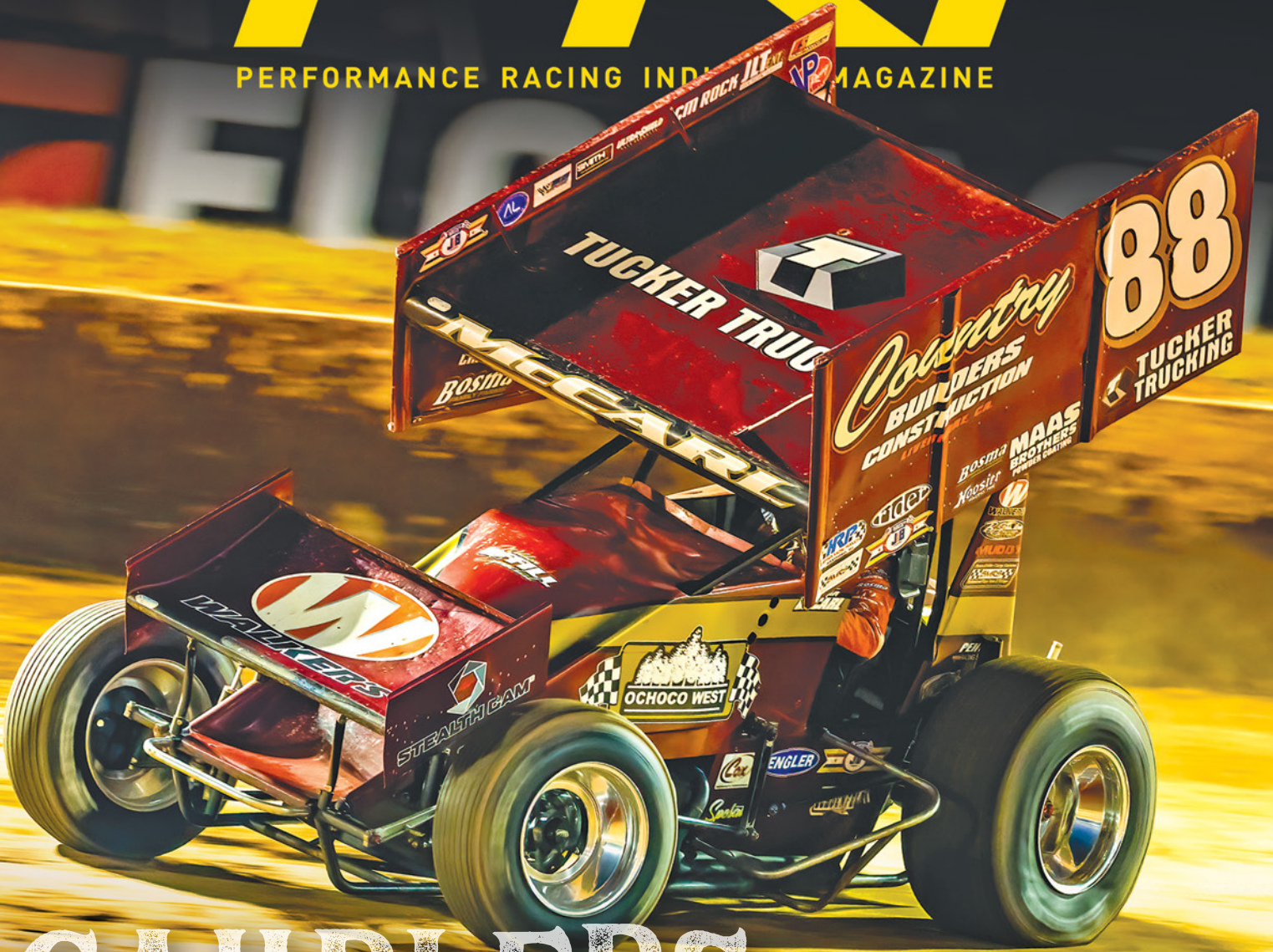


# PRR

PERFORMANCE RACING INDUSTRY MAGAZINE



# GAMBLERS & OUTLAWS

THE WINNERS, LOSERS, AND QUESTIONS SURROUNDING HIGH LIMIT RACING'S NATIONAL BID

## INSIDE

MIDGET RACING | AUTONOMOUS RACE CARS | GRUDGE DRAG RACING  
CAMSHAFTS | OILS & LUBRICANTS | USED RACE PARTS | & MORE

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**ON THE COVER**  
Cover Photography:  
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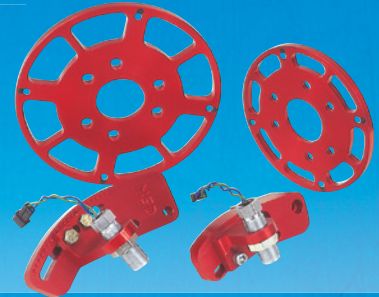
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Cylinder head size (in Roll Fixture)  
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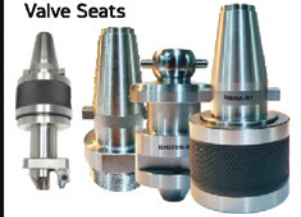
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Cylinder Head Size  
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**ROBINS GUIDE HONING**

## FROM THE EXECUTIVE EDITOR

Autonomous race cars are not larger versions of RC cars.

This may sound ludicrous to our readers, especially the engineers. Yet it's one of many misconceptions encountered by the team at the Indy Autonomous Challenge (IAC), as described in this month's Special Report about autonomous race vehicles, which begins on page 28.

While walking the aisles of Lucas Oil Stadium at the 2023 PRI Show, I finally had the opportunity to examine the IAC AV-21 chassis built by Dallara—modified from their original design for the Indy Lights Championship—that competed in the Indy Autonomous Challenge from its first race in 2021 at Indianapolis Motor Speedway through 2023. The technology in the race car amazed me, especially the lidars, radars, cameras, and GPS signal antennas throughout the vehicle, as described by Gina O'Connell. But the technological marvel of what has been accomplished through the previous chassis has been upgraded to a completely new level with the IAC AV-24 chassis that debuted at CES (Consumer Electronics Show) in Las Vegas earlier this year, and then put on its own show at Las Vegas Motor Speedway.

Race format previously consisted of two vehicles on track at the same time. IAC President Paul Mitchell described one instance when two teams battled for track position. The typical AI cars make a pass by accelerating, going around the other car, then moving back in line once the other car has been cleared. However, during the semifinal round in Las Vegas, a German team began a pass to overtake the other car operated by a Korean team. The result was an actual battle for position as they ran wheel-to-wheel going through Turn 1, Turn 2, and then completing the pass, which was the first time that had occurred between autonomous AI drivers. Now with the AV-24, three cars take to the



**MEREDITH KAPLAN BURNS**  
meredithb@performanceracing.com

track simultaneously. As night enveloped the IAC event at LVMS in January, the track lights were turned off and the cars could be identified by LED lights, but no headlights. Under the canopy of darkness, one car passed another. With AI drivers, who needs lights?

Fascinating stuff. But the goal is not to send race car drivers to the unemployment line. Instead, this technology will be used to improve safety in autonomous systems for road cars, while training future engineers and ultimately drawing more eyeballs to auto racing.

Along the same lines of bettering our sport, and to further advance the PRI brand, we welcome Michael Good, who was just named PRI President. While recently speaking with Michael, he told me, "I can clearly see the path ahead and understand what it will take for PRI to become an even more integral partner to the industry." To learn how he plans to do so, look for my interview with him in the Newly Appointed column in next month's edition. **PRI**

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Lily Huang

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# FEATURED VEHICLES

This month's featured vehicles include a tribute to one famed test driver while the other pays homage to two German marques in one combined badge.

## 2012 BMW Z4 (E89) GT3

**JASON BACON** | FORT LAUDERDALE, FLORIDA

**RACE SERIES/CLASS:** Time Attack and exhibition events

**ENGINE:** GMS Stage 3 M120 V12 engine built by Gooichi Motors in Loxahatchee, Florida

**CAR:** Built by Gooichi Motors

**FEATURES:** ProCharger F1x blower, Celeritech headers, Air Lift Air Ride suspension, Öhlins coilovers, Wilwood brakes, Fifteen52 three-piece center lock wheels on Toyo Proxes RR tires, Haltech EMS, Braille Battery, five-axis ported heads, oversized valves, billet cams, long rod rotating assembly, full billet dry sump

**FACTS:** Everything in the engine has been developed by Gooichi Motors and was built to handle 1,800 horsepower. The car color is a silver/Mercedes F1 Petronis green color scheme. "We have been known to upset purists, so we thought it was the perfect color scheme on a Mercedes-powered BMW race car. The emblems on it have even been CNC machined to be half BMW, half Mercedes logo," said Sam Morris of Gooichi Motors.





## 2003 DODGE VIPER COMPETITION COUPE GTC-VCC#15

MANSEN WAY | CORYDON, INDIANA

**RACE SERIES/CLASS:** SCCA, NARRA, Viper Racing League GT, TT

**ENGINE:** Dodge Viper V10 built by Performance Vehicle Operations (PVO)

**CAR:** Built by Performance Vehicle Operations (PVO), sold under SRT

**FEATURES:** Tremec T56 six-speed manual transmission, AP Racing air jacks, BBS three-piece wheels, Hoosier tires, StopTech two-piece rotors, Brembo calipers, RaceTech seats, Moton adjustable dampers, MoTeC data acquisition system, carbon fiber composite body panels, Polycarbonate windshield and rear window

**FACTS:** This is No. 15 of 125 built. It features Prototype #4 livery as a tribute to test driver Tommy Archer and his contribution to make the production Viper Competition Coupes (VCCs) safe and strong enough to win titles across the world. "It's surprising how few people even know these cars were purpose-built race cars by Dodge and sold with a Bill of Sale only, not street legal," said Mansen Way.

# ASK THE EXPERTS

## SELLING USED RACE PARTS

Establishing a marketplace for second-hand equipment can create new revenue streams for racing businesses and help teams recoup upgrade costs.

By Bradley Iger

Rising costs are a well-understood pain point across a wide range of motorsports disciplines, and the expenses involved in acquiring must-have parts and equipment play no small role in the equation. Although used gear comes with its own inherent caveats, the commonality of parts and equipment between series and classes offers an opportunity for teams that are updating their race programs to ease the burden of investment through consignment. For the racing businesses that provide these consignment services, it presents a new revenue stream with customers who're often already on the hunt for specific types of products.

"We were originally a retail outlet, and we wholesaled items because we manufactured things for different companies," explained Butch Hatton of Race Parts Liquidators, Crown Point, Indiana. "Over time, more and more people came to us wanting to put used stuff up for sale in the showroom, and interest in consignment kept growing to the point where we added a department dedicated to the used stuff. As technology changed and new products were coming out, folks needed to move their older gear in order to afford to buy new equipment, and I think that people started to realize that they could reach a larger audience through us than they could by themselves."

As time went on and the Internet started to become a more viable resource for used parts sourcing, the company established an online catalog for the parts in its inventory.



"I wasn't a computer person—I had to learn the technical stuff as we went," said Hatton. "But it kept growing, and eventually we realized that we were seeing better margins with the used parts and equipment than we were with the new stuff."

These days Race Parts Liquidators is keenly focused on the circle track market, and people have consigned everything from lug nuts to complete cars. Hatton said that circle track racers tend to cycle through parts more quickly than folks in other racing disciplines, and that in turn creates greater demand from both buyers and sellers who're looking to step up their race programs. It's a dynamic that was also identified by the folks at SRI Performance, a Mooresville, North Carolina-based retailer that's primarily focused on the circle track market as well.

"NASCAR Cup teams are a major source of our used parts inventory," SRI's Todd Foster told us. "They know they're only going to run

SRI Performance concentrates on used parts for the circle track market, as those racers tend to go through parts more quickly than racers in other disciplines.

parts for a certain amount of time or mileage before they replace them. And they're looking at all of these parts sitting around and thinking, 'These parts are still usable. We ran them 5,000 miles, but they can probably go 30,000 miles. We should be selling these to people running in other series.'"

He said that teams from the ARCA, Xfinity, and Truck series are often the ones who are buying this equipment second hand. That's led certain items, like 22-gallon fuel cells, to become hot sellers. "These fuel cells were used by the NASCAR guys before they went to fuel injection—it was the biggest cell that they had ever run. I believe these can be used in ARCA, and there's a vintage NASCAR series that uses them as well."

Transmissions from Andrews and G-Force have also seen interest at SRI. "They're looking not just for the transmission, but also the gear set that's in them," Foster said. "The ratios need to be different if they're running on road courses."

Meanwhile, Hatton pointed to blocks, cylinder heads, camshafts, and other engine components as particularly high-demand items.

Among the in-demand items at SRI Performance are Andrews transmissions. "They're looking not just for the transmission, but also the gear set that's in them," said Todd Foster. "The ratios need to be different if they're running on road courses."



"We've sold NASCAR engines to folks in drag racing and road racing, too—there's a lot of crossover. COVID is still having an impact on racers, even today. Many manufacturers are still way behind on production. If you order a new crankshaft and the lead time is 39 weeks, you might not even be able to use it that season. That's led a lot of people to start looking for other solutions."

He said that while they generally take whatever parts that folks want to consign, there are some things that they tend to shy away from. "You don't want to tie up a significant portion of your warehouse space with stuff that might sit for a long time. Rearend housings, axles, purpose-built stuff, and so on. You've got to keep the product moving along. If something just sits on the shelf, it's occupying our warehouse space and our time, but we're not making a commission off of it."

Foster said that suspension parts like springs and control arms can be tough to shift as well. "We have quite a few of those. We don't avoid taking them in, but they don't sell as quickly as some other parts. Some of that is because the parts were purpose-built for a particular car or team, so they might not fit a lot of other applications."

Both SRI and Race Parts Liquidators work with their consignors to determine pricing for the items that come in as well as the split between the consignor and the company. "Sometimes people will say, 'I want to get this much out of this particular part or piece of equipment,'" Foster noted. "But most of them—especially the bigger teams—just trust us to use our best judgment, and price it appropriately based on our knowledge of the sport and the market." **PRI**

## SOURCES

**Race Parts Liquidators**  
racepartsliquidators.com

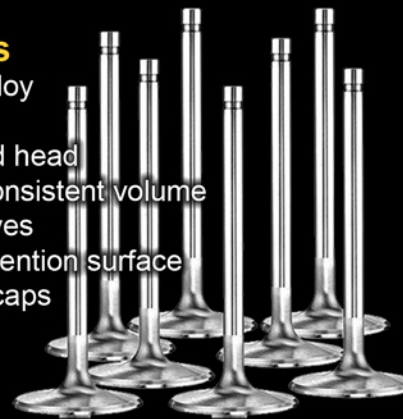
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MORE INFO

# EDITORS' CHOICE

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

By Mike Magda

## SERIES 2 DRY-SUMP OIL PUMPS

**AVIAID**

[aviaid.com](http://aviaid.com)



**A**vaid in Chatsworth, California, is upgrading its Series 2 oil pumps with a new six-tooth gear design that has proven to increase scavenging through-put by some 12% over previous rotor designs.

"Engine builders want increased vacuum in a compact pump package," said John Schwarz. "With four available scavenge section widths ranging from 1.000- to 1.750-inch to choose from, plus four-, five-, and six-stage designs, we can tailor scavenging vacuum to the engine builder's needs."

There are six different section widths available on the pressure side of the pump, ranging from 0.600- to 1.750-inch. The unique design of the Series 2 pump allows the use of both standard and specially angled sections to facilitate running lines in space-

restricted installations. A variety of regulator sections and pump ends—as well as mounts—is employed to configure the pump to most any application.

Now in its fourth iteration, all previous Series 2 models can be upgraded to the new design. The components are designed to work with low-viscosity oils in a variety of racing applications, including road race, drag race, circle track, and marine. The Series 2 is available in either belt or cam drive, and the pumps can be adapted to right- or left-side engine mounting.



## LS MECHANICAL STANDARD-ROTATION WATER PUMP

### MEZIERE ENTERPRISES

[meziere.com](http://meziere.com)

**D**esigned to work with standard V-type, Gilmer, or radiused-tooth HTD drive systems, this new mechanical water pump from Meziere Enterprises in Escondido, California, is configured specifically for LS performance engines.

“It will perform well in drag-and-drive applications as well as circle track and endurance,” said Don Meziere. “We also have a lot of experience with Baja 1000 vehicles, so these pumps have proven performance aspects, like the bearing and seal package.”

The pump is constructed from billet aluminum and features a high-flow 4-inch swept-vein impeller. There are auxiliary ports for bypass, sensor connections, and additional output lines. The modular top can accept a wide variety of thermostat housings and hose connections.



While factory style iron pumps may begin to cavitate under racing conditions—which could cause the coolant temperature to spike—the Meziere pump is designed to maintain proper flow through the entire rpm range. The pump carries a two-year warranty and is manufactured in the USA. All Meziere

mechanical and electrical pumps are fully tested before packaging and shipment.

“There was a need for a reliable mechanical solution,” recalled Meziere. “We saw a void in the market where we thought we could improve performance for those types of vehicles.”

## RED SERIES CHEVY LS FLAT-TOP PISTON

### WISECO PERFORMANCE PRODUCTS

[wiseco.com](http://wiseco.com)

**W**iseco Performance Products in Mentor, Ohio, set out to engineer a highly featured forged piston with a budget-minded price by developing the Red series. The newest addition is a flat-top model designed for the GM LS family.

“We really wanted to bring out a fully machined piston similar to the professional series and not as-forged, like the Pro Tru Street series,” said Michael Skeen. “The Red series fits right in between those two.”

The LS piston is available in multiple bore diameters, compression heights, and dome volumes to most engine builders’ needs.

“The big selling point over the Pro Tru Street is the machined features, and the Pro Tru Street is made from 4032 aluminum. The valve pockets and domes are machined and not as-forged,” added Skeen. “This would be similar to a race-ready piston out of the box.”

The Red series is constructed from dedicated 2618 aluminum forgings. Features include ArmorGlide skirt coating, horizontal-slot oiling in the wrist-pin bores, and an accumulator groove. Every piston



comes with a 1.2-mm steel top ring, 1.2-mm iron second ring, and 3.0-mm stainless steel oil ring.

“You can be comfortable running boost or nitrous,” said Skeen.

## FORD 7.3L V8 FRONT COVER

### LATE MODEL ENGINES

[latemodelengines.com](http://latemodelengines.com)

The new front cover kit from Late Model Engines in Houston, Texas, for the Ford 7.3-liter Godzilla engine deletes the VVT and replaces the factory oil-pump arrangement with a Coyote-style gerotor pump.

"You can get this cover in billet or cast aluminum and with or without a distributor provision," said Bryan Neelan.

By integrating the gerotor into the front cover, LME eliminates the factory jackshaft that drives the oil pump mounted in the rear sump. The LME solution includes a standard pickup tube and allows a variety of oil pan styles with either a front or rear sump to clear chassis components in most popular vehicles.

"The factory jackshaft pump-drive system isn't good for swaps," said Neelan. "There will be more racing applications for Godzilla."



The kit also includes a billet timing set. The LME kit complements other Godzilla products, including a new intake manifold and CNC-ported cylinder heads and billet valve covers.

## MAX-COOL TRANSMISSION COOLER FOR MOPAR 8HP70

### TCI AUTOMOTIVE

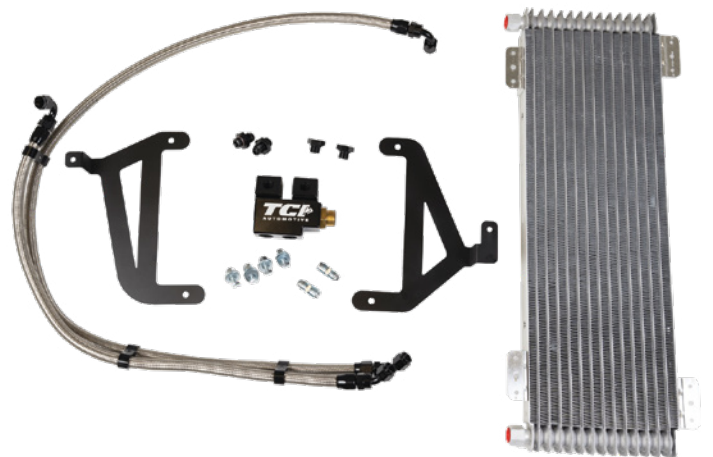
[tciauto.com](http://tciauto.com)

Potential overheating issues with the 8HP70 eight-speed automatic transmission found in late-model Dodge Challengers and Chargers can be prevented with a Max-Cool kit from TCI Automotive in Ashland, Mississippi.

"It has four times the cooling capacity of the factory system," said Brian Hosenfeld.

This secondary cooler has a removable thermostat that will open the thermostatic cooler block when needed to reroute coolant through the heat exchanger to provide maximum cooling.

The kit includes the heat exchanger, -6AN braided hoses that can be cut to length, thermostatic cooler block, fittings, brackets, and hardware. This bolt-in kit is specifically designed for the two Dodge applications. Cutting and welding are not required.



The cooler is quite handy when boosting engine power with a cam swap and installing a TCI torque converter to help control the torque demands.

## HIPSTER BILLET TURBO 350 TRANSBRAKE VALVE BODY

### AUTOMATIC TRANSMISSION DESIGN

[autotransdesign.com](http://autotransdesign.com)

**M**anufactured in-house from 6061 aluminum, the new Hipster Turbo 350 transbrake valve body from Automatic Transmission Design in Germantown, Wisconsin, is a clean-sheet design to complement a growing number of aftermarket products for the TH350 transmission.

"It's the only billet Turbo 350 valve body on the market," said Michael McCormick. "An iron valve body weighs around 17 pounds. This billet one weighs 7.5 pounds."

The Hipster is designed for crisp shifts and instantaneous setup/release timing. It features an adjustable pressure regulator and improved filter design that was leveraged from ATD's work with the Powerglide.

"A lot of bracket racers are still running Turbo 350s," continued McCormick. "Plus, there are guys running Comp and other NHRA classes who want the lightest possible transmission. Some guys think



they can get that with the 350."

Additional valve bodies are available without the transbrake function.

## FORD 8-INCH NODULAR-IRON DROPOUT CASE

### QUICK PERFORMANCE

[quickperformance.com](http://quickperformance.com)

**I**f you can strengthen the 8-inch rearend in a Ford, there's less likelihood that a 9-inch swap will be required when modifying the engine for more power. The new 8-inch nodular-iron dropout case from Quick Performance in Ames, Iowa, will help toughen up the factory rearend in many popular applications.

"There's going to be added strength because it's nodular," said Ashton Thompson. "But it also gives you a period-correct look with the double ribs."

The case is cast and machined in the USA. The case, bearing caps, and pinion support are all constructed of nodular iron. Other features include nodular iron 1310-series pinion yoke, billet side adjusters, a 2.89-inch carrier bore, and snap-ring pilot-bearing retainer. The case accepts all factory components.

Customers can also order a fully assembled case with Timken bearings and Motive Performance ring-and-pinion gears in addition to numerous options covering lockers, spools, or limited-slip differentials.



# NEWLY APPOINTED

**JONNIE LINDBERG**

The Top Alcohol Funny Car double champion who made his mark in Sweden and America joins Paul Lee's nitro team as crew chief.

By Jim Koscs

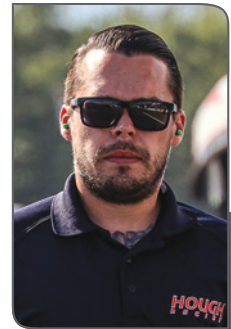
There's a new yet familiar face on the nitro scene this season, with Top Alcohol Funny Car champion Jonnie Lindberg now serving as crew chief and tuner for Paul Lee's Funny Car team in the 2024 NHRA Mission Foods series. Lee's operation announced Lindberg's appointment this past December. John Medlen, who had tuned for top nitro teams for three decades and retired from full-time work after the 2022 season, will

serve as a consultant for Lindberg.

Many know Lindberg as the Swedish drag racing star who raced Pro Mods and alcohol Funny Cars in Europe with his brother, Johan, before moving his career as a driver, tuner, and builder to the US. Lindberg drove his first US race in 2013 at the World Finals in Pomona. He won back-to-back NHRA TA/FC World Championships in 2015 and 2016 and made the cover of Drag Illustrated magazine's "30 Under 30"

issue in 2016.

Lindberg began tuning alcohol Funny Cars when he was 18 and, after his two championships, drove a nitro Funny Car with Jim Head's Head Contractors team. He also began tuning Brian Hough's TA/FC in late 2018, and the car finished third in national points in 2020. The same year, Doug Gordon won the 2020 NHRA TA/FC world championship in a car built by Lindberg and his team of fabricators.



**JONNIE LINDBERG**

TITLE:  
Crew Chief

ORGANIZATION:  
Paul Lee Racing

HOMETOWN:  
Brownsburg, Indiana

FAST FACT:  
"Outside of racing, I'm starting to build my own street motorcycle in my shop."

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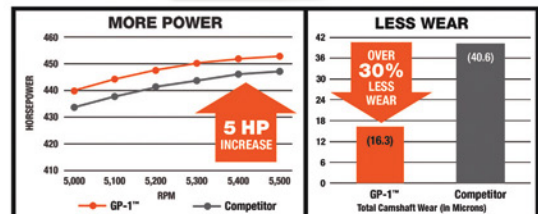
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“As a former alcohol Funny Car racer, I appreciate the talent and skills that it takes to become a successful racer, and Jonnie has proven he possesses those skills as a former NHRA World Champion,” Lee said in a statement.

Upon returning from a Christmas visit to Sweden, Lindberg shared his thoughts on the move to Lee’s nitro team with PRI.

**PRI:** What got you started in drag racing?

**Lindberg:** My dad was building hot rods when I was growing up, so that’s where I got into American cars. Then my brother and I started racing with a blown 1963 Nova. After that, we raced Super Comp with a ’23 T-bucket altered.

**PRI:** What is a favorite memory from your involvement in the sport?

**Lindberg:** Man, that’s a hard question, there are just so many good ones. I guess my top one would be the first championship we won in Europe in 2010. My brother was driving the Pro Mod, and I tuned it. The second one must be when we won Charlotte in 2015 and set the national record in TA/FC—the first one in the 5.30s and 270 mph.

*“THINK POSITIVE! POSITIVE ANYTHING IS BETTER THAN NEGATIVE NOTHING.”*

**PRI:** What are you most looking forward to working with Paul Lee and John Medlen?

**Lindberg:** I’m excited working together with John and to learn from one of the greatest tuners in our sport. He has so much knowledge, and he’s just a great guy to be around. Same goes for Paul. We always got along well, and I’m excited to give him the best race car possible.

**PRI:** With your extensive experience tuning alcohol Funny Cars, do you see any challenges to bringing your skills to the nitro category?

**Lindberg:** I know the basics on how to run a nitro car thanks to Jim Head and Dave Leahy, but of course I need to learn it and make my own mistakes. Hopefully, I don’t make too many with John watching over my shoulder!

**PRI:** Is there anything else in your background that you see as an advantage that you bring to the Paul Lee team?

**Lindberg:** I used to run my own operation,

so I know how much work, preparation, and dedication it takes in the shop to be successful at the track. I have experience driving Funny Cars, plus I know how to build one of those from scratch.

**PRI:** Can you name one mistake you’ve learned from in your professional career?

**Lindberg:** Yes, sometimes you need to rest and recover and don’t burn the candle at both ends for too long.

**PRI:** Is there one piece of advice you have received, personally or professionally, that you feel has greatly impacted your life?

**Lindberg:** Think positive! Positive anything is better than negative nothing.

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

**Lindberg:** On the race track and at the shop, it’s the adjustable wrench in my back pocket, for sure. But then it’s the welder and the lathe...can’t live without them. **PRI**

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# INDUSTRY INSIGHTS

CJ OLIVARES

CJ Olivares is guiding the MAVTV platform to be motorsports enthusiasts' first choice when viewing events, which gives them more options and control about what they are going to watch and which device they use.

By Jeff Zurschmeide

Among the biggest challenges for any racing series is figuring out how to reach the largest potential fan base. At the track and series level, getting fans through the gates and into the seats is both a measure of success and a means of funding the operation.

In the modern era, that means having a smart media strategy that includes putting the racing product on screen as well as generating organic social media and traditional advertising.

Television channels devoted to racing have been pivotal in creating new fans, and now streaming channels are adding to the array of options to bring new fans to the sport. Among the heavy hitting media channels is MAVTV, which is owned by Lucas Oil and exclusively carries motorsports and automotive programming. MAVTV carries a long list of Lucas-branded series including the Chili Bowl, pro motocross, off-road racing, dirt late model, and more. The channel also carries the Trans Am series, MotoAmerica, Formula DRIFT, and other related programming.

The man selected by Lucas to run the show is CJ Olivares, who brings impressive career history and credentials to the project. In December 2023, he relaunched MAVTV with a range of new platforms and distribution agreements. We caught up with him recently for a discussion of how the TV and streaming business works, and what it can mean for a racing series.

*"WE WANT TO BE THE CAMPFIRE AROUND WHICH ANYBODY IN THE MOTORSPORTS COMMUNITY CAN COME HANG OUT, WATCH GREAT RACING, SHARE STORIES, AND LEARN AND BECOME INSPIRED."*

**PRI:** Tell us a bit about yourself. How did you get to MAVTV?

**Olivares:** I've been at MAV a little over a year now. I joined full time in September of 2022, but I've been in sports media my whole life and in sports television for 30-plus years. I started as a print journalist and photographer in the endurance sports world, and then I was at Fox Sports for 15 years on the programming production side. That led to an opportunity to create and run a network called Fuel TV that focused on the action sports, surf, skate, and snow. What attracted me to MAVTV is that I saw a couple of dynamics at work in the motorsports space.

What I saw in the landscape a year-and-a-half ago was that after SPEED went away, there was no mass media property that really stepped into that void at the intersection of motorsports and auto enthusiasm. I looked at what was happening and realized that there are so many subcultures within motorsports, of different types of racing. Whether it's four-wheel, two-wheel on dirt or pavement, domestic or international, they don't have one place to go from a video perspective. And I thought, 'You know what, if not us, then who?'

**PRI:** MAVTV had its own history as well, before focusing on motorsports. Did that concern you?

**Olivares:** When it launched in 2006, MAVTV was what I lovingly refer to as 'Bro TV.' It was bikini contests and cage fighting and some motorsports and action films. But as the world and culture evolved, it ran into some challenges. Lucas Oil purchased the channel based on the fact that they were supplying virtually all of the motorsports programming, and they repositioned it as more family friendly. They made it more grounded in who the Lucas family is and what Lucas Oil is, which is really the

*"WE'RE ON EFFECTIVELY EVERY MAJOR STREAMING SERVICE PLATFORM AND/OR DEVICE."*

heartland of America. Just good, honest, hardworking people, and they really focused on that. Then almost seven years ago, they pivoted to motorsports exclusively.

**PRI:** What does being on MAVTV offer to a series or a track or anybody who's considering involvement? What is your sales pitch for the channel?

**Olivares:** That they can be part of re-establishing the new home for motorsports on television. Very candidly, that's our aim. We want to be the campfire around which anybody in the motorsports community can come hang out, watch great racing, share stories, and learn and become inspired. I think we have arguably the only race-centric cable television network in the United States, and by the time this interview comes out, we will have launched Amazon FreeVee, adding that to our free FAST channel offering. And we are now available directly on smart televisions and Roku-type devices.

Our traditional cable TV channel is holding ground in terms of households in the United States. The television universe has shrunk 30% over the last decade. It's continuing to shrink with all of these other opportunities and ways that you can consume. The good news for us is, while the rest of the market has been shrinking, we've been holding ground. Then our FAST channel has experienced some pretty explosive growth. With the launch on FreeVee, we will be north of 300 million devices globally, and 90% of that is in the US. We're on effectively every major streaming service platform and/or device. So from a distribution perspective,

we also offer these race series a couple of different opportunities, whether it's the pay TV cable side or the free TV side to get live and delayed or highlight programming out to an audience.

Another thing that we've worked really hard on this last year is being a good partner to the series, trying to find ways that we can collaborate and work together to amplify their ability to sell sponsorships, to promote their races, to get people going back to the butts-in-seats. Depending on what series you're talking about, it's either the series or a track promoter who are the ones who are taking the risk on getting people out to the races.

**PRI:** How does the money flow—from MAVTV to the series or from the series to MAVTV?

**Olivares:** That's a great question and there's not a single answer. A lot of it depends on the size and scale and scope of the series. Not all series are the same. We know NASCAR, Formula 1, IndyCar, and NHRA all have their broadcast partnerships. They're awesome, amazing, hundreds of millions, if not billions of dollars. In the case of NASCAR recently, there are huge rights fee deals. So we're chasing everything else in some of the bigger properties like MotoAmerica. We had an existing highlight relationship that we expanded to get live races this year. Trans Am is a great example of a property that really didn't have a home. We started last year showing highlights and primetime on Thursday nights the week after a race. By the end of the season, we were experimenting with going live. This season we're going to go live with both TA and TA2 all season long.



With smaller series, we start with the audience history. Has this series been able to draw attention? Has it had any live viewing before? What's the quality of the live production? Is it drawing an audience? Is it a good live product for us, or is it a challenging live product for us? For example, one of the things we found was that the Lucas Oil Late Model Dirt Series is a really challenging series for us to go live with. It's a great highlight show for us, but because they're running at night in the Midwest in the summer, you get a lot of rain and a lot of delays for track prep. That impacts the quality of the experience, so we really look at that.

*"WE'RE TRYING TO ELEVATE MOTORSPORTS AND BRING MORE PEOPLE IN AND CREATE MORE FANS, BECAUSE ULTIMATELY THAT'S GOOD FOR US. IF IT'S GOOD FOR MOTORSPORTS, IT'S GOOD FOR US."*

In 2023, MAVTV entered into a new partnership with Formula Drift to be the series' exclusive cable broadcaster. "This partnership further demonstrates our commitment to showcasing the diversity and excitement of motorsports to our passionate viewers," CJ Olivares said.

We also look at the sponsorship complexion: who's spending, how much are they spending? Is there an opportunity for them to spend some money in support of this? We try to be realistic about the ecosystem, and once you get out of those tier-one race series, it's challenging.

**PRI:** What do you need to see from a small series to even consider televising them?

**Olivares:** First, how long have they

been running? If there's a series that's underexposed but has consistently delivered a really entertaining race product, that can be a great show. Then we try to find a place to fit it into the system. Sometimes that means going directly to our pay TV side, and sometimes it means going to the free TV side.

**PRI:** Will new technology help more series to get on your channels?

**Olivares:** One of the other things that we're preparing to launch is a new video viewing app. We had an epic fail in 2022 with the MAVTV Plus app. So we got out of that business, and now we're looking at re-entering it. When we launch this app in a couple of months, that will give us yet another way to reach out to the fans in the community and serve them. Because as I said before, there are some properties that



aren't well suited to a rigid schedule of linear television. So if we can just say, 'Hey, folks, we are going live with whatever short track race from wherever, tune in,' there's a little different standard if you're watching that. If it's streaming, then people are a little more forgiving, I think.

**PRI:** I want to dig into the money side of the program a bit more, since that's a top concern of series promoters. Can you offer any more details?

**Olivares:** Again, there's no single answer to any property. For example, our partners MotoAmerica have all of their classes and produce the feed. We pay a rights fee, and we get the feed. The quality of the feed is

"Trans Am is a great example of a property that really didn't have a [broadcast] home," said CJ Olivares, seen here at the 2024 Sebring Trans Am race. After initially showing highlights a week after the races and "experimenting with going live" in 2023, "this season we're going to go live with both TA and TA2 all season long."

amazing. It's got everything we need. Other folks come to us with a product that isn't fully baked or has maybe been streamed previously and is not quite ready for broadcast. Maybe the quality of the cameras needs upgrading, or the reliability of the signal, maybe even the talent that they're using to call the races on camera is not as experienced. We'll work with talent directly to train them up, tune them up, and give them notes on how they can be more effective and more engaging. It is all of those things.

One of the ways that we look at the space is, we're trying to elevate motorsports and bring more people in and create more fans, because ultimately that's good for us. If it's good for motorsports, it's good for us. So if we can help different race series and different production companies refine their production within their budgets, we'll do it.

It would be great to have 27 cameras and all these elaborate telemetries that you see in NASCAR and Formula 1 and all of that stuff, but most series can't do that. The economics aren't there for that. We ask, 'What is the best product that we can produce from what they have?' And we really try to work in partnership with people.

**PRI:** So you get the best product you can, and then you decide whether it goes onto the free channel or the streaming or through the app or onto the cable channel, as it works out the best economically for everyone?

**Olivares:** Sometimes it goes on everything. Maybe it will go live on the cable channel, and then we'll do highlights on the free channel, and then we'll push out clips on social, and then it'll go live on-demand through the app eventually.

**PRI:** Switching up for a moment, can you describe the relationship between MAVTV and FloRacing and FloSports?

**Olivares:** The easiest way to characterize it is that we have a content partnership. It originally included more than it does today. Originally it included Sprint 500, some Chili Bowl, also Shootout maybe, and then late model dirt. Now in 2024, it's basically just late model dirt. We see them as a great partner, and I think they have a different business model than we do. The position that they have captured is really regional racing and heavy on the dirt track. So as I was referencing earlier about the challenges of late model, it's a really great product for us on Monday nights.





**PRI:** What advice would you give to a promoter who has a series, and they want to grow their appeal, they want to grow their audience? What are one or two things that they can do to make their series more successful?

**Olivares:** I think part of it goes back to the fact that motorsports are entertainment. The drama and emotion that you get from watching and being a fan of sports and motorsports in particular is a rush. It's dramatic, and it can be heart wrenching and joyful and all of the things, the spectrum of human emotion. It's really about the fan experience from the time they turn into the parking lot until they're pulling out.

Then try to be very deliberate about how you can translate that excitement of being someplace live into your race coverage, whether you are doing it or whether it's in partnership with somebody. Invariably, the series operators and the owners and promoters know their own world inside out. What they have to figure out if they're going

Not every program on MAVTV is motorsports-related. Dream Collections with Chris Jacobs highlights car builders who "transform, modify and customize virtually anything mechanical." Here, Jacobs, left, and McKeel Hagerty, center, visit designer and car builder Chip Foose.

to stream it or broadcast it is how to speak to your audience. You don't want to speak down to existing fans who may be watching, but also you don't want to speak over the potential new fans' heads, so you take a little bit of extra time to explain the nuances.

**PRI:** Let's talk about the future of motorsports programming. What is all this going to look like in five years or 10 years? Is it even possible to know?

**Olivares:** I think there's a lot that we don't know and can't know, but I can tell you about what has evolved over time, and if you look at the last 15 years, it has been characterized by control really being in the hands of the viewer. You as a fan now have more choice and control about what you are going to watch

and on what device you're going to watch it. I think that trend is never going backwards. I was looking at VR goggles the other day, and somebody was talking about watching live racing via the VR goggles. If you're in a Cup car with Kyle Larson and you see what he sees, and you turn your head and you see what's out the side of the car, if you got Bubba Wallace coming up next to you.

It's a hard thing to know in specifics what the future holds, but I really believe firmly that choice and control are going to continue to move into the hands of the fan. I think the quality of racing, the diversity of racing that you can watch live is going to increase. That's certainly one of the things we're trying to do. **PRI**

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## SPECIAL REPORT:

# AUTONOMOUS RACING

By Steve Statham

THE DRIVERS ARE WRITTEN IN CODE, BUT THE RACING COMPETITION IS NO LESS FIERCE.



Photo courtesy of Indy Autonomous Challenge

Auto racing has long been a proving ground for technologies that expand the boundaries of the world around us. At the heart of the sport, however, has always been the competitive clash of driver against driver fueled by the desire to win, to vanquish opponents, to be the best no matter what the danger, and hoist the trophy.

So what is racing if the driver is not a human being, but rather software and sensors processing terabytes of data?

We're about to find out, because autonomous racing is here and is making rapid advances around the globe. In the US, the Indy Autonomous Challenge (IAC), Indianapolis, Indiana, has been holding

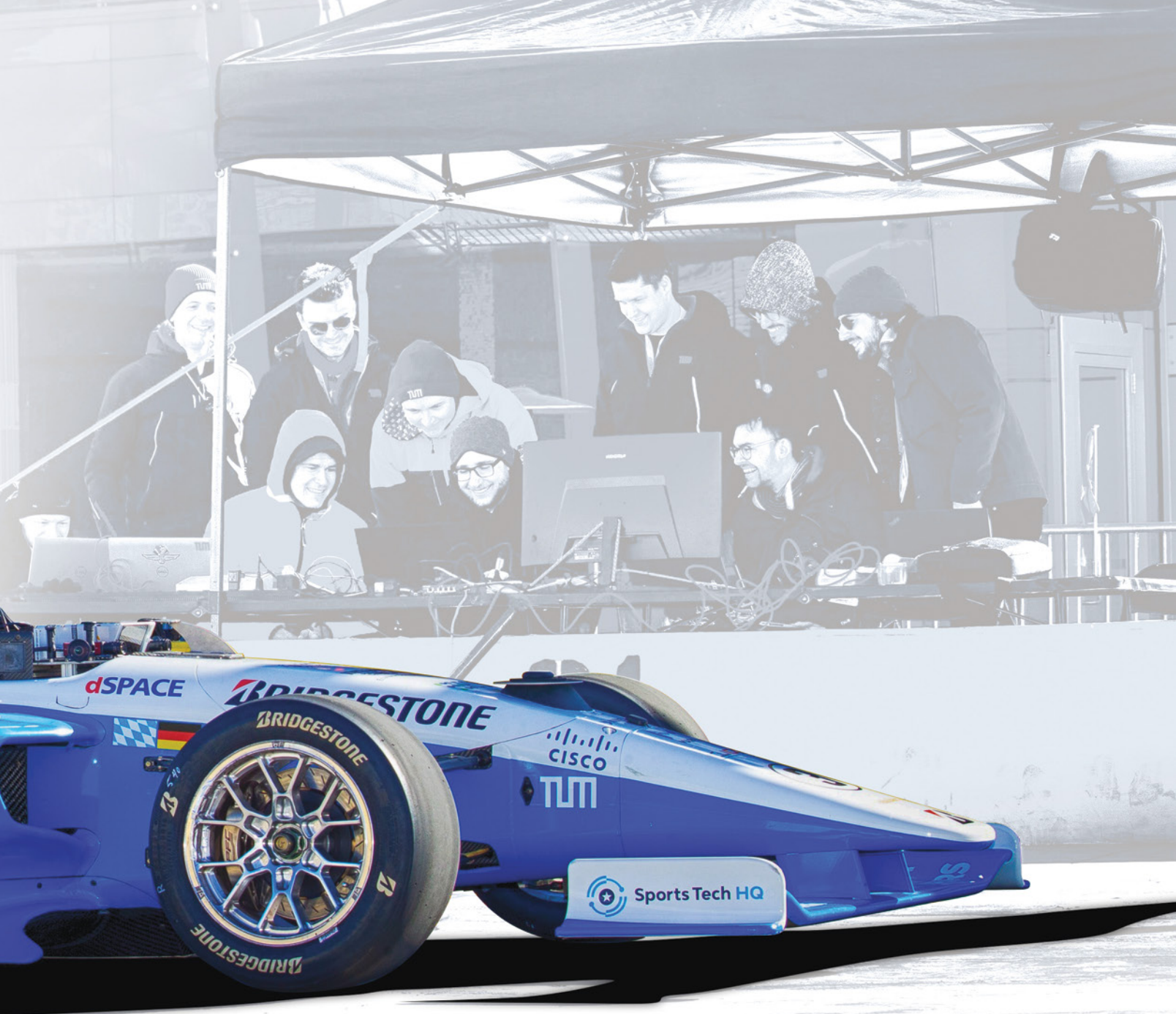
increasingly advanced autonomous races since 2021. The teams writing the code that pilot the cars come from top universities around the world, with backing by industry and governments.

"This is an applied research initiative that connects 18 of the top engineering universities around the world with top industry suppliers into the automotive sector. And that's not just traditional automotive companies. Cisco is a partner," explained Paul Mitchell, president of Indy Autonomous Challenge.

Governments have also taken an interest in the development of high-speed autonomy. The IAC receives backing from the state of

Indiana and is on the federal government's radar screen. "We had a lot of representation from the DoD [Department of Defense] and DARPA [Defense Advanced Research Projects Agency] at our event in Las Vegas. We have partnerships with some European countries—Italy, Germany—all working to use motorsport as a platform to accelerate the development of AI driver software and components that can handle high-speed ground-based autonomy," Mitchell said.

Autonomous racing is far enough along that the IAC can brag of some impressive results. The cars are modified Indy Lights chassis built in collaboration with Dallara, although at the moment, the racing is not



like an IndyCar event, where two-dozen cars compete on track at the same time. Nonetheless, the IAC achieved several milestones at the most recent event in January in Las Vegas as part of the Consumer Electronics Show (CES). At Las Vegas Motor Speedway, the IAC debuted its new AV-24 chassis, while its legacy AV-21 chassis achieved firsts in autonomous vehicles passing each other at speed.

"The race itself was the same format as the previous years: two cars at a time racing in these passing competitions on an oval. There was some really compelling action that took place, particularly in the semifinal round between Technical University of Munich,

which went on to win the competition, and Korea Advanced Institute of Science and Technology," Mitchell said. "It was really the first time we've seen in one of these races what you and I would describe as wheel-to-wheel racing through corners. Typically, our AI drivers, when they make a pass, they make a pass pretty directly—they accelerate, they go around the car, they move back into a race line once they've cleared it by a safe margin. If, for whatever reason, they aren't able to make that pass, they usually back off.

"What happened was, the German team started a pass heading into Turn 1, and rather than completing the pass it ran wheel-

to-wheel with the car from the Korean team through Turn 1, into Turn 2, and then made the pass. You and I would say, 'Well, that's racing.' But we'd not seen that before with these fully autonomous AI drivers, which tells us that they're getting better. We're seeing an increase in the quality of the racing that appears more in line with top human race car drivers for IndyCar or for other series. That was, for me, the highlight of the race that took place at Las Vegas Motor Speedway on January 11."

If the AV-21's wheel-to-wheel passing seems unremarkable, the AV-24 car flexed abilities that humans would struggle to match. "The rollout of this new AV-24 vehicle



At the debut of the Indy Autonomous Challenge's new AV-24 chassis at Las Vegas Motor Speedway, racing was run in the dark. The cars were lit up with LED lights but had no headlights, and the lights at the track were turned off.

was exciting because we put three cars on the track at the same time for the first time," Mitchell explained. "We've never had three cars running together. And we had them running in the dark. The cars were lit up with LED lights but no headlights. The lights were turned off at the track. As the light came down to total darkness, the cars kept running. Then once it was completely dark, one of the cars passed another car."

This type of research is part of a global competition to master autonomous technology. On the other side of the world, another series is set to hold its inaugural race on April 28, 2024, at the Yas Marina Circuit in Abu Dhabi, United Arab Emirates. The Abu Dhabi Autonomous Racing League (A2RL) uses customized Dallara Super Formula cars as the base competition vehicle.

For A2RL, the teams competing also represent an international collection of universities and institutions from the UAE, China, Germany, Italy, Singapore, Hungary, and the US.

ground to stress test and optimize the performance of autonomous vehicle software, enhancing safety and reliability. With its sophisticated infrastructure and technology focus, Abu Dhabi has become a hub for innovation. We are augmenting our knowledge economy through R&D, and A2RL just shows the scale of our ambitions for the future.

"Held once a year, the event will see competing teams partake in a series of races and challenges for a stake in the US \$2.25-million prize purse, with engineers, scientists, programmers, and technicians becoming the 'heroes' of the sport."

## THE LONG VIEW

Although racing is a high-profile testbed for autonomous technology, the ultimate goals reach far beyond the race track. "A2RL is certainly not intended to replace conventional motorsport or to develop systems that replace drivers in the future—absolutely not," Timpano said. "It is an

an extreme situation will build consumer confidence in everyday Advanced Driver Assistance Systems (ADAS) like Lane Assist or Automatic Emergency Braking, which some find disconcerting. We are doing science in public."

A world dominated by autonomous technology will surely have drawbacks, but our autonomous racing sources reported plenty of upside. "The focus is, how do we get to a world where we have high-speed autonomy, cars and trucks that can move on highways at speeds greater than 100 mph, speeds that humans are not really well suited to pilot a vehicle," Mitchell explained. "If we can get to that point, our economies will speed up from a supply chain standpoint, human mobility will speed up between destinations, and if it's done in a way that's safer, then even for humans driving at lower speeds on highways, think of how valuable that would be to society. That's the long-term objective, that's the North Star that everyone is working toward.

"Along the way we certainly hope to develop a way to transition some of these technologies and learnings into human-driven race cars to make them faster, safer, more effective," Mitchell continued. "I often liken that to the modern US Air Force fighter jets. Think about the mechanical planes that were being flown in WWI and WWII, and how much the human had to do on their own, versus the F-35 today that at times can fly itself, but still very much relies on the capabilities of this extremely well-trained, almost superhuman, fighter pilot. I think that's increasingly what our race car drivers are, and as we add more technology to the cars, adding technologies that can allow them to see 360 degrees, adding technologies that may give them separating

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"A2RL was conceived by ASPIRE, the technology transition pillar of Abu Dhabi's Advanced Technology and Research Council," said Stephane Timpano, CEO of ASPIRE. "A central motivation in establishing A2RL was to create an extreme testing

exciting proving ground for the world's most advanced autonomous driving systems. We want to help accelerate the development and effectiveness of safe autonomous systems for road cars. At the same time, we hope that showing AI perform in such



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front and rear braking, and other things, is all part of perhaps leading to higher performance, higher speed, and most importantly, safer motorsports.”

## TEAM SPORT

A conventional racing team will have a driver, crew chief, and pit crew, maybe a spotter or two, along with engine builders and engineers. Autonomous racing likewise requires a team, although the duties are divided in ways that reflect the technology involved.

CK Wolfe is the program manager for Research Operations and Technical Projects at the University of California, Berkeley. AI Racing Tech is the name of the Berkeley autonomous racing team, a collaboration between UC Berkeley, University of Hawai'i (UH), University of California, San Diego (UCSD), and Carnegie Mellon University. AI Racing Tech was one of the three teams testing the AV-24 at Las Vegas, with Wolfe as the simulation team lead.

“The sub-teams that we have are perception, planning, localization, controls, vehicle dynamics, simulation, and trackside logistics,” Wolfe said. “The trackside logistics is like our pit crew that a normal racing team would have. On the autonomy side, because we write software to make all of the same decisions in real-time that a real race car driver would have to do, you have to respond to the track conditions. The top 1% of drivers in the world are the ones who actually end up in the racing field, and we're trying to mimic what they do.

“So you need your race car to be able



The Abu Dhabi Autonomous Racing League (A2RL) was established “to create an extreme testing ground to stress test and optimize the performance of autonomous vehicle software, enhancing safety and reliability,” said Stephane Timpano. The A2RL will hold its inaugural event in April at the Yas Marina circuit.

to respond to the changes on the track, to be able to sense those things, and make decisions in real-time the same way that an actual race car driver would. There are a lot of components of that,” she continued. “Perception is how you see the world. High-level planning is, based on what you see in the world, how you're making those decisions. Controls would be how you're executing those decisions, like how you're actuating the low-level steering, throttle, brake commands, which can be a very complicated way to apply things. Vehicle dynamics is how you're modeling the car.

Simulation, which is the team I lead, brings all of those things together, and you're driving the car in simulation the same way you would in the real world, to try to validate all of that software and all of that AI for the real car before we even get to the track.”

High-speed autonomy requires the race car to be equipped with a suite of leading-edge processors and sensors, and the IAC's new AV-24 chassis employs the best of the best.

“For perception we added more capabilities by putting some rear-facing sensors. There's a lidar that's facing backward and a radar that's facing backward,” the IAC's Mitchell said. “In the AV-21 there's nothing facing backward. So we created 360-degree uninterrupted lidar perception by having four lidars instead of three on the car.

“Additionally, we've upgraded the quality of the sensors. We went from a first-generation lidar from our sponsor Luminar to its newest one called the Luminar Iris, which is longer range, more accurate, and more powerful. Similarly, for radar we changed from a legacy radar technology to a brand-new Continental 4D radar, a more advanced radar technology. And then we've increased the 360-degree perception of our cameras.

“For localization, we added more GPS, GNSS [global navigation satellite system] capabilities—stronger, better, more accurate GPS. We also increased the wireless communication pathways because another way you do localization is not just by GPS, but communicating with race control so we understand where the cars are. For that we added this Marelli telemetry device that is

# AUTONOMOUS RACING CALENDAR

## ABU DHABI AUTONOMOUS RACING LEAGUE 2024

- Yas Marina Circuit in Abu Dhabi \_\_\_\_\_ April 28

## INDY AUTONOMOUS CHALLENGE 2024

- Milan Monza Motor Show, Autodromo Nazionale Monza \_\_\_\_\_ June 28–30
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Top engineering universities from around the world are competing in autonomous racing events, working with industry suppliers both within and outside the automotive sector. "Cisco is a partner," said Paul Mitchell of the Indy Autonomous Challenge.

used in F1.

"In vehicle dynamics, we made some really big changes by putting in a completely

new drive-by-wire system, steering and braking," Mitchell continued. "We actually did it as an internal engineering project

within IAC, sourcing rotary actuators and linear actuators that are very robust, accurate and fast, and could handle the harsh operating conditions of a race car. So we dramatically improved the steering strength and accuracy. For braking, with two linear actuators, we separated the braking of the front master cylinder and the rear master cylinder, so the AI driver can send different brake pressures to the front and rear of the car."

This hardware and software magic can take a race car quite far, but it still helps to

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have the perspective of a racing veteran to speed things along. One such veteran is Gary Passon, who currently runs the AVT program at the University of Hawai'i and is the AI motorsports team principal. As a driver, he progressed through the amateur and semi-professional ranks, rising as high as the USAC Mini-Indy series (today's Indy NXT) before leaving racing behind to focus on a career in the computer industry. "I retired after 30 years of industry work and moved to Maui, and got involved again in technology, but this time blending my computer background with my racing background by involving the University of Hawai'i in autonomous vehicle technologies," Passon said.

"In the beginning it was all about just getting the car to move and getting it to go around the track without hitting something. And then pretty soon you want to do that a little faster, and a little faster, and that's kind of what a new driver coming up in racing

goes through," Passon said. "They have to earn their way into the program by learning the nuances of operating at the extreme of the tires and the vehicles themselves. What I hopefully have helped bring to the table is the perspective and experience from having done that as a human, and trying to highlight for the team the areas where we need to put our focus so that we can teach our autonomous driver the way of the world and the limits in which it has to operate and go there in a safe and fast manner. Crashing cars is not good whether it's a human or an AI driver."

### REAL DEAL

Autonomous racing is so new on the scene that misconceptions still pop up. These are not race cars being guided remotely or piloted using a racing simulator. "We're talking about full level 5 autonomy, meaning that the moment that the competition starts, other than turning the car

on, the team does nothing," Mitchell said. "They're sitting there and they're watching. The only thing they can do is they have essentially the ability to abort if they see something on their telemetry data or their

Like conventional racing, autonomous racing is a team sport, though the teams and their duties reflect the high levels of technology involved in full level 5 autonomous driving. Once the competition starts, though, the human members of the team do nothing to control the car.



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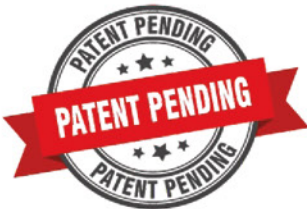
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# GAMBLERS AND

Can High Limit Racing challenge the World of Outlaws' grip on national touring 410 sprint car racing, and what will this "split" mean for the sport?

By Jack Haworth

When two national touring series start competing against each other in a particular discipline, racing industry veterans get nervous. These dreaded "splits" bring up haunting memories of business battles gone wrong—most notably the high-profile civil war that engulfed Indy car racing.

410 sprint car racing has its own history of splits.

The World of Outlaws has maintained its position as the premier national touring sprint car series since 1978 but faced challenges from both the United Sprint Association in 1989 and the National Sprintcar League in 2006. Both series lasted only a single season before disbanding. In 2024, the World of Outlaws is facing a new challenger led by its own reigning five-time champion, Brad Sweet.



# OUTLAWS

"I've been racing my whole life and on the road for 10 years with the World of Outlaws," said Sweet. "So I always had ideas and ambition to help drive the sport to another level."

Known for throwing slide jobs and running the cushion, the "Big Cat" saved his biggest move for the off-season. In partnership with Kyle Larson—multi-discipline motorsports star and Sweet's brother-in-law—the duo officially announced the launch of High Limit Racing, a national series of 410 sprint cars with big ambitions and significant funding that has many in open wheel racing talking.

"It seems like there's a new buzz in 410 sprint car racing because of High Limit being added to the mix," said Jim Allen of the Northern Auto Racing Club (NARC), a West Coast 410 sprint

car series based in Auburn, California.

The new High Limit series has ruffled feathers, set off a firestorm of online opinions, and ignited a scramble to secure full-time driver rosters and tracks. However, there's optimism this split may not repeat past mistakes.

"These breakaway [series] have not been successful in the past, but the new game changer is streaming revenue," said Jerry Gappens of Eldora Speedway, New Weston, Ohio. "Streaming has changed the landscape across the board, not only in sprint car racing."

Indeed, the rise of streaming in motorsports is creating an interesting and quickly evolving dynamic. With new funding, bigger

audiences, and a new national touring series in 410 sprint car racing, this once-niche segment of motorsports is reaching new heights while attempting to conquer old challenges along the way.

## THE CONCEPT

The seeds of High Limit Racing were sown during the 2023 race season, when Larson and Sweet debuted the High Limit Sprint Car Series, a 12-race midweek series. Less of a full-fledged national tour, the series was a starting point for their team to kick the tires.

"I think last year was definitely a learning curve, but I thought we did a good job and had some great events," said Sweet. "I think for us, it was more like a proof of concept."

The midweek series was successful, albeit restricted. World of Outlaws teams could not run in most High Limit races due to the Outlaws' policy of restricting teams to four non-Outlaws races per year. If an Outlaws team exceeds this limit, they lose eligibility for various monetary benefits, including tow money, points fund, exclusivity bonus fund, and more.

Faced with the limited potential of their midweek series, Sweet and Larson decided not to fold but to go all-in.

"I think what happened was the Outlaws didn't allow the drivers, like myself, to race in those races," said Sweet. "I just felt like we weren't going to be able to stay in that 12-race midweek [series] with it really helping what we wanted to help. But with the FloRacing [deal] and how well things went in those 12 races last year, it created the opportunity and desire to make more of a national series and to take all our ideas and innovation and really make it matter for everybody in sprint car racing."

For Sweet and the High Limit crew, deals began to fall into place. In late October 2023, High Limit announced it acquired Tony Stewart's All-Star Circuit of Champions, a Midwest-based 410 sprint car tour that's been around since 1970. Next, High Limit inked a multi-year media deal with FloRacing—a streaming platform that provides live and on-demand coverage of circle track and grassroots racing—with the media company taking a minority equity stake in High Limit Racing.



Founded by Kyle Larson and Brad Sweet, High Limit Racing is 410 sprint car racing's new national series. Its inaugural full-time season spans coast-to-coast with 60 dates at 36 tracks in 19 states, with driver payouts topping \$5 million. Sweet's goal is to make High Limit "a more sustainable business for car owners" and to "feel like a professional sports league."

In early November, High Limit Racing was officially announced as a new national series. This year, it will span coast-to-coast with 60 dates at 36 tracks in 19 states, with driver payouts topping \$5 million. A \$1 million point fund will be up for grabs, with the series champion collecting \$250,000. Last year's Midweek Money Series will also return as part of the High Limit national tour, awarding an additional point fund of \$100,000. Comparatively, the 2024 World of Outlaws schedule features 86 races at 41 tracks in 19 states.

Perhaps most intriguing, High Limit will begin awarding charters after the first season is complete. Sweet said the series will award five charters to its top-five teams in points at the end of the 2024 season, and five more after the 2025 season. It's all part of their overall vision to elevate the sport.

"We're trying to create some equity for these team owners who are making huge investments," said Sweet. "It's no different than any other major sports league that has a franchise or a charter system."

Launching a 60-race schedule and introducing a charter system is a big swing for a new sanctioning body with only 12 total races under its belt. But it's a risk worth taking, according to Sweet.

"The biggest thing is that we're trying to make it a more sustainable business for car owners and to capitalize on the momentum of what's been happening for sprint car racing over the last few years," he

said. "We've been seeing larger audiences show up at the race tracks and streaming audiences growing, which has created a lot of opportunities to raise purses and try to share the money more evenly through the whole ecosystem. The ultimate goal for us is to improve every aspect of sprint car racing and be good stewards for the sport."

The series plans to invest more money into safety and help race tracks make safety improvements, while also improving the overall fan experience at the facility. Additionally, High Limit will prioritize working closer with team owners by increasing transparency and "treating them more like partners."

"We want to make it feel like a professional sports league," said Sweet. "I think these owners need it to be more of a business rather than a hobby or something they are toying around with on the side. It's a big money business behind the scenes."

The World of Outlaws has long touted its series as, "often imitated, never duplicated." In 2024, High Limit Racing is rolling the dice to not just imitate or duplicate the Outlaws' tried-and-true brand of national 410 sprint car racing, but to elevate the status quo.

## THE POSITIVES

Between the high price of travel and skyrocketing costs, to remain competitive in sprint car racing means funding is front of mind for most teams.

"We're talking about businesses running



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down the road," said Allen.

Funding 900-horsepower businesses involves scratching by with a combination of purse winnings, tow money, points funds, sponsorship, and personal investment. Yet with growing purses, high-paying marquee races, strong crowd sizes, and robust car counts, 410 sprint car racing is thriving.

"There's a substantially increased amount of money on the line now," said Allen. "It's not all top heavy, which is good because we need to keep all those teams in business."

Ultimately, a key difference maker has been streaming. Since 2018, the World of Outlaws has broadcast races on its own streaming platform, DIRTvision, while High Limit streams on FloRacing. Beyond the national series, both streaming platforms work with various tracks and regional racing series to stream local races, providing revenue and exposure to the weekly racing circuit.

"High Limit is a great venue for

[FloRacing] to get subscribers," said Allen, who just signed a two-year contract with FloRacing to continue streaming NARC races. "We got a little more money this year, our audience is increasing, and collectively, I think we all play off each other. It's good for the sport."

Not only are streaming services bringing in new revenue and new fans, but also new ideas to enhance the nightly programs. "One thing that FloRacing has really pointed out is that these shows need to be run more efficiently and be done in two or two-and-one-half hours," said Allen. The idea is that efficient shows will keep fans engaged and entertained, both at the track and on the couch.

However, the money is making the biggest impact. Without FloRacing's partnership, High Limit Racing likely wouldn't have made the jump to a full-time national series or brought millions of dollars to the sport. Ultimately, this much-needed influx of

funding is creating new opportunities for teams around the country.

"I think it will open up some opportunities for more race teams to go out on the road and have a chance to make a living from it," said Gappens.

For example, Sweet said the All-Stars only had a few full-time teams last year, but at press time, High Limit has 17 drivers fully committed to its 60-race season. "I feel like we upgraded the All-Stars to the position we're in now with High Limit Racing. It's a lot more equivalent money-wise to where the World of Outlaws are at."

In addition to creating more full-time teams, it creates new opportunities and aspirations for young drivers. "Hopefully more up-and-coming drivers will look at winged sprint car racing as a viable option to make their livelihood," said Sweet.

Gappens agreed about the importance of developing new talent. "From a promoter standpoint, I think that's really

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important to generate new stars. Any sport needs new stars and new [drivers] for people to cheer for.”

For most aspiring young drivers, the road to competing full time in a national series begins at the local track, in the local series. This could be a boon to the local racing scene according to Doug Johnson of Huset’s Speedway in Brandon, South Dakota, and Jackson Motorplex in Jackson, Minnesota.

“I think it’s a lure to some of these young kids coming up,” said Johnson. “Having both series on both coasts is going to help that. In turn, most of them aren’t going to jump right to the World of Outlaws or High Limit. That’s where the local racing is going to benefit from getting some of those guys.”

With more sprint cars on track, builders and parts manufacturers are another potential benefactor.

Dan Musselman of Maxim Chassis in Springfield, Illinois, is not concerned about the High Limit and World of Outlaws duel.



Eldora Speedway will host multiple nights of racing for both the World of Outlaws (seen here) and High Limit Racing in 2024. So which series will prevail? “From a track perspective, it’s butts in the seats,” said Eldora GM Jerry Gappens. “The fans will be the jury on whether they like it or they don’t.”

“We still sell to the same customers, and it really doesn’t matter to us what series they’re in.” He described business as “very solid,” though not at the peak he experienced during the COVID-19 pandemic. He’s added three new employees over the past year to increase production and believes his shop’s outlook is positive.

“The small business economy is still pretty good, and that for the most part is what

drives our business,” observed Musselman. “Australian business has picked back up after COVID-19, that also helps with our volume.”

Ultimately, Sweet believes healthy competition between the two series will lead to a better result for fans, drivers, teams, and the entire sport. He cited the fact that both High Limit and the Outlaws now travel with a safety team, and nightly features pay

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"These are things that wouldn't happen without competition," said Sweet. "The Outlaws have raised their bar, they've doubled their tow money, they upped their purses. We pushed them to make improvements, and I'm sure they're going to push us to step up our game. In the end, there's going to be more teams that can be more sustainable with all the extra resources out there, and I believe the fans will win with more content to watch and races to attend."

### THE CONCERNS

Between two national touring series, there will be 146 race dates scheduled for the 2024 season.

"As a promoter, I always worry about oversaturation of a product," said Gappens.

While these races are spread throughout the country, that translates to many high-



In October 2023, High Limit Racing acquired the All-Star Circuit of Champions (seen here) from Tony Stewart. The Midwest-based series only had a few full-time teams last year, while 17 drivers will go full-time with High Limit Racing. "I feel like we upgraded the All-Stars to the position we're in now," said Brad Sweet. "It's a lot more equivalent money-wise to where the World of Outlaws are at."

paying races that need to be promoted, attended, and streamed. 410 sprint car racing continues to grow, but 2024 will provide a significant stress test to its overall popularity.

"My biggest concern is if the average fan has the disposable income to go to all these bigger events, and then in turn, what is that going to do to weekly racing," said Johnson. "I have major concerns, but we'll just wait

and see how it plays out."

While increased purses are a boon for teams and drivers, they are a challenge for local tracks. Gappens said the World of Outlaws raised purses by 20% to tracks for the 2024 season, which was "a big hit in one year." While he said the price of hosting High Limit and World of Outlaws was comparable—Eldora is hosting both series this year—increased costs are



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difficult to absorb for small tracks making small margins.

He added, "20% is going to make a big difference on the bottom line for all of us, but especially at a family-operated race track."

A major concern is if the increased costs will force promoters to raise ticket prices. "For every action, there's a reaction, and we've got to be sensitive to when we price ourselves out of the market for the common race fan," said Gappens. "That's what's getting lost in this that worries me with the sanctioning bodies."

National touring sprint car shows typically draw healthy crowds to tracks because of big-name drivers, but most facilities rely on weekly shows to stay in business. That's where the Catch-22 of streaming services comes into play. For all the benefits they have brought to sprint car racing, side effects are showing up in the form of lackluster weekly attendance.

"If people have just an inkling that it might

rain or it's too cold, they're not going to go to the races, and they'll stay home and watch it," said Johnson. "[Streaming] is too convenient for weekly racing."

This is creating a unique problem for track promoters. The streaming money may help fund their operation, but it can also keep people away from the track.

"As far as the national series, I think the streaming is great and it does great for them," explained Johnson. "But we have got a weekly series we need to worry about and put butts in the seats because if we don't, the doors aren't going to stay open. It's that simple."

The surge in popularity for 410s is also decimating another sprint car class that was a mainstay at the weekly level—360 sprint cars.

"My son has raced 360s for a number of years, and it's not cost effective," said Johnson. "You look at it from a car owner standpoint, you're spending the same

amount of money [as 410s], but you're racing for half the money."

As the sport continues to grow, teams are sparing no expense in their fight to be competitive. But this mindset creates another challenge to the segment's financial sustainability.

"We're our own worst enemies with the cost," observed Gappens. "Now it seems we've got to have titanium parts; you've got air pressure bleeders. When you bring technology into it, you're increasing the cost."

Keeping costs in check for teams, tracks, and fans will be a key challenge for these sanctioning bodies to navigate.

### THE BIG QUESTION

Is there enough support for two national touring series to survive in 410 sprint car racing?

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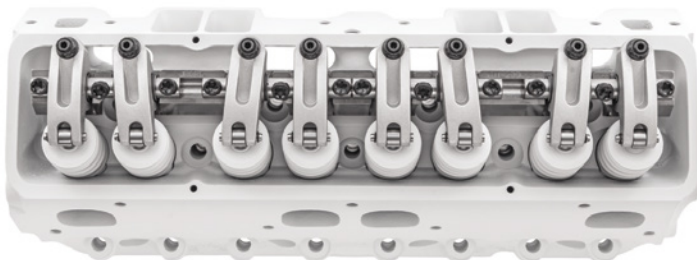
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until the dust settles at the end of the season.

"We're going to give fans a good sampling of everything, and then the fans will be the jury on whether they like it or they don't," said Gappens. "They'll vote by buying tickets to these events."

Eldora will be an interesting case study, as it is hosting multiple nights of racing for each series. In Gappens' view, the success or failure of either series will be easy to determine. "From a track perspective, it's butts in the seats. If our attendance is the same or hopefully up for all of it, that'll be a great success. If we see a drop off on one or the other, then that obviously is going to raise a red flag and cause some concern about the direction we're going."

410 sprint car racing is entering a new era. With more money, more races, and two national series going head-to-head, there's a lot on the line this year. While disagreements about the sport's direction and costs have led to this latest split, the sport's overall success is ultimately what's most important.

"We certainly don't want to hurt the sport," said Sweet. "We're going to be very open-minded and try to make the right judgment calls on what's going to be better for the overall health of the sport. I just hope in 10 years, this is a much larger sport, a more professional sport, and hopefully a lot more people know what a sprint car is." **PRI**

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# UNDERSTANDING THE DYNAMICS OF MIDGET RACING

Although the segment faces some challenges at both regional and national levels, midget racing continues to serve as a springboard into professional motorsports careers for many competitors, and events like the Chili Bowl have become an annual pilgrimage for racers and fans alike.

By Bradley Iger





**M**idget racing's first organized events date all the way back to 1933. Members of the Midget Auto Racing Association gathered at Loyola High School Stadium in Los Angeles, California, to kick off the sport's first official weekly program that summer. Thanks to close competition and a fairly straightforward premise, interest soon spread to other regions throughout the country and beyond.

Nearly a century later, midget racing finds itself affected by challenges that have become commonplace in most types of modern-day oval track competition, but its inherent appeal and rich history have allowed the segment to endure where others have faltered.

"Costs have gone up quite a bit over the past few years, but that's certainly not unique to this segment," explained Brad Hayes of the Kenyon Midget Series, Lebanon, Indiana. "That has impacted things at the regional level. The purses don't justify some of the costs for engines and things like that, so that has caused some difficulties. But there are plenty of folks who are still doing it at the national level. There's an incredible passion for this sport—that's one thing that midget racing really has going for it. There are people who will always run a midget, no matter what."

Midget racing is also buoyed by events like the Chili Bowl Nationals, which sees hundreds of competitors from a range of oval

track disciplines converge on Tulsa Expo Raceway in January for the annual, nearly week-long event. This, along with a concerted effort to unify the ruleset among various national series to curb cost increases, has given top-tier midget racing momentum that's not expected to wane for the foreseeable future. Meanwhile, regional series have also developed their own strategies to ensure that the segment remains on an even keel.

## NATIONAL INTERESTS

"It's just such a fun and entertaining segment of dirt racing," said Nick Graziano of the Xtreme Outlaw Midget Series, Concord, North Carolina. "It's one of those situations where all the pieces are in place: It's a cool car, and they put on great shows no matter where you're watching them because they mostly race on small, bullring tracks. That forces them to have this three-wide, tight-corner, slide job kind of racing. One of the big things that we've seen lately is that midget racing has become part of the ladder for future stars. We've seen guys like Kyle Larson and Christopher Bell come out of midgets, and we're also seeing newer young talent like Jade Avedisian, who won the Xtreme title last year and became the first woman to win a national title in any form of dirt racing. Racers are making a name for themselves here."



“Midget racing has become part of the ladder for future stars,” said Nick Graziano of the Xtreme Outlaw Midget Series. Among them is Jade Avedisian, left, who won the series title last year “and became the first woman to win a national title in any form of dirt racing. Racers are making a name for themselves here.”

Graziano also said that Toyota’s support of the segment has helped to elevate its visibility and appeal, and that the automaker often develops fledgling talent here before they step up to other motorsports segments. The company’s midget racing engine package has also become one of the go-to options for teams that are determined to put together a highly competitive car.

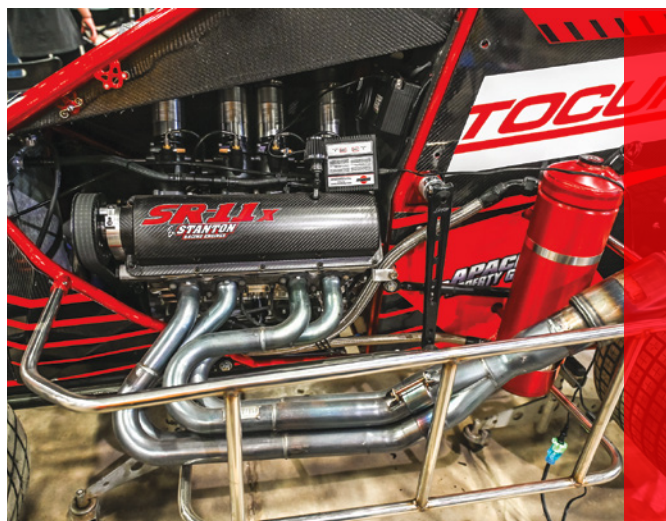
“The Toyota TRD and Stanton SR-11x motors are dominating right now,” observed Tommie Estes of USAC (United States Auto Club), Speedway, Indiana. Estes said that with the recent influx of technology in the sport, the sanctioning body has updated its rulebook to prevent teams from taking advantage of the adjustability that the electronics can provide.

“Everything’s computerized now, and that makes it easier to manipulate things,” he explained. “There are companies that are making ignition boxes with dual settings, and that basically allows you to

create a type of traction control based on which setting you’re using, and we don’t allow any form of traction control. It forced us to change the ruleset to allow only one ignition switch in the cockpit. But that’s always been the nature of the sport—

you’ve got a set of rules, and some people try to work in the gray areas. It’s like a chess game. You might not get caught tonight, but when you do, it’s checkmate. And then we start a new game.”

With engine packages venturing into



“The Toyota TRD and Stanton SR-11x motors are dominating right now,” said Tommie Estes, competition director for USAC’s Circle Track division. With the recent influx of technology in the sport, USAC has updated its rulebook to prevent teams from taking advantage of the adjustability that the electronics can provide.

the \$50,000 range and beyond, midget racing at the national level requires funding that has some teams eyeing sprint cars and other divisions as a potentially viable alternative. Yet there are still those who're steadfastly loyal to the segment and have the means to invest significant sums of money to stay competitive.

"We noticed that people were building one-off cars specifically for this event," said Bryan Hulbert of the Chili Bowl Nationals, Tulsa, Oklahoma. "For a long time, the

*"THE BASIC PREMISE OF MIDGETS HAS AN INHERENT APPEAL: FAIRLY LIGHTWEIGHT CARS WITH MORE HORSEPOWER THAN THEY REALLY NEED, AND EXCITING COMPETITION."*

Chili Bowl didn't have a mandate that said that your chassis had to use a certain tube thickness or a certain size, and fortunately we've never had an incident that really called the issue into question. But we were concerned about a situation where someone might have run a light car at the Chili Bowl and then goes on to sell it to another racer who goes out and runs at a 3/8-mile track. That could be a dangerous situation, so in the interest of making things as safe as possible, we're implementing a new chassis rule for 2025. Ultimately it really just brings things in line with the ruleset that's already in use by the major sanctioning bodies here."

While the notion of building a car exclusively for one event might seem extravagant, the Chili Bowl has evolved into a massive, must-attend annual event for many competitors, fans, and companies in the oval track racing realm. The indoor race is held in January, when most series are still on hiatus, which makes it much easier for competitors to allocate time for it on their

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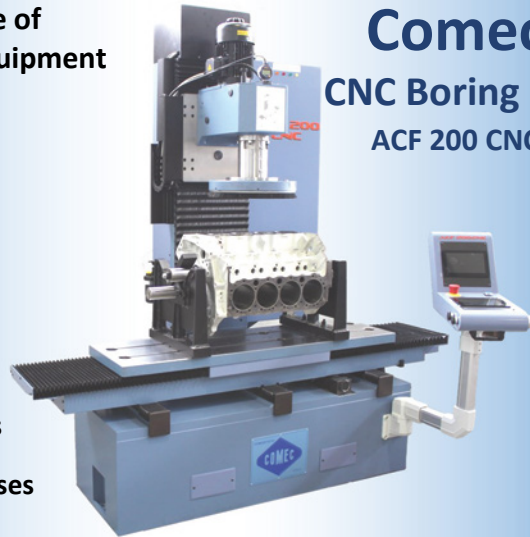
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The Kenyon Midget Series has adopted a spec model to keep costs down. "It's especially good for competitors who are new to this sport," said Brad Hayes. "They can get a taste of midget racing without having to spend 50 grand on an engine, or something like that."

racing calendar. More than 360 drivers and thousands of fans showed up for the event earlier this year.

Hulbert also said that the Chili Bowl's ability to attract big names in racing has

in turn brought more attention from big manufacturers to the sport as well as to this event, specifically, which has only added to its appeal. "The event has a really unique atmosphere. It's been compared to the

energy that you feel on the grid at Indy. If you roll in there, going up against that many other drivers, and walk out the winner, you've done something."

A substantial purse incentivizes racers

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to make time for the Chili Bowl, too. Hulbert explained, “\$20,000 on Saturday night and \$2,000 just for making the main event is nothing to sneeze at. You look at the run that Logan Seavey had this year, where he won his qualifying night, won the Race of Champions, and then won the main event. Between that and the lap money, he walked out of there with over \$30,000.”

Graziano pointed out that those circumstances provide fans with an opportunity to watch some of the biggest names in the sport mix it up alongside future stars. “You get to see this incredible diversity of drivers competing in it from national quarter midgets, World of Outlaws, Late Models, NASCAR, and potentially even IndyCar. It’s become this event where almost the whole motorsport world kind of comes together at a time of year where there aren’t other races pulling attention away from it.”



Toyota’s support of midget racing has helped to elevate its visibility and appeal, said Nick Graziano of the Xtreme Outlaw Midget Series. The automaker often develops fledgling talent here before they step up to other segments. Photo by Jacy Norgaard.

### A SPECIALIZED APPROACH

While those competing on the national stage are bolstered by sponsorship support and events like the Chili Bowl, some regional series have forged a path

of their own to keep the sport viable for teams whose budgets simply cannot match that pace. Rather than seeking to maintain parity with national series, the Kenyon Midget Series has instead adopted a spec

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model to keep costs down.

"The biggest issue when it comes to cost is the engines," Hayes said. "National-level engines can cost tens of thousands of dollars, whereas the spec engines in our series are \$4,000 for a fresh one. So that's something we're doing at the local level to bring some participation back. In our series, we've seen car counts increase over the past couple of years."

The Kenyon Midget Series also uses a spec chassis. Although these mandates preclude participating teams from potentially campaigning the same car at the national level, the ruleset offers some compatibility with USAC's D2 series. More importantly, Hayes said, the rule structure allows teams to get involved without requiring a national-level budget to do so.

"It's especially good for competitors who are new to this sport. They can get a taste of midget racing without having to spend 50 grand on an engine, or something like that,"



The Chili Bowl's substantial purse incentivizes racers to attend the annual January event. 2024 champion Logan Seavey, seen here, "won his qualifying night, won the Race of Champions, and then won the main event," said Bryan Hulbert. "Between that and the lap money, he walked out of there with over \$30,000."

he explained. "The basic premise of midgets has an inherent appeal: fairly lightweight cars with more horsepower than they really need, and exciting competition. But when you look at how much it costs to run at the national level, it's almost cheaper to run a sprint car these days. And depending on where you are in the country, there may be more races available, and the potential to win more money over there. We've had racers who've run with our series for a year or two and then just jumped straight into a 410 sprint car."

### THE PATH FORWARD

Hayes added that, at the regional level, social media platforms like Facebook have been an indispensable tool not only for bringing greater visibility to the sport, but also from logistical and educational standpoints. Driver meetings are often held via Facebook Live events, and the Kenyon Midget Series makes information



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about effective chassis setups readily available through its page so that teams can quickly get a competitive car up and running. Because the segment often serves as a temporary waypoint on the path toward larger racing ambitions rather than a long-term destination, Hayes thinks that rentals and arrive-and-drive programs may have a promising future at the regional level.

"There's a market for something where the drivers can just show up, get in the car, and go race rather than buying their own car and needing a truck and trailer to get it to the track," Hayes said. "There's already some of that at the national level, and I could see that continuing to grow. Especially with a spec series like ours, I think it's perfect. It doesn't make sense to invest a lot in the equipment if the plan is to move on to another series in a year or two."

While costs will likely continue to remain high at the national level, recent efforts to

bring uniformity to the various series through chassis and tire mandates should help prevent expenses from swelling further in upcoming seasons.

"This past year we moved to a specific tire requirement, the SP3 Hoosier," Estes said. "A lot of the midget racing organizations have moved to this tire as well. We've had teams that have won races on the same tire two or three times, whereas before that wasn't really possible with the softer SP2."

Looking ahead, Graziano said that the Chili Bowl might be used as the model for the expansion of existing events in the future, or when organizers consider new ones to add to the race calendar. "I think the segment is going to continue to grow as these bigger names want to get involved and bigger stories are created as a result. We'll see that full-fledged 'event' approach become more prevalent. Because of that, events like the Milton Hershey Appalachian

Midget Week are poised to become the next big thing in this segment. It's really about finding ways to elevate these events beyond being just another dirt race and into something that's going to attract the whole family." **PRI**

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By John F. Katz

It's been just one year since retired racer and lifelong entrepreneur Dan Lawson acquired the EMI division of Speedway Motors and renewed production of Schnee Chassis sprint cars. Since then, cars from the newly formed Schnee-Lawson Chassis have won the Knoxville Nationals and, said Lawson, "pretty much every big event in the country," with a roster of drivers that includes Kyle Larson, Rico Abreu, Tyler Courtney, Ryan Timms, Chase Randall, and Paul Nienhiser.

In October, Schnee-Lawson moved into an all-new, state-of-the-art facility at the I-70 Motorsports Park in Odessa, Missouri,

*"RACING IS WHERE I DEVELOPED MY WORK ETHIC. I LEARNED EARLY ON THAT RACING DEMANDED A LOT OF TIME AND A COMMITMENT TO EXCELLENCE IF YOU WANTED TO REACH THE TOP."*

about 15 minutes east of Kansas City. "When we opened, we had 40 sprint cars on back order and a deadline for each car," said Lawson in January. "Fortunately, we are on track to meet all of our customers' season-openers. Our mission isn't to become the largest sprint car chassis manufacturer, it's to be the best—through excellence in design, build quality, and safety."

### RACING TOWARD SUCCESS

A self-described "second-generation open wheel racer," Lawson "grew up with my dad driving midgets and sprint cars—and I followed in my dad's footsteps. Racing is where I developed my work ethic. I learned early on that racing demanded a lot of time and a commitment to excellence if you wanted to reach the top."

Lawson was 16 and a high school senior in 1974 when he drove his first race in a non-wing sprint car. He graduated to wing cars two years later. At 22 he founded the business that became Design Source Flooring, "and I spent the next several years focusing on that business. Then I got back into racing and won three championships as a driver, and then I put a younger guy in my car and won a couple of championships with him, too."





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By then it was the 1980s, and Lawson “kind of retired” from racing a second time, again to grow his flooring business. (Today, Design Source Flooring employs 125 people at locations in Kansas, Oklahoma, and Missouri.) He returned to open wheel racing in 2020, as sponsor and mentor to young racers Xavier and Natalie Doney—more about that later—and purchased EMI in April 2023.

Brian Schnee, Lawson reminded us, “has been designing and building sprint car chassis for over 35 years and is known as one of the best designers, builders, and TIG welders in the country.”

Schnee (say Shuh-nay) welded up his first chassis in 1985 and quickly earned a winning reputation with Doug Wolfgang at the wheel. That reputation, and Schnee Chassis sales, extended worldwide by the time Schnee merged his company with Speedway Motors’ Eagle Motorsport (later EMI) in 2013. Lawson stepped in when Speedway announced its intention to close EMI and end production in March 2023. Now Brian and Jean Schnee, his wife and longtime collaborator, have moved to Odessa, where Brian continues as designer, fabricator, and welder with Schnee-Lawson.

**QUALITY THROUGH CONSISTENCY**

Initially, Lawson leased the former EMI shop from Speedway and resumed production of Schnee’s sprint car chassis in Lincoln, Nebraska, while building his new plant in Odessa. The Schnee chassis was “tweaked” (Lawson’s word) a couple of years ago with input from team owner Paul Silva, and additional refinements have been made since then. But beyond good design, Lawson emphasized the consistent build quality made possible by the advanced production facility in Odessa. “The way we build our chassis is unique,” he said. An overhead crane system carries each chassis through a succession of specialized workstations, which Lawson called “an assembly-line approach, like GM or Ford... creating efficiencies and facilitating the highest level of quality control.” All tubing is US-sourced 4130 chromoly. “And we use

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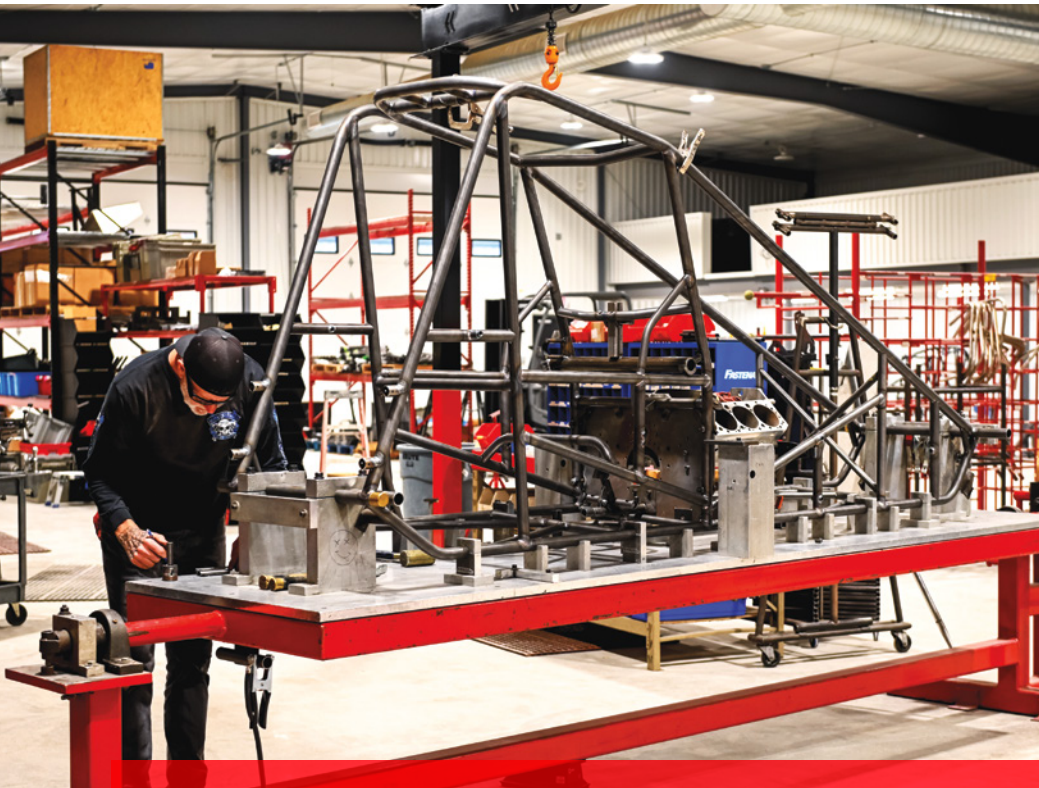
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“The way we build our chassis is unique,” said Dan Lawson. An overhead crane system carries each chassis through a series of workstations, which Lawson likened to an OE assembly-line approach, “creating efficiencies and facilitating the highest level of quality control.”

precision-built jigs and templates, so the way we bend our tubing, the way the car is tacked up and then welded, is all repeatable.

“A lot of our competitors can’t say that,” he added, which is why “occasionally you’ll hear a racer say, ‘Man, I really liked that car, but I can’t get this other car [from the same manufacturer] to feel like that car.’ They really like our cars because each car feels similar to all the others.”

In an effort to give back to a sport that has been important to him since birth, Dan Lawson, left, is mentoring up-and-coming drivers, including Xavier Doney, right. Lawson formed the Doney-Lawson Racing Team with Xavier and his sister Natalie. Their father, Mike, is GM of Schnee-Lawson Chassis.

It helps, no doubt, that Brian Schnee’s cars were already noted for their consistency. “Brian was building my cars when they bought Schnee out from EMI,” said Jimmy Jones, team manager and crew chief for Ryan Timms Racing. “We haven’t seen any variance in them, and we’ve not had a car that hasn’t worked yet.”



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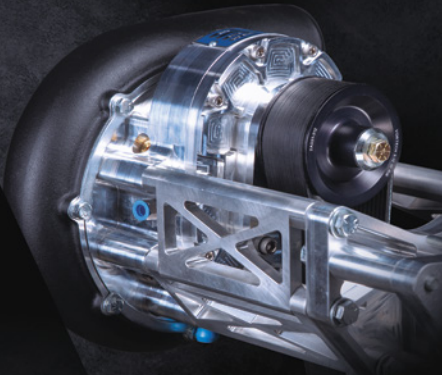
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Schnee's cars have certainly worked well for Timms, whose second-place finish at Red River Valley in August 2022 made him the youngest podium finisher in World of Outlaws history. (For then-16-year-old Timms, it was only his second ever WoO start.) In 2023, Timms scored eight wins in wing and non-wing 360s and 410s, including the Southern Sprint Car Shootout at Volusia.

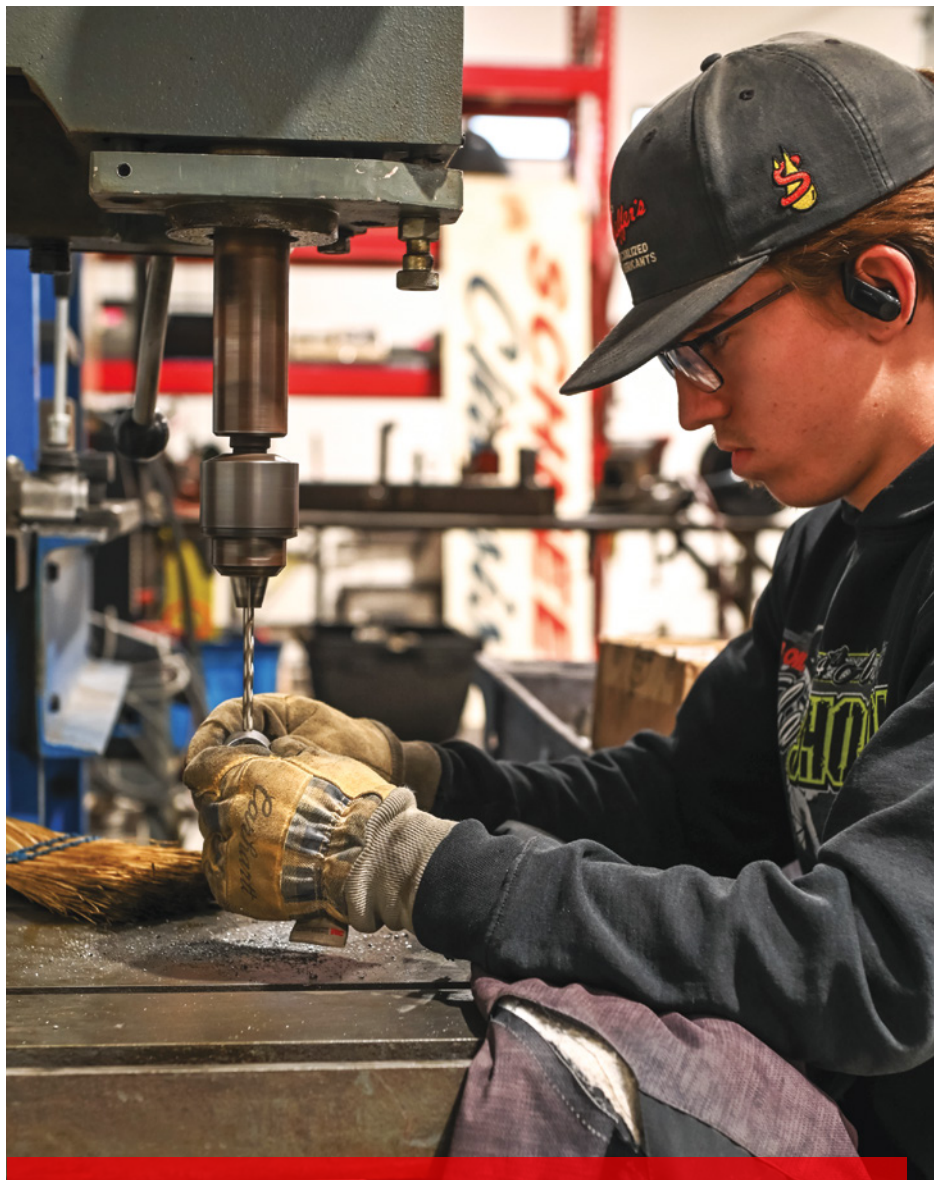
Jones has ordered four Schnee-Lawson cars for the 2024 season. "Brian is a really good welder," he added. "He's been with Wolfgang forever." Jones has also run an imported brand, "and they were decent cars, but they wore out really fast. They were a lot cheaper, but you have to buy a lot more of them. So I'm glad people are still manufacturing in the US. The craftsmanship is so much better."

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"If you are in the sport, you know who Brian Schnee is," added Tim Clauson, co-owner of Clauson Marshall Racing. "He's always had a stellar reputation. His cars are works of art. They are beautiful." Still, when Clauson Marshall launched its current program, it chose another chassis that "everybody seemed to be winning with. And we were happy, we had good luck with them."

Clauson met Dan Lawson at a USAC race in South Dakota "a couple of years ago. I started keeping track of what he was doing with Xavier Doney, and we'd talk now and again." When their conversation turned to business last summer, Clauson met Schnee and came away impressed. "His passion for what he does, and the way he does it, matched our passion for the sport."

Clauson agreed to try a Schnee-Lawson



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Dan Lawson's mentorship of young talent goes beyond the driver's seat and into the shop. "Two years from now, we will have mentored and trained several people to design, fabricate, and TIG-weld our race cars," he said, with the goal of making those chassis indistinguishable from chassis built by Brian Schnee.

car at the 2023 Charlotte World Finals. "We ran in the top five every night. We were quick time in our group one night, and second quick time the next night, and we won at Cherokee. After that, we were all in.

"We only had the one car they built for Charlotte, and we had to turn over our whole inventory," Clauson continued. "But Brian and Dan have been phenomenal. They got two more cars done for us right

away, to get us through Florida." When we spoke in early February, Clauson expected delivery of a fourth car that month and a fifth around April.

## OFFERING OPTIONS

Schnee-Lawson's standard product line starts with a bare frame. Customers can also choose a Basic Kit, which adds a rear motor plate, torque tube hoop, and Dzus springs.

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## BUSINESS PROFILE

A Dressed Kit adds body panels (carbon fiber is an additional option); and with the poplar Deluxe Kit, “they only have to put in a rearend, steering, and an engine,” said Lawson. Schnee-Lawson also sells axles, drag links, and tie rods, plus accessories such as nerf bars, although they leave shock absorbers to the shock experts: “That’s a whole ‘nother world of specialization.” Lawson added. “But we can build a roller if the customer supplies the rearend and steering. They could pick it up, put in an engine, and go race that night.”

While maintaining the baked-in repeatability described above, Schnee-Lawson can customize a chassis to meet a driver’s individual preferences—“as long as it meets our safety standards.”

The shop has also modified existing chassis. Lawson recalled adding a pair of front wing mounts to Kyle Larson’s car on a Saturday when Larson’s team was in town. “He had just one wing mount on each side of the downtube, and decided he did not like the balance; he wanted more downforce

Brian Schnee, below, has been designing and building sprint car chassis for more than 35 years. He is “known as one of the best designers, builders, and TIG welders in the country,” reported Dan Lawson.



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*“WE WANT TO MAKE SURE OUR CARS ARE SUCCESSFUL, AND THAT EVERYBODY WINS, SO WE’RE WILLING TO GO THE EXTRA MILE TO DO WHATEVER WE NEED TO DO TO HELP OUT OUR CUSTOMERS.”*

further forward. So we added new wing mounts on each side of the downtubes, so he had four instead of two.” What may sound like a small change can make a big difference when a driver is “looking for that sweet spot where the car balances out.”

Another advantage of the new facility is ample room for repair work. “If they wreck, we have the space in the building for them to leave the car,” Lawson added. “We’ll do whatever we need to do to help them out.”

Promotional support is provided by Lawson’s son Justin, whose JDLawson Media maintains Schnee-Lawson’s Facebook page. Social media, said Lawson, has “helped brand Schnee-Lawson Chassis, while our customers and fans stay in touch with our builds, and with who is racing our chassis.”

Beyond that, said Lawson, new customers are attracted by “our reputation for quality design, customer service, and how we treat people. Every customer becomes a friend. If someone is at the track, and they are struggling with a setup—or whatever—they can call us, and if one of us can’t answer, we’ll return the call in a matter of minutes. They can call us and reach us after hours—we’ll take those calls. We want to make sure our cars are successful, and that everybody wins, so we’re willing to go the extra mile to do whatever we need to do to help out our customers.”

## BUILDING THE FUTURE

Even before buying EMI, Lawson was not only looking for a way to get back into racing, but to give back as well, “to the sport that’s been part of my life since birth.” Lawson thought the best way to do that would be to help develop some younger drivers. So in 2020, “I began going to the race tracks around the Midwest, just watching different drivers and their families,” not only “spotting talent” but also observing family dynamics. “That’s how I discovered Xavier and Natalie

Doney. The whole family was involved, working on the cars at the track. And these kids were phenomenal. They were doing great, driving older cars with older engines, because that’s what mom and dad could afford. I decided I could help the Doney family take their kids a lot farther than they would be able to on their own. It’s been an incredible ride.”

Xavier and Natalie had been racing since they were 5 1/2 and 4 1/2, respectively, starting in quarter midgets and then moving up to micros. Natalie is now driving a 305, while “we put Xavier directly into a 410 when he was 14,” said Lawson, “and into a 410 wing car about a year ago.” Here too, social media has provided a boost, helping “fans keep up on our in-house Doney-Lawson Racing team.”

Xavier has also demonstrated his potential as a builder; mentored by Schnee, he “has become an incredible welder just in a matter of three months.” Their father, Mike Doney, is now general manager of Schnee-Lawson. “After Brian and I put together our deal,” said Lawson, “I approached Mike, who was looking for a career change, and he came aboard.

“Over the next couple of years, we want to build up our racing program, make it bigger, and allow the kids to go even further and really showcase their talents.” (The team sponsor is yet another Dan Lawson enterprise called Motor Haven, a storage facility for cars, boats, and RVs, situated on the same property as the Schnee-Lawson facility.)

Additionally, “Mike and I are growing and expanding our mentorship program, training and developing the next generation of Schnee-Lawson fabricators, designers, and welders. Two years from now, we will have mentored and trained several people to design, fabricate, and TIG-weld our race cars, so if any of our customers sets any of our chassis side-by-side, they won’t be able to tell if the car was built by Brian, or by any of our other awesome employees.” **PRI**

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# HOLDING A GRUDGE





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SPIRIT AS WELL AS A  
SENSE OF COMMUNITY  
THAT CAN GET LOST IN THE  
POMP AND CIRCUMSTANCE  
OF ORGANIZED DRAG RACING.

By Bradley Iger

A vast array of subgenres has cropped up since the advent of drag racing, but it could be argued that the original concept continues in its purest form as grudge racing.

Recent years have seen grudge racing itself splinter into niches like 'no time' and 'no prep' racing, but the core concept remains consistent: a straight-line competition between two vehicles with minimal preamble.

While larger, better-publicized drag racing events and series put on by sanctioning bodies like the NHRA kept the segment on the periphery for a time, recent years have seen a resurgence of interest in grudge racing. As Josh Robinson of Ohio Grudge Racing in Columbus, Ohio, explained, it's not hard to understand why.

"It's born out of what always made street racing appealing, but it's the more legitimized events that started to crop up about seven or eight years ago that really gave it a push, especially the 'no time' stuff," Robinson said. "Big egos, big money, lots of flash, and lots of heated negotiations and arguments between two camps. It eventually resulted in two racers lining up for a large sum of money. I've seen grudge races where there's been as much as 60 or 70 thousand dollars on the line. That tends to create an exciting atmosphere."

For decades, grudge racing's inherently clandestine nature relegated this type of competition to word-of-mouth events held on backroads and side streets. But thanks to concerted efforts by promoters, organizers, and the racers themselves, these types of events have become a consistent draw at drag strips across the country.



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While purpose-built drag cars do turn out for grudge races at Motorsport Park Hastings, many of the participants are “people in street cars who’re looking to put them through their paces,” said Jeff Lacina. “People are looking for ways to exploit [their car’s] performance in a safe environment.”

## TAKING IT TO THE TRACK

“There’s always been a niche for this type of racing, but for a long time it was pretty underground,” said small-tire drag racer Cory Clemens. “I think it really started to find a place in the racing world when Duck of Duck X Productions started including these types of races in his events in the early 2010s. Duck’s races were originally kind of a grudge type of vibe. That’s why those events were so big back in the day. There’d be 500 people at the starting line, betting and going nuts. He had all of that no-time stuff, and

And when you really boil it all down, the money is a big factor. It’s all about how you can make the most profit out of what you’ve got. That’s part of the appeal of street racing. Eventually that scene is going to get out of hand, though, and folks are going to say, ‘OK, let’s take it to the track.’ But the traditional formats at the drag strip aren’t going to allow you to play your game if they’re showing your times. So those folks are going to organize events where the times aren’t being shown because there’s a demand for it. Suddenly you’ve now got no-time events at the track. But when the money starts shifting to other types of events, it takes a lot of those racers with it. Eventually it all kind of resets again.”

**“I’VE SEEN GRUDGE RACES WHERE THERE’S BEEN AS MUCH AS 60 OR 70 THOUSAND DOLLARS ON THE LINE.”**

then he slowly started adding Radial vs. The World and Pro 275 stuff, going into a more polished kind of format.”

Clemens said that, as with many things in life, drag racing trends tend to be cyclical. “Like everything else, it starts on the street.

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us to do it back when we were teenagers. And you get these rivalries: Aiken versus Augusta, or North versus South, etc. They're communities that kind of keep to themselves, but they'll call out one another to pair up and settle things."

Perhaps the biggest factor that contributes a sense of excitement to grudge racing is the fact that the performance capability of the racers and cars involved can't be easily quantified. "You can't really tabulate what one racer can do against another if you don't have times, and removing the ability to apply statistics really plays into it," said Robinson. "Gambling is a huge part of the culture of

no-time and grudge racing, and that just ratchets up the intensity both for the racers and the spectators."

The simplicity of this type of drag racing also inherently sets a low barrier of entry for grassroots competitors. While racers in the upper echelons of grudge racing might be competing for tens of thousands of dollars

Gambling is a huge part of the culture of no-time and grudge racing, which increases the intensity for racers and spectators alike, according to one source.





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in what are effectively purpose-built drag cars, the format also attracts those with mildly modified street machines who might be racing for a few hundred bucks—or just for the fun of it—at more exhibition-minded events.

“People are always looking for something to do with their car hobby, and grudge racing can provide an option that doesn’t require a big investment or a lot of hoops to jump through in order to get involved,” said Jeff Lacina of Motorsport Park Hastings in Hastings, Nebraska. “While we do see some folks bringing more purpose-built vehicles to some of our grudge racing events for shakedown and testing runs, but a vast majority of our grudge racers are people in street cars who’re looking to put them through their paces. Today’s cars are so good compared to what was available just 10 or so years ago, and many of our racers are looking for ways to enjoy all that performance in a safe environment. It’s very affordable and there’s no complex tech inspection. People will often come just to spectate and hang out, and then later decide to make some passes when their buddies show up.”

The recent rise of reality-style television shows like “Street Outlaws” has also elevated grudge racing’s visibility significantly. But when it comes to big money, one-off events like those organized by Big Jake Promotions in Carrollton, Texas, Clemens said that Facebook and other social media platforms tend to be the most effective way to get the word out. And the numbers involved tend to get the racers talking.

“Right now, Big Jake’s stuff is really getting a lot of attention because of the size of the pots that they’re putting on,” Clemens said. “No-time racing is still pretty underground—I didn’t even know about one of their events until someone sent me a flyer for it and asked if I was going. I think it’s like \$30,000 for the Friday night race and \$50,000 for the Saturday night race. So you could go home with 70 or 80 grand just from a couple of passes over a weekend.”

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# BUILT FOR THE BUILDER

that are held at Motorsport Park Hastings and Carolina Dragway tend to attract the usual suspects—late model Ford Mustangs, Chevrolet Camaros, Dodge Challengers, and the like, many of which are outfitted with power adders like turbos and superchargers

*“PEOPLE ARE ALWAYS LOOKING FOR SOMETHING TO DO WITH THEIR CAR HOBBY, AND GRUDGE RACING CAN PROVIDE AN OPTION THAT DOESN'T REQUIRE A BIG INVESTMENT OR A LOT OF HOOPS TO JUMP THROUGH IN ORDER TO GET INVOLVED.”*

as well as DOT-legal drag radials. While these street machines are tamer than the tube-chassis cars that are typically seen at big-money events, it doesn't necessarily mean that they're slow.

“A lot of the younger generation that's coming in now aren't really focused on building something that's basically a Pro

Mod on steroids for grudge racing,” said Owen. “A lot of these late model muscle cars are getting to be 10 or 12 years old now, so they're getting cheap enough to modify, and some of them are extremely fast. These kids don't shy away from big stakes, either.

There was a race not long ago between two Challenger Hellcats where they were holding \$60,000 on the starting line for one run.”

But there are also those who're interested in taking their builds to more purpose-built levels. “We have guys who're turning the latest Camaros into tube chassis cars with solid rear axles, but for the most part, the Fox-body Mustang platform is still really popular for competitors

who're racing at that level,” Owen continued. “Small blocks are common, and some of the more serious guys are using aftermarket blocks and heads, or having engines built professionally by shops like TRE Racing Engines. We see turbo setups and some ProChargers, but nitrous-fed combinations tend to be really popular around here.



According to racer Cory Clemens, most of the cars that show up for grudge and no-time racing are steel body tube chassis cars. He sees a trend toward classic muscle cars and third-gen Camaros. “I notice that because that's what I run. They're still relatively inexpensive.”

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Nitrous is cheap, and perhaps more importantly, it's much easier to hide than a turbo or supercharger setup. A lot of folks are more comfortable tuning those types of combinations."

*"THESE CARS STILL LOOK LIKE THE CARS THAT YOU SEE DRIVING DOWN THE ROAD. I THINK THAT MAKES IT MORE RELATABLE."*

Clemens said that, although they may be underpinned by a tube chassis, all-steel, all-glass cars have always been popular in no-time racing. "Ten years ago, a big no-time combination might've been a Fox-body Mustang with spray on it and radials, but like everything else, the wildfire gets to it, and it just climbs and climbs. Next thing you know you've got full-blown, carbon fiber-bodied Pro Mods racing in no-time events. We're seeing more of that now, but it's definitely not every car that shows up. Most of what's showing up is still steel-body tube chassis cars, and they're staying competitive. We still see a lot of Fox bodies, and we're actually seeing a trend of 1969 Camaros and other

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Grudge racing was “born out of what always made street racing appealing, but it’s the more legitimized events that started to crop up about seven or eight years ago that really gave it a push, especially the ‘no time’ stuff,” said Josh Robinson of Ohio Grudge Racing.

vintage muscle cars like that. I’m also seeing a lot more third-gen Camaros pop up, and I notice that because that’s what I run. They’re still relatively inexpensive, so that’s kind of a fad right now.”

He noted that while pretty much anything goes in terms of vehicle dimensions for many top-tier, no-time events—which lend themselves to those Pro Mod-style carbon bodies—the all-steel, all-glass classes tend to require stock vehicle dimensions even if there’s a tube chassis underpinning the factory-style bodywork. “I think that’s another reason this type of racing resonates with fans. These cars still look like the cars that you see driving down the road. I think that makes it more relatable,” Clemens added.

Much like the platforms, the engine combinations used at the top tier of no-time grudge racing have evolved significantly as well. “A few years ago it was about turbo LS combinations and small blocks with nitrous making about 1,500 hp,” Clemens said. “And there was a phase where everyone

was running those twin-turbo 481X engines. But now, if you’re not bringing a twin-turbocharged, Alan Johnson-style Hemi, or some other kind of setup that can make 5,000 hp, you’re kind of behind the ball. While track conditions play into how much you can actually put down, it’s good to have the power for the back half.”

Outside of exhibition and test-and-tune events, the consensus is that the ongoing health of the grudge racing segment is largely tied to the purses that are up for grabs at these events. If that money shifts to no prep and other drag racing niches, top talent may also gravitate in that direction as they seek payouts that are in line with the level of investment involved, whether that’s at the track or somewhere else. The key, Owen said, is always being aware of the current temperature in the scene and taking a proactive role when needed.

“With true, ‘I’m calling out’ grudge racing, I think it’s really about knowing your customers—the guys who are coming to the track,” Owen explained. “We pay a lot of attention to social media so we can stay on top of what’s going on in that world. There are certain times of the year when it starts to get a little quiet, and when that happens, we get on the phone. We’ll call a couple of people and say, ‘Hey, let’s try to put something together—we’ll throw some money on top of whatever y’all come up with.’ You get that rolling, then you start marketing it, and it always generates more interest. You end up with four or five locked-in races for the night, and that’s what you sell your tickets on.” **PRI**

## SOURCES

**Carolina Dragway**  
carolinadragway.com

**Clemens Motorsports**  
clemensmotorsports.com

**Motorsport Park Hastings**  
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By Drew Hardin

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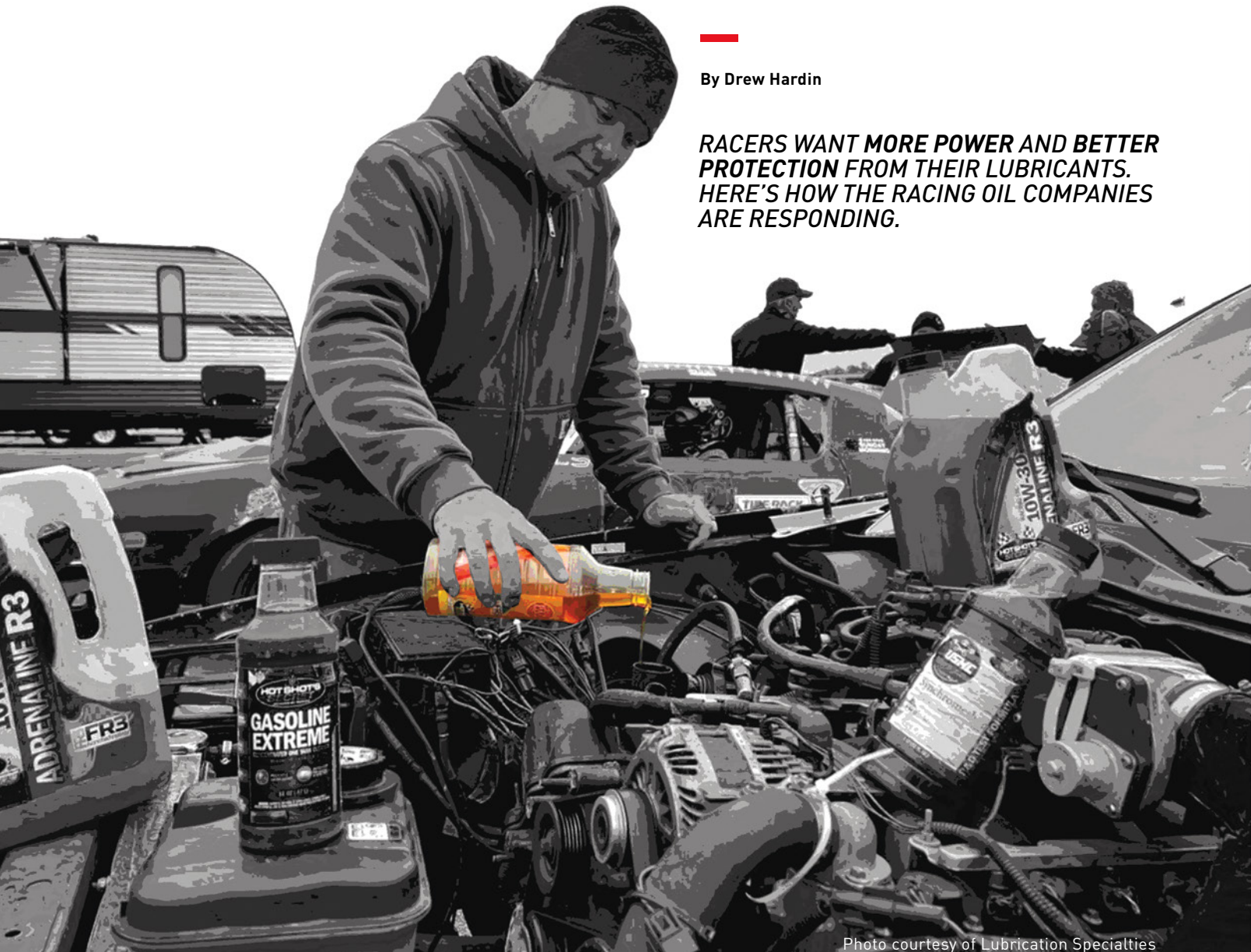


Photo courtesy of Lubrication Specialties



**H**ow often should oil be changed? Should it be mineral-based oil, full synthetic, or a blend? How thin or thick should that oil be? These questions sound like they come from the FAQ section of your local quick-oil-change station's website, but racers share many of these same concerns when seeking the best lubrication for their engines. Granted, the worlds they occupy are very different: Racers may be looking for protection from the pressure generated by forced induction, or to squeeze a few more horsepower from an otherwise sealed powerplant, while fuel economy is the name of the game in the transportation sector. But the constant evolution of engine technology, whether that's for the drag strip or the interstate, is forcing race oil formulators as well as commodity oil manufacturers to re-examine oil's basic building blocks to find new lubrication solutions.

## LATEST LUBRICANTS

The French oil company ELF traces its motorsports involvement back to the late 1960s. Now a brand under the TotalEnergies umbrella, it has re-entered the US market and is offering racing fuels and two lines of lubricants, HTX and HTX Classic. These oils "cover the gamut," said Michael Beam from ELF's US headquarters in Linden, New Jersey. "Circle track, dirt track, IMSA, endurance racing, drifting, pretty much everything except for drag racing." The HTX Classic oils contain higher levels of zinc for classic road cars and vintage race cars.

ELF's HTX oils are formulated with an ester base and a mix of polyalphaolefin (PAO) oils, Beam said, "which allows us to handle higher temperatures, higher shear, and help reduce friction." HTX oils "really exceed on the turbocharge side of things, where the high exhaust temperatures can cause coking on those small bearings inside the turbocharger." To explain the difference between HTX's base oils and more conventional synthetic base oils, Beam pulled out a cooking analogy, likening ester/PAO oil to olive oil, "while synthetics are more like butter. When you cook both of those, olive oil can handle the temperature a lot longer before it starts smoking, and when it does burn off, it doesn't leave any deposits. But if you cook butter, it burns pretty quickly in a frying pan."

Ester technology isn't new, Beam acknowledged, "but it's really coming around. It definitely costs more—esters would be cost-prohibitive in your daily driver—but it's great to use if you want the best protection."

Klotz Synthetic Lubricants of Fort Wayne, Indiana, has recently introduced two new products, a drag race oil and a motorcycle oil with applications in the circle track world.

Klotz's new KE-916 Pure Estorlin Racing oil "is one of our first drag-racing-specific oils," said Chris Mileti. With a multigrade viscosity of 0W-16, it is "the lowest viscosity grade racing oil that Klotz has introduced in recent

years." It was formulated in response to a trend Klotz recognized in Stock and Super Stock drag racing classes. Two trends, actually.

These racers are "going to lower viscosity grades in an effort to reduce frictional losses in the engine and generate more horsepower," Mileti said. "They're also going to extraordinary lengths to keep their engines cold, during warm up, during the burnout, and during the race, because cold engines produce more power. We had to change the formulation for that, because most racing oils are designed to protect the engine from high temperatures."

Mileti called it a "balancing act, because you want to reduce the frictional losses, but you still have to protect the engine. Even though it's running for only a few seconds, it's under a tremendous amount of stress." The new oil was formulated "so that its friction-modifying

*"WE'RE TRYING TO FIGURE OUT WHAT WORKS FOR DRAG-AND-DRIVE, BECAUSE IN OUR MIND, DRAG RACING AND STREET DRIVING ARE TWO DIFFERENT APPLICATIONS. BUT IN THESE EVENTS, YOU'RE DOING BOTH."*

and anti-wear chemistry activate at low temperatures.” Just how low? “These drag racers see maximum oil temperatures around 145 degrees Fahrenheit,” Mileti said. “To put that into perspective, Klotz participates in other forms of racing where oil temperatures can approach 330 degrees F.”

Klotz tested the new oil with select customer race teams last year, from dyno sessions to racing at the NHRA US Nationals. “When we reviewed all the data and looked at some of the teardown engines, we were really happy with the performance,” Mileti said. As an added benefit, “in dyno testing, we were able to improve horsepower. Across the entire rpm range over our benchmark oils, we were getting about 4 hp. That’s a pretty big deal for a Super Stock team.”

Klotz’s other new oil, KL-840R Motorcycle Techniplate, is a 10W-40 variant of a 15W-60 racing oil designed for motorcycles with wet clutches, “where the engine oil touches both



During its development, Klotz tested its new KE-916 0W-16 Pure Estorlin racing oil with several Stock Eliminator and Super Stock teams, including Russell Ghent, who is seen here. The oil was formulated specifically for teams that run their engines as cold as possible to produce more power.

the engine and the clutch,” Mileti said. “It’s very hard to find performance gains in those types of engines because you have to watch what type of chemistry you put in there. It

can negatively impact clutch performance.” KL-840R is formulated to “handle extremely high temperatures, and it’s optimized for clutch feel and performance.” Klotz developed the oil with feedback from flat-track motorcycle racers.

During the oil’s development, Klotz discovered that it “excels” in motorcycle-engine-powered Legend cars, Mileti added. “The issue with those Legend cars, especially the air-cooled ones, is as the oil heats up, they lose some ring sealing, which causes a loss of power. But with the KL-840R, you get very good lap-to-lap consistency. In fact, in some of the testing we did down in Georgia late last summer, one of the fastest laps we had was the last lap of the race.”

Schaeffer’s Specialized Lubricants of St. Louis, Missouri, introduced two racing oils at the 2023 PRI Show. Its Micron Moly SAE 70 and Micron Moly 10W-30 were specifically formulated for drag race engines using

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alcohol- and methanol-based fuels.

"We've always had success on dirt and asphalt tracks, and some of those racers would also participate in drag racing, so interest started to grow," explained Larry Ludwig. "Normally, our semi-synthetics would work with the alcohol in circle track racing because the temperatures got up to the point where it boiled off the alcohol. But in drag racing, you have more of a tendency for that alcohol to get into the oil and to not be burnt or vaporized off. With a synthetic or partial synthetic oil, that alcohol will basically separate. When it goes to the next race, you may get a slug of alcohol instead of the oil getting into the engine and trying to lubricate it, which can cause a catastrophic failure." However, these new oils, which are petroleum based, "will mix with the alcohol and keep it suspended."

The 70-weight Micron Moly was formulated "for extremely high-horsepower drag race and tractor pulling engines, where

traditionally a 70-weight is used mainly because of the amount of fuel dilution that happens in those particular applications," Ludwig noted.

The 10W-30 is intended for aluminum-block engines with tighter tolerances. "At one time, we only had a 20W-50 viscosity grade, but we were getting feedback that 20W-50 was, in some engines, a little bit too heavy of a viscosity," Ludwig continued. "Engine builders still wanted the protection of a little bit heavier viscosity oil, but not a 20W-50. We came up with the 15W-40 Supreme racing oil, and that worked excellently, but we kept getting feedback about how the tolerances were becoming so much tighter in the crate engines being used. So we developed that 10W-30."

TriboDyn Lubricants of Mooresville, North Carolina, has made a couple of improvements to its formulations in recent years. "Our goal was to improve two things," explained Mark Wheatley. "One was to bring

our coefficient of friction 30% lower than anybody else. The other was to improve our film strength so overall it would be the best product out there with the highest film strength."

TriboDyn's film strength technology is formulated into its TRI-EX oil, "while our TRI-EX2 has our highest film strength, our ceramic lubrication, and a coefficient of friction technology that is second to none on the market."

Not long after the formulations were complete and on the market as a running change, two of TriboDyn's oils were bought on the Internet along with 38 other oils to be used in a test of "the tribological characteristics of next-generation lubricants" by the Metropolia University of Applied Sciences in Helsinki, Finland. None of the companies whose oils were used in the study were told that their oils were being evaluated, Wheatley said, and only found out after the results were released and posted.

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"I like to use our synthetics in the drifting world," said Bill Alexander of Driven Racing Oil, "as it's a more sustained high-rpm environment with more temperature." At higher oil temperatures, "a synthetic will hold up better than a mineral oil."

The test results showed that TriboDyn Lubricants' oils were number-one in every category, including film strength, and they achieved the highest horsepower numbers in dyno testing because of their reduced coefficient of friction. "That test proved we

were on the right track with the goals we set," Wheatley said.

TriboDyn has also reduced its retail prices on all TriboDyn Lubricants products by 15%.

Not all the latest product releases are engine oils. Lubrication Specialties of Mt. Gilead, Ohio, parent company of Hot Shot's Secret, has introduced Adrenaline Assembly Lubricant. "It has a lot of tackiness, so it clings on the parts," explained Josh Steinmetz. "It also has a lot of rust and corrosion inhibitors in it, and a whole lot of zinc"—more than 2,000 ppm—"to help with that initial startup until we get oil flowing to the rest of the components.

"We wanted to offer something better than other assembly lubricants on the market and also offer a complete solution, from assembly all the way through our racing oils," Steinmetz added. "Next on our radar is a break-in oil."

Driven Racing Oil of Memphis, Tennessee, is also working on a new type of break-in oil,

said Bill Alexander. We spoke with him while he was on the road, having just completed some dyno testing at a race engine shop. "I'm maybe 50% of where I'm going on those," he said, "but I know what we found this week is going to lead to a new and enhanced break-in oil."

## ONE OIL FOR BOTH DRAG AND DRIVE?

Driven has entered into a partnership with Sick the Magazine, the publication that supports Sick Week and other drag-and-drive events. "We're seeing a big boost in popularity in these events," Alexander said, "and we're trying to figure out what works for drag-and-drive, because in our mind, drag racing and street driving are two different applications. But in these events, you're doing both. So we may be adjusting a formulation, or recommending they use what we already have but in a different way."

Alexander believes these racers "may

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Hot Shot's Secret's new Adrenaline assembly lubricant "has a lot of tackiness, so it clings on the parts," said Josh Steinmetz. "It also has a lot of rust and corrosion inhibitors in it, and a whole lot of zinc to help with that initial startup until we get oil flowing to the rest of the components."

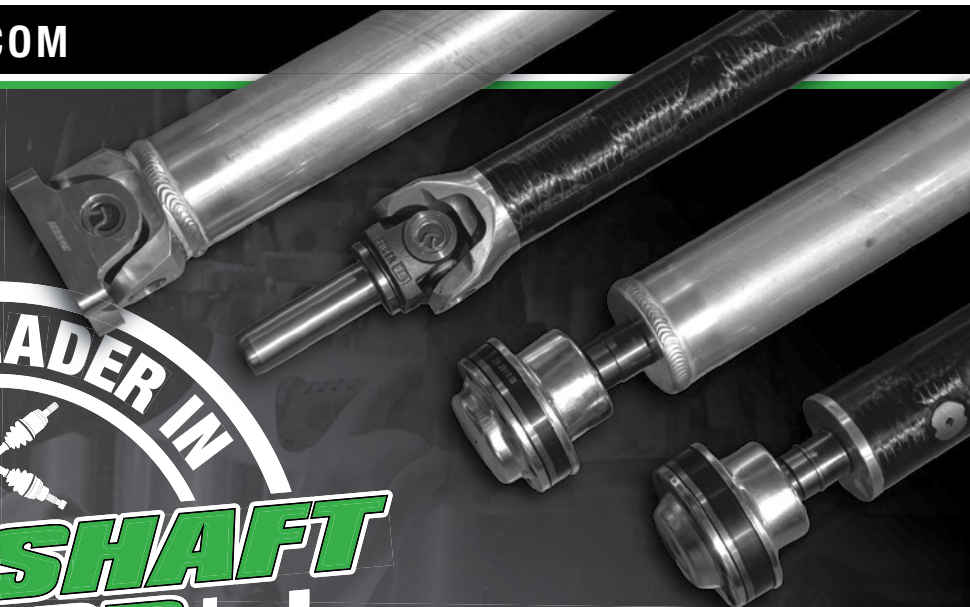
need to run higher viscosity oils than they would typically run because of the heat in the drive." For the same reason, synthetic oil may be a better choice for these racers, even though "in our opinion, synthetic wouldn't be the best choice for the drag racer. We typically don't recommend it

because, for one thing, they don't run the oil long enough to really get the benefits of a synthetic, especially the higher oxidation stability. You never get the oil hot enough to take advantage of it. And mineral oils, like our GP-1, which is Pennsylvania-grade crude, give a better ring seal, which can

result in better compression and more power." But Alexander has already been testing synthetic oil with drag-and-drive competitors, believing it will stand up better to the heat generated by hundreds of miles of street driving between drag strips.

What about the possibility of using synthetic oil for the drive portion of the event and then replacing it with mineral-based oil for racing? "What I've found is that a lot of them will only do one oil change through the week," Alexander said. The Driven van that goes to these events carries 50 cases of

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oil for the racers, but it wasn't selling much "until about day four, which was right in the middle of the event. They do not want to change the oil every day, so we're looking to get optimal performance out of one product for both applications."

## VISCOSITY TRENDS

Tighter production tolerances and the drive to improve fuel economy have created a need in the general transportation sector for thinner and thinner oils, some down to single digits. However, does that trend hold true in racing?

"A lot of times to get more horsepower you want to go to a thinner viscosity," Beam acknowledged. "But the problem with, for example, a forced-induction engine is you tend to get a little blow-by, so fuel dilution becomes a problem. Managing the right viscosity to handle fuel dilution, and maintain protection, is very important. To me, it's important to match your oil weight to what you're doing and what you need."

"I would say there's a trend to go to lower viscosity grades because you're reducing frictional losses in the engine," Mileti said. "These teams are going to want to use the lowest viscosity grade that they can that still provides adequate protection for the engine. In some circle track racing we're seeing viscosities as low as 0W-30."

Mileti went on to say that in some applications, NHRA Top Fuel, for example, "those engines produce so much horsepower, they're not going to gain any appreciable performance improvement by lowering the viscosity. They're more concerned with just keeping the engines together. The diesel tractor pullers might be in the same camp. They wouldn't benefit from a couple fractions of a percent horsepower improvement. But the Stock and Super Stock guys would."

Steinmetz noted that in the diesel racing segment, "tolerances are getting a little tighter in some of the engines, so we're making weight adjustments on their oil viscosity based on what they're setting up. We're working with them to find out what new issues they're having. We're still primarily 50- and 60-weight oils, but we do have some guys going down to 40-weights with



Many of our sources recognized a trend toward lower viscosity grades, especially for those racing engines built with tighter tolerances. But there still has to be enough film strength to protect the engine, they reported, especially in forced-induction engines that are prone to fuel dilution.

increased tolerances."

"There's a lot of old-school thinking about viscosity," Alexander said. "Guys will say, 'I'm gonna run the thickest oil I can because that gives me the most protection.' What we find is, viscosity is really dependent on engine oil bearing clearance and other things. An oil that's too heavy may be hotter than a thinner oil, because if the engine's not set up for it, there's more resistance in the fluid, which creates heat. And maybe that oil's not getting to your lifters, so the hydraulic lifters aren't working as efficiently as they should."

"If you lower the viscosity, you do get rid of drag," Wheatley said. "But you may be creating wear issues, because the thinner the oil, the worse the film strength is." TriboDyn's film strength improvements were made to address just these kinds of circumstances, he said, with the added benefit of gaining horsepower due to the lower coefficient of friction. He cited tests done with TriboDyn oil in a 602 crate motor where "all they did was drain their 20W-50

oil and add our TriboDyn 20W-50 oil. On the dyno they picked up 4 hp, and they also reduced their operating temperature 20 degrees. If I ask engine builders, 'How much would you pay for 1 or 2 hp?' I get answers from \$1,000 to \$2,000 or even \$5,000. When I tell them they can do it just by changing their oil to TriboDyn oil, they look at me like I have five heads."

## RENEWABLE FUTURE?

We received very mixed responses when we asked if these companies were planning to incorporate renewable oil ingredients into their racing oils. Ludwig said there's been "no demand whatsoever" for a product like that at Schaeffer's. "You'll see it more in commercial use and by companies that have government contracts because the federal government and some state governments mandate the use of a renewable type of base oil."

Likewise Beam said that while ELF did formulate renewable race fuel, there were no plans for renewables on the lubricant side. "Renewable oils, which are re-refined base oils, are fine for a daily driver. But they aren't really capable of giving you the protection of an ester or a PAO that you would want in a race engine."

Mileti said that the use of renewable lubricants in motorsports "is a ways away from large-scale adoption." Klotz does have two products in that space, though they don't use re-refined base oils. "We're one

of the last companies to use castor-based lubricants," he explained, referring to oil derived from the castor bean. Both products, BeNOL Racing Oil (100% castor oil) and Super Techniplate Synthetic Lubricant (a castor/synthetic blend) are for two-stroke motorcycle engines, "and they work pretty well if you have a two-stroke racing engine that runs very hot and at high rpm." Some automotive race teams, he added, will put a small amount of BeNOL into alcohol, methanol, and even nitromethane "to add a little lubricity to the fuel."

Steinmetz said Lubrication Specialties is "continuing to experiment" with renewable lubricants. "We continue to look at that as an opportunity to see what's happening there and make sure that we're ahead of the curve if anything changes in that market."

Driven has a "100% renewable motor oil," Alexander said. "It's called an estolide, and it's a true synthetic. I've been working on it for a couple of years, and I'm seeing pretty good results out of it. It works as well as a lot of mainstream synthetic motor oils, but the cost is much higher, so the market doesn't seem to be there. But we're going to keep working on it, and staying on top of it, kind of jogging alongside the market with it." **PRI**

## SOURCES

**Driven Racing Oil**  
drivenracingoil.com

**ELF**  
elf.com

**Klotz Synthetic Lubricants**  
klotzlube.com

**Lubrication Specialties/Hot Shot's Secret**  
hotshotsecret.com

**Schaeffer's Specialized Lubricants**  
schaefferoil.com

**TotalEnergies**  
totalenergies.com

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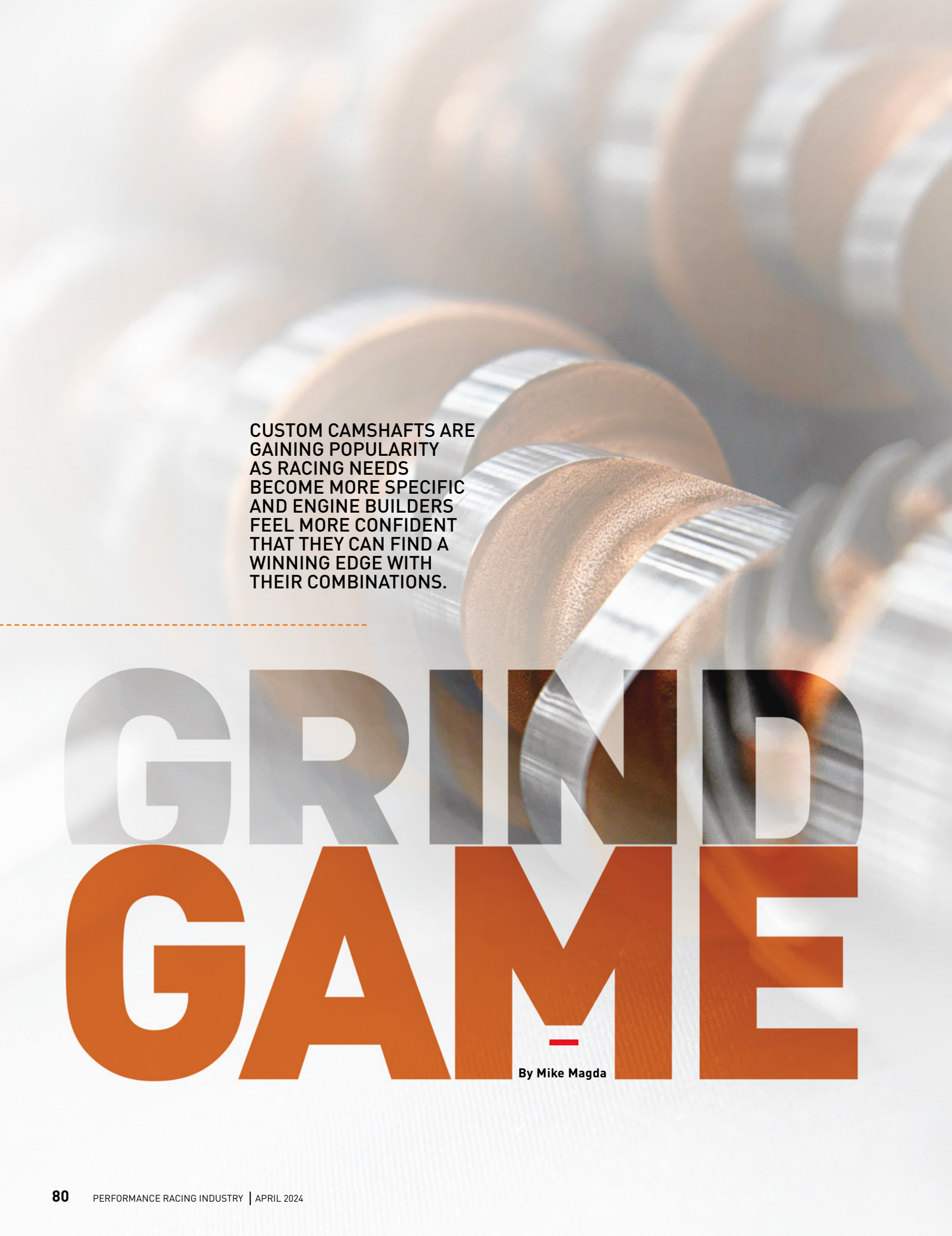
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# GRIND GAME

By Mike Magda





**T**here was a 24-hour endurance team that told its camshaft supplier the engine needed more low-end performance because of changing driver dynamics at night.

“Drivers would be less apt to grab a lower gear out of the corner late at night, so torque production was key,” explained Chris Potter of COMP Cams, Olive Branch, Mississippi. “However, the engine needed to run at race pace for more than 24 hours. A custom grind and new lobe series were the answers this team needed to meet their goals.”

Years later, that lobe-design family became one of the most popular choices for non-race applications at COMP Cams. “That shows that race technology trickles to the street, even in the world of camshaft lobe design,” added Potter.

In other examples that tout custom cam rewards, COMP Cams’ engineers helped a bracket racer with a 582-cubic-inch big block Chevy project and a circle track team with a GM Ecotec I4 engine.

“We worked through the BBC system, which was limited by the cylinder head, and moved to a newer lobe series matched with good springs. It picked up peak power by 10%,” recalled Potter. “Another example is the Ecotec owner who had maxed out our catalog cams while running circle track races. Last year, we helped with a custom grind and picked up the performance significantly. Since then, he’s been able to refine his package even further while working on a new cylinder head package. This year we’re doing another set of custom grinds to further his platform.”

Depending on the application, custom camshafts can make up 70% or more of a cam company’s sales, easily outperforming off-the-shelf cams for select categories. Some companies don’t even have cams with designated grinds and part numbers in their immediate inventory.

“We’ve found that making cams and putting them on the shelf doesn’t really fill the need that customers have,” said John Partridge of Bullet Racing Cams, Olive Branch, Mississippi. “Sure, there’s a standard combination out there for a 350 or a 383, but I try to look at everything that customers are doing to be sure that I give

them the best I can the first time.”

Over at Crower Cams in San Diego, California, most of the simple stock-engine-type applications with hydraulic or solid flat-tappet lifters are generally purchased from the catalog.

“That would be about 70% catalog or standard off-the-shelf grinds,” observed Guy Aguayo. “We’ve had some grinds that work well across the board. The majority of the roller cams are custom ground because of power adders, nitrous, big compression, and big cubic inch. The size of cams keeps getting bigger because of better flowing heads.”

Nolan Jamora at Isky Racing Cams in Gardena, California, said the split between custom and off-the-shelf at Isky depends on the race venue. “If it’s drag racing, it’s about 20% off-the-shelf and 80% custom,” he said. “It’s a big difference because of the Outlaws, drag-and-drive, and small-tire racing. We’re customizing all that because everything is power adder. There are just so many combos out there, and product right off the shelf is not going to work anymore.”

There are engine combinations that remain quite popular, such as a 632-cubic-inch tunnel ram with a pair of Dominator carbs, for which a shelf cam will be appropriate. However, a basic boost-prepped engine can have different-sized turbos, an intercooler or not, etc. Even street engines, added Jamora, that step up to turbos should be evaluated for a custom cam.

“Boost applications have enough variables—such as displacement, static compression, amount of boost at different loads, etc.—that custom cams are the norm rather than the exception,” added Eric Bolander of Howards Cams, based in Oshkosh, Wisconsin.

## PLAYING WITHIN THE RULES

In oval and dirt track racing, sanctioning bodies have introduced numerous rules to regulate camshaft design, and companies have to engineer the best possible profile to stay within the guidelines.

“In oval track, the split between custom and off-the-shelf is about 50/50,” said Jamora. “We have vacuum-rule cams or compression-rule cams, those are pretty



Depending on the application, custom camshafts can make up nearly three-quarters—or more—of a cam company's sales, easily outperforming off-the-shelf cams for select engines and racing disciplines. Photo courtesy Erson Cams.

much all set depending on the cubic inch. Racers can get those right off the shelf since that's pretty cut and dry."

Isky also offers lift-rule cams that in the early days were designed to "lob" the lifter off the cam lobe nose to gain a little extra lift. That strategy is no longer favored.

"Yeah, we do lift-rule cams, where 0.400-, 0.420-, 0.450-, 0.480- or 0.500-inch lift rule," said Jamora, explaining the lobe design favors more contact with the lifter. "You don't lob the lifter anymore. You want the lifter on the lobe at all times. With the new modern design, and how you can grind it, you can get very aggressive, so you don't have to design loft into them, which is just unstable for the valvetrain."

Crower keeps the lifter close to the lobe when designing a lift-rule camshaft. Engineers also manipulate the lobe-separation angles when working with vacuum-rule camshafts.

"We'll open up the lobe-separation," said Aguayo. "Because you're not making a lot of power, the weight of the car comes into play. Then, if it's two- or four-barrel, another little curve comes into play. The two-barrels tend to work a little bit different torque-band than a four-barrel. The race track makes a big difference, too. I need to know their max rpm and their slow rpm off the corner, so they

don't come off the corner under a bad load. The driver makes a big difference."

## FEEDING INFORMATION

As previously mentioned, camshaft tech reps are requesting more information about the drivers' racing style and preferences.

"I'll ask what's the track like? Do they run the cushion? Does the driver like to dive into the corners or get on the brakes early? Is he young and aggressive? So we'll actually do the cam for that," said Jamora.

The difference in driving style—that is, one who likes to brake early or one who carries speed into the corner—may mean a difference of three or four degrees duration in the lobe design.

Callies Performance Products was early to market with cams for the Ford 7.3 Godzilla. When Jesel came out with a belt drive, it used a bushing to reduce the OEM cam thread from 21 mm to 7/16-inch. "After some back and forth with Tim Fodor at Jesel, we came up with a solid roller tool steel core that utilized a 7/16-inch thread, and dual dowels as found on most other Ford race cams," said Callies' Nick Norris.

"You're really talking about keeping them in the power band," added Jamora. "If they're basically a stop-and-stab style, we'll need to have more torque built into the grind. If it's somebody who rides a cushion and is very smooth, he's not dropping a lot of rpm, you could keep more mid-range power and torque because he'll keep the rpm up."

Besides drivers, engine builders are becoming more appreciative of custom camshafts. There's a greater sense of confidence when selecting a cam grind that is designed around their specific setup and racing needs.

"That is why it's an advantage to build a relationship with a cam company—more specifically a 'cam guy.' He won't point you at a part number or plug everything into a computer and let a program spew out a part number," said Bolander. "You want someone who knows why they're recommending a grind and what it's going to do for you."

Working with knowledgeable tech reps at a cam company takes time. There are forms to fill out that help them get started,





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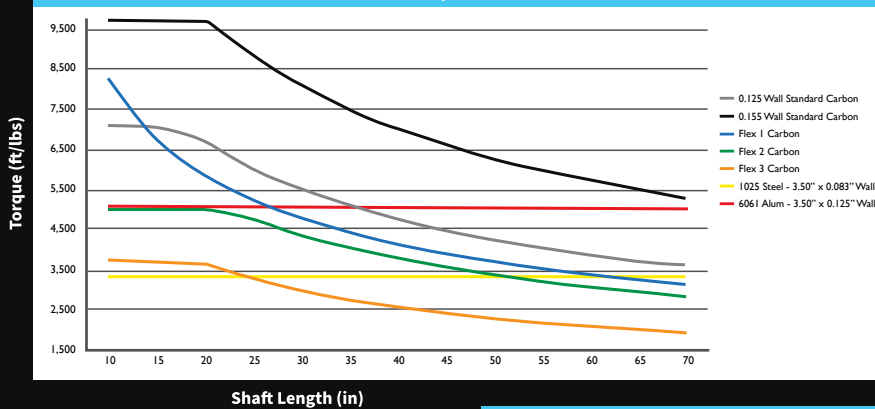
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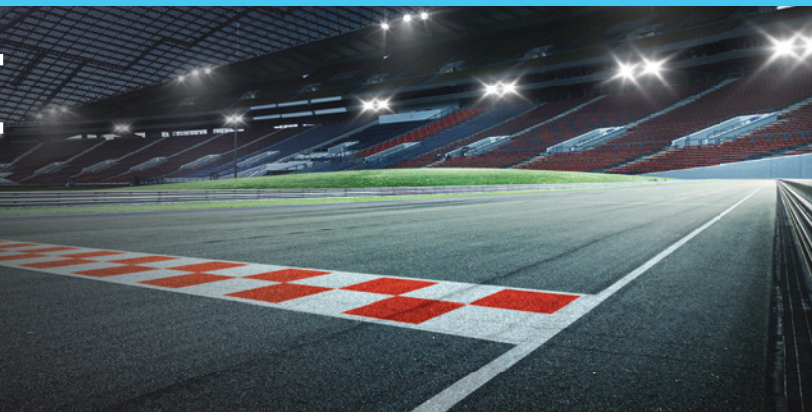


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A camshaft profile custom ground by COMP Cams for an endurance race team eventually became a popular non-race cam choice. "That shows that race technology trickles to the street, even in the world of camshaft lobe design," said Chris Potter.

but the real information comes from their questions and feedback. Key to a productive discussion is honesty.

"That is one of the things we tell our customers up front: Be honest with me. Don't tell me something you're going to do. You tell me exactly what you are doing now because it's going to be really imperative that I have the right information," explained Partridge. "Don't give me the pie-in-the-sky deal. I don't want to recommend something that won't work for you if you're not doing what you're telling me."

"The basics we need are still the same, things like intended use, displacement, expected rpm, tappet choice, head flow, induction choices, bore/stroke, valve selection, transmission...the more information you provide, the better our team can quickly zone

in on a recommendation on the lobe series and valve timing," explained Potter. "As we approach from a system perspective, more questions are needed. Rocker style, pushrod types, valve spring installed height, spring loads, lifter diameter, journal size, lifter spacing, and more."

Other information, like cylinder-head flow rates, is also crucial so the tech reps can build a model for a specific combination of parts as well as the intended use of the engine.

"We'll get everything on the combination, such as cylinder heads, what they flow at certain lifts, the compression ratio, iron or aluminum cylinder block, carbs or fuel injected, header size, gearing, type of fuel, tire...I mean, we get down to everything," said Jamora.

All this information flow to the cam company's hotline can beg the question: What if I talk to different tech reps on the same day? Will they recommend the same camshaft?

"Yes, you're going to get the same information," said Partridge. "Now, it may vary by a degree or so, but yeah, you're going to get the same recommendation from anybody here."

The need for camshafts in airplane engines motivated Callies Performance Products in Fostoria, Ohio, to get into the cam business. Lycoming Aircraft had relied on another cam manufacturer for product that went out of business and approached Callies, which purchased equipment from the liquidation sale.

"Within a matter of months, we were in the camshaft business," said Nick Norris.

Callies specializes in manufacturing the billet-steel cores used by many aftermarket suppliers that finish-grind custom racing camshafts. Many of these cores are 8620 carburized steel, and there are some induction-hardened cores. The cores are ground with oversized but unfinished lobes in position for the desired firing order. The bearings are ground to the finished size, as is the distributor gear, if needed. Then the cores are heat-treated before shipment to the cam grinders for finishing.

"The firing order, lift, duration, and lobe separation all have to be within a certain envelope in order not to grind through the heat-treat," added Norris.

Callies will finish-grind the cores for select

customers but not on a single custom cam order. Builders with high-volume crate-engine or private-label programs will be considered, or race teams that need a large order of camshafts with similar grinds, like Top Fuel or Funny Car.

Even though nitro cars have the most powerful engines in motorsports, crew chiefs are burdened by strict rules that have changed very little in the past two or three decades. Therefore, cam specs haven't changed that much. However, cam grinders are starting to work with fresh ideas to manipulate valve events in fuel engines.

"When we first got into Top Fuel, everybody gathered up and measured cam samples. I was amazed at how close they were to each other. They were nearly identical," said Norris. "The biggest problem with the fuel cars is the opening side of the exhaust lobe because you have so much cylinder pressure. It has a lot to do with the lash ramp at the beginning of the opening side of the profile. It took four or five tries, but one turned into magic."

"We have updated some [Top Fuel lobes] in the last year or two," added Partridge. "We have gotten a little more aggressive than we used to be and found some places that we could push it. And we found some places that we shouldn't have. The exhaust side really seemed to be the area where I work on the most. The intake doesn't seem to respond a whole lot, but the exhaust side has."

Even in the diesel market, especially with the tractor pullers, the exhaust lobe is drawing more scrutiny.

"Depending on the class, they're running more boost than any drag car thought of. Seriously, diesel tractors run anywhere from 130 to 150 pounds, and in the Outlaw classes as much as 250 pounds," said Russ Yoder of Erson Cams, Louisville, Kentucky. "This is where a lot of Erson's Top Fuel experience comes in. We had to calm down the aggressiveness on the exhaust because those engines make so much cylinder pressure. You have to run a fairly mild exhaust profile in order to not blow the lifters apart."

Yoder said that Erson doesn't change lobe profiles often, preferring to expand the lobe



Off-the-shelf cams are still in demand due to proven performance and quick delivery, according to race cam suppliers. Photo courtesy Erson Cams.

catalog only when a custom cam grind has proven extremely beneficial to a customer. Erson was also cautious when it was trendy in the industry to make the popular lobe profiles more aggressive without addressing other issues, such as valve springs.

“So many people got on the bandwagon of more aggressive, make more power. When you do that, if you don’t really stay on top of valve springs, inevitably that profile doesn’t work and you end up tearing up parts,” said Yoder. “We can go with something that’s tried and true and not destroying the valvetrain. And honestly, it still gets as much horsepower.”

## SUPPORTING CAST

All variants of engines seem to be reaping the benefits of custom cams, and cam designers have been taking advantage of continuing advancements in supporting valvetrain components around the camshaft.

“The evolution in valve springs has really been the key,” said Partridge. “Don’t get me wrong, there are other things, such as better pushrods and rocker arms. But valve springs are what really changed everything. We’re able to run smaller, lighter springs and nowhere near the kind of spring pressure we used to run.”

“We’re really paying attention to valve springs,” agreed Norris. “For a long time, people have over-sprung. They put too much valve spring in the system. When they have a valvetrain that gets out of control, the first thing they do is put more spring on it, when in all actuality, they should probably take spring out of it.”

“Getting the lightest valvetrain makes a big difference because the valves will rev more rpm safely,” advised Aguayo. “The bottom line is, if you can check a camshaft on a Spintron and figure out exactly where that valvetrain keeps from entering into harmonics, that’s the cam you want to run because it will live for the long run, like lots of 40-lap mains.”

Even the rest of the drivetrain behind the engine will benefit from the right custom camshaft if all the components are optimized to work together.

“This is even more true on the race side where big power can be put to the ground more efficiently,” said Potter. “Now we’ve moved further into the realm of systems engineering, beyond just the valvetrain system or the engine system, and now into the entire vehicle system. As we have the ability to put more and more power to the ground, the more important a good, engineered custom cam grind will become. As the entire vehicle and engine system becomes more and more refined, the more important a well sorted custom grind will be to match with the other components.” **PRI**

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# TORQUE TIPS



# CLUTCHES, DRIVESHAFTS, AND AXLES ARE ON THE RECEIVING END OF GROWING AMOUNTS OF POWER. DRIVELINE COMPONENT MANUFACTURERS ARE STEPPING UP TO THE CHALLENGE OF MANAGING THOSE FORCES.

By Drew Hardin

So much of innovation in racing can be boiled down to the concept of trying to hit a moving target—a target that is for the most part going one way: faster. It takes a complex series of functions to increase speeds and lower lap times or ETs, and bearing the brunt of those ever-evolving functions is the race car's driveline.

"A lot of our products are born out of not just transferring torque but withstanding torque," said Lee Mejia of The Driveshaft Shop, Salisbury, North Carolina. "People are making a lot more horsepower and torque than what the vehicle was initially designed for, and then they're finding limitations in the drivetrain that the additional torque has created—twisted up driveshafts, broken axles, and things like that."

"The trend of power going up is probably the biggest we see," added Chris Bernal of Advanced Clutch Technology (ACT), Lancaster, California. "The numbers just go up and up, in street vehicles and race vehicles. That causes a lot of issues with the driveline, not just the clutch."

"If you were recommending to people what they need to go race based off what those cars were capable of 10 years ago, you would have very unhappy customers, because the capability of those cars today is so much greater," explained Dave Ely of Diversified Machine Inc. (DMI), Lancaster, Pennsylvania. "And the demands on the components are so much greater today than what they were 10 years ago. What you would have recommended as your go-to unit at that time just simply would not get the job done today."

It wasn't all that long ago that "we used to shift at 5,500–6,000 rpm," recalled Will Baty of McLeod Racing, Anaheim, California. "Today, stock engines do that. A stock LS is set at 6,200. Now you have the new Ford Voodoo engines, which from the factory go to 9,200 rpm. This is the zone that we need to make sure our clutches will function and operate in properly."

We asked these experts to identify some of the moving targets that are on their radar, how they're hitting them, and if they could provide some torque transfer advice.

## THE DRAG-AND-DRIVE CHALLENGE

"It's still small, but it's growing," said Bernal of the segment of his customers taking part in Drag Week, Sick Week, and other drag-and-drive events. The dual nature of

the competition, where participants drive hundreds of street miles—often towing a trailer—to make hard passes down the drag strip, and then drive to the next venue, complicates clutch selection.

"You can't put 100% pure race products on and expect that car to be drivable on the street," he pointed out. "At the same time, the street-type products are not going to last. These are 1,200-hp cars that are going drag racing but are also 'street legal.' They'll tear up the clutch, or the clutch will help tear up the driveline if it doesn't have any give at all in it. So it's particularly challenging to do something for these guys."

ACT's clutches "span the gamut from the high-horsepower street guy to full race," Bernal added. "The tricky part is in between, where you have big power, but the clutch also has to not shake the car, throw the transmission out of the car, or destroy the rearend."

For this segment of the market, ACT has developed its new Mono Drive hub, which the company includes in its new Mod-Twin clutch kits. The Mono Drive hub is a single hub that drives the two discs in a twin-disc clutch. "Instead of two short hubs with maybe a half inch of engagement on the input shaft, we have an inch and a quarter of solid engagement, which the transmission guys are very happy about," Bernal explained. Plus, the Mod-Twin clutch is modular, so the hub can be changed from a sprung hub to a solid one depending on the application. "You can change from race discs to street discs with one part number," Bernal said. "It's best to outfit it the way you want, but if you have to make any changes down the road, it's easy to do." The Mod-Twin is "a real robust system," he added. "We took it from a racing approach, but we added some compliance to it for some of these drag-and-drive type of events."

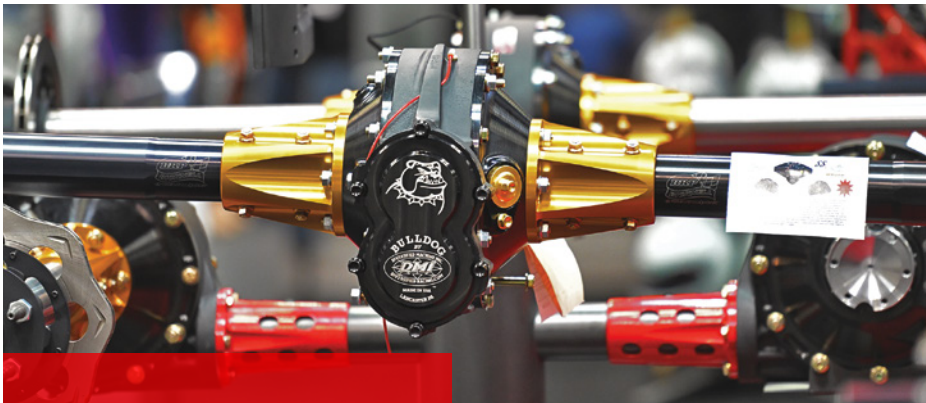
In Baty's experience, many of the drag-and-drive cars he's seen "were set up with smaller-diameter clutches, which are great for drag racing. They're built to be light and hold power, but they have no inertia, not a lot of clutch active engagement time. You're supposed to let the clutch out as fast as possible and go. Now these guys are on the street, and they're trying to take off from a dead stop pulling a trailer. Without that inertia, they end up slipping

*"BEFORE THEY EVER LAUNCH THAT CAR, THEY KNOW THEY'D BETTER SWITCH OUT THE STOCK DRIVESHAFT BECAUSE IT'S GOING TO BREAK."*

the clutch a little more to get the vehicle moving. Slipping the clutch generates heat. Heat is the number-one killer of clutches."

McLeod's RST and RXT twin-disc clutches are 9 11/16-inch clutches "that are the sweet spot between the really small clutches and the bigger clutches that hold more power," Baty said. The RST is rated for applications up to 800 hp, while the RXT is made for applications up to 1,200 hp.

There is another option for those who want to stick with a smaller clutch, Baty said: "We add more discs to it. When we start stacking, going from a twin disc to a triple or four disc, it hasn't really lost that inertia, because the performance of the clutch won't really change as far as how the engine runs through the rpm spectrum. What changes is the life and the overall drivability. We essentially give the



**"If we've done our job, you forget we exist," said Dave Ely of DMI's quick-change rearends. When the rearend works properly and needs no attention, "it's allowing you to figure out how to get faster, not be fixing it."**

clutch more area, more heat sink. The more area we have, the more drivable that clutch is, even if it's a smaller clutch."

## DIRT CAR REARENDS

Size has become a concern with the ring-and-pinion gears in dirt modifieds and dirt late models, Ely said. "Some of our competitors have tried to convince people that they need an 8-inch ring and pinion to save weight" instead of the typical 10-inch ring and pinion. "It does save about 2 1/2 pounds," he admitted, "and it will spool up a little faster and increase the acceleration. We offer an 8-inch for those who feel they really need it. But there is no free lunch. One of the disadvantages of an 8-inch rear is that it's not going to transfer as much torque because the leverage isn't there to do it. If you are specifically looking for forward traction, the 10-inch is going to transfer more torque into your torque arm than the 8-inch will."

Reliability can also be a problem with a ring and pinion that's too small for the application, according to Ely. An 8-inch "has a smaller surface area, so it will see a higher concentration of force per square inch on it than the 10-inch will. So it's going to wear out sooner and will be more prone to pitting, etc.," he said.

Ely noted that, as in so many forms of

racing, technology in the dirt track world keeps progressing. Those changes, including suspension setup evolution and new shock technology, "all contribute to the wear and tear that you see on a ring and pinion set." That means driveline parts suppliers have to "pay attention to the latest technology in all the market segments that you service, and then figure out how that applies to what you do. We see it frequently on the sprint car side through tire rules. As the tires change, whether they provide more grip or less grip, we have seen the driveline demands change with the tire changes. Surprisingly enough, when they start unhooking the cars, we'll actually see increased driveline wear because the cars aren't as locked down. It puts different harmonics through driveline components that will cause different wear than if things are locked down and have a load on them. There's always a result based off of a change that takes place, and you have to be on top of it."

## MATERIAL MATTERS

Mejia told us some of The Driveshaft Shop's customer cars "are making 2,000–3,000 hp, with torque numbers that are pretty far up there as well. We've had to figure out ways of making parts that are torsional enough to withstand that kind of shock and abuse over and over again."

Among those are driveshafts for modern domestic muscle cars. "We've become a necessary upgrade for anyone going to the track who's making more than stock horsepower. Before they ever launch that car, they know they'd better switch out the stock driveshaft because it's going to break."

OEM driveshafts, Mejia explained, aren't made to withstand the forces of a hard launch on a prepped surface. "The big focus for the OEMs is NVH (noise, vibration, and harshness). They want to build the quietest, most comfortable car they can." He also believes the factories are building their driveshafts to act as what he called "fusible links." The factory would rather "warranty and replace a couple-hundred-dollar driveshaft or axle than a transmission or a differential."

(We heard this same fuse analogy from Bernal regarding clutches. "[Racers] want their clutches to be totally robust and never fail, yet at the same time, the clutch has to be the fuse. Replacing the clutch in the pits is not fun, but it can be done. Changing the transmission or rearend, on the other hand, gets pretty expensive. So we need to be the fuse that barely blows but does blow when it's beneficial.")

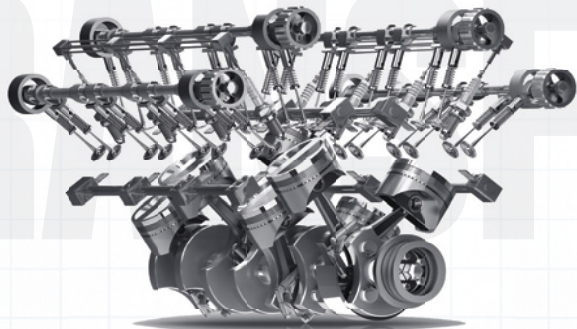
When it comes time to upgrade a driveshaft for a Challenger Hellcat, for example, The Driveshaft Shop offers replacements made from aluminum or carbon fiber. Most people think the choice of carbon fiber is based on weight, Mejia said, but that's not the case. "For a Hellcat, the two driveshafts are pretty comparable in weight. The carbon might be 2 or 3 pounds lighter." The big difference, he said, is that carbon fiber "is a more torsional material,



**ACT's Mod Twin clutch kits feature a Mono Drive hub that drives both clutch discs, providing more engagement on the input shaft. The modular kits also allow users to change from a sprung hub, seen here, to a solid one, based on application. "You can change from race discs to street discs with one part number," said Chris Bernal.**



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so it has more capability to twist under load to absorb some of that initial shock during the launch. Aluminum is a torsional material too, with typically about 15 degrees of twist under load, but carbon can double that. By doing so, it typically smooths out the launch, helps with some traction, and it can help with wheel hop.”

Driveline material choice is less of a concern with front-wheel-drive performance cars, Mejia said, because the company makes the majority of its axle bars and spline pieces for high-horsepower applications from 300M chromoly. “We’ve come up with a lot of innovative ways to make these parts for optimal strength, but to fit in OEM size restraints. In our Honda line, for example, we make a set of axles that’s good to about 700–800 hp that fits the stock hubs. Beyond that, our racing axles are designed for people making over 1,000 hp. For them we increase the size of the CVs, and we increase all of our spline sizes on the internals, and the spline into the hub. Then we supply a different set of wheel hubs that fits the stock bearing but has a much larger spline, to have better engagement and be able to withstand a lot more power.”

The Driveshaft Shop also uses a proprietary splining method in which the splines are rolled, not cut, into the bar. “We’re basically forging the material into that shape, so we lose no material, and we don’t affect the grain structure of the material. It allows us to have much better quality control on the tolerances on the splines,” said Mejia.

When it comes to material choice for a clutch, what comes up first in most people’s minds is the friction material on the clutch disc. “But the biggest main choice is the flywheel,” explained Baty. “That’s what’s dictating how the clutch is going to react out the get-go. The biggest change we make is deciding whether it’s a steel or aluminum flywheel.”

The choice depends on the car’s intended use, Baty said. “Say there’s a guy who has a performance street vehicle that he considers his race car as well. He may do autocross here and there, but he’s not a serious racer. I will tell him for the amount of time you’re going to lose on the track, your overall drivability and clutch longevity will benefit



The choice between a carbon fiber and aluminum driveshaft isn’t as much about weight as racers may think, said Lee Mejia of The Driveshaft Shop. Carbon fiber “is a more torsional material, so it has more capability to twist under load to absorb some of that initial shock during the launch.”

running a steel flywheel. A lot of these guys want all the power in the world, but they don’t want to sacrifice clutch drivability. So the steel flywheel is going to be the better option. It’s about inertia. Inertia is your friend. You don’t want to get rid of all of it. Now, the guy who’s looking to win championships, who doesn’t care what it drives like and isn’t going to be driving on the street? The aluminum flywheel is what he wants.”

## DRIVELINE DO’S AND DON’TS

When we asked these experts for advice on what to do—and not—when it comes to driveline parts selection, each had a little different spin on the same bit of wisdom: Ask the right questions.

“The top teams do things for certain reasons that work,” Bernal said. “The teams that aren’t at the top struggle with getting advice earlier. If you call me when you’re going into a certain form of racing, and I know the setup you’re using, we’re going to have a real good recommendation on what works and how to set it up. You can call me after it’s messed up, but it’s a different kind of conversation than when you’re putting things together.

“There’s just so much power now,” he added. “You can’t get away with a clutch that you heard about on the Internet, or you heard about from someone else. That was fine when they were making 500 hp, but

now that they're making 900 or 1,000? That's going to be a different answer."

"The biggest thing that can cause an issue is when customers aren't as forthcoming as they should be with what their actual plans are for a build," Meija said. "Maybe they're trying to skimp on something like the axles or the driveshaft and are blowing stuff up, because they're making twice as much power as what that part is rated to. It's important that, when we're talking about something that is actually transferring torque, that you're realistic with what it is you're going to be doing and what you need those parts to do. That way we can make sure that whatever it is that we give you is going to be able to hold up and for a good long time."

Baty agreed. "We really need to know the overall intended use of that vehicle to have the perfect clutch performance. A lot of people will build a vehicle intended for all-out performance. They want every ounce of power that it's potentially capable of producing. However, when they try to use it on the street or some different sanctioning body, everything changes. So we need to know those things."

Critical for clutch selection, Baty added, is knowing the engine's torque. "It's all about the torque," he said. "I don't care about horsepower. Torque is that twisting force that's trying to drive through that clutch." Knowing the engine's torque production, he can then utilize "the different ways to hold and harness that power, whether it be the friction material, clamp load, or a combination of the two."

Regarding DMI's quick-change rearends, Ely has found there's "a fine line between no maintenance and preventive maintenance. Looking at my phone calls from people who have issues, half of them are because they've done zero maintenance, and the other half are people who just felt like they had to fiddle around with stuff that doesn't need fiddling around with. Somewhere in the middle is where you want to be. You've got to have good experience, and you've got to rely on people to teach you properly. Ask questions as racers. Ask successful racers. Talk to guys who win. Talk to the manufacturer. What's the life expectancy of this? How should it be maintained? How often should I be doing it?"



McLeod's RXT is a 9 11/16-inch clutch that hits "the sweet spot between the really small clutches and the bigger clutches that hold more power," said Will Baty. RXT clutches are made for applications up to 1,200 horsepower.

"People tend to believe that everyone always has an angle," he continued. "But speaking on behalf of me and Diversified Machine Incorporated, we have no angle, other than we want you to be happy, and we want you to have success. I'm not just trying to sell you something. I'm trying to put a product into your hand that you're going to forget about. If we've done our job, you forget we exist. Let's say you bought a quick-change rear. You've put it in, and you've focused on getting faster, on getting your tires right, on picking the right shocks, on your driving, on all these other things. Not one time has that quick-change rear taken one second of your attention. That means that we have done our job, because it is allowing you to figure out how to get faster, not be working on something fixing it." **PRI**

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# PRI TECH

## FORD 9-INCH THIRD-MEMBER PREP

With effective prep, the Ford 9-inch rearend can be used for just about any form of motorsports. Getting that ideal setup starts with its third member and using the right components for the job at hand.

By Lucas Hardin

The Ford 9-inch is the most widely used rear-axle assembly for practically any form of racing in rear-wheel-drive vehicles. The reason for that is simple. These proven units have an unrivalled combination of strength, weight, and reliability that makes them effective in wildly different applications. The tremendous aftermarket support developed for the 9-inch over decades has made them even more adaptable.

At the core of the wide-ranging prep choices available for a 9-inch is the center section. Unlike many other rearend designs, the Ford 9-inch has a removable third member, which holds the ring and pinion and differential in a tidy, easy-to-remove housing. This feature not only makes the 9-inch simpler to service, it also adds to this rearend's adaptability. By selecting different third-member housings and fitting them with the correct components, the rearend can be tailored precisely for each type of racing.

When setting up a Ford 9-inch third member for racing, cars tend to fall into one of two categories: those that turn and those that don't. By that, we're referring to road race or stock cars and drag cars. Each has very specific parameters for third-member preparation.

### DRAG RACING

Cars used for drag racing go really fast for very short bursts. The rearend needs to handle an incredible amount of shock load when the driver dumps the clutch or leaves off the

Preparing a Ford 9-inch rearend typically starts with the third member, which houses most of the rearend's vital components, including the ring-and-pinion gears and differential. By choosing the right combination of these parts, racers can tailor their 9-inch for practically any type of motorsports segment.

For street/strip drag cars, the ring and pinion choices are largely the same as those of road racers and stock cars. But high-horsepower drag cars that don't see street use generally use Pro gears, which are made to be less brittle, so they can better cope with high shock loads.



trans brake from the line. But then after that, the rearend just needs to get the car to the end of the track. There isn't much heat buildup.

That lack of heat in a drag car rearend allows for a wide range of material choices to manufacture the third-member case. Iron is still a popular choice, but aluminum cases are definitely worth considering. Granted, aluminum cases don't hold up well in prolonged high-heat environments, but that's not an issue in drag racing. The car is just blasting down the quarter- or eighth-mile and

then loping back to the pits on the return lane. And the weight savings of aluminum is definitely an advantage.

The next component to consider is the differential. Drag racing differentials have evolved over the years due to the rise in popularity of drag-and-drive events. Traditionally, drag racers have used spools, since going straight as fast as possible is the main priority. But with the introduction of street driving in the form of drag-and-drive events, many customers have switched to a traditional locker

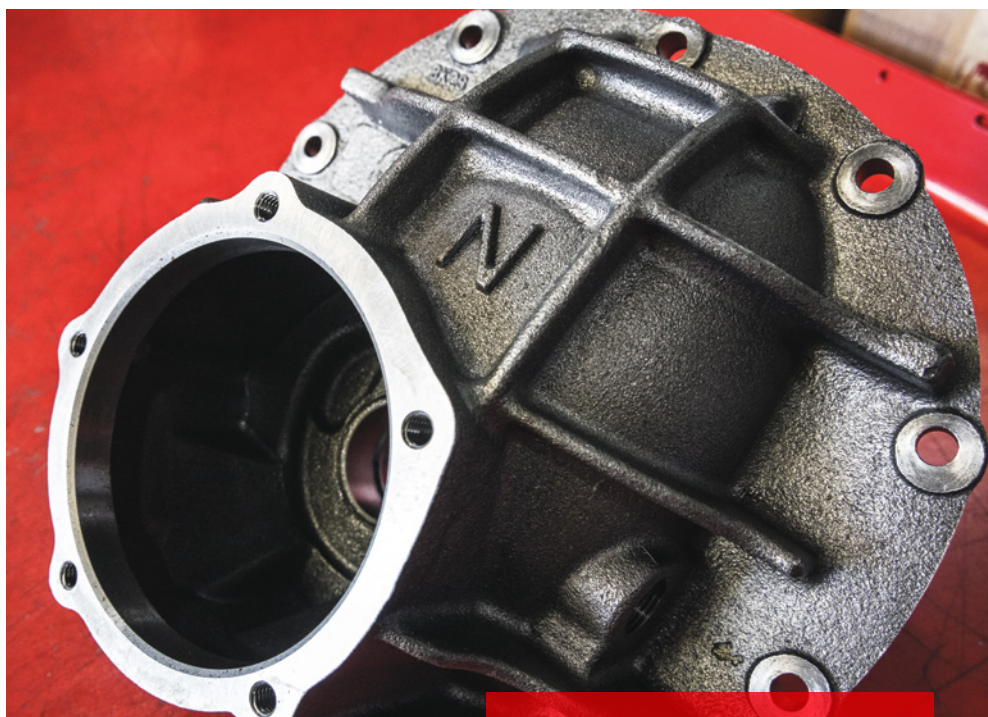


or a helical gear-type limited slip, such as the Eaton Truetrac or Strange S-Trac differential. These helical differentials allow for docile street manners and consistent, reliable traction on the track, while still handling the extreme abuse that comes with hard launches on a prepped surface.

There are strength choices between differentials, and horsepower is only part of the story; tire size and transmission type also play a significant role in deciding which differential to use. We recommend the Eaton Truetrac in 31-spline up to 1,000 horsepower. If the customer plans to use a trans brake, manual transmission, or drag radials, we prefer to upgrade to 35-spline for anything over 800 horsepower. At the 1,200–1,400 horsepower mark we recommend the Strange S-Trac, again in 35-spline. If the car is strictly for track use, we typically use a spool, as there's no need for cornering manners.

That said, there's a lot of misinformation out there. In our experience, rearend knowledge is built primarily on word-of-mouth. Many customers call in asking for a spool or old-fashioned locker for a street/strip combination. While these work, the road manners leave something to be desired. Modern helical-style limited slips are a great option for cars that run drag-and-drive events as they provide excellent drivability while still handling the extreme abuse of drag racing.

Ring-and-pinion sets are always an important consideration for drag cars, too, and they become particularly crucial over about the 1,200 horsepower level. Again, that number isn't a rigid standard—cars that leave the line particularly hard for any number of reasons may find that cutoff to be even lower. Vehicles used purely for drag racing at these higher levels of performance



Nodular-iron cases, such as the Ford N-Series case, are one of the most common choices for all types of racing. Although nodular iron isn't the lightest, it's durable, affordable, and widely available, making it a sound choice for drag, road racing, and stock cars.

typically run a Pro gear. This type of ring and pinion is made from a softer base metal—typically 9310 steel alloy—and heat-treated specifically to absorb high impact shock loads. Pro gears are less brittle, so they can absorb much higher shock loads than standard ring-and-pinion sets. The downside to Pro gears is that they don't take prolonged loads well at all—they'll fail relatively quickly when used for street or dual-purpose cars.

## ROAD RACING & STOCK CAR

Cars that turn while racing present their own unique challenges in 9-inch third-member prep. In these applications, shock loads are far lower, which puts less strain on the ring and pinion and other components. But unlike drag cars, road race and stock cars face vastly more heat

buildup, especially in long endurance events. That heat buildup becomes an important factor when choosing a third-member case. For one thing, it pretty much eliminates aluminum cases from consideration. When aluminum cases get hot, they lose their dimensional stability. This throws the very precise relationship between the ring gear, pinion, and other components totally out of whack, which typically results in the rearend eating itself.

For this reason, iron remains the best material for road racing and stock car third members. It's not the lightest, but it can survive the punishment of even the longest endurance events. For those who do want to shed some pounds, the Ford HS case is a good option. It's an investment-cast steel case that weighs about 8 pounds less than a typical nodular iron case, and it can handle just about anything below 1,000 horsepower—more than enough for the vast majority of road race and stock car setups.

Ring and pinion choices aren't as critical for road racers as they are for drag cars, due to the lower shock loads encountered. Of course, there's always a megabucks alternative. For example, NASCAR teams typically use very exclusive ring-and-pinion sets that are optimized to provide minimum friction at the exact speeds they'll be sustaining on any given track. These gears are priced accordingly—around \$7,000 a set. But for normal road race or stock car teams, just about any high-quality ring-and-pinion set will work. Worth noting, however, the quality of almost all mass-produced ring-and-pinion sets has diminished drastically in the last couple of decades. But the difference is mostly in how noisy they are, rather than in their overall strength, which is what really matters on a race car.

When it comes to differentials, road racing and stock cars are completely different from drag cars. Once again, consistent traction is the name of the game. A spool isn't optimal, as it will always resist direction changes. Alternatively, an open differential will allow direction changes but won't transfer power reliably when one corner loses traction. Most, if not all stock cars use a traditional locker differential. Lockers are great for consistent traction when needed, yet they still allow the differential to unlock when turning sharp corners.

In road race applications, many racers prefer a clutch-type limited slip or helical



Differentials are one of the most important choices to be made when setting up a Ford 9-inch third member. Road racers tend to prefer clutch- or helical-type, limited-slip differentials, while stock cars typically run a locker. Dedicated drag cars usually run a spool.

limited slip. Two common differentials in road racing are the OS Giken SuperLock and Eaton Truetrac. The OS Giken is a tunable clutch-type limited slip that allows the user to tailor the differential to course conditions and driving style. The downside is that with repeated racing, the clutches will wear and need to be replaced over time. The Eaton Truetrac is a common choice for weekend warriors; it provides reliable grip when traction is inconsistent but remains budget friendly as there are no clutches to replace.

Choosing the wrong differential can cause inconsistent cornering characteristics and result in slower lap times. In extreme situations, incorrect differential choice can result in internal damage or even an accident. A perfect example would be in a dedicated road-course situation with a differential that can't handle wheel hop or sudden shifts in chassis loading, such as

when the car hits the rumble strips in a fast corner. These situations unsettle the suspension and can cause the inside tire to lose traction. If the driver doesn't lift, this rapid loss and regaining of traction under power can damage the differential. This is where a locker or clutch-type differential can benefit the dedicated racer.

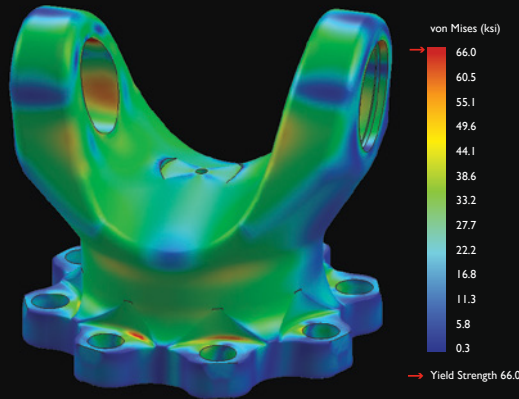
By following these recommendations, Ford 9-inch rearends can be as at home on a drag strip as they are on punishing laps of endurance racing. The key is in proper setup. This tremendously adaptable rearend design can do it all if the right components are used for each application. When prepped effectively in this way, these robust units are more than up to the job race after race, season after season. **PRI**

*Lucas Hardin is the drivetrain technical specialist at Detroit Speed & Engineering, a division of Holley Performance Products. In his role at Detroit Speed, Hardin works with a team of master technicians to help racers in all forms of motorsports select and set up drivetrain components. To learn more about Detroit Speed rear axle assemblies, visit the company's website at [DetroitSpeed.com](http://DetroitSpeed.com).*

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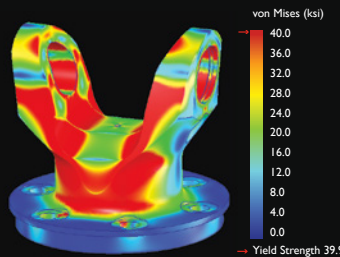
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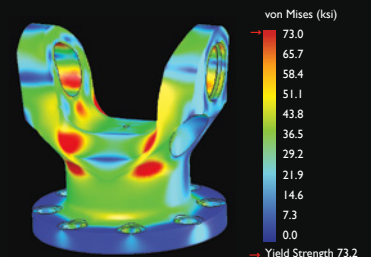
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# ADVOCACY CORNER

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

Edited by Jack Haworth

**P**RI's Washington, D.C.-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 the upcoming SEMA & PRI Washington Rally, a successful industry advocacy event in West Virginia, and a new bill introduced by Kansas lawmakers that would secure consumer freedom.

## ATTEND THE SEMA & PRI WASHINGTON RALLY

Don't miss out on the opportunity to attend the SEMA & PRI Washington Rally, taking place in Washington, D.C., on May 8–9, 2024. The Washington Rally provides an opportunity for SEMA and PRI member companies to come together and advocate on behalf of the specialty-automotive aftermarket and motorsports-parts industries with members of Congress.

By attending the Washington Rally, you will have the opportunity to meet with your members of Congress and their staff, discuss critical issues, and advocate for policies that will benefit our industry. Your participation will help ensure that our industry's concerns are heard and that we can continue to innovate and grow.

Whether it's protecting the right to repair and modify vehicles with advanced technology, combating vehicle technology mandates that limit consumer choice, or protecting motorized access to federal government lands, there are many issues facing SEMA and PRI members in the nation's capital. With the 2024 presidential election heating up and the balance of power in both the House and Senate up for grabs, it's more important than ever for SEMA and PRI members to come to Washington, D.C., to advocate for the industry!

If you would like to register for the Washington Rally, please visit [sema.org/washington-rally](https://sema.org/washington-rally), or contact Kayla Mitchell at [kaylam@sema.org](mailto:kaylam@sema.org).

SEMA and PRI have a limited number of rooms available at the Royal Sonesta Washington, D.C. Capitol Hill for \$409 per night plus tax. A link to book a room will be provided upon completing the registration form. The deadline to RSVP for the Washington Rally and book a room in SEMA and PRI's room block is April 15.

Below is a list of 2024 Washington Rally events:

### Wednesday, May 8, 2024

5:30 pm–7:00 pm: SEMA-PRI PAC Reception, Royal Sonesta Capitol Hill, Sapphire Room & Terrace – Penthouse level

\*A PAC contribution is required to attend in the suggested amount of \$250 per individual. If you have already contributed to the SEMA and PRI PAC in 2024, this event may be complimentary as a part of your PAC Membership Benefits. Please contact PAC Manager Alicia Steger at [alicias@sema.org](mailto:alicias@sema.org) if you have any questions.

7:00 pm–9:00 pm: Washington Rally Congressional Dinner, Royal Sonesta Capitol Hill, Crown Ballroom – Penthouse level

### Thursday, May 9, 2024

7:00 am–8:30 am: Breakfast & Welcome Briefing, Royal Sonesta Capitol Hill, Crown Ballroom – Penthouse level

9:00 am–12:00 pm: Meetings with Congressional Representatives, House & Senate Office Buildings

9:00 am–3:00 pm: Cars at the Capitol Event, Southwest side of the US Capitol on Maryland Avenue (across from the Botanical Garden)

12:00 pm–1:30 pm: Congressional Luncheon, Capitol Hill Club, Eisenhower Room

2:00 pm–5:00 pm: Meetings with Congressional Representatives, House & Senate Office Buildings

## RACERS AND LAWMAKERS CELEBRATE 2024 MOTORSPORTS DAY AT WEST VIRGINIA CAPITOL

Industry professionals, elected officials, and state agencies came together on February 23 for the 2024 Motorsports Day at the West Virginia Capitol. The event served as a platform for collaboration, education, and the celebration of motorsports' significant contributions to the Mountain State.

"Participating in West Virginia Motorsports Day is vital for SEMA and PRI," said Christian Robinson, SEMA and PRI senior director of state government affairs and grassroots. "It afforded us direct connections with lawmakers and industry-driving businesses. Through events like these, we can advocate for the future of motorsports, and celebrate its positive impact on communities in West Virginia."





2024 Motorsports Day at the West Virginia Capitol

In the State Capitol Rotunda, more than 30 businesses and vendors, including SEMA and PRI, showcased the diverse landscape of West Virginia's motorsports scene. Meanwhile, outside the Capitol, more than 30 racing vehicles displayed the pinnacle of motorsports engineering and design. Notably, Chaos Motorsports' AK Whatley received legislative recognition for completing the grueling 2024 King of the Hammers event.

Throughout the day, attendees engaged in open discussions and networking, fostering collaboration, and identifying avenues for growth with government officials and peers.

For more information and assistance engaging with your local and state officials, contact Christian Robinson at [christianr@sema.org](mailto:christianr@sema.org).

### KANSAS HOUSE APPROVES BILL PROTECTING VEHICLE CHOICE FREEDOM

Kansas has introduced PRI-supported legislation to ensure consumers' choice of vehicle powerplants and fuel by preventing a state agency, county, or city from limiting access to internal combustion engines.

Kansas lawmakers passed a resolution last year, but this year's bill will codify this into law.

The House Federal & State Affairs Committee recently held a hearing for the House's version of the bill (H.B. 2783), where it passed with overwhelming support. Following a vote by the full House, the bill received quick approval and now awaits consideration by the Senate.

"Based on this topic's importance to industry in the state, we were among several groups that testified in support of the proposal," said Colby Martin, SEMA and PRI director of state government affairs. "It is reassuring that Kansas lawmakers have so strongly agreed that this effort promotes consumer choice, fosters innovation, and protects jobs."

PRI believes Kansans, not the government, should be allowed to choose the type of vehicle technology that best serves them and their families.

For more information, contact [SAN@sema.org](mailto:SAN@sema.org). **PRI**

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# INDUSTRY NEWS

## MICHAEL GOOD APPOINTED PRESIDENT OF PERFORMANCE RACING INDUSTRY

Michael Good has been appointed president of Performance Racing Industry (PRI).

Good will be based at PRI's headquarters in Indianapolis, Indiana, reporting to SEMA President and CEO Mike Spagnola.

Good is a strategic and high-achieving executive with more than 25 years of experience leading teams and organizations, as well as growing top- and bottom-line revenues across a variety of industries both domestically and internationally. He joins PRI from Dynamat, Inc., Hamilton, Ohio, where he served as the president and CEO.



Michael Good

## WHARTON AUTOMOTIVE GROUP ACQUIRES COMPETITION CLUTCH

Wharton Automotive Group (WAG), the Anaheim, California, parent company of McLeod Racing, FTI Converters and Transmissions, Silver Sport Transmissions, and other driveline brands, has acquired Competition Clutch.

Acquired from previous owner Chris Jewell, Competition Clutch is a provider of clutch kits, flywheel products and accessories for the sport-compact market. Effective immediately, the company will be based out of McLeod Racing's Anaheim manufacturing plant.

## AMERICAN SPRINT CAR SERIES JOINS WORLD RACING GROUP; NOS ENERGY DRINK EXTENDS TITLE SPONSORSHIP

World Racing Group, the Concord, North Carolina-based sanctioning body and parent company of the World of Outlaws and DIRTcar brands, has acquired the American Sprint Car Series (ASCS) from series founder Emmett Hahn.

The 360 sprint car series and its 12 regions will now operate under the same banner as the World of Outlaws NOS Energy Drink Sprint Car Series, World of Outlaws CASE Construction Equipment Late Model Series, Xtreme Outlaw Midget Series, and Super DIRTcar Series. The 2024 ASCS National Championship season will include 40 stops across 10 different states, including the 360 Knoxville Nationals in Knoxville, Iowa.

In related news, NOS Energy Drink has extended its partnership with the World of Outlaws Sprint Car Series in a multi-year deal. The extension will make it the longest-running title sponsor in series history. The World of Outlaws Sprint Car Series welcomed NOS Energy as its title sponsor in 2019 and extended the partnership several years later.

## EXCESS INJECTORS LAUNCHES IN NORTH AMERICA

Excess Injectors, an Australia-based provider of performance fuel injectors, has officially launched its product line in North America

through Summit Racing Equipment, the automotive parts retailer headquartered in Tallmadge, Ohio.

"We are thrilled to launch in North America through Summit Racing Equipment," said Simon Richards, principal of Excess Injectors. "Not only are we proud of the new standard we've created for the fuel injector industry, but thrilled to offer the transparency of the data collected on each injector to prove why our sets are the most exact-matched sets on the market."

## PARELLA MOTORSPORTS HOLDINGS ACQUIRES INTERNATIONAL GT; ANNOUNCES SCHOLARSHIP RECIPIENTS

Parella Motorsports Holdings (PMH), owner of the SpeedTour brand and its participating series, has acquired International GT.

The North American racing series includes three different championships for late-model Ferrari and Porsche GT3-spec sports cars—the Stuttgart Cup, Maranello Cup, and Mission Foods GT3 Cup Trophy—and joins the PMH portfolio alongside the Trans Am Series, Sportscar Vintage Racing Association, Formula Regional Americas, Formula 4 United States Championship, and more.

PMH has also announced the recipients of its Powering Diversity Scholarship. The scholarship will aid drivers competing in the Trans Am Series, Ligier JS F4 Series, Formula Regional Americas Championship (FR Americas) and Sportscar Vintage Racing Association (SVRA).

2024 PMH Powering Diversity Scholarship recipients: Michele Abbate, Kaylee Bryson, Maite Cáceres, Harbir Dass, Taylor Ferns, Justin Garat, Tyler Gonzalez, Ava Hanssen, Nicole Havrda, Jenn Krpata, Rafa Matos, Landan Matriano Lim, Christopher Parrish, and Amy Ruman.

## LUCAS OIL PROMOTES MORGAN LUCAS TO CEO, KATIE LUCAS TO PRESIDENT

Lucas Oil Products, based in Indianapolis, Indiana, has promoted Morgan Lucas to CEO and Katie Lucas to president of the company.

Morgan has served as the company's president since May 2020 and was previously senior vice president of sales. Katie served as vice president of strategy and philanthropy before stepping into the chief administrative officer role in 2022.



Morgan, left, and Katie Lucas

As CEO, Morgan is responsible for the strategic direction and vision of Lucas Oil, as well as providing financial and operational leadership for the company. In Katie's role as president of Lucas Oil, she will manage the day-to-day operations and ensure all functional departments are working closely to support the strategic goals of the company. Katie will also continue to lead all of Lucas Oil's philanthropic and community engagement endeavors.

## YOKOHAMA TIRE PROMOTES STAN CHANDGIE TO COO

Yokohama Tire Corporation (YTC), the Japanese tire manufacturer with American operations centered in Santa Ana, California, has promoted Stan Chandgie, formerly executive vice president of sales and support to chief operating officer, effective April 1.



Stan Chandgie

In his new role, Chandgie will retain oversight of consumer and commercial sales and marketing, tire business planning, and supply chain and logistics to his responsibilities. He will continue to report to Jeff Barna, YTC's president and CEO.

## JOSTENS RACING APPOINTS MIKE KIRKS AS DIRECTOR OF MOTORSPORTS BUSINESS DEVELOPMENT

Jostens Racing, an awards and jewelry supplier with headquarters in Minneapolis, Minnesota, has named Mike Kirks as its new director of motorsports business development.

Kirks, who previously served as the membership benefits manager at PRI, will be responsible for continuing the growth of the company's motorsports business by expanding outside of the major racing series. He will be based in Indianapolis, Indiana.

## FALKEN TIRES' PARENT COMPANY PROMOTES BAKARI HOWARD, JOYCE HO

Sumitomo Rubber North America (SRNA), the Rancho Cucamonga, California-based parent company of Falken Tires, has promoted Bakari Howard to manager of motorsports and Joyce Ho to corporate events and merchandising manager.

Bakari has served in several different roles, including positions in sales and product training, and is also the host of Falken Digital TV's "Tire Tech" episodes. A 15-year member of the SRNA team, Ho's

time at SRNA has also included stints as executive assistant and financial analyst.

## NASCAR REGIONAL REPLACES NASCAR ROOTS; HONORS DIVERSITY AND INCLUSION ADVOCATES

NASCAR, based in Daytona Beach, Florida, has officially launched the NASCAR Regional brand and platform, which encompasses the touring and weekly series of NASCAR, including the ARCA Menards Series, ARCA Menards Series East, ARCA Menards Series West, NASCAR Whelen Modified Tour, and the Advance Auto Parts Weekly Series.

Formerly NASCAR Roots, the NASCAR Regional brand and platform will better position the sport to grow awareness around those series, sources from the sanctioning body said. In addition, the rebrand ushers in a more organized and recognizable platform that provides concise sightlines of a "ladder system" from beginning to end.

In addition, NASCAR has announced 10 trailblazers and inclusion advocates as part of the 16th annual NASCAR Drive for Diversity Awards. Among the honorees are crew members, league partners, and a public school system, all of whom are making a real difference in the sport.

The 2024 NASCAR Drive for Diversity Awards recipients are as follows: Crew Member: Mike Metcalf; Developmental Series Driver: Zach Herrin; Sam Belnavis Industry Ambassador: Jefferson Hodges, Team Penske; Institution: Chicago Public Schools; National Series Driver: Tyler Reddick, 23XI Racing; Outstanding Intern: Chandler Love, University of Miami; Partner: Keurig Dr Pepper; Team: Venturini Motorsports; Track: Phoenix Raceway; Young Racer: Katie Hettinger.

## IRACING ADDS TCR BRAND, SERIES TO PLATFORM

iRacing, located in Chelmsford, Massachusetts, will be adding TCR Series branding to its virtual motorsports platform as part of a new partnership with World Sport Consulting, the United Kingdom-based promoter of the TCR brand.

As part of the agreement, iRacing's four current TCR touring car models will all gain TCR branding, and the standalone series featuring the cars will be renamed the iRacing TCR Virtual Challenge.

## MCCOY RECEIVES PROMOTER OF THE YEAR AWARD AT RPM@DAYTONA

John McCoy, promoter at Knoxville Raceway in Knoxville, Iowa, received the Auto-Racing Promoter of the Year Award at the 51st annual RPM@Daytona Workshops in Daytona Beach, Florida.

Additionally, Susan Deery, manager of Rockford Speedway in Rockford, Illinois, was presented with the Jody Deery Award, named after her late mother, for leading the track during its final season.

## I29 DRAGWAY RESTARTS BRACKET PROGRAM UNDER WDRA SANCTION

I29 Dragway, located in Pacific Junction, Iowa, is restarting its bracket racing program in 2024 after signing a multiyear sanction agreement with the World Drag Racing Alliance (WDRA), Springfield, Illinois, and incorporating the Summit Sportsman Drag Racing Series.

The bracket racing program will join a schedule of street, no-prep, and roll racing events on the I29 Dragway calendar.

## NHRA SUMMIT SERIES TO HOST FIRST ET FINALS AT CANADA'S NAPIERVILLE DRAGWAY

The NHRA Summit Racing Series, based in San Dimas, California, will hold its first-ever Eastern Canada ET Finals in 2024 at Napierville Dragway in Quebec.

Scheduled for September 6–8, the championship-level event will include competition from Super Pro, Pro ET, Sportsman, Motorcycle/Sled, and Junior Street classes.

**For all the latest motorsports industry news, visit [primag.com/industrynews](https://www.primag.com/industrynews).**



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### IMPACT RACING [ximpactusa.com](http://ximpactusa.com)

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### DESIGN ENGINEERING, INC. [designengineering.com](http://designengineering.com)

DEI's new Radio Frequency Interference (RFI) Shield products are designed to reduce interference from radio and electromagnetic waves to ignition systems and high-voltage wires. It's available as a split sleeve or tape. Both products include DEI Quick Fix Silicone Tape to seal off the ends for a secure safeguard and finished look.

**Contact: 800-264-9472**



### PRECISION TURBO & ENGINE [precisionturbo.net](http://precisionturbo.net)

The Next Gen 6266 turbocharger is rated at 950 horsepower and will be available in the all-new SCP (S Cast Ported) compressor covering, offering a 4-inch inlet and 2.5-inch outlet. The new aero package includes a redesigned compressor cover with numerous flow enhancements and a new compressor wheel profile that incorporates an extended tip on the exducer.

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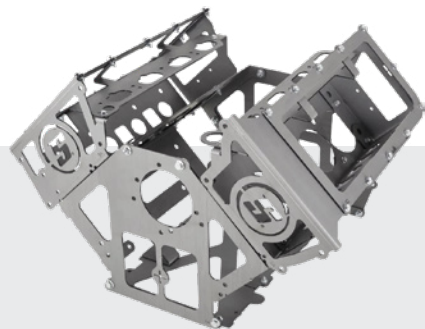
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The 1964–1972 Chevy Chevelle Ladder Bar Frame Kit for drag racing is precision-built with fully welded construction. The frame is completely welded with 2x3-inch frame rails, ladder bar crossmember with ladder bar front mounts, rear shock crossmember with upper shock mounts and panhard bar mount. It's jig welded for easy installation.

**Contact: 800-523-3353**



**SPEEDWAY MOTORS**  
[speedwaymotors.com](http://speedwaymotors.com)

The SoloSwap Ford 5.0 Coyote Mock Up Engine Swap Dummy Block Kit is compatible with all 5.0L and 5.2L Coyote engine bolt-ons such as intake manifolds, headers, and oil pans, designed to make positioning and fabricating engine mounts easy. It weighs 22 pounds for the short block and 40 pounds for the long block. It replicates all Coyote-based engines and features heavy-duty 12-gauge steel construction.

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# SOCIAL STATUS

Create quality content that captures the interest of your online audience so they stop scrolling and start viewing.

**S**ocial media is content driven, and in today's digital landscape, creating quality content has become the foundation of a successful online presence. With millions of users scrolling through endless streams of content daily, it can be challenging to capture their attention and spark interest.

One of the first steps to creating quality content is understanding your target audience. As you grow a following, test various types of content to figure out what resonates best with your audience. Tailor your content to your audience preferences and demographics.

Be authentic. Give your brand a personality to build trust and connect with your audience. If possible, create original content for a more genuine feel, and tell a story or give insight with your content to reflect your brand values. Engine or chassis builders could post about their background in racing, how they got to where they are, and what racing means to them.

With strong imagery, video, captions, or storytelling, create a scene that will captivate

your audience and evoke emotion, whether it's excitement, empathy, happiness, or heartwarming joy. Has a customer recently won a race, or come back to competition after an accident? Their stories can inspire other racers. This can help make your content more engaging and memorable.

Additionally, provide value to your audience through your social media posts. Educate them, inspire them, motivate them, or purely entertain them. Offer useful information that solves a problem or addresses a need, give ideas to inspire others who might want to emulate that concept, or create something exciting that captures your audience's attention. Whichever avenue you choose, focus on delivering value with every post.

Experiment with various content formats to figure out what resonates with your followers and to keep things interesting. That could include short- or long-form video, imagery, graphics, memes, polls, user-generated content, live videos, and so on. Make sure to diversify so you don't become stagnant. Furthermore, keep up with current trends

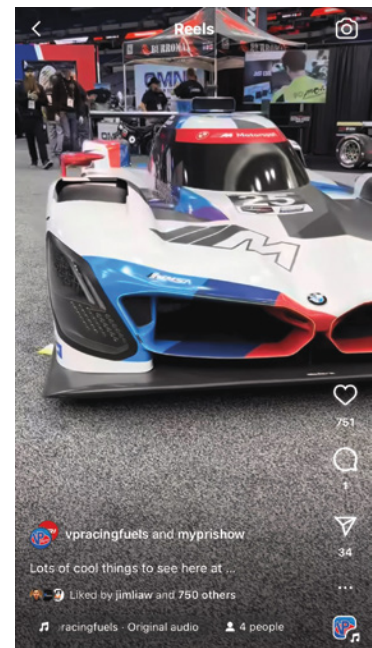
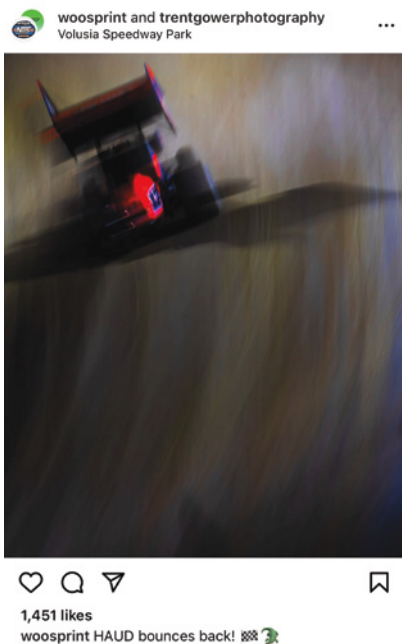
to stay relevant, and incorporate some of those trends into your content strategy when you feel it's appropriate, while also staying aligned with your brand.

To build brand recognition and stay top of mind with your followers, maintain a consistent posting schedule. This will help to keep your audience engaged, which will also help grow your following.

Visual content tends to perform better than just words on social media platforms. Using high-quality and captivating images, video, and graphics to communicate your message effectively can quickly grab attention and lead to increased engagement.

And lastly, regularly analyze your content performance metrics to understand which types of content resonate with your audience and where improvements can be made. Use this data to refine your strategy and optimize future posts.

Mastering the craft of creating quality content is essential for individuals and brands to thrive in this ever-growing digital realm. **PR1**



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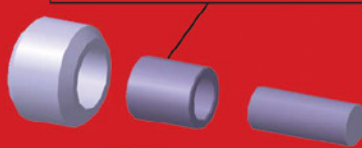


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