb/hr fuel injectors feature a precision lapped disc valve, high-quality brass windings, and high-temperature O-rings. These injectors are made to provide linearity with no discernible "bounce" at low pulse widths. Features include minitimer connectors (EV1/Bosch Style), low impedance for use with peak and hold drivers, supports over 3,000 horsepower, four-hole orifice – pencil cone spray pattern, and more.

Contact: 866-464-6553



MAHLE MOTORSPORT

mahlemotorsports.com

MAHLE Motorsport offers four new performance cast PowerPak piston sets for the 6.0L and 6.4L Ford Powerstroke. Developed for diesel motorsports competition, the 6.0L pistons are based off the 2004 and newer design, and the 6.4L pistons are based off of the MaxxForce design that provides strength and durability. The 6.0L PowerPak set is cast from MAHLE's proprietary M124 alloy and the 6.4L Powerstroke set is cast from M142 alloy. Both are designed for a 4.134 stroke and 6.929 rod.

Contact: 888-255-1942



MELLING PERFORMANCE

melling.com

The 48560T-9 Timing Set features a 250-inch seamless single roller chain, three-bolt billet steel cam sprocket, one-piece Torrington thrust bearing, billet steel crankshaft sprocket, heat-treated nine keyway adjustable, center distance 4.890 inches, and more.

Contact: 517-787-8172



MOROSO

moroso.com

This valve cover fits big block Chevrolet Reher-Morrison Raptor 12-degree and Profiler Hitman 12-degree spread port cylinder heads. It's fabricated aluminum construction with billet rail, 2-7/8 inches tall, is designed with a broad, flat surface for logo engraving, and can be polished, chromed, or powder coated.

Contact: 203-453-6571



PROFORM PARTS

proformparts.com

All three sizes of the Aluminum Cast Gray Bowtie Differential Covers include two bearing main cap stabilizing bolts, fluid capacity plug, magnetic drain plug, main cap adjusters, and mounting hardware. Features include increased gear life, decreased ring deflection, and CNC-milled Chevrolet Bowtie emblem.

Contact: 586-774-2500



STILETTO STEERING SYSTEMS

pro-werks.com

The Gen 5 universal Stiletto small boxes offer more ratio choices to meet steering response needs. For ease of changeover, the pinion location relative to the mounting bolt holes has been standardized on all new Gen 5 small boxes. All aluminum components are anodized for corrosion resistance. Additional features include increased rigidity, decreased weight, secure boots, and optimized performance.

Contact: 231-873-9252



SUMMIT RACING

summitracing.com

The Pro Hemi non-MDS camshafts delete the MDS feature but retain variable valve timing (VVT). The cam cards include the degrees of cam advance or retard that are designed into the camshafts so users can install the cam dot-to-dot and know valve events are correct. The cards also have the OEM cam part numbers to help users choose the correct cam for the vehicle.

Contact: 800-230-3030



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Contact: 408-448-2001



VORTECH SUPERCHARGERS

vortechsuperchargers.com

The 2021 Ford F150 5.0L Tuner Kit features include billet aluminum and steel supercharger mounting bracket assembly with idlers, drive belt and all high-grade hardware, V-3 Si-Trim supercharger (self-lubricated) with 3.40-inch drive pulley, air inlet assembly includes mandrel bent 3.5-inch aluminum tubing, high-flow roto molded duct, and more.

Contact: 805-247-0226



WEDDLE INDUSTRIES

weddleindustries.com

This Weddle S4/S5 throw out bearing adapter is made from an existing late VW T/O bearing shell that's machined and welded in a custom sleeve. The adapter can use a flat face or a convex face T/O bearing depending on the clutch being used. The new design is a direct replacement assembly, using the standard clutch release mechanism, and has been tested against Stage 4 Kennedy pressure plates.

Contact: 805-562-8600



WILWOOD

wilwood.com

Wilwood offers a new caliper and rotor design for the Polaris RZR UTV platform from 2014–2023. Matched UTV6 six-piston calipers in front and rear with dynamically mounted steel floating rotors reduce piston knockback, improve thermal capacity, and fit most 15-inch or larger wheels.

Contact: 805-388-1188

PERFORMANCE INDUSTRY REPS

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SOCIAL STATUS

A closer look at how racing and performance industry members are using social media to boost engagement, with a specific focus this month on BeReal.

One of the newest and rapidly growing social media trends right now is BeReal. This app is simple as it notifies users at a random time once a day to “be real.” At that time, users utilize the front and back camera on their phones to take a photo of what they’re doing at that moment without the use of filters or editing. Ideally this is supposed to make this social media platform feel more authentic than others out there.

As of May 2023, the BeReal app has been installed more than 85 million times worldwide and has over 20 million active daily users. Currently, BeReal doesn’t allow formal advertising or use of the app for commercial purposes, but marketers can still find creative ways to use this platform to promote the company and build a community.

BeReal appeals largely to the younger

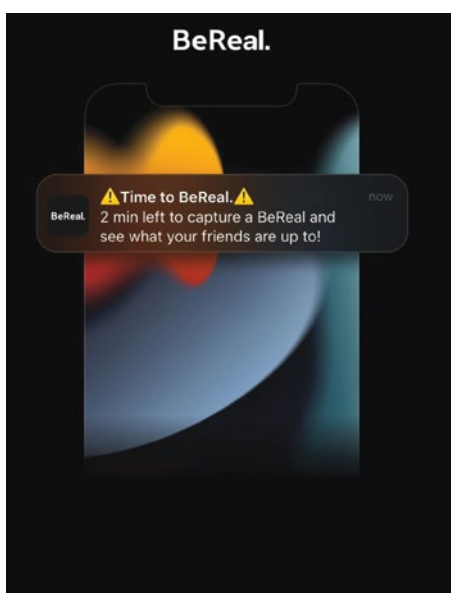
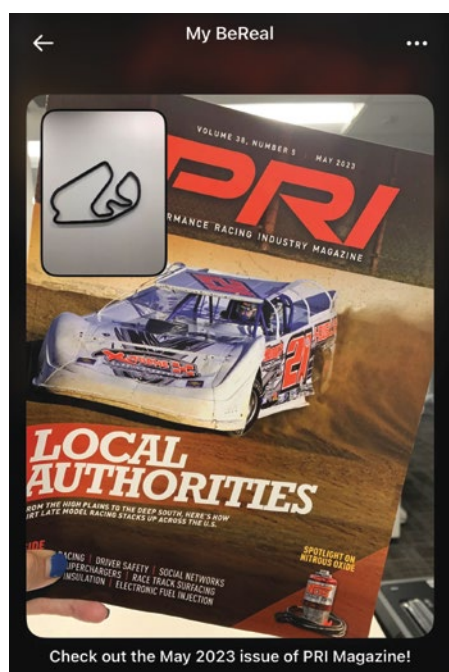
Gen Z crowd, so if that’s not an audience you’re trying to reach, you may not want or need to be present on this app. However, if you’re looking to attain a new customer base, BeReal might just be what you need. This app will make you think outside the box and get creative to cater your content to the youthful generation.

If you’re a manufacturer, distributor, or retail shop, one smart way to engage on the platform is to share exclusive coupon codes, information, or product releases to your audience. Since you won’t be able to predict when the platform will send the daily notification, this doesn’t require much planning and can trigger new sales or increase website traffic.

Giving a behind-the-scenes look at the company is another way to utilize BeReal. This gives you some personality and builds trust with the customers by

showing the human side of the business. Along with highlighting employees, organizations can feature various operational procedures. If you’re a performance parts manufacturer, focus on different aspects of the manufacturing process. If you’re an engine builder, show off some of the builds you’re working on. If you’re a race team, post your schedule or race cars being worked on, and so on.

The main thing is to be genuine. In a world full of filters and editing, people are looking for more and more authenticity these days. Unmask your business and give the followers a real look at what makes your company unique. And as usual, get creative with your marketing strategy on BeReal. Put together a plan prior to downloading the app, and have fun with it! **PRI**



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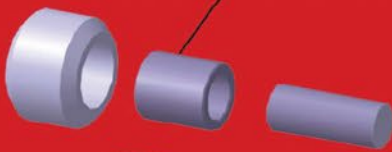


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