

ARIZONA DRIVER

THE ENTHUSIAST'S GUIDE TO LIFE BEHIND THE WHEEL

VOLUME 20 NUMBER 5
SEPTEMBER-OCTOBER 2021



Ford Mustang Mach 1

VEHICLES • EQUIPMENT • TECHNOLOGY • PEOPLE • EVENTS • DESTINATIONS • ATTRACTIONS





RECONNECT

PEOPLE | PRODUCTS | VEHICLES | IDEAS



NOVEMBER 2-5, 2021 • LAS VEGAS CONVENTION CENTER • LAS VEGAS, NEVADA

SEMASHOW.COM/REGISTER

ARIZONA DRIVER

THE ENTHUSIAST'S GUIDE TO LIFE BEHIND THE WHEEL

news & features September-October 2021

A Week With	2021 Toyota 4Runner TRD Pro .....10
Good Deeds	Phoenix Raceway Track Laps for Charity A .....13 Arizona Accelerator Charities is the beneficiary of Track Laps for Charity on October 16. For just \$25, you can drive your personal vehicle on the mile-long championship oval at Phoenix Raceway.
Teen Driver	Performance driving school hones teen skills B .....14 The strongest skills make the best and safest drivers. Radford Racing School in Arizona is the latest stop for this increasingly highly skilled new driver. By Kimatni Rawlins with MiKaiya Rawlins
A Week With	2021 Ford Mustang Mach 1 Coupe Premium .....18
Motorsports	2022 NASCAR Next Gen Ford Mustang .....23
Motorsports Book	Noeth: Bonneville's Women of Land Speed Racing C ...25 This first-of-its-kind book by "LandSpeed" Louise Ann Noeth—just released—showcases the contributions of women in motorsports, specifically on the Bonneville Salt Flats.
A Week With	2021 Mazda MX-5 Miata Grand Touring 6MT .....26
Technology	EV news highlights .....29 From materials, battery swapping and sustainability—to teardrop trailers and the West Coast Electric Highway.
A Week With	2021 Ford F-250 Power Stroke Lariat Ultimate Tremor ...32
ADOT	North-South Corridor route for Pinal County D .....35 The long process for a new major highway from Apache Junction south to I-10 takes a giant step forward.
A Week With	2021 Nissan Armada SV AWD .....36
A Week With	2021 Infiniti QX80 Premium Select 4WD .....39
Vehicle Project	Girl Gang Garage: 1961+2019 Volvo plug-in hybrid E ...40 With support from Volvo, Phoenix-based Girl Gang Garage embarks upon their latest impressive SEMA-bound custom build, incorporating the plug-in hybrid powertrain and technologies from a 2019 Volvo S60 T8 Polestar Engineered into the restoration of a yard find classic 1961 Volvo PV544. Meet the "Iron Maven." By Joe Sage with Shawnda Williams
A Week With	2021 Hyundai Elantra Limited .....45
A Week With	2021 Hyundai Veloster N .....46
ARIZONA FLYER MAGAZINE	Volocopter VTOL air taxi first crewed flight .....49 Milestone achieved at Oshkosh in this burgeoning category.
A Week With	2021 Subaru Forester Touring .....51
A Week With	2022 Subaru Outback Wilderness .....52
Motorsports	Phoenix Raceway NASCAR November 2021 F .....55

departments

■ FROM THE PUBLISHER	.....4
■ AUTOMOTIVE NEWS UPDATE	.....6
■ THE INSIDE TRACK: BRIEFS & RUMORS	.....56
■ UPCOMING FEATURES	.....58



COVER: 2021 Ford Mustang Mach 1. This new limited edition model brings back a landmark heritage name while providing a powerful pony car between the Mustang GT and the Shelby GT500, incorporating significant parts and technologies from the Shelby GT350. **Photo: Joe Sage**



START YOUR ENGINES : FROM THE PUBLISHER

This issue brings you a healthy range of automotive lifestyle. Longstanding friend and colleague **Kimatni Rawlins** of *Automotive Rhythms* makes his first appearance as a contributor in this issue with daughter **MiKaiya Rawlins**—a new driver who is rapidly working her way through some of the nation's best performance driving schools, now Arizona's Radford Racing School, to become the best she can be.

Shawnda Williams and **Bogi Lateiner** of Girl Gang Garage rejoin us with an entirely new (and at the same time old) custom build headed to SEMA 2022—"Iron Maven," a restoration and customization of a 1961 Volvo PV544 in combination with the futuristic powertrain technology of a 2019 Volvo S60 T8 Polestar Engineered plug-in hybrid.

A new major highway running south from Apache Junction to I-10 between Phoenix and Tucson is bound to get a lot more attention, now that its route has been declared. If you're a fan of the two-lane back roads between the two cities, or if you're interested in the long-running talk of the two someday blending into one megacity, this is a big deal.

Vehicle manufacturing is a phenomenally complex endeavor, with an almost unfathomable volume of engineering, sales, materials, time-management and bean-counting reasons behind each and every one of the some 350 different vehicles available in the US. These are the reasons we can't all have a manual transmission or all-wheel drive or a classic transfer case or 10,000 pounds of tow capacity on everything that comes down the pike—all the more reason we get a certain amount of joy when we do get these features still on some models, as you'll find in this issue from Miata to 4Runner and more.

We also have a special news section covering specific recent technological challenges and breakthroughs particularly on the EV front.

With national events still reduced, we again had time for more long drives—up the Beeline Highway or I-17, beyond the end of the pavement, wherever the spirit moved us.

Enjoy the ride!

Joe Sage - Publisher/ Executive Editor

ARIZONA DRIVER

MAGAZINE



PUBLISHER/EXECUTIVE EDITOR:

Joe Sage

CONTRIBUTING WRITERS/PHOTOGRAPHERS:

Randall Bohl, Nick Calderone, Chris Collard, Tyson Hugie, Stephanie Jarnagan, BJ Killeen, Christina Lawrie, Mercedes Lilienthal, Sue Mead, JP Molnar, "LandSpeed" Louise Noeth, Doris Ong, Brenda Priddy, Kimatni Rawlins, Kelly Sallaway, Lyn St James, Tim and Kristin Sharp, Dave Stall, Paul Strauss, Valerie Thompson, Scott Tilley, Sherri Tilley, Jan Wagner, Nicole Wakelin, Shawnda Williams, Kevin A Wilson, Meagan Wristen



www.arizonadrivermagazine.com



Instagram: @ArizonaDriver



Facebook: @ArizonaDriverMagazine



Twitter: @ArizonaDriver



Pedal: @ArizonaDriver

ARIZONA DRIVER MAGAZINE IS A MEMBER OF:

IMPAInternational Motor Press Association
MAMAMidwest Automotive Media Association
MPGMotor Press Guild
NWAPANorthwest Automotive Press Association
PAPAPhoenix Automotive Press Association
RMAPRocky Mountain Automotive Press
SAMASouthern Automotive Media Association
TAWATexas Auto Writers Association
TxMPATexas Motor Press Association
WAJWestern Automotive Journalists

ACMLeMay—America's Car Museum
SturgisSturgis Motorcycle Museum & Hall of Fame
USFRAUtah Salt Flats Racing Association
USMAUnited States Motorsports Association

PUBLISHED BIMONTHLY BY ADZONE ARIZONA LLC

All contents © AdZone Arizona LLC and *Arizona Driver Magazine*. All rights reserved. Any scanning, downloading and/or physical or electronic sharing of any part of this publication without prior written permission of the publisher constitutes theft of intellectual property.

Arizona Driver Magazine, *Arizona Rider Magazine*, *Arizona Flyer Magazine* and *Arizona Boater Magazine* are registered tradenames of AdZone Arizona LLC.

ARIZONA DRIVER MAGAZINE

PO Box 13387, Scottsdale AZ 85267

Advertising and sponsored content: 480-948-0200

MAX ALL SEASON PERFORMANCE HAS ARRIVED.

INTRODUCING THE NEW MICHELIN® PILOT® SPORT ALL SEASON™ TIRE.



**PERFORMANCE MADE TO LAST.
ELEVATE YOUR PERFORMANCE IN ALL SEASONS.
SUPERCAR CERTIFIED.**

[MORE AT MICHELINMAN.COM](http://MOREATMICHELINMAN.COM)



OFFICIAL TIRE

Torva

Fine Art of Fine Automobiles



Lucretia Torva | 480.251.3817
Instagram: @torvasm | torvafineart@gmail.com

AUTOMOTIVE NEWS UPDATE

Battista all-electric GT



▼ Each **Battista** GT hypercar will be a one-of-a-kind, thanks to an all-encompassing **Automobili Pininfarina** bespoke personalization program. All Battista customers are invited to work with the design team to create their perfect pure-electric hyper GT. A new Atelier space at the Cambiano, Italy production facility opens late this year, housing an extensive range of color and material samples close to the assembly area, where Automobili Pininfarina's skilled technicians will turn clients' dreams into reality. Mixing advanced composite materials with traditional coachbuilding techniques, every element of the car receives bespoke treatment. The first commission is inspired by New York City, with a sophisticated red, white and blue color theme; exposed signature carbon body work featuring a world-first Iconica Blu thread; performance stripes and pin-stripe finished in meticulously hand-applied Bianco Sestriere metallic; a red exterior jewelry pack; and a Furiosa carbon accent pack finished in black exposed signature carbon; Impulso wheels finished in dark matte grey with black anodized brushed aluminum center-lock ring; black Goccia roof, rear diffuser and rear wing; and brushed aluminum headlight engraving. The hand-painted finish for this one-off example takes hundreds of hours of expert attention. The luxurious interior gets the same one-off treatment, from choice of leather and Alcantara to the contrast stitching; intoner jewelry pack; and fine aluminum interior detailing. This is

evident in the methods used to craft the exquisite materials, such as leather interior elements tanned with olive leaves, a process that reduces the need for harmful chemicals in the creation of every Battista. The first bespoke commission features Pilota seats finished in black leather upholstery with Iconica Blu Alcantara with navy blue inserts; Iconica Blu stitching with red and white cross stitch; red headrest logo; white seatbelts; and Iconica Blu



Rolling Bones Hot Rod Shop

thread on the back of the carbon seats. Brushed aluminum detailing is finished in red, echoing the red exterior jewelry pack, with darker details of the interior jewelry pack finished in anodized black. With 56 exterior paint finishes or exposed carbon fiber bodywork, with the option of a contrasting front body color, along with other paint and anodized finish options, there are 128 million combinations possible.

▼ Salon Privé returns to Blenheim Palace in Woodstock, Oxfordshire, England from September 1-5, with its celebrated mix of modern supercars, iconic racers, great classics and the latest concepts. This year, the immaculate grounds will also be rocked by the dramatic sight and sound of hot rods created by the Rolling Bones. Based in an old cow barn in upstate New York, the **Rolling Bones Hot Rod Shop** is run by Ken Schmidt and Keith Cornell, owners and enthusiasts who have been creating bespoke works of automotive art for more than 20 years. Rejecting building trailer queens or street rods with new or reproduction parts, they instead produce daily driver hot rods that border on being full-on race cars. Raw, pure, built to be used, they perfectly evoke the golden era of hot rodding following World War Two, when American servicemen returned from duty with a passion for speed and adventure, and turned their attention to old Fords that were cheap and plentiful during that era. Rolling Bones is fiercely loyal to Ford, and their use of vintage parts that would have

been available to hot rod builders in-period gives each of their cars its character, while patina has been raised to something approaching an art form. Rolling Bones hot rods have roared across the Bonneville Salt Flats and gone head-to-head in dusk races across the dry lake at El Mirage. Now five of them are bringing their special brand of anarchy to leafy Oxfordshire. In its 16th year, Salon Privé Week is a must-

attend series of events for any car enthusiast or aficionado—a Partner Concours to the Peninsula Classics' Best of the Best Award, now recognized alongside Pebble Beach and Villa d'Este, Salon Privé is the



Rivian R1T

UK's most exclusive automotive event. Feted by the hot rod cognoscenti, Rolling Bones will add an exciting and rebellious new element to Salon Privé Week.

▼ Might Arizona's burgeoning clean vehicle manufacturing industry gain another key player? Amazon-backed EV startup **Rivian Automotive** plans to build a second US assembly plant that will also include battery cell production. Multiple states have bid for the plant, dubbed "Project Tera" in documents, which could be announced at any time now and break ground early next year, say sources who ask not to be identified. Timing could still change given the coronavirus pandemic, which already delayed a planned announcement from summer. Rivian's existing US plant is in Normal, Illinois, and was formerly owned by Mitsubishi Motors. The typical cost of a new vehicle assembly plant is \$1 billion or more, a battery cell production factory at least \$2 billion. Other automakers have partnered with battery manufacturers on cell production, and Samsung currently supplies battery cells to Rivian. In the US, traditional carmakers such as GM and Ford are retrofitting plants for EV production, while Tesla, Taiwanese contract manufacturer Foxconn, and startups including Lucid and Canoo have existing plants or are adding them. California-based Rivian, also backed by Ford and T Rowe Price, aims to compete when it rolls out its R1T pickup and R1S SUV, as well as a delivery van for Amazon. Rivian will seek

a valuation of well over \$50 billion in a potential public listing later this year, according to another source. A second US plant will expand the company's capacity and include a 50 GWh battery cell produc-

tion operation built in phases, as well as a product and technology center, according to documents seen by Reuters that were submitted to state economic development officials. The proposal had listed spring 2021 as the period in which states would be notified of the company's decision, with "mobilization" likely in the summer and the start of construction in the fall. However, the pandemic has delayed that timeline. The project requires an estimated



McLaren Elva with JR Hildebrand

2,000 acres of land and would seek to achieve net-zero carbon emissions as soon as possible, according to the proposal. Launch editions of Rivian's pickup and SUV are priced at \$73,000 and \$75,500, respectively, with 2022 models available for preorder at \$67,500 for the R1T and \$70,000 for the R1S. Amazon has ordered 100,000 electric vans from Rivian through 2024, with production scheduled to begin

in Illinois this fall. Rivian plans to follow the initial three vehicles with smaller models targeted at China and Europe.

▼ IndyCar Star JR Hildebrand has taken the newest **McLaren** Ultimate Series—the Elva, the lightest McLaren—for a spin in the streets of San Francisco and along the Pacific Coast Highway, testing its immersive driving experience and declaring it "the ultimate driver's car." (A full film is available on the McLaren Automotive YouTube channel.) Designed for pure driving connection, engagement and enjoyment, the Elva is the lightest and most driver focused vehicle in the McLaren model lineup. Powered by an 804-bhp twin-turbo V8, the McLaren Elva claims ferocious acceleration and handling that is both exploitable and accessible, points on which Hildebrand is in full agreement, "with not only hypercar performance but a hyper-specific use case. Where the McLaren Senna and McLaren Senna GTR exist to be the ultimate in track weapons, the Elva is designed for the ultimate immersive experience on your favorite roads, and to be completely unhidden from your environment, whether that be a coastal sea breeze or the paparazzi flash pulling up on Rodeo Drive. This car isn't for everyone, nor is it for every situation.

KEEP RIGHT >>

moment at hand by going for a drive. It's impossibly nimble and lightweight, blurring the boundaries between the car and all of its environment. Get this thing in a tunnel, wick it up to 9000 rpm, pile on the

notable for an active triplex damper added to the front suspension, active aerodynamics, development-integrated Michelin tires and the Koenigsegg Electronic Stability system. A patented in-house Koe-

ous opening and closing of clutches that allow for seamless acceleration or deceleration, with shift-time benefits when changing between any forward gears. The first customer cars deliver in spring 2022.

▼ **Audi** has a new RS3 headed our way for 401-hp high-performance daily driving duty. Horsepower is the only US spec as of now; European release comes first. As of now (there), it includes one of Audi's original market-conquering technologies: a five-cylinder engine. (Since horsepower is the one thing they've stated for the US, we hope it's also intended for our version.) With 500 Nm (about 370 lb-ft) of torque, the 2.5L TFSI powerplant hits 100 km/h (62 mph) in 3.8 seconds, with a 290 km/h (about 180 mph) top speed. The new RS3 is the first Audi standard-equipped with a torque splitter replacing the rear axle differential and its multiple disc rear axle clutch package. Instead, an electronically controlled multiple disc clutch is used on each drive shaft for optimal distribution of torque along the rear axle, significantly reducing understeer tendencies in more dynamic driving. In lefthand curves, it transmits the drive torque to the right rear wheel, in right-hand curves to the left rear wheel, and when driving straight ahead to both wheels. The new technology also



Koenigsegg Jesko (pre-series)

brakes and bang that downshift—just the snap, crackle and pop that this thing gives you. It provides the purest sensation of connection to the road, it excites all your senses from smell, to taste, to the feeling through the steering wheel. It's the most incredible machine for the A to A journey, just getting out and driving like nothing else matters. You want to know what it's like to drive the McLaren Elva? It's the ultimate driver's car," says Hildebrand. Available with a windshield, as driven by Hildebrand, or with the innovative Active Air Management System, McLaren Elva is limited to just 149 examples. With almost limitless customization by McLaren Special Operations (MSO), each Elva will be unique, but all will offer a truly unforgettable driving experience.

nigsegg Light Speed Transmission (LST) represents a scale of evolution they say is as big as the advent of modern dual-clutch technology at the turn of the century. Jesko prototype driver Markus Lundh says, "The Jesko feels very natural to drive. Because of its seamless shifting, whether up or down, everything just happens much faster. There are no delays, it is very responsive and behaves exactly the way you want it to. For a car of its size and pow-



Audi RS3

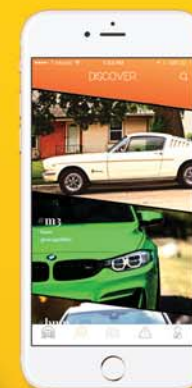
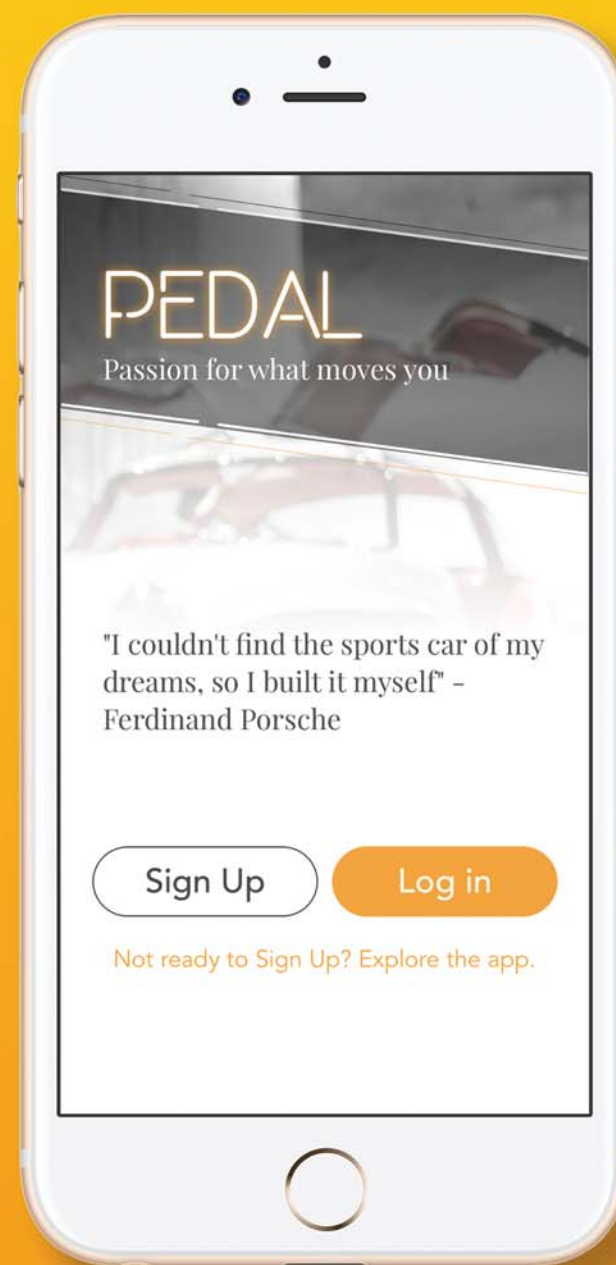
▼ Ultimate performance has come to life in the pre-series production **Koenigsegg Jesko**. In Tang Orange Pearl with silver and carbon fiber accents, the car is a visual homage to the early original Koenigsegg CCR color palette. Tech-empowered creature comforts include race-inspired Smart-Cluster instruments in the binnacle (the graphic turns just as you do on the wheel), and an updated SmartCenter infotainment touchscreen. The pre-series Jesko was revealed in conjunction with the start of production of 125 Jesko and Jesko Absolut customer cars, with pre-assembly in an extended over-100,000-sq-ft facility. Recent shakedown runs have tested responsiveness, driving sensation and handling,

er, it is very agile in the way it reacts to steering and does not spin out even with sudden movements at full throttle." Set to be the world's fastest shifting transmission, LST comprises nine forward gears and seven wet multidisc clutches in a compact, ultra-light package, capable of insanely fast upward and downward gear changes between gears while maintaining positive torque—thanks to the simultane-

makes controlled drifts possible, directing all the power to only one of the rear wheels, with up to 1,750 Nm (about 1291 lb-ft) per wheel possible. There's even an "RS Torque Rear" drive mode specifically for this purpose. Bearing all this and a whole raft of additional performance technology upgrades and innovations, the Audi RS 3 Sedan is expected to be available in early 2022. ■



PASSION FOR WHAT MOVES YOU



Pedal is the must-have free app for automotive enthusiasts—the social networking community to capture and share the passion that moves you. Regardless of vehicle: car, truck, van or motorcycle. Whether you're a collector, dreamer or fan. An individual, organization or business.

Create a profile. Follow friends, family and others. Take new pictures and video, or upload from your camera roll. Share and comment. Post a link. Discover content from all over the world and join in the conversation.

This app is for people who want to share exotics like Ferrari, Lamborghini, McLaren and Porsche. Vintage, hot rods, daily drivers, electrics, autonomous and exciting barn finds. Individuals and car clubs. Racing from NASCAR to F1. The beautiful, ugly, strange and everything you think is worth sharing on and off the road.

Use Pedal to:

- Create your own profile.
- Post pictures and videos. Edit with our filters, add comments and save them to your profile.
- Opt-in to location services to geotag your posts.
- In the Discover page, search for users and hashtags to uncover and follow content you may like.
- On Pedal, we rev what we like. You can rev a post up to three times on the RPM gauge and then resets. Show your interest with each rev, watch the color change and the odometer counter go up.



PEDAL
© 2018 CARSICARS!, INC., ALL RIGHTS RESERVED.



“DON'T EVER CHANGE”

BY JOE SAGE

A few years ago, a friend's kid had some math homework that included a “word problem” couched as the depreciation of a Toyota 4Runner. The automotive people all pounced. “That’s a trick question! A 4Runner never depreciates!” It makes a point: even after years of duty, a 4Runner is likely to be as strong, solid and capable as the day it was born. And why not? It’s basically the same as one born today—the gen-five 4Runner has been in service since introduced in 2009 as a 2010 model.

And that, to many, is a very good thing.

“Change is good” is a mantra to some, while “if it ain't broke, don't fix it” is a mantra to others. As the years roll by, a collective sigh of relief rises from a great many 4Runner fans as the fundamentals of this body-on-frame SUV remain intact.

Sure, there have been light facelifts and big feature upgrades along the way. More noticeable than changes year to year, though, are differences from trim to trim—there are currently a full nine models (and/or special editions) in the 4Runner lineup,

with another on the way for 2022 (see footnote). Of these, four out of nine are TRD models (Venture Edition is built upon the TRD Off-Road), plus there's a new TRD Sport next year. Even the SR5-based Trail Edition is (as its name might suggest) well up the scale toward TRD off-road-worthiness.

While the entry level SR5 and next-up SR5 Premium have a choice of rear-drive or full-time four-wheel drive, as do a couple of upper end models, all the rest are 4x4 only—real 4x4, a classic part-time system with a 4HI/4LO transfer case.

It's noteworthy that, even against more luxurious models such as Nightshade and Limited, TRD Pro—the most off-road-worthy of all and the one we're driving here, available as a 4x4 only—still comes in as the top model by price. It's significant that they've kept this in the top spot, as it plays a big role in defining the whole 4Runner lineup.

Choosing an SUV from Toyota is complex and varied—there are six very different ones, nine if you count hybrids and plug-in hybrids separately,

as they do—while choosing your 4Runner is varied, too, but simpler. All have the same 270-hp 4.0-liter V6 and 5-speed automatic. Even with trim and outfitting variables, weight is about the same for any (varying just 130 pounds among 4x4s), with all achieving the same fuel mileage (other than one point higher for highway only on two-wheel-drive models). Of note to some buyers, the same models that offer rear-drive also offer three rows of seating. Any and all tow 5000 pounds. Wheel size varies, on some for style, most for function. Suspension architecture is the same, though there are upgrades to components on the tougher ones.

TRD Pro is the toughest and priciest 4Runner, but, with two rows of seating, not the heaviest.

New this year is our sample's no-cost special paint option, Lunar Rock, perfect for both 4Runner and Tacoma TRD Pro, replacing last year's equally perfect Army Green. (The new color carries special significance for Toyota, as they are currently developing a manned lunar rover.)

Stronger and lighter black TRD alloy flow-form wheels are new, too, equipped with Nitto Terra

Grappler tires. Wheels are a deeper dish design, allowing more play for re-tuned Fox internal bypass shocks and coil springs, all TRD-tuned. Other TRD Pro inclusions are noted in the sidebar.

At 270 hp and almost 5000 pounds, the 4Runner is not bought as a street racing machine, though it performs and feels exactly as an owner expects it to. It does not have a lot of power, but in the spirit of the machine, that feels right, like it's strictly business. Heading to the wilds northeast of the Valley, we had no trouble maintaining our speed and position in the always competitive surface street traffic for our initial 1,000-foot paved elevation gain. Considering the 4Runner's off-road-oriented gearing and its venerable 5-speed automatic, that's impressive. It's a smooth-running transmission—now with electronically controlled intelligence—but you can feel and hear how busy it is behind the scenes. It strains some, runs its range some, lugs some, but basically maintains your speed and power uniformly. No doubt Toyota has something else in the works for the not too distant future, but it's certainly no deal-killer today.

The 4Runner's interior is clean and attractive, somewhat lean and spartan, and bearing many controls with a traditional look and feel—knobs,

in particular, which we appreciate not only for style and inherent function, but because this is a vehicle you'll likely take into the snows of Flagstaff or farther north, and it's one of the few in which you can control heat and audio with gloves on. The screen is appropriately smaller, yet the system overall is chock full of the usual higher tech.

We arrived at the start of our rugged off-road spot and popped it from 2HI into 4HI—confirming to ourselves that we love a manual transfer case.

The 4Runner's reputation precedes it for off-roading, and its visuals confirm it all, even standing still. Specs round it out: generous ground clearance and approach/departure angles, and bigger tires with strong sidewalls (on smaller wheels than the luxe trims). We gave it quite a run, and best of all is that, much as we love the 4Runner, the drive itself is what sticks with you—the mechanicals are splendid but a transparent experience, as things should be with any good tool.

There's an overall flavor to the 4Runner that some might call a throwback. Call it what you will, this is all key to its charm. We haven't seen any potential alternative—whatever they might do with this nameplate in the future—but count us among the fans of 4Runner just the way it is. ■



SPECIFICATIONS (TRD PRO)

ASSEMBLY.....	Tahara, Aichi, Japan	
ENGINE.....	4.0L alum/alum EFI 24v DOHC V6	
COMPRESSION RATIO.....	10.4:1	
HP/TORQUE.....	270 hp / 278 lb-ft	
DRIVETRAIN.....	part time 4x4 w Active TRAC	
TRANSMISSION.....	5-spd auto w ECT-I	
TRANSFER CASE (HI/LO).....	1.0 / 2.566	
TORQUE SPLIT.....	40/60 up to 30/70 or 53/47	
SUSPENSION.....	F: coils, indep dbl-wishbone, stblzr bar; R: coils, 4-link rigid, stblzr bar	
STEERING.....	pwr assist var gear rack & pinion	
BRAKES.....	F: 13.3 vented; R: 12.3 vented	
WHEELS.....	17x7.5 TRD Pro alloy, black	
TIRES.....	P265/70 R17	
TRACK (F/R).....	(TRD Pro) 64.1 / 64.1	
LENGTH / WHEELBASE.....	191.3 / 109.8 in	
HEIGHT.....	w TRD Pro roof rack 72 in	
TURNING CIRCLE.....	37.4 ft	
APPROACH / DEPARTURE.....	33 / 26°	
ROWS / SEATS.....	2-row / 5-passenger	
HEADROOM (F/R).....	39.3 / 38.6 in	
LEGROOM (F/R).....	41.7 / 32.9 in	
CARGO CAPACITY.....	47.2 / 89.7 cu.ft	
GROUND CLEARANCE.....	9.6 in	
WEIGHT.....	4750 lb	
PAYLOAD / GVWR.....	1550 / 6300 lb	
TOW CAPACITY.....	5000 lb	
FUEL / CAPACITY.....	.87 oct unl reg / 23.0 gal	
MPG.....	16/19/17 (city/hwy/comb)	

2021 TOYOTA 4RUNNER LINEUP

All have 4.0L V6 / 5-spd auto.....	4x2.....	4x4.....
SR5.....	\$36,765.....	\$38,640
SR5 Premium.....	39,825.....	41,700
Trail Edition.....	40,615.....	
TRD Off-Road.....	40,730.....	
TRD Off-Road Premium.....	43,325.....	
Venture Edition.....	44,895.....	
Limited.....	45,670.....	47,705
Nightshade.....	47,085.....	49,120
TRD Pro ▼.....	50,745.....	

(Our sample's sticker price varies slightly from master price list.)

Arriving for 2022: 4Runner TRD Sport

As with the Tacoma midsize pickup, a new 4Runner TRD Sport will complement TRD Off-Road and TRD Pro, but where those add trail-ready features for the toughest terrain, TRD Sport's emphasis will be on everyday comfort, adding style points plus exclusive road-handling Cross-Linked Relative Absorber System (X-REAS) suspension (and 2WD or 4WD). Price should fall between SR5 and TRD Off-Road.



BASE PRICE.....\$50,470

TRD PRO INCL: 2.5" Fox internal bypass shocks front/rear w piggyback reservoir rear; TRD-tuned front springs; 1/4"-thick TRD aluminum front skid plate with red TRD lettering; 17" matte black flow-formed TRD alloy wheels w P265/70R17 Nitto Terra Grappler all-terrain tires; TRD branded cat-back exhaust; color-keyed front & rear bumpers w black accents, door handles, heated & power outside mirrors, overfenders, side rocker panels, hood scoop & rear spoiler; black hood scoop insert & black TRD roof rack; unique TOYOTA front grille; black TRD Pro external hard badges; smart key with push-button start.

OPTIONS: TRD Pro floor mats (169); cargo cover (179); cargo mat (100); door edge guard (79); paint protection film (395).....total: 922

DESTINATION CHARGE.....1175

TOTAL.....\$52,567



Drive Toward a Cure for Parkinson's Disease

Join the 75 Days of Summer 2021

From the First Day of Summer to Labor Day / June 20 to Sept 5

fueled by **HAGERTY.**

Just \$20 to Win Prizes All Summer Long!

- 1) Drive the most miles.
- 2) Get friends to sponsor you.*
- 3) Share your drives on social media.

75 Days of Summer prize donors include: **Maserati** **MOTHERS** Polishes•Waxes•Cleaners



75 Days of Summer grand prizes include a 1-Day Driver's School courtesy of the BMW Performance Driving School at The Thermal Club near Palm Springs, California!

Plus, all 75 Days of Summer drivers will receive their very own 15% discount code for the BMW Performance Driving School at The Thermal Club!

Offer subject to restrictions. ©2021 BMW of North America, LLC. The BMW name, model names and logo are registered trademarks.



MOTHERS
Polishes•Waxes•Cleaners

*The first \$100 you raise on your 75 Days of Summer fundraising page earns you \$150 worth of detail products including the all-new Ultimate Hybrid product line, courtesy of Mothers!

drive toward a cure.org/summer



Drive Toward a Cure is a 501(c)(3) charitable organization.

News, event registrations, and donations at

www.drive toward a cure.org

[/DriveTowardACure](https://www.facebook.com/DriveTowardACure) [@DriveTowardACure](https://www.instagram.com/DriveTowardACure) [@DriveTowardCure](https://www.twitter.com/DriveTowardCure)

Supporting Parkinson's Disease through beneficiaries including:



GOOD DEEDS : PHOENIX RACEWAY TRACK LAPS FOR CHARITY

CRUISIN' FOR A CAUSE

DRIVE YOUR CAR AT PHOENIX RACEWAY, OCTOBER 16
ANNUAL TRACK LAPS FOR CHARITY EVENT PROVIDES FANS WITH FIVE PACED LAPS AROUND ICONIC TRACK THAT HOSTS THE NASCAR CUP SERIES CHAMPIONSHIP

Less than a month before NASCAR Championship Weekend returns to the Valley, Phoenix Raceway will host Track Laps for Charity from 10am to 4pm on Saturday, October 16. For a donation of \$25, you can drive your personal vehicle on the mile-long, doglegged championship oval.

All proceeds will benefit Arizona Accelerator Charities, a 501(c)(3) donor advised fund under the NASCAR Foundation.

"This is an amazing opportunity for race fans and car enthusiasts to drive their family and friends around the same track that will host NASCAR Championship Weekend in November," said Phoenix Raceway President Julie Giese.

"More importantly, this one-of-a-kind thrill will make a difference throughout the Valley, by supporting Arizona Accelerator Charities."

Arizona Accelerator Charities' mission is to accelerate the development of children in Arizona by supporting education, children and families of our military and veterans, and life enrichment programs for children and families in our community.

To secure this unique opportunity, you must register in advance at phoenixraceway.com/tracklaps.

To participate in Track Laps for Charity:

- All drivers must be 18 years of age or older with a valid state-issued driver's license.
- Driver and passengers must sign Track Laps for Charity waivers.
- All participants must adhere to Arizona state laws regarding the usage of seat belts and child safety restraints.
- Passenger vehicles only; motorcycles are not permitted.

- Maximum speed is 55 miles per hour and regulated by Phoenix Raceway personnel in the Official Toyota Camry Pace Car.
- Drivers must stay up to speed and refrain from lagging behind in order to speed up.
- Track Laps for Charity may be postponed or canceled due to inclement weather or safety conditions. If a cancellation is necessary, Phoenix Raceway will make its best effort to contact guests in advance of their visit.

For more information, visit:

phoenixraceway.com/tracklaps.

NASCAR Championship Weekend is November 5-7, featuring four championship races over three days. Limited tickets are still available at:

www.PhoenixRaceway.com.



Performance school hones teen skills

High Performance Teen Driving Experience at Radford Racing School

Experienced by Kimatni and MiKaiya Rawlins

My high school teen MiKaiya Rawlins (Mika) just graduated from Paint Branch High in Silver Spring, Maryland, so my gift to her was a trip to the Grand Canyon State for a full day on the track behind the wheel of her favorite automotive brand, Dodge. Yep, she's been talking about the purchase of a pink Charger for the last two years. But, thanks to Radford Racing School instructors, Mika currently knows how to operate the muscle car, specifically the Dodge Challenger SRT Hellcat Redeye!

"Brake, control that wheel. Slow wheel. Power unwind. Control it; look where you want the car to go, turn, release," commanded Mika's instructor BJ from the passenger seat before letting her take the 1.65-mile, 15-turn circuit on her own for about 12 laps. Emotional exhilaration took precedence as I was both nervous and exuberant that my first-born—who has only been driving for a year—kept

(cont'd)



Welcome to a world where the roads are dry, the cars are slick and the destinations are limitless...



We drive customers to your business.

- Focused content delivered to a targeted, engaged audience
- Print-social-web advertising & promotional bundles
- Print-web special sections & sponsored content
- Custom publications, brochures and direct mail

sales@arizonadrivermagazine.com / main office: 480-948-0200
www.arizonadrivermagazine.com / FB: @arizonadrivermagazine
IG: @arizonadriver / TW: @arizonadriver / Pedal: @arizonadriver

up with grown men while controlling the aggression of a supercharged 6.2-liter HEMI Hellcat V8 engine dispersing 797 horsepower and 707 lb-ft of torque, allowing the Redeye to sprint from 0 to 60 mph in a blistering 3.4 seconds. Its top speed is 203 mph, something you typically see in supercars.

As the Publisher of *Automotive Rhythms* and an auto journalist of 25 years, I cannot overstate the importance of advanced driving schools for newly licensed kids to help them understand vehicle dynamics and car control, proper positioning and preventive safety techniques. Radford is Mika's third practicum, including the 2-Day BMW Teen Driving School in Greenville, SC. My goal is to build her confidence and reaction time, so specific adjustments like counter-steering and object avoidance come naturally in real-world scenarios.

For familiarization, the Radford Racing School, formerly Bondurant High Performance Driving School, is the Official High Performance Driving School of Dodge//SRT, offering world-class experiences utilizing more than 100 race-prepared vehicles: sedans, SUVs, Ligier JS F4 single-seaters, and gas-powered go-karts. In addition, new Dodge//SRT owners can opt-in for a one-day session of tactical control of their new muscle once they take ownership. It's Dodge//SRT's small token of appreciation for becoming an elite Hellcat Kingsman! These owners represent thousands of students who come to Radford annually to study high-performance vehicles' optimum capacity in contained conditions.

Our "1-Day High Performance School" began with a 45-minute classroom session led by Danny, to go over proper hand positioning, seating adjustments and positive driving habits such as setting your eyes down the road. All of Radford's tutelage revolves around maximum car control, whether it's teaching a teen to be a better driver on public roads or improving experienced drivers' racing skills. Their two key mantras are learning the importance of "vision" and "weight transfer." Objectives include:

Always look up and ahead to see your environment and the fast-approaching changes of said environment. This will allow you to respond to variations sooner and avoid looking ahead; it also allows you to see where the car is going, compared to where you want the car to go. Avoid becoming a victim of "target fixation," basically worrying about hitting something you are fixated on. Conversely, look at the open area and away from the object you don't want to hit.

The "3 and 9" steering hand position is better than "2 and 10," since it gives you 200 degrees of motion. Moreover, do not grab the wheel underhanded since airbags deploy at 200 mph and can easily break your wrist. Lastly, do not steer with

one hand because you have now reduced control by 50 percent.

Drivers need to have a good sense of awareness to be prepared to make evasive maneuvers if necessary. If everybody drove on the street with the same level of focus as when driving on the track, then accidents would be reduced.

Weight transfer plays a considerable role in how your vehicle handles. Hard acceleration transfers weight to the rear contact patch (the amount of tire hitting the ground), and hard braking shifts it to the front. When steering, you want more weight up front for proper steering control. When it's moved to the rear, more traction is provided. However, you want the transfer to be smooth and balanced, not abrupt on each end. Therefore, brake into a turn and accelerate out of turns to shift traction back to the rear. Never accelerate into a corner!

Afterward, we hit the track to put our new-found knowledge to use. Mika applied the schooling to the slalom, three-lane accident avoidance simulation, autocross cornering control, emergency braking, and a lead and follow around the race-track. The warmup slalom set the tone for the rest of the day, since we had to keep our eyes up and hands and arms relaxed while maneuvering left and right through the line of cones from 25 mph to 40 mph. Mika also learned how to correct over and understeer on the skidpad. Understeer is when the front tires have lost traction, and subsequently, the vehicle will not respond to steering inputs. Oversteer is when the driver has lost grip of the rear tires. Thus, Radford taught her how to counter-steer, reduce speed and regain control.

Mika finished the day as a graduate and received her certificate. At the moment there is talk of when she can get a Hellcat of her own. "No time soon, baby girl," I iterated. Parents, please sign your kid up to as many driving schools, clinics, and programs as possible. The investment is well worth the commitment due to the exorbitant amount of teen driving deaths in the United States. Think safety over convenience first. ■

For more Radford Racing School information, visit www.RadfordRacingSchool.com

KIMATNI RAWLINS is an automotive journalist and publisher of *Automotive Rhythms (AR)*, a multinational lifestyle firm that blends evaluations of the latest cars, trucks, SUVs and bikes around music, sports, fashion, travel and technology. Consisting of Internet, radio, online video and event properties, AR serves as a media gateway for information relating to auto lifestyle experiences. AR's fundamental media tool is a line of insightful columns and videos that speak to urban consumers in their respective voices. Please visit Kimatni at www.AutomotiveRhythms.com.



THIS SPECIALTY MUSTANG IS A KEEPER

BY JOE SAGE

The Ford Mustang lineup can be parsed in great detail or in generalities, and in some ways the two approaches are not all that different.

First are the 2.3-liter four-cylinder turbo models, with 310 to 330 horsepower. Then come the V8s, among which there are performance, heightened performance and super performance V8s. The basic V8 model is the Mustang GT, its 5.0-liter powerplant (also measuring as the classic Ford 302 cubic inches) delivering 460 horsepower, a significant difference in potency from the turbo-fours.

Gone are the days of comparing basic suspension, when only a couple of upper models offered an independent rear (a huge improvement for all but the most fishtailing-burnout-happy types).

Shelby, historically sometimes separate but currently integrated into the Mustang lineup, sits one wide gap above the GT. There is but one model at

this time, the Shelby GT500, with 760 horses from its highly tuned 5.2-liter V8 and with the rest of its mechanicals augmented to handle it.

Pricing for 2021 models ranges from \$27,205 for the base turbo-four to \$36,285 for the base GT (a bit more for premium models and for convertibles when offered) before options or delivery. The jump to Shelby GT500 roughly doubles the base GT, at \$72,900. They're all great offerings, but there is an obvious zone between the GT and Shelby, just begging for something else. Well, quit begging.

Enter the limited edition 2021 Mustang Mach 1.

The Mach 1 accomplishes a lot of things all in one well-executed move—not only a new option in that higher-performance sweet spot, but also bringing back the Mach 1 name, most famous for the 1969-70 original—which set 295 speed and endurance records at Bonneville in its first model

year and earned back-to-back SCCA Manufacturer's Rally Championships in 1969 and 1970 (with other models through the '70s and a brief reprise in 2003-04). It's a smart move in its own right, but also reinforces the heritage behind the Mustang Mach-E electric utility's name, for which many people never had the backstory. With Mach 1 in the stable, the backstory moves right up front again.

The Mustang Mach 1 occupies much the same spot in the lineup as Mustang Bullitt had—though rumored to be coming in a little higher, it bears the same horsepower—as well as Shelby GT350.

Promoted as occupying a space between the GT and the Shelby GT500, it certainly does by price, at a stated \$53,400 (a little different from our sample's sticker base). It also does by power, though nominally barely, at 480 hp. Horses are far from the whole story in this pony car, though.

The new Mach 1 has increased aerodynamics, suspension and handling enhancements, a choice of six-speed manual or 10-speed automatic, and a driver-focused cockpit. The Mach 1 is quickly rec-

ognizable by its specific grille and front fascia, hood and rocker panel stripes (option-deletable) and other accents in low-gloss Magnetic (color) and black, all echoing elements of the original car. The front fascia incorporates a splitter that boosts downforce by 22 percent. The car rides atop subtly staggered 19-inch wheels, rears a half-inch wider.

The Mach 1's specially calibrated 5.0-liter V8 bears Shelby GT350-derived and revised components including its intake manifold, oil filter adapter and engine oil cooler, together increasing engine oil cooling capability by 50 percent.

The Tremec 6-speed manual (from the Shelby GT350) is outfitted with rev-matching—for the first time—and is paired with the GT350's oil cooler system and Mustang GT's twin-disc clutch and short-throw shifter. The optional 10-speed automatic has an upgraded torque converter and enhanced model-specific calibration. (Our sample had the automatic, \$1595 any two-handed two-footed enthusiast will save.) Transmission oil also has enhanced cooling, a 75 percent improvement, and the rear axle has its own cooling system.

An optional Handling Package (\$3750, not on our sample) has inch-wider wheels front and rear,

different wheel lip moldings, a large higher-downforce front splitter, a low-gloss Magnetic swing spoiler with a Gurney flap, and rear tire spats from Shelby GT500.

A variety of striking colors are available (Fighter Jet Gray catches our eye). Ours pulls a heritage color name, Grabber Yellow, applying it to a magical hue tricky to photograph and hard to describe, almost fluorescent in certain light—or in the rain.

Ford cites the Mach 1's new underbelly pan—extending 20 inches farther back than on a Mustang GT Performance Pack—as its most aerodynamically important upgrade, smoothing and increasing airflow under the front of the car, with large underwing features to increase downforce. Airfoils in the brake cooling ramps—another first in a Mustang—also improve downforce and assist brake cooling flow.

Also pulling from both GT and Shelby, underpinning upgrades on Mach 1 include the latest Magnetic Ride calibration, stiffer steering I-shaft, new EPAS calibration, stiffer sway bars and front springs, a brake booster from Mustang GT Performance Pack Level 2, 9.5- and 10-inch split fitment wheels with

(cont'd)



SPECIFICATIONS

ASSEMBLY	Flat Rock, Michigan
ENGINE	Windsor Essex Engine Plant
BUILD	unitized welded steel body w alum hood and front fenders
ENGINE	302 cu.in (5.0L) V8 dual port FI, 32v DOHC, alum/alum, twin indep var cam timing, cast alum blockheads w plasma transfer wire arc cyl liners, cast alum pistons, forged steel rods, forged steel cross-plane crankshaft, composite shell-welded intake, tubular stainless steel headers
HP/TORQUE	480 hp / 420 lb-ft
COMPRESSION RATIO	12.0:1
DRIVETRAIN	RWD
TRANSMISSION	Tremec TR-3160 6-spd manual standard; (ours w optional rev-matching 10-spd SelectShift automatic)
TOP SPEED	na for auto / 166 mph manual
SUSPENSION	F: dbl-ball-joint ind MacPherson strut & tubular 32mm stblzr bar; R: integral-link indep w coils, solid 21.7mm stblzr bar, mono-tube dampers
STEERING	elec pwr-assist rack & pinion w pull-drift compensation & active nibble control, 3-mode (normal-comfort-sport)
BRAKES	four-wheel power disc, 4-sensor 4-channel ABS, AdvanceTrac ESC; F: 352x32mm vented, 4-piston 46mm fixed alum caliper; R: 320x25mm vented, single-piston 45mm floating alum calipers (Performance Pkg Brembo upgrade avail)
WHEELS	F: 19x9.5; R: 19x10
TIRES	F: 255/40R19; R: 275/40R19 summer
LENGTH / WHEELBASE	188.5 / 107.1 in
TURNING CIRCLE	(18"/19" A/S tires) 37.8 ft (20" A/S tires) 40.0 ft
HEADROOM (F/R)	37.6 / 34.8 in
LEGROOM (F/R)	45.1 / 29.0 in
CARGO CAPACITY	13.5 cu.ft
GROUND CLEARANCE	na
WEIGHT	3913 lb
FUEL / CAPACITY	prem 91 octane / 16 gal
MPG	15/23/18 (city/hwy/comb)
BASE PRICE	\$51,720
GRABBER YELLOW PAINT	n/c
EQUIP GROUP 700A	alum pedals, cloth heated/cooled front seats, heated steering wheel, driver's seat memory, premier trim w color accent/stitching group.....1595
10-SPD AUTOMATIC	incl 3.55 Torsen limited-slip rear axle, leather shift knob, paddle shifters, remote start.....1595
WHEELS	19" magnetic-painted alum.....395
MACH 1 ELITE PKG	B&O 12-spkr audio, AM/FM/HD/CD, enhanced security pkg.....1295
VOICE-ACTIVATED TOUCHSCREEN NAV	595
GAS GUZZLER TAX	1000
DESTINATION CHARGE	1195

TOTAL\$59,390

Note: comparing our Monroney sticker with an online build shows several price increases and some of our included items now optional at cost.



MACH 1

Michelin PS4 tires, a rear subframe with stiffer bushings and a rear toe-link from Shelby GT500.

We gave the Mach 1 plenty of wheel time during a very wild weather week with record rainfall—including plenty of time around town, a visit to a well-timed Arizona East Valley Mustang Club get-together during a torrential downpour, and a run up I-17 into the high plains in mixed weather.

The car's layout is a good mix of premium tech fitment and refreshing simplicity, combining a pair of screens—12.3-inch binnacle and 8-inch center stack—with elements such as stylish and tactile toggle switch controls for startup, traction control defeat, steering modes (comfort, normal, sport), drive modes (track, dragstrip, snow and wet, normal, sport plus), hazard lights and such. Seats and wheel are power for some functions, manual for others, a good metaphor for the general setup. (Our car also had optional cooled seats, as well as easy entry-exit, something we always turn off, which in this case took some serious digging.)

The dashboard is classic twin-hood Mustang, and the instrument panel includes a number plate, as the Mach 1 is promoted as a limited edition (though what those limits may be is yet unknown).

Though few people buy a performance V8 for its fuel economy, Mach 1 is rated 15 MPG city, 23



highway and 18 combined. While we don't generally dwell on such things, a ready readout told us it arrived with an average of 18, as promised.

From style to performance, the Mach 1 hits a desirable balance—just over the top, but not way over the top, a great approach in a world with so many versions of overkill. It has just enough style points to make it distinctive and sharp (and again, you can fine-tune this to taste, for example by going with or without the prominent striping).

Similarly, the drivetrain is great right off the shelf—plenty of feel-good you can hear and indeed feel—with more headroom via drive modes or just via the throttle as is. The exhaust note is strong and satisfying, but still seems adequately neighborhood-friendly, at least around our performance-oriented neck of the woods.

Parking lot speed bumps are tough on most any vehicle we drive, other than the best big pickups, utilities and off-roaders, but compared with most, the Mach 1 surprised us with a rear axle that was about as comfortable as the front, all the more surprising given its pony car format, where the rear half of the car is only a third of it, so to speak.

Put it all together, and the Mach 1's price point seems just right—or, in fact, in typical Mustang fashion, a bargain for all this car delivers.

The Mach 1's perfect balance of showiness and subtlety was clear as we joined the East Valley Mustang Club in Mesa. In a parking lot full of over-the-top models and modifications, this new factory build still had a commanding presence. The Club had been excited to have a look at it, though it was absolutely pouring, so almost everybody was inside having a lengthy breakfast get-together.

Equally significant was our drive over to Mesa and back in these storm conditions, something we might have avoided had we not had a calendar

specific. Forget any live axle fishtailing of the old days—the Mach 1's combination of sophisticated suspension, front and rear, and those Michelin PS4 deep channel performance tires had us tracking as true as if we had all-wheel drive.

Good news on that front, though—best of both worlds—as even the stable and planted independent rear suspension, as in any great performance vehicle, does not remove front-engine-rear-drive responsiveness, thrills and good times when applied sportingly.

Our final day brought threatening clouds and a bit of spit, but basically dry roads—good for a few hours' drive north into the high plains between Black Canyon and Flagstaff, a chance to experience the Mach 1's commanding power, control and well-connected road feel (and a chance to grab an always great meal at Rock Springs Café).

We had no particular logbook entries on the whole run, which to us is proof that hands on the wheel and feet on the pedals added up to a satisfying and engaging drive the whole way.

Perfectly suited to town, open road or track, strong and capable in wet or dry, the Mach 1 is a standout all-purpose performance car. As they say this is a limited edition, you might do well to go check dealer inventory right now. ■



Mach 1



Contests - Classic Car Community

Best Side Contest


Calendar Grid Contest


Join us Community
 Join the Classic Car Community! It's absolutely 100% FREE!
Services
 Search for restoration shops and classic car dealerships in your area.
Bookstore
 Find books on Classic Cars here.
Contests
 Best Side Contest
 Calendar Grid Contest

SERVICES Add your Service Return to Previous Page

Event Calendar
 Find upcoming Classic Car events in your area.

Q & A
 Ask the Experts, chat with members, ask questions, find answers.

Photo Journal
 Tell us your stories & the journeys your cars have made.

Classified Cars
 Buy/Sell/Trade your classic car here!

Classified Parts
 Buy/Sell/Trade your classic car parts here!

Bookstore - Classic Car Community

Welcome to Classic Car Community!

Here you will find useful tools to help finish restoring your classic car. You will find everything from classic parts, services and if you are in a bind, ask the experts! If you are not already a member, [Join the Community!](#)

WIN! A \$100 GAS CARD

SELL your Car HERE!

ASK QUESTIONS FIND ANSWERS

THE DAILY NEWS
 Last Cruise Nite of the season brings crowd for classic car nostalgia (Santa Paula Times)

I want the CCC Newsletter!

Event Calendar

Q & A

Photo Journal

Classified Cars

Classified Parts

Join the Community

Services

Bookstore

Contests

Newsletter

Next gen racing pony

Ford has unveiled its all new 2022 NASCAR Next Gen Mustang, ready to compete in the NASCAR Cup Series starting in the 2022 season.

The new car, under development for two years, is completely different from its predecessor, re-designed from the ground up. Unlike past versions with the exterior being the only noticeable change, the 2022 model has the future in mind, incorporating flexibility for additional technological advances likely to follow, such as a hybrid or electric powertrain.

The new NASCAR Mustang more closely mirrors its Mustang production counterpart, incorporating much of the same architecture seen in production cars, including rack-and-pinion steering, independent rear suspension, 18-inch tires (with aluminum forged wheels), and a symmetrical exterior shell.



The race car now has a wider stance, with its tail and smaller greenhouse volume more closely resembling the production Mustang.

Development of the new car took place at both Ford's Dearborn Development Center in Michigan and the Ford Performance Technical Center in Concord, North Carolina, where Ford's NASCAR scale model and aero teams are located.

Extensive development continues on full-motion simulators at the technical center, where both

racing and production car work takes place.

Mustang came to the NASCAR Cup Series in 2019 and has won at least 10 races in each of its first two years, including a season-high 18 victories in 2020 that helped Ford win the manufacturers' championship.

The NASCAR Next Gen Mustang will make its competition debut on February 20, 2022, during the 64th annual Daytona 500 at Daytona International Speedway. ■



YOUR NUMBER ONE DESTINATION FOR AUTO RACING & DRIVING SCHOOLS




Since 1975, Skip Barber Racing School has operated a fully integrated system of racing school, driving schools, corporate events and special projects across North America, at WeatherTech Raceway Laguna Seca, Lime Rock Park, NJ Motorsports Park and Road Atlanta. No other organization delivers such a combination of high quality instruction, equipment, facilities and memorable experience. Whether you are a new driver looking to improve your street awareness skills, or an accomplished amateur racer looking to take the next step, Skip Barber Racing School has a program for you!

SKIPBARBER.com / 866.932.1949

BECOME AN EXCEPTIONAL DRIVER.



BOOK TODAY!

BRIDGESTONE WINTER DRIVING SCHOOL



800.949.7543 • winterdrive.com • open 7 days a week
Steamboat Springs, Colorado

Learn To Drive! Learn To Race! Learn To Win!



It doesn't get more real than this! When you enroll in one of our race programs, you'll be strapped into a real 150 bhp Formula 2000 racecar capable of 0-60 mph in 4.2 seconds, 130 mph in the draft, pulling up to 2g's in the corners, and stopping on a dime.

Full SCCA accreditation | No Artificial Speed/Rev limits | Full Laps Every Session
Passing Allowed In All Programs | In Car Timing Systems | Textbooks In Advance
3-1 Student to Instructor Ratio | Formula 2000 Racing Series For Graduates



PALM BEACH INT'L RACEWAY - LIME ROCK PARK - NJ MOTORSPORTS PARK
POCONO INT'L RACEWAY - DOMINION RACEWAY - ROEBLING ROAD RACEWAY
BERTILROOS.com | 800-722-3669

0-60 IN 1.5 SECONDS

DRAGSTER ADVENTURE SIDE-BY-SIDE RACING STARTING AT JUST \$399

OR EARN YOUR NHRA OR IHRA COMPETITION LICENSE!

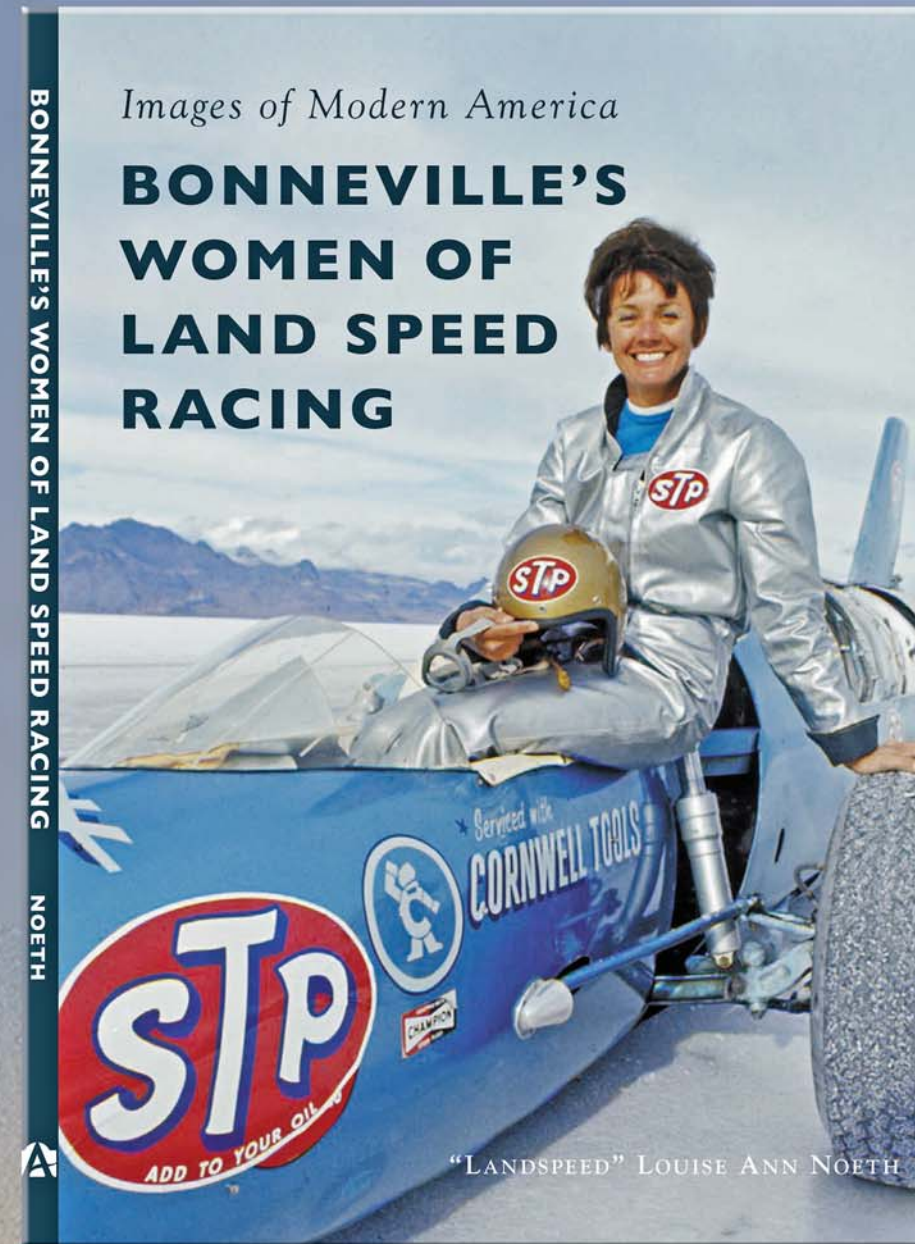


FRANK HAWLEY'S DRAG RACING SCHOOL

866.480.7223 | frankhawley.com

CLASSES HELD AT
FONTANA, CA • PHOENIX, AZ • GAINESVILLE, FL
ST. LOUIS, MO • NORWALK, OH • READING, PA

Women of speed and their daring deeds



Victor Hugo said, "Nothing is more powerful than an idea whose time has come." Thus it was with this book showcasing the contributions of women in motorsports, specifically on the Bonneville Salt Flats. It's the first of its kind.

Phone calls, emails and letters came at a furious pace, as the author interacted with more than 300 individuals to identify and summarize the deeds of ladies of speed. The list now has 260 verified names.

Arcadia Publishing has transformed the mini manuscript, captioned photos and list into a printed, all-color book, debuting on the Salt as we speak.

Here's a look inside:

COVER: Paula Murphy, the first woman to race a jet on the salt in 1964 is the book's "Cover Girl."

CHAPTER 1. FAST FEMALES ON FOUR WHEELS: They have driven speed machines from tiny to thunderous, all fabulous, mostly one-off expressions of mechanical and aerodynamic artistry.

CHAPTER 2. LADY WRANGLERS OF JET & ROCKET POWERED CARS: Using the same propulsion that takes human beings to another planet and back, or just across a continent, ladies have repeatedly tamed and taunted thrust powered vehicles.

CHAPTER 3. WOMEN RIDERS: Whether two wheels or three, women have thrown a leg over, or climbed into motorcycles of every size and description with distinction.

CHAPTER 4. UNSUNG HEROINES: The helping hands, hearts and innovative brainpower that volunteer to enrich the lives of the entire racing community, these women may not make it into the record books, but sincerely serve with strength and purpose to get things done.

CHAPTER 5. LAND SPEED LADY LIST: The first known collection of verified and documented women who have left the starting line to set hundreds of land speed records—both national and world—on the Bonneville Salt Flats, this list includes speed machine designers, fabricators and mechanics, as well as the wondrous wizards "behind the curtain" who make racing on the salt a reality.

ARIZONA HEROINES: Arizona racing ladies in these pages include Jill Iverson (rider, SCTA official and starter), Pam Manghelli (driver, SCTA volunteer on data and stats), Valerie Thompson ("The World's Fastest Female Motorcycle Racer"), Linda Van Scoy (crew chief, Corvette race car) and Donna Wagner (Black Salt Racing Coordinator of 350mph-plus Triumph sportscar).

Check *Bonneville Racing News* for a special feature on the book that reveals—for the first time—when and how ladies got the right to race on the salt.

The author and VIPs hosted book signings at the Bonneville Motorcycle Speed Trials (BMST) August 28-31, with a book signing on the 31st; and will do so again during the Utah Salt Flats Racing Association's (USFRA) World of Speed September 10-13. Or you can order your own autographed copy here:

www.landspeedproductions.biz ■

ABOUT THE AUTHOR: "LandSpeed" Louise Ann Noeth is a raconteur of stunning speed stories. She has raced jet dragsters, helped TEAMVesco capture the current 458-mile-per-hour world wheel-driven record, and guided the Breedlove and Fossett teams. In addition to her books, touchstones throughout motorsports are heralded in her Fuel For Thought column. She is also an extreme-speed consultant for film and television.

PURE FORMULA BY JOE SAGE

Mazda MX-5 Miata was born in an era when little two-seat convertible sports cars were years gone, not expected to be seen again. Its popularity spawned a resurgence from many brands, generally pricier, but Mazda has stayed true to its formula: fun and accessible, starting in the \$20s and capping out just over \$30 grand, as in the top-trim soft top we're driving here. (This year, both the soft and RF retractable hardtop are available.)

The 2021 Miata is a carryover model from 2020, which had a number of upgrades ranging from tech interface to seat stitching, while the top trim Grand Touring with manual shift we're driving here received notable drivetrain and chassis upgrades—limited-slip rear differential, sport-tuned suspen-

sion, a new front shock tower brace and Bilstein dampers. And it's all still just above \$30 grand.

Little roadsters take a moment to get used to if you're tall, but we remind ourselves they are a pure experience kind of on a par with backpacking, where minimalism is your friend. Storage and stash space is sparse—other than cupholders, a bin between the upper seatbacks, an awkward reach, is about the only place for a sunglasses case.

Fifteen seconds is our benchmark for convertible top operation. In the Miata, it takes about one second either up or down: unlatch, grab, drop, push-click into place; unlatch, grab, raise, latch.

Cargo volume is under five cubic feet, but of such proportions that it looks and feels (and func-

tions) like more. (Notably, trunk space is almost just as generous in the retractable hardtop.)

Purposeful and fun at the same time, suspension can feel skateboard-stiff on rough surfaces, but skateboard-lively and maneuverable in all conditions, and this is a great thing. Fun is job one.

We used our Miata as a daily driver during most of a week of record rains. On our final day, Valley skies cleared and it was still a bit cooler, a rare combination for a convertible in August in the desert. Just heading to the corner store, we instead turned onto the boulevard for a few feel-good top-down miles—which turned into the full length of that road, then another, till we were at the irresistible Beeline Highway. Why not just a few miles of this? We can turn around any time. You can guess the rest: our quick run to the store turned into lunch in Payson—and this is just that kind of car.

We drove up with the top down, but then the rains came again, so we drove back down with the top up. 181 hp may not sound like a lot, but Miata weighs just 2341 pounds even in this top trim. Its lightweight Skyactiv engine thus provides plenty of pep, the manual transmission is smooth and accurate, traction remained great in heavy rain at highway speeds through mountain twists and turns, and we can vouch for great brakes, as one truck who perhaps forgot they were towing a trailer almost took us out with a sudden lane change.

We once boasted to a dealer's service advisor about the low mileage on a roadster of our own, to which they just laughed and said everybody has low mileage on these—it's almost always somebody's second or third car. This is likely especially true in the Miata, given its still highly advantageous price. Even in top trim, no buyer should expect a \$100k or even \$60k luxury car for \$25-30 grand. Instead, expect as much fun as a day at the beach and a carnival ride, with top roadability.



Suitably useful on a daily basis, Mazda MX-5 Miata really shines when you slip behind the wheel and hit the open road—on a whim and for as long as you feel like. ■

SPECIFICATIONS

ASSEMBLY	.....Hiroshima, Japan
SEATING CAPACITY	.....two
ENGINE	.....2.0L SKYACTIV-G 4-cyl EFI, alum/alum, 16v DOHC, induction sound enhancer (MT only)
HP/TORQUE	.....181 hp / 151 lb-ft
COMPRESSION RATIO	.....13:0
DRIVETRAIN	.....RWD (w torque-sensing limited slip diff, MT only)
TRANSMISSION	.....6-spd manual, short throw shifter (6-spd auto w paddles avail)
SUSPENSION	.....(some details are MT only): Brembo brakes red calipers (GT); gas monotube Bilstein shocks (MT); F: dbl wishbone, shock tower brace (MT only), stblzr bar; R: multi-link, stblzr bar
STEERING	.....double pinion elec pwr assist
BRAKES	.....F: 11" vented, single piston; R: x1" solid, single-piston
WHEELS	.....17x17 aluminum
TIRES	.....P205/45 R17 high-perf summer
LENGTH / WHEELBASE	.....154.1 / 90.9 in
TURNING CIRCLE	.....curb to curb 30.8 ft
HEADROOM	.....37.4 in
LEGROOM	.....43.1 in
CARGO CAPACITY	.....4.59 cu.ft
GROUND CLEARANCE	.....4.7 in
WEIGHT	.....(MT) 2341 lb
WEIGHT DISTRIBUTION	.....(MT) 52/48%
FUEL / CAPACITY	.....87 ok, 91 recm / 11.89 gal
MPG	.....26/34/29 (city/hwy/comb)
BASE PRICE	.....\$31,770
SNOWFLAKE WHITE PEARL PAINT	.....395
GRAY SOFT TOP	.....200
DESTINATION CHARGE	.....945
TOTAL	.....\$33,310

Another Grand Touring-only option is the grey top on ours (just \$200, see photo on page 3, table of contents), which—along with our sample's Snowflake White Pearl paint (just \$395)—not only gives the car a sharp and sort of nautical look, but is probably a good choice in our desert sunshine, less likely to show fading.

MAZDA MX-5 MIATA LINEUP 2021

SOFT TOP		
Sport	.....2.0T 181 hp	.....\$26,830
Club	....."	.....30,290
Grand Touring	....."	.....31,770
RF RETRACTABLE FASTBACK (HARDTOP)		
Club	....."	.....\$33,045
Grand Touring	....."	.....34,525



BECOME AN EXCEPTIONAL DRIVER.

Learn performance driving in a way that will benefit you on every surface.

Our globally recognized training program allows you to adapt instantly to ice, snow, pavement, dirt and gravel with skill and confidence.

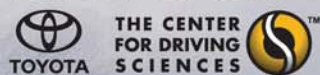
A variety of programs are available from corporate and teen safety to professional racers and security professionals.

We train in a wide variety of specially equipped state of the art, front, rear and all wheel drive Toyota cars and SUVs.

Each vehicle is equipped with Bridgestone Blizzak winter tires, which offer the best performance possible on our world class snow and ice tracks.



BRIDGESTONE WINTER DRIVING SCHOOL



800.949.7543 • winterdrive.com • open 7 days a week
Steamboat Springs, Colorado

BOOK TODAY!



TECHNOLOGY: EV NEWS UPDATE



Colorado Teardrops EV Adventure Trailer

Boulder-based Colorado Teardrops' new EV-specific camping trailer, The Boulder™, aims to conquer the reduced EV range while towing, expecting to restore it to pre-towing range or better. The trailer bears a sizable subfloor battery pack, enabling the EV itself—via a DC fast charge connection—to be recharged from the trailer, on the open road or in the backcountry. Strong lightweight materials keep the trailer's weight low, and its aerodynamic design minimizes drag—both of these boosting the range of both the towing EV and the trailer.

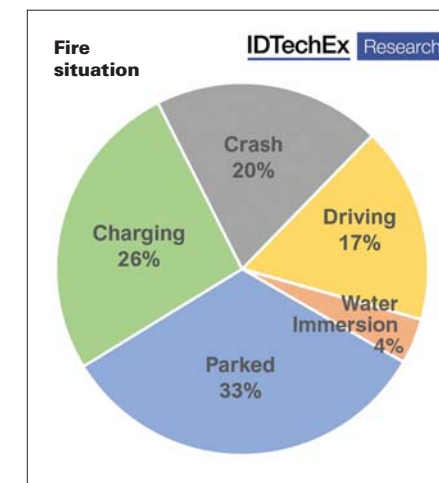
Focused on ergonomics and a small footprint, The Boulder offers a way to avoid overcrowded campgrounds and to be able to park in the garage back home. The trailer has an insulated hard-shell cabin, a comfortable queen-size bed and bunk beds for a family of four, a dining lounge with couches, a hot shower, interior climate control, electrical outlets and a kitchen galley out back.

Founder Dean Wiltshire estimates the trailer “will be used two to three times more than traditional RVs because it is so easy to take with you, while also removing the anxiety of reaching the next charging station,” adding that fewer than one percent of EV owners have seen a luxury camping experience paired with an EV. Founded in 2014, Colorado Teardrops is a family-owned company with a recently expanded 20,000-sq-ft facility. Early ordering offers price and warranty incentives.

EV fires: opportunity for material suppliers

GM's recall of the Chevrolet Bolt in 2020 involved about 69,000 cars produced from 2017 to 2019, recalled for potential battery fires. The fix was an inspection of the battery and a software update limiting battery capacity to 90 percent. But in

2021, two more Bolts, both of which had the recall, have caught fire. Continued investigation by GM and LG Chem spotted the “presence of two rare manufacturing defects in the same cell,” prompting another recall to replace the battery modules, at some \$11,000 per vehicle, nearly \$800 million total. GM is not alone; Hyundai recalled about 82,000 EVs (mostly Kona, also IONIQ and Elec City buses) due to battery fire risks, at a cost of some \$900 million, with LG Chem taking the majority of this hit. Ford's Kuga plug-in hybrid also



faced issues with cells by Samsung, a recall of 33,000 cars costing Ford some \$400 million.

As OEMs and governments set out bold electrification targets, these high-profile recalls erode confidence for some consumers considering the shift to EVs. But analysis from sources such as PINFA (the Phosphorous, Inorganic and Nitrogen Flame Retardants Association) actually shows that fires in EVs are less common than those in traditional combustion vehicles. But EV fires tend to be

much more severe and attract a lot more press. One fire in 2020 blew the roof off its garage.

A recent report by IDTechEx, “Thermal Management for Electric Vehicles 2021-2031,” addresses several aspects of thermal design in EVs, including fire occurrence, detection and prevention. While a fire might be expected after a crash or damage to the battery, a large proportion of battery fires occur when the vehicle is parked and with no obvious trigger—about a third. While IDTechEx says there will always be risk of a battery fire due to many potential causes, they see it as an opportunity for thermal interface, flame-retardant and fire protection material suppliers to make it less likely batteries will overheat. Fire-retardant and fire protection materials can enclose a fire or prolong the time before a fire escapes the battery pack. China recently implemented new EV fire safety regulations, requiring a five-minute warning between a thermal event and fire or smoke exiting the battery pack, and the EU has various draft regulations with a similar focus. IDTechEx only expects regulations in this field to become more stringent.

Battery pack-level solutions to date include ceramic blankets, aerogels and fire-resistant coatings, each with benefits and trade-offs among melting temperature, thickness, weight and cost. A portfolio of fire-retardant polymers used within EV battery packs includes silicones, polycarbonates, polyimides, polyesters and many more. The sheer variety of applicable materials and the growing, potentially huge, EV market represents a major target for many players along the supply chain for EV materials, from raw ingredient suppliers to material formulators and suppliers.

Designing a more sustainable EV

Most electric motors for electric vehicles rely on permanent magnets made with rare earth metals. Researchers at the University of Pittsburgh Swanson School of Engineering are working with Powdermet Inc, a nanomaterials and advanced materials research and development company in Euclid, Ohio, to develop a rare earth mineral-free electric engine. The project recently received \$200,000 in funding from the US Department of Energy (DOE).

The global market for EVs is expected to grow by more than 25 percent by 2030, with some politicians and manufacturers alike calling for a phase-out of gasoline-powered vehicles by 2035, with at least 40 percent of new vehicle sales being elec-

KEEP RIGHT >>

Register Today - Free to Browse, Free to Join, Free to Post
#1 Motorsports Marketplace. Go to www.racingjunk.com



- Drag Racing Cars • Off Road • Road Racing Cars • Antique/Classic Cars and Trucks
- Motorcycles • Modern Cars/Trucks/SUVs • Hot Rod/Street Rod/Custom • Much More

Interested in having millions of people see your products?
Email advertising@RacingJunk.com to learn about dealer and advertising opportunities.

tric by 2030.

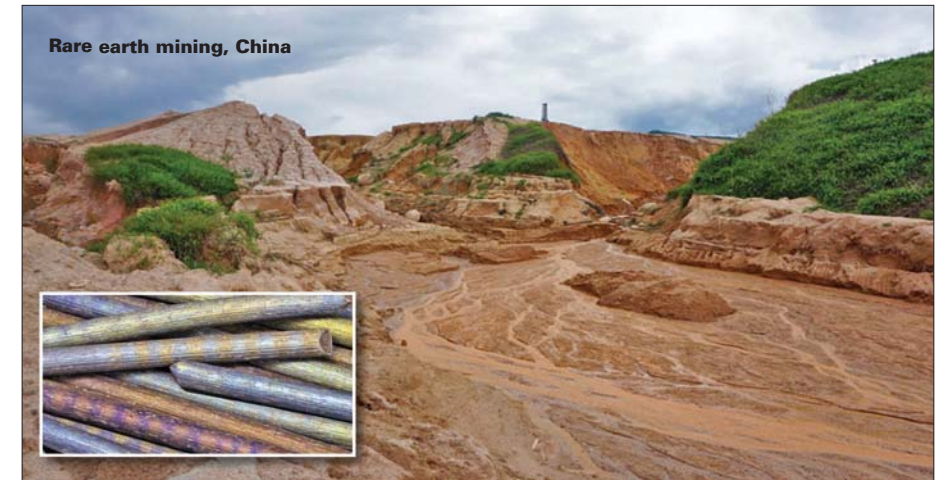
However, most electric motors for electric vehicles rely on permanent magnets made with rare earth metals, which are—as the name implies—a limited resource. In addition to their rarity, extracting and processing these materials has severe environmental consequences, leaving behind a significant amount of toxic waste. And since China accounts for the vast majority of rare earth production, geopolitics and price volatility are additional concerns. Designing electric motors without rare earth metals is a crucial step, especially for sustainable supply chains. Pitt researchers and Powdermet aim to develop an alternative, hoping to create an electric machine that uses permanent magnets made of more abundant novel magnetic materials.

West Coast Electric Highway upgrade

The West Coast Electric Highway (WCEH) is an extensive network of charging stations every 25 to 50 miles along Interstate 5, Hwy 101 and other major roadways from Baja California into British



Columbia, powered by renewable energy sourced via Renewable Energy Certificates. The initiative is a collection of projects, funding sources and partners with the same vision: to enable EV drivers to make longer trips and travel between cities.



Rare earth mining, China

EV Charging Solutions (EVCS), one of the largest fast charging network operators on the West Coast, has been funded by the Oregon Department of Transportation to upgrade 44 charging stations and add three new ones on the Oregon portion of the original WCEH—in all, more than 100 charging ports. Eleven “superstations” will have three DC fast chargers and one Level 2 AC charger. Existing CHAdeMO-only DC fast chargers will be replaced with new DC fast chargers with both CCS-combo and CHAdeMO DCFC capability. Existing Level 2 AC chargers will be replaced with new equipment. New will be a 110V outlet for e-bikes and e-scooters. A CHAdeMO adaptor for Tesla will be available at all stations. EVCS subscription plans include monthly unlimited charging or a pay-as-you-go option, with a variety of payment methods.

Battery swapping has a new lease on life

Limited charging speed and site availability have been major barriers to electric vehicle adoption, and fast-charging stations are currently the most popular way to quickly add range to vehicles. However, these additional power demands can stress the electrical grid, prompting reconsideration of other solutions like battery swapping. Although this failed nearly a decade ago, it is now being considered for urban taxi fleets. A new report by tech-enabled research and innovation advisory service Lux Research, “Cost Comparison of Battery Swapping and Fast Charging for Electric Vehicles,” analyzes and compares costs for deploying battery swapping infrastructure to support electric taxis in cities and offers insight on how promising battery swapping can be as a fast-charging alternative. Lux developed a model to perform a cost analysis of infra-

structure supporting an electric fleet of taxis in two different countries, the UK and China. The report drew several interesting conclusions:

- Battery replacement costs are crucial for keeping costs low. Faster charging minimizes down-

time but speeds up battery degradation. Factoring in replacements due to faster charging makes 50 kW charging the cheapest option.

- Battery swapping is most competitive for large fleets. In China, battery swapping is the cheapest and fastest solution, even in small fleets of just 100 vehicles, while in Europe the costs are roughly equal.
- China has cemented its position as the leader in battery swapping deployments and will remain the most promising region for the technology. Due to a



Lux battery swap

combination of favorable economics, local companies commercializing the technology, and favorable government policies, activity in the region is a leading indicator of adoption elsewhere.

As battery swapping networks grow, new opportunities for cost reduction emerge. While fast charging stations have the benefit of a decade of deployments and refinement, battery swapping is still in its nascent stages, with deployments accelerating rapidly over the past two years. ■

A showpiece beast—right off the shelf

BY JOE SAGE

With amped-up style, amped-up power and amped-up off-road and tough weather capability, the new Ford F-250 Super Duty with Tremor Package is about as great an F-250 as you could hope to find. Arizona's highways and trails are full of such trucks, but until now they have taken aftermarket build to achieve—most either really beefed up for off-roading or really tricked out for premium fit and features. This one is all of the above, and it's ready to go, right off the shelf, with factory engineering top to bottom, inside and out.

You can do anything you want with customization, limited only by budget, imagination and per-

haps by the realities of actually driving and using the truck on a daily basis. But you'll have a mish-mash of sources, build quality—and warranties.

Ford has already tackled this equation with the F-150 Raptor—a huge hit, especially here—then following it up this year with the F-150 Tremor, with slightly tempered degrees of styling and bones, aimed at people for whom Raptor might be just one step too far. (Raptor was originally conceived for much more specialized activity—dune racing—than most people give it.) While nobody would say no to an F-250 Raptor if there were one, adapting Tremor to the F-250 is a great move.

Where this truck deviates (nominally) from the F-150 Tremor is that it is presented and purchased as a package rather than a freestanding model, a fully integrated “build with package” factory build option available on Lariat (our sample), King Ranch or Platinum—for a mere \$3975. Ours also adds a “build with” Ultimate package—see sidebar for highlights of both. Neither changes the fundamental F-250 build—no specialized grille or body work and such, as on F-150 Tremor or Raptor. The flexibility of integrating it into a variety of trim levels makes your own decision and build easy.

Though the official naming scheme is lengthier,

we fully suspect most people will simply call this an “F-250 Tremor” (as we found we did).

Our build adds one more significant item: a 6.7L Power Stroke V8 Diesel with 475 horsepower and an over-the-top 1050 lb-ft of torque. Two more factory upgrades help apply all that power: up front, a 12,000-lb Warn winch, and out back, a tow package raising capacity to a whopping 30,300 pounds.

Though we didn't tow, winch or haul, we ran the F-250 Tremor through a big dose of everything it offers—in town, on the freeways, up the Interstate and on some serious dirt and rock trails.

The Goodyear Wranglers are a great fitment. Just the right degree of extreme for typical weekend off-roading, they are still perfectly suitable around town. We could feel their burly grip in low-speed cornering at first (coming to this from a sports car), but got used to it right away.

The Power Stroke diesel is pricey, but its power is wonderful—especially as Ford engineers have coordinated it with the TorqShift 10-speed, which delivers quick pickup when the light turns green in town, top acceleration on a freeway ramp, strong merging ability in traffic, and endless climbing and passing ability on the Interstate. The shift-on-the-

fly transfer case offers RWD, full locking 4x4 high and low, and a full-time 4WD mode for mixed-conditions roads. We drove our wide range of conditions without utilizing any of the drive modes, but they include normal, tow/haul, deep snow/sand, eco, slippery and rock crawl. Getting the gearing just right for this wide-ranging combination of purposes is surely an engineering challenge, and the Super Duty team has clearly conquered it.

For its gargantuan power and tow capacity, you will know it's a diesel, though by its seamless performance, you might not even notice. As a daily driver, you will just know it's a rocket. If in your budget, the Power Stroke is 10 grand well spent. We didn't track and record, but anecdotally noted that our fuel tank maintained its level for a long time.

There are always those who prefer to create a custom build. Even they could probably still buy this truck and be perfectly happy. The familiar spacious, comfortable, beautifully designed F-Series cabin rides atop highly off-road-capable tires, wheels and suspension—again in that wide range of models from Lariat to Platinum. So well executed is the F-250 Tremor, the advantages of buying a factory build, ready to go, are just so strong. ■



SPECIFICATIONS

ASSEMBLY	.....Ford Kentucky Truck Plant
BUILD	.....high strength fully boxed steel frame, aluminum bed and cab
ENGINE	.....6.7L Power Stroke® Diesel V8, single turbo, charged air cooler, in-block cams & OHV, compacted graphite iron block, alum heads, 32v pushrod/rockers, high-pressure common rail
HP/TORQUE	.....475 hp / 1050 lb-ft
COMPRESSION RATIO	.....15.8:1
DRIVETRAIN	.....4x4
TRANSMISSION	.....TorqShift 10-spd auto w SelectShift, column mount
TRANSFER CASE	.....2HI/4HI/4LO, electronic controller, 53:1 crawl ratio
AXLES	.....3.55 electronic-lock
SUSPENSION	.....F: mono beam (narrow front track) w coils, heavy duty gas shocks, stblzr bar; R: solid axle, leaf springs, heavy duty gas shocks
STEERING	.....power hydraulic
BRAKES	.....F: 14.29 vented; R: 14.29 vented
WHEELS	.....Tremor low gloss black 18" alum
TIRES	.....all-terrain LT285/75R18E AT
LENGTH / WHEELBASE	.....250.0 / 159.8 in
HEADROOM (F/R)	.....40.8 / 40.4 in
LEGROOM (F/R)	.....43.9 / 43.6 in
TURNING CIRCLE	.....53.5 ft
BED LENGTH	.....(nominal 160 wb) 81.9 in
OVERHANG	.....F: 38.2 in; R: 52.0 in
GROUND CLEARANCE	.....10.8 in
WATER FORDING	.....33 in
APPR / BRKOVER / DEPART	......31.65 / 21.5 / 24.51°
PAYLOAD CAPACITY	.....3320 lb
GVWR	.....10,800 lb
TOW CAPACITY	.....(std 20,000) w pkg 30,300 lb
WEIGHT	.....base 7262 lb
FUEL	.....ultra-low-sulfur diesel /B20
FUEL CAPACITY	.....34 gal
MPG	.....heavy duty: na (city/hwy/comb)
BASE PRICE (Lariat Crew 4x4)	.....\$52,730
PREF EQUIP PKG 608A	
6.7L POWER STROKE V8 DIESEL	.....10,495
397A (240A & 157A) DUAL ALTERNATORS	.....115
LARIAT ULTIMATE PKG: leather w 40/console/40 seats; heated/vented front seats; driver side memory seat; nav system; remote start; LED box lighting; tailgate step	.....3495
TREMOR OFF-ROAD PKG: 35" Goodyear Wrangler Duratrac LT285/75R18E AT maximum-traction off-road tires, 18" low gloss black alum wheels, specially-tuned rear stblzr bar, custom 1.7-in piston twin-tube dampers, Dana limited-slip front differential, extended-axle vent tubes, large skid plates, off-road running boards, 10,800-lb GVWR pkg. (Tremor w Lariat Ultimate savings 570.)	.....3975
HIGH CAPACITY TOW PKG w upgraded axle, increased GCWR to 30,300 lb, ultimate trailer tow camera system and pro trailer backup assist package. (Tremor w Trailer Tow Pkg savings 570.)	.....2785
WARN 12,000-LB WINCH	.....3000
TOUGH SPRAY-IN BEDLINER	.....595
DESTINATION CHARGE	.....1695
TOTAL	.....\$78,885

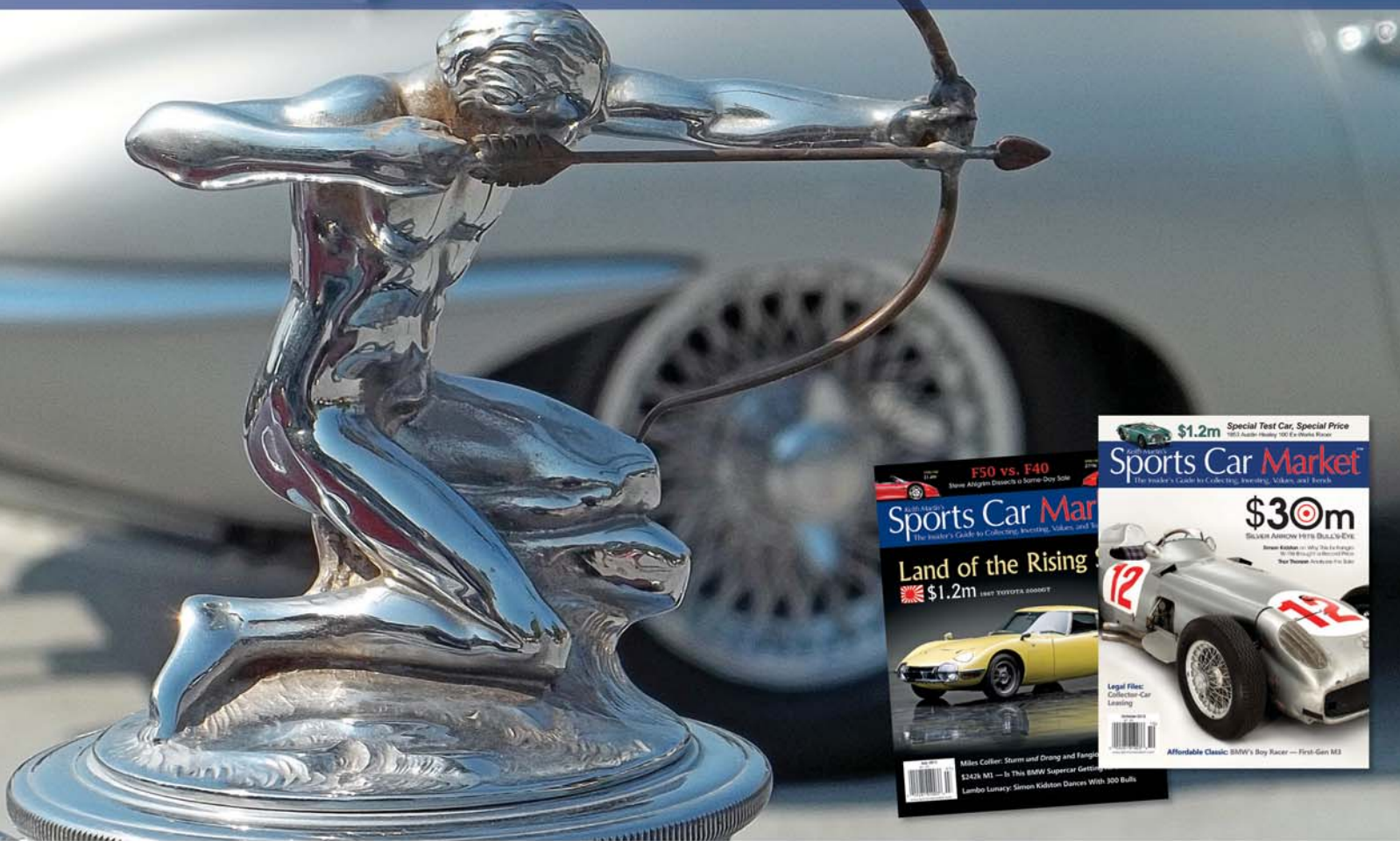
TREMOR

Keith Martin's Sports Car Market™

The Insider's Guide to Collecting, Investing, Values, and Trends

“Hats off to you. Keeping up the great effort to produce the best car magazine each month is no small feat.”

— E.M., Northbrook, IL, subscriber since 1998



Subscribe to SCM today and become a collector car insider

www.sportscarmarket.com

ADOT selects final North-South Corridor route in Pinal County



Following several years of study, technical analysis and input from communities and stakeholders, the Arizona Department of Transportation has selected a final 55-mile North-South Corridor through Pinal County. The continuous, access-controlled north-south transportation corridor is intended to:

- ▼ Improve access to future activity centers
- ▼ Improve regional mobility
- ▼ Improve north-to-south connectivity
- ▼ Integrate the region's transportation network
- ▼ Address existing and future population and employment growth
- ▼ Provide an alternative to congestion on I-10

The Final Tier 1 Environmental Impact Statement (EIS) and Record of Decision (ROD), published on August 20, identifies the selected corridor, which stretches from US 60 in Apache Junction to Interstate 10 in Eloy in Pinal County. The study also incorporates a proposed extension of State Route 24 from Ironwood Drive to the North-South Corridor.

The Record of Decision is the final decision-making document for the Tier 1 study. Conducted in accordance with the National Environmental Policy Act (NEPA), all public comments and questions received during the Draft Tier 1 EIS comment period are addressed in the Final Tier 1 EIS, as well as updated analyses based on new information, and identifies a Selected Corridor Alternative for the proposed North-South Corridor. Because this is a combined EIS/ROD, there is no formal comment period.

The Final Tier 1 EIS includes a phased implementation plan with preliminary recommendations for how the North-South Corridor could move forward into Tier 2 studies. Subsequent Tier 2 environmental and engineering studies as part of the NEPA process would further refine the selected 1,500-foot North-South Corridor to identify a recommended 400-foot freeway alignment and identify planned interchange locations and other project elements. The phased implementation plan includes smaller segments that may advance as separate, independent projects. These studies, not yet fully funded, would include additional analysis and more opportunities for public review and comment. ADOT is considering all funding options to move through the Tier 2 study process and eventually to construction.

The Final Tier 1 EIS is available at repository locations throughout the study area and online at www.azdot.gov/northsouthstudy.

Winning formula

BY JOE SAGE

Nissan Armada used to share its bones with the earlier midsize Titan pickup. After the Titan upsized in 2016, Armada in 2017 migrated to the platform of the global-but-not-sold-here Nissan Patrol, a full-size tough-duty utility highly coveted by the cognoscenti, maintaining a welcome body-on-frame build.

It remains a solid winning formula.

Armada has great numbers. Its traditional slab-sided form gives it generous interior di-

mensions—40-plus-inch headroom and legroom in two rows, plus a decent kid-size third row, and exemplary elbow room throughout.

Strong clearance, approach and departure specs make it a solid performer for tough off-road weekend duty. And it tows 8500 pounds (in both 2WD and 4WD versions). Brake controller and sway control are also available options for towing.

Though immediately familiar, the 2021 Nis-

san Armada has received significant restyling, tip to tail, notably a much evolved version of what remains a family-wide grille. (It's also the first Nissan to sport the updated Nissan corporate logo.) The interior features a redesigned center stack, built around a new 12.3-inch touchscreen. The engine is bumped this year from 390 to 400 horsepower.

Power, screen size and towing capacity all claim best-in-class status.

Armada's big 5.6L V8 provides grunt you are aware of even around town and can rely upon

in more challenging conditions. In line with its rugged build, Armada is a true 4x4, with a transfer case delivering 4HI, 4LO and crawl ratios via an easy-to-access console dial.

We gave the Armada a solid off-road run out toward Four Peaks—gravel roads and dirt trails, variously including high-speed stretches, off-kilter surfaces and significant wash damage from recent rains—and the vehicle was as tough as all comers.

We did no towing and carried no loads, but also never pampered nor restricted aggressive performance. Yet our readout was consistently about 15.2 MPG, respectable for a three-ton, three-row, 400-hp V8 beast—and right on target as rated.

Armada can be your go-anywhere do-anything vehicle, for when that's defined not as being as extreme as possible, rather a good healthy degree of extreme along with a good healthy degree of parenthood, executive duty or whatever your daily drill includes—tough and capable, with a respectable image.

In a lineup of six SUVs and crossovers, plus a new EV on the way, the Armada maintains a noteworthy traditional position. It's a big boy, with a 40-plus turning circle, a handful on a par with a big pickup. But it's here to



do a job, and it does it very well.

Ours was the SV model, second up out of four trims, not too fancy but with stance- and appearance-enhancing 20-inch wheels and a handful of other options added.

Higher trims add such amenities as quilted leather and rear seat entertainment.

Highly rated for reliability and starting under \$50 grand for a rear-drive S trim, Nissan Armada offers solid value and utility. It's no wonder we noticed a great many others sharing the road during our week with it. ■

SPECIFICATIONS

BUILD	body-on-frame
ENGINE	alum/alum Endurance® 5.6L V8 32v di, silent chain single stage valvetrain
HP/TORQUE	400 hp / 413 lb-ft
COMPRESSION RATIO	11.2:1
DRIVETRAIN	(opt) 4x4 snow mode, hill start assist, tow mode
TRANSMISSION	7-spd auto w overdrive, manual mode, rev-matching
TRANSFER CASE	4HI, 4LO, crawl
SUSPENSION	F: dbl-wishbone indep, twin-tube shocks, 36mm stblzr bar; R: dbl-wishbone indep, twin-tube shocks, 26.5mm stblzr bar
STEERING	eng spd-sens pwr rack & pinion
BRAKES	F: 13.8x1.2; R: 13.8x0.8, all vented
WHEELS	(opt) 20-in painted aluminum
TIRES	(opt) 275/60R20 BSW A/S
LENGTH / WHEELBASE	208.9 / 121.1 in
GROUND CLEARANCE	9.1 in
APPRCH / DEPART / BRKOV	20.8 / 22.2 / 20.5°
TURNING CIRCLE	41.3 ft
HEADROOM (F/2/3)	40.9 / 40.0 / 36.4 in
LEGROOM (F/2/3)	41.9 / 41.0 / 28.4 in
CARGO CAPACITY	16.5 / 49.9 / 95.4 cu.ft
WEIGHT / DISTRIB	5933 lb / 51/49%
TOW CAPACITY	8500 lb
FUEL CAPACITY	26.0 gal
MPG	13/18/15 (city/hwy/comb)

BASE PRICE (SV 4x4)	\$55,600
APPEARANCE PKG: 20" aluminum wheels, LED fog lights, power liftgate, auto-dim rear view mirror w Homelink	2500
CARPETED FLOOR MATS / CARGO MAT	320
ILLUMINATED KICK PLATES	390
DESTINATION CHARGE	1495
TOTAL	\$60,305

2021 NISSAN ARMADA LINEUP

S	RWD	\$48,600
	4x4	51,600
SV	RWD	\$52,600
	4x4	55,600
SL	RWD	\$56,000
	4x4	59,000
Platinum	RWD	\$65,000
	4x4	68,000



Add coupon code AZDriver at checkout for an extra 15% off!

THE BEST LINE OF DEFENSE

Our biggest seller -- new lower prices!

BestLine Racing Diamond Nano-Lube Engine Treatment for Gas and Diesel

NEW FULL SYNTHETIC DIAMOND NANO-LUBRICANT ENGINE OIL ADDITIVES ARE NOW DESIGNED FOR BOTH GAS AND DIESEL ENGINES

Energy is lost due to friction that arises between the hundreds of parts that comprise an engine. This ultra-low friction technology uses nanotechnology in order to reduce friction by approximately 60% compared to conventional engines, by forming an ultra-low friction film on top of the Diamond Nano-coating. The Diamond Nano-Lube along with our other proprietary pure synthetic base oils and additives provide longer-lasting wear and heat protection for your motor. No Solids, No Teflon (PTFE), or any other old school ingredients. Only the latest high-quality additives are being used in the New BestLine Racing Engine and Fuel Treatments.

- Use for Gas and Diesel Engines ■ High Shock Load Protection ■ Protects Against System Corrosion
- More Concentrated Extreme Pressure Formula ■ Use One Bottle for Every 5 quarts of oil
- Extreme Heat Resistance and Boundary Layer Protection ■ Cleans & Treats Internal Components
- Fortifies Against Oxidation and Thermal Breakdown ■ Lubricates with Diamond Nano-Particles
- Reduces Friction, Heat and Wear ■ No Melting Point due to the Diamond Nano-Lubricating Particles
- Race Proven Under Extreme Conditions ■ Improves Fuel Economy and Performance
- Extreme Pressure Lubricant ■ Suitable for Race and Daily Drivers
- No Shipping Restrictions and Can Be Shipped Worldwide



Net 12 fl.oz. (355 mL).....\$18.95
 4-pack\$ 56.99
 Case (24)\$422.76

Also available in gallon jug, 5-gal pail and 55-gal drum

Check out our Fuel Treatment, Power Booster Combustion Modifier, Water Wetter Cooling System Cooler, Transmission Treatment, No-Skweek Penetrant Lubricant, True Ceramic Coating Kit, kits, packages, accessories and more!



bestlinerracing.com - 800-726-0311

Proud sponsors of
Valerie Thompson Racing



A WEEK WITH : 2021 INFINITI QX80 PREMIUM SELECT 4WD

FRATERNAL TWIN BY JOE SAGE

Having Nissan Armada also in this issue begs for comparison and avoids a lot of repetition.

Infiniti is, of course, the luxury brand from corporate Nissan. It gets tricky in spots comparing the full Infiniti and Nissan lineups, as both evolve over time, some still parallel, some diverging, per varying customer tastes both subtle and large. But this one's easy. The flagship Infiniti QX80 is fundamentally a flagship Nissan Armada in fancier clothes, as has been the case for years (the QX80 used to be the QX56, before full-lineup QX naming).

Much that we've said about the Armada in this issue also applies to the Infiniti QX80—format, spaciousness, capability. Specifications for powertrain, interior dimensions, exterior clearances and such are the same (though sometimes worded and/or emphasized a little differently in specs).

We took the Armada on an off-highway run, but not the QX80. We have no doubt it can handle them pretty identically. Clearance and turning circle are identical; ground angles vary by tenths of a degree, due to the QX80 having a body 1.3 inches longer and different tires and wheels. But general style and demeanor suggested more urbane use,

as we suspect they do for real world owners.

We perceived the QX80 to have a quieter ride, but did not have both at the same time. The Infiniti likely has more sound-damping materials, though it weighs less than the Armada (possibly the Infiniti's wheels, though bigger, weigh less).

The Infiniti has more elegant interior finishes. On the road, the two can be readily distinguished by front and rear styling, though their bodies are virtually identical from mid-fender through D-pillar. Armada was heavily restyled this year (front and rear); the QX80 was not. Expect this in a couple of years, though, as other Infinitis have revealed a modest rework of the grille shape for next year.

Exclusivity is a draw for the Infiniti. Beyond styling and materials, that happens to a degree purely by sales volume. Infiniti overall (with three cars and four utilities total) has less than ten percent the sales volume of Nissan (with a stable of eight cars, six utilities, two pickups, two vans and lower prices). QX80 represents about 30 percent of Infiniti sales, Armada just three percent at Nissan. But with Nissan so big, this calculates to Infiniti sitting at about 60 the sales volume of Armada.*

Thus the QX80 is almost twice as rare on the road—adding to its exclusivity. ■

*Third party Q1 2021 figures were used for comparisons.

SPECIFICATIONS

BUILD	body-on-frame
ENGINE	alum/alum 5.6L V8 32v di, silent chain single stage valvetrain
HP/TORQUE	400 hp / 413 lb-ft
COMPRESSION RATIO	11.2:1
DRIVETRAIN	(opt) Infiniti All-Mode® 4WD
TRANSMISSION	7-spd auto w overdrive
SUSPENSION	F: dbl-wishbone; R: dbl-wishbone
STEERING	engine speed variable assist
BRAKES	F: 13.78x1.18; R: 13.78x0.79, all vented
WHEELS	22x8 forged aluminum alloy
TIRES	P275/50R22 A/S
LENGTH / WHEELBASE	210.2 / 121.1 in
GROUND CLEARANCE	9.2 in
APPRCH / DEPART / BRKOVRR	20.9 / 22.3 / 20.7°
TURNING CIRCLE	41.3 ft
HEADROOM (F/2/3)	39.9 / 40.0 / 36.8 in
LEGROOM (F/2/3)	39.6 / 41.0 / 28.8 in
CARGO CAPACITY	16.6 / 49.6 / 95.1 cu.ft
WEIGHT / DISTRIB	5706 lb / 51/49%
TOW CAPACITY	8500 lb
FUEL CAPACITY	26.0 gal
MPG	13/19/15 (city/hwy/comb)

BASE PRICE (Prem Select 4WD)	\$76,450
TRUFFLE BROWN LEATHER SEATS	incl
ROOF RAIL CROSS BARS	410
CARGO PKG: rear mat & net, console net, first aid kit	295
INFINITI EXTERIOR WELCOME LIGHTING	455
INFINITI ILLUMINATED KICK PLATES	485
DESTINATION CHARGE	1395
TOTAL	\$79,490

2021 INFINITI QX80 LINEUP

.....	RWD	4x4
Luxe	\$69,050	\$72,150
Premium Select	73,350	▼76,450
Sensory	80,200	83,300



Talk about a hybrid!

GIRL GANG'S NEW BUILD WILL MAKE A CLASSIC 1961 VOLVO PV544 AND A 2019 VOLVO S60 T8 POLESTAR ENGINEERED PLUG-IN HYBRID BECOME AS ONE.

By Joe Sage with Shawnda Williams



Shawnda Williams (left) and Bogi Lateiner, Girl Gang Garage

Girl Gang Garage of Phoenix has announced a new partnership with Volvo Cars, who have come on board to raise awareness of a severe lack of women in the automotive industry.

Girl Gang is a catalyst for gender diversity in the male-dominated automotive industry. In 2016, Bogi Lateiner, Master Technician, TV host and advocate for women the trades, led an all female truck build known as the Chevy Montage. The response was overwhelming, highlighting an undeniable need within the industry and an equally pressing desire from women at large. Bogi soon partnered with Shawnda Williams, design technologist and strategist, to found Girl Gang.

More than a physical location, the Garage is a living, breathing network of women, ranging from novices to industry veterans, all coming together with the singular goal of growing stronger together and developing new opportunities for the next generation.

Volvo and the Iron Maven

Volvo Cars and Girl Gang have partnered to call attention to the need for more women in the auto industry with a custom plug-in hybrid car project that merges 1960s style with modern technology, power and efficiency.

As part of their support of the mission at Girl Gang, Volvo has provided a 2019 S60 T8 Polestar Engineered sedan that will provide the underpinnings of Girl Gang's latest all-female build, Iron Maven. Merging the Garage's own 1961 Volvo PV544 coupe with the Volvo S60 T8 will result in a powerful 415 horsepower plug-in hybrid car with modern finishes and technology neatly packaged in a classic design.

The union of the PV544 and the S60 is unconventional, and there is a reason for that. Girl Gang intentionally tackles unusual and daring builds to challenge themselves, to create greater awareness of their mission, and to be a living example that whatever you dream up, you can build. "We have set the bar high for ourselves and plan to cut no corners," says Girl Gang partner Shawnda Williams. "Iron Maven's final design will be the culmination of astute problem solving and aesthetics. Every bit of technical complexity is equally matched with thoughtful design decisions. As we progress through this build, we will be sharing more of what the final design will look like. Expect to see an aggressively sportier rendition of Volvo PV544, with a lowered stance, widened rear fenders, and a more refined front end."

Additional partners

BASF, an international automotive coatings, chemical company, and leading partner for the Chevy

(cont'd)





Montage build, again shows its commitment to promoting women in the automotive trades. BASF will be featuring the Iron Maven in their highly coveted SEMA booth, where it will be unveiled. Like its predecessor, they will also be holding a color contest with their supporters and fans helping them decide on one of the most critical decisions of any car build—what color to paint it.

Merging old and new naturally creates some complex gaps, and Girl Gang has partnered with some heavy hitters in the additive manufacturing industry to help us pull this off. In addition to their partnership with Volvo Cars, Girl Gang is also bringing a completely new 3D printing element to this build.

Stratasys, a manufacturer of 3D printers and 3D production systems, has partnered with Girl Gang and will be helping facilitate any necessary 3D printing needs to provide critical parts to help bridge the gap between old and new.

Next is local Phoenix company PADT, who have swooped in as an invaluable resource for anything and everything 3D printing-related, from machine setup to scanning of the 61 Volvo and significant components of the S60.

Finally, Girl Gang has connected with Women in 3D printing—a similar-minded advocacy group looking to encourage more women to pursue career opportunities in 3D printing and adjacent STEM industries—whose knowledge will be instrumental in working collaboratively to achieve some pretty exciting opportunities.

The build

Iron Maven is the third all female build from Girl Gang and also the most complex to date. The largest build of its kind, they expect it to involve over 100 women by the end of the build. The Volvo Cars Technical Support team, based in both the US and in Sweden, is assisting the team with select component and system integration.

Bogi Lateiner is leading a team of professional and hobbyist female mechanics, body technicians, painters and welders, including several female Volvo hybrid trained technicians. Additionally, women with limited to no automotive experience but who desire to learn are welcomed as part of the team.

A “barn find” in the Phoenix area, the PV544 represents a combination of modest classicism and the company’s heritage. The car will be adapted and updated to accommodate technologically advanced elements from the S60 T8 Polestar Engineered sedan, notably the plug-in hybrid drivetrain—a Drive-E, four-cylinder gasoline engine paired to electric motors.

The modern Polestar Engineered car’s suspension, vehicle control systems and Sensus infotain-

ment system are also planned to be integrated into the new car. Major modifications, custom 3D-printed components, traditional metal fabrication techniques and technical analyses ensure the final car carries through the essence of classic, current and forward-looking elements and approaches.

“This build is about celebrating both the past and the future, not only as it relates to Volvo and the evolution of the Automotive Industry, but also in relation to the presence of women in the industry. The amount of skill required by our all female team to combine these two Volvos into one as ‘Iron Maven’ is nothing short of incredible,” says Lateiner. “There are so many incredibly talented women in the industry and there is strong interest from novices when given an opportunity like this to learn. We are so grateful for our industry partners who have joined with us to make this build not only a reality, but also a concrete example of what the power of women working together can make possible.”

Tackling a diversity gap

According to US Bureau of Labor Statistics data, only nine percent of automotive repair and maintenance positions are held by women, compared to the average gender split of 46 percent women employed in other industries. The Iron Maven project brings to life the ongoing focus by Girl Gang and Volvo Cars to spark a change for women in the automotive industry and provide real, lasting career opportunities.

Girl Gang provides a range of year-round classes and events at their primary location in Phoenix. Volvo Cars and Girl Gang programming as well as the Iron Maven project build also relate to technical, vocational and STEM learning at schools.

Volvo is one of few multinational car manufacturer to recognize gender inequities and commit to taking proactive measures to address these issues within their company. They seek to increase the number of its female service technicians and offers a series of development programs, scholarships, partnerships and more at training centers across the US. This includes a 50/50 Gender Neutral Leadership Commitment in recruitment and promotion to leadership positions, as well as a larger focus on supporting the company’s transition to a fully electrified lineup of vehicles.

More info and SEMA reveal

Iron Maven is scheduled to be unveiled at the 2022 SEMA Show in Las Vegas. To follow along or learn more about training programs and opportunities:

- social: @girlganggarage, @bogisgarage
- www.girlganggarage.com
- www.volvocartechs.com ■



Also don't miss!... GIRL GANG Garage CAR CARE CLASS

Girl Gang Garage welcomes you to join their Women's Car Care Class. The class is led by automotive expert Bogi Lateiner, ASE certified mechanic, host of *Motor Trend's All Girl's Garage* and nationally recognized educator.

She will share some of her favorite female-friendly techniques for basic auto care and walking you through the process of how to:

- ▼ Change a tire
- ▼ Check fluids
- ▼ Change wipers
- ▼ Check belts & hoses
- ▼ Jump start

Bogi will also cover the basics of brake and cooling systems and any other car care processes or general car care questions you may have.

Held the last Saturday of every month, the next class is September 25, 9am-12 noon.

Limited class size: In order to comply with new CDC recommendations for social distancing, maximum class size is limited to 10 people, and classes will fill quickly.

Please be sure to bring and wear work clothes and covered shoes. ***MASKS ARE REQUIRED.***

Admission is \$15.

www.girlganggarage.com/classes-events



TRAVEL SITES TO BE SEEN



sedona.net
flagstaff.com
prescott.com
thecanyon.com
grandcanyon.net
oakcreekcabins.com

Hotels, Resorts and Lodging
 Bed & Breakfasts - Inns - Cabins/Cottages
 What To Do
 Real Estate and Relocation
 Spas - Galleries - Artists
 Restaurants - Shopping
 FAQs - Resources
 Special Offers - 11th Hour Getaways

Southwest Media Communications
 602-892-4766 - info@southwestmedia.net

A WEEK WITH : 2021 HYUNDAI ELANTRA LIMITED

Sharp by Joe Sage

Meet the seventh-generation 2021 Hyundai Elantra, introduced to us by livestream in spring 2020, after its in-person reveal was one of the first to go virtual. Now it has arrived at our office in person, and it has been worth the wait.

Immediately recognizable by its completely redesigned, crisply angled sheet metal—a styling theme they call “Parametric Dynamics”—it’s more than two inches longer, an inch wider and almost an inch lower, with leg, head and shoulder room all increased, the rear by a generous 2.3 inches.

The interior is clean and complete. Setup—seats, mirrors, interface—is quick and easy, including screen-access audio and climate.

The new Elantra piles on technology beyond its price point, including segment-first wireless Android and Apple with Bluetooth support for two devices at once, available twin 10.25-inch screens, optional Digital Key via phone or NFC, enhanced natural-language voice recognition and more. Standard SmartSense includes a wide range of driver assist. Additional features are optional.

Our first impression was how large this car is inside, for a compact—or period. The rear is surpris-

ingly generous. This small car feels as spacious as a full-size sedan from the golden age.

Elantra starts under \$20 grand (see full lineup). Built on Hyundai’s K3 third-gen platform, the new Elantra is stronger, lighter and has a lower center of gravity, together delivering higher fuel economy and road-hugging performance. A multi-load path structure enhances collision safety. Fully independent rear suspension improves handling and rough road feedback. The drivetrain is smooth, with prompt, consistent acceleration and power.

One thought stuck with us through the week: despite a wealth of alternatives, many far more expensive, if there were just one model of car in the world, could this be it? If so, would people clamor for it to be bigger? Doubtful. Fancier? Unnecessary. More expensive? Extremely doubtful. Faster? Already a peppy daily performer with this base powertrain, an Elantra N-Line offers more power, and arriving this year will be a full N model, as Hyundai continues to expand its performance line.

The new Hyundai Elantra is a solid contender for cost, size and performance. They’ve done a new version of what they’ve done for years: apply an attractive, innovative skin to the exterior. And a simple lineup offers a wide range of alternatives.

The 2022 Elantra will carry over unchanged. ■

SPECIFICATIONS

ASSEMBLY PLANT	.....Montgomery, Alabama
ENGINE / TRANSMISSION	.....USA / Mexico
ENGINE	.....2.0L MPI Atkinson DOHC 16v 4-cyl
HP/TORQUE	.....147 hp / 132 lb-ft
COMPRESSION RATIO	.....12.5:1
DRIVETRAIN	.....FWD
TRANSMISSION	.....Smartstream Intelligent Variable (IVT)
SUSPENSION	.....F: MacPherson strut, hydraulic twin tubes, 2.3mm coils, 22mm hollow stblzr bar; R: coupled torsion beam axle, gas monotubes, 2.1mm coils
STEERING	.....motor-driven pwr rack & pinion
BRAKES	.....F: 11.0" vented; R: 10.0" solid
WHEELS / TIRES	.....17x7.0J alloy / 225/45 R17
LENGTH / WHEELBASE	.....184.1 / 107.1 in
GROUND CLEARANCE	.....5.3 in
TURNING CIRCLE	.....35.44 ft
HEADROOM (F/R)	.....40.6 / 37.3 in
LEGROOM (F/R)	.....42.3 / 38.0 in
CARGO CAPACITY	.....14.2 cu.ft
WEIGHT	.....2725-2868 lb
FUEL / CAPACITY	.....reg unl / 12.4 gal
MPG	.....31/41/35 (city/hwy/comb)

BASE PRICE (Limited)	.....\$25,450
CARPETED FLOOR MATS	.....155
DESTINATION CHARGE	.....995

TOTAL\$26,600
-------	---------------

2021 HYUNDAI ELANTRA LINEUP

2.0L	.....147 hp / 132 lb-ft	
SE	.....IVT (intelligent var)	.....\$19,650
SEL	....."	.....20,900
Limited ▼	....."	.....25,450

1.6L TURBO	.....201 hp / 195 lb-ft	
N-Line	.....6-spd MT	.....\$24,100
	.....7-spd DCT	.....25,200

1.6L + HYBRID	.....201 hp / 195 lb-ft	
SEL HEV	.....6-spd EcoShift DCT	.....\$23,550
Limited HEV	....."	.....28,100

2.0L TURBO	.....276 hp* / 289 lb-ft	
Elantra N	.....N Wet 8-spd DCT	.....(MY 2022) TBA
	.....*286 hp for 20 seconds w N Grin Shift	



NAUGHTY AND NICE

BY JOE SAGE

The Hyundai N brand is growing, as both a Kona N and Elantra N are new this year in the US (as well as i20 and i30 N cars, globally). The Veloster N was first, in 2019 (see our Nov/Dec 2018 issue for our track-based first drive). N stands for the Namyang, South Korea, research and development facility where Veloster N was conceived, giving a nod also to the famed Nürburgring course in Germany, where its capabilities were honed.

Hyundai chose the low-slung Veloster for their first N in our market due to strong roll, pitch and yaw metrics—delivered by the low profile itself and by the reduced glass and steel of that profile.

Rather than creating a top-dollar halo car to introduce a high performance line to Hyundai, the Veloster N brought top performance to the entry price end of the scale. It's about twice the price of a base Veloster, with about twice the power and torque (and a lot more to distinguish it). The price has gone up, folding in former options—notably a performance package that boosts horsepower to 275, already chosen by the majority of buyers and still a great value for this hot performer.

Our 2018 feature (available online) has detailed info on upgrades in the N—body and chassis stiffness, suspension, transmission, steering, tires, brakes, proprietary ESC and torque vectoring, aerodynamics, exhaust, cabin details and much more.

We visualize Veloster N in Performance Blue, a soft but distinctive hue used on their international i20 and i30 rally cars, though at launch we also had samples in other colors (it also comes in Racing Red, Ultra Black and Chalk White), and it's one of those cars that looks great in any. The black unit here is a real eye-catcher, showing off its contours and red highlights. A spoiler on some vehicles looks like an add-on, but this looks fully integrated and buttons up an already tight and potent stance.

We'd been having a week of light dust and rain, so we took the Veloster N for a brushless car wash late in our week, where the cashier asked whether we were trying to make it rain. Yes, sort of. We were heading north up I-17, where radar showed some serious weather afoot. We might not be responsible for creating it by washing the car, but we'd definitely be chasing storms already forming.

We're happy to note the option of either a 6-

speed manual (with model-specific short-throw shift) or new 8-speed wet dual clutch transmission (N DCT) with paddles. This sample had the latter. Though we're big fans of manuals, the DCT, from shifter to output, is a very strong powertrain detail we enjoyed greatly. We didn't use its manumatic feature in town much—ratios and performance are great, and we didn't need to. On our storm-chasing run up I-17, we did (using the shift lever at times, paddles at others), happily burning through the challenging curves and climbs of Black Canyon. It makes you want to take it to the track, but we had done that at launch. We did everything else with it that you can do on public pavement.

Veloster N's purpose-built suspension tracks supremely accurately—and belying its front-drive build, as we had already learned at the track earlier. You'd even be forgiven for thinking it had rear-biased AWD, but forgoing that keeps weight and cost down (and probably helped enable this magical car's development at all).

Some details: the build also equates to a turning circle almost three feet larger than Elantra, though the Veloster is some 16 inches shorter and its wheelbase about three inches shorter. Reaction to speedbumps is harsh in the rear. Brakes are su-

perb, unusually tight and responsive. You'll want to enjoy its engineered handling by turning off aggressive lane-keeping if you want to hug the painted lines (very easy via a switch on the instrument panel, rather than the typical deep screen dive). Weight and cost are also kept down via such build decisions as manual seats. N instrumentation includes lap timer, g-force indicator and other performance goodies.

Beneath the N characteristics, the core Veloster itself is a very cool little rig. One standout feature is its three-door setup—unusual, useful, proprietary with only a couple of fairly obscure exceptions.

Our drive time was top notch.

We've long noticed that a hot car is likely to bring out aggressive behavior from two sets of fellow travelers: triggered boy racers; and minivans or the like (perhaps offended but more likely jealous). The Veloster N brought out a few boy racers, but surprised us by generating aggressive moves from a number of sedate midsize sedans. The latter probably fit our standard minivan mold: maybe offended, probably jealous. Or maybe they thought we were a boy racer and needed to be put in our place. (Spoiler: none of them put us in our place.)

We generally don't dwell upon fuel mileage, other than in vehicles where it's the main purpose, but the Veloster N gave us a ready readout, and its EPA rating proved accurate. We even beat it with-



out trying: after a week mostly around town, with a day at enthusiastic Interstate highway speeds, it stated 23.6 MPG overall.

A couple of weeks earlier, we had had the new Elantra (also in this issue), which had given us the impression that if the world had only one car, that could be it. Here to promptly make a counterclaim is the Veloster N, solid evidence that the world always welcomes something more.

The Veloster N is a great road warrior and great town car. Surprisingly, the Veloster lineup is not a big seller. So go grab one and be distinctive.

The storms never did quite catch us on that run up I-17. Or perhaps we were the storm. ■

NEW FOR 2021: VELOSTER AND VELOSTER N

VELOSTER N:

- Previously optional Performance Package (among other things boosting engine from 250 to 275 hp) is now standard.
- N DCT 8-speed wet dual-clutch transmission (with the prior-only-choice 6-spd manual still available).
- Adds standard SmartSense forward collision-avoidance assist, lane keep assistance and driver attention warning.
- AVN 5.0 multimedia navigation system (standard with updated N menus).
- New light sport bucket seats.
- Expect 2022 to be a carryover model.

BASE VELOSTER:

- Carryover model.



SPECIFICATIONS

ASSEMBLY PLANT	Ulsan, South Korea
ENGINE / TRANSMISSION	Korea / Korea
ENGINE	Theta 2.0 Turbo GDI 4-cyl alum/alum, DOHC, E-CVVT
HP/TORQUE	275 hp / 260 lb-ft
COMPRESSION RATIO	9.5:1
DRIVETRAIN	FWD
	electronically controlled hydraulic torque vectoring control
TRANSMISSION	N 8-spd Wet Dual Clutch Transmission (N DCT) w paddle shifters
SUSPENSION	F: MacPherson strut, coils, electronically controlled twin tube gas shocks, 21mm stblzr bar; R: multi-link, electronically controlled twin tube hydraulic shocks, 12mm stblzr bar
STEERING	motor-driven power, rack-mounted rack & pinion, sport-tuned
BRAKES	F: 13.6x1.2" vented, 2-piston; R: 12.4x0.8" vented, 1-piston
WHEELS	19x8.0J alloy
TIRES	.235/35 R19 Pirelli P Zero summer perf
LENGTH / WHEELBASE	167.9 / 104.3 in
GROUND CLEARANCE	5.3 in
TURNING CIRCLE	38.12 ft
HEADROOM (F/R)	38.1 / 35.9 in
LEGROOM (F/R)	42.6 / 34.1 in
CARGO CAPACITY	19.9 / 44.5 cu.ft
WEIGHT	4079 lb
FUEL / CAPACITY	prem unl / 13.2 gal
MPG	20/27/22 (city/hwy/comb)
BASE PRICE (Veloster N)	\$33,750
DESTINATION CHARGE	995
TOTAL	\$34,745

2021 HYUNDAI VELOSTER LINEUP

2.0L	147 hp / 132 lb-ft	
2.0	6 MT	\$18,900
	6 auto	19,900
2.0 Premium	6 auto	23,100
1.6L TURBO	201 hp / 195 lb-ft	
Turbo R-Spec	6 MT	\$23,450
Turbo	7 Eco DCT	25,750
Turbo Ultimate	7 Eco DCT	28,450
2.0L TURBO	275 hp / 260 lb-ft	
Veloster N	6 MT	\$32,250
	8 Wet DCT	33,750

*It's not just a car.
It's a time machine for your soul.*



Drive your dream.®

You never forget your first love.

With thousands of classic cars and trucks for sale, ClassicCars.com plays matchmaker every day to car buffs just like you. Travel back in time and fall in love all over again.

www.ClassicCars.com

© 2008 The Collector Car Network, Inc. All rights reserved.

Volocopter takes to the skies at Oshkosh



The Volocopter 2X flight at EAA AirVenture in Oshkosh, Wisconsin in late July was the first ever public crewed test flight of a fully electric vertical take-off and landing (eVTOL) air taxi in the US. This successful flight marks a key milestone in Volocopter's plan to raise awareness of air taxis around the globe and is key to the long-term success of delivering advanced air mobility (AAM) and urban air mobility (UAM) solutions.

The crewed aircraft took off at 2:45pm CDT for a four-minute flight at about 164 feet altitude, with a top speed of 18 mph, over Wittman Regional Airport during the "World's Greatest Aviation Celebration." Some 600,000 event attendees were able to watch the Volocopter 2X fly, as well as to take a seat in a VoloCity model at Volocopter's booth.

The company had performed an unmanned flight of the Volocopter 2X aircraft at Le Bourget Airfield during the Paris Air Forum in June, where they also had the VoloCity model onsite. That three-minute remote controlled flight was the first public flight demonstration of an electrically powered air taxi in France, giving the public a real-life experience of what an electric air taxi looks and sounds like in operation. The Volocopter 2X flew a 500-meter route at speeds up to 30 km/h and 30 meters altitude along the Le Bourget Airfield (546 yards at up to 18.6 mph at 98 feet altitude). That flight marked the beginning

of a multi-step test and market development campaign in cooperation with the French Civil Aviation Authority (DGAC).

Volocopter's approach to launching UAM services, including VoloConnect air taxis and VoloDrone heavy-lift drones, entails partnering with global industry leaders to offer the whole operating UAM ecosystem, including infrastructure and the digital backbone (VoloPort and VoloIQ) to integrate services into existing transport systems in cities.

In addition to a full-service solution, Volocopter is the first and only eVTOL developer to hold Design Organization Approval and Production Organization Approval, two strategic certification approvals from the European Union Aviation Safety Agency (EASA) to design and produce aircraft in-house. Once certified for commercial launch in Europe, Volocopter is positioned for concurrent type certification approvals in the US from the Federal Aviation Administration (FAA), having applied earlier this year, as well as the civil aviation authority in Singapore (CAAS). ■





Your world is about to get *Larger*

MEXICO

CLASSIC VACATIONS

Treat yourself to the life of luxury travel

Your Travel Center's phenomenal relationships and reputation within the travel industry provide a bridge from YOU to executives of over 1,000 of the world's finest hotels, cruise lines and tour outfitters. You will be recognized as a VIP guest with privileged access to special amenities and services when available, such as:

- Complimentary room upgrades
- Food & beverage credit
- Cocktail partys
- And much more...
- Breakfast for two daily
- Hosted tours
- Private transfers



Our travel experts

Our Advisors are certified Travel Agents and experienced travelers. Depending on your specific needs, you will be directed to a travel expert who knows your destination and can provide you with the guidance that can best fulfill your travel expectations. Using the latest technology, they keep up with the latest enhancements that will save you time and money.

Our experienced leisure travel specialists can help with all your travel desires, including but not limited to all-inclusive luxury cruise vacations, luxury resort getaways, customized travel vacations, safaris and even guided travel to China, Southeast Asia, Europe, Africa and beyond. Our preferred relationship with the Four Seasons Hotels, Ritz-Carlton Hotels and the Belmond group allow us to offer our luxury hotel clients amazing perks and value-added amenities when available, such as hotel credit, complimentary breakfasts, hotel room upgrades and more! This is also true with many of our luxury and premium cruise partners as well as many of our destination management companies located throughout the world.

We also have a dedicated corporate travel team that handles large accounts across the United States. Our partnership with The Frosch Travel Group gives us the tools necessary to tailor a corporate travel plan for your company, provide travel savings for your employees and give you the personal attention you need in this technology driven era. Our personal commitment to providing you the tools you need to travel safely and at the lowest cost is unmatched.

Arizona headquarters

With 40+ years in the travel business, our travel agency offices in Arizona have a reputation for an outstanding passion regarding the world of travel. Our attention to personal service, along with our preferred travel relationships with many airlines, car rental agencies, hotels, cruise and tour vendors, ensures that we will exceed your travel needs.

Whatever your travel needs may be, allow Your Travel Center the opportunity to serve you.

FUNJET

MORE OF LAS VEGAS

Funjet Vacations

Your travel center

MEMBER OF THE FROSCH TRAVEL GROUP



Your Travel Center

MEMBER OF THE FROSCH TRAVEL GROUP
 414 South Mill Avenue, Suite 125
 Tempe, AZ 85281
 480-496-0160 / 800-952-3174 Toll Free
 www.ytc.com
 CST# 2019108-10

A WEEK WITH : 2021 SUBARU FORESTER TOURING

Road handling utility

BY JOE SAGE

The Subaru Forester was originally built on the platform of the Impreza, their popular and wideranging lineup that includes the sporty WRX and high-performance WRX STi. Forester is now built on the Subaru Global Platform—but then again, so is Impreza. The formula thus remains the same: a vehicle with the interior volume of a generous compact crossover, with road handling prowess related to a performance-gened sedan.

Forester's numbers tell the tale: 111.9 cu.ft of interior volume, 31.3 cu.ft. of cargo volume behind the rear seats, and 76.1 cu.ft with the rear seats folded down (or all a little less with a moonroof, as on ours). Its numbers in fact edge out the Outback, with the exception of cargo volume behind rear seats. Inside, Forester has more front legroom than Outback and just 0.1" less rear legroom. The difference is due to overall length: Outback is 9.2 inches longer. Ground clearance is the same for both, but Forester's shorter length gives it notably greater approach and departure angles for those outdoor weekends (with break-over also a little bit more). Forester is also a couple of inches taller than Outback, adding to a characteristic look that is also enhanced by its shorter length. (One note: we had the Forester in August, and it has a lot of glass.)

All Forester trims have the same engine,

driver-selectable X-Mode features and all-wheel-drive system. All have the same CVT, while the three top trims have a 7-speed-mimicking manual mode.

Outback does offer a more powerful turbo engine on many trims, and its suspension and drive modes are more advanced for off-road and other tougher duty. Both are fully independent, and Forester surpassed most everything we drive for comfort on speedbumps.

We thought about the CVT very little during our week of freeway and surface street driving with a few parking lots and warehouse districts thrown in, exactly the kind of use most people are going to give it most of the time. Times we did think about it were typical CVT observations: though this is a fine example, if paying attention, we still find ourselves waiting for it to shift, but it never will. Unless in manual mode. Available via paddles or shift lever, we used this mode really just for kicks on freeway overpass sweepers and such, where you can actually be quite aggressive.

We had no volume of gear during our week with the Forester, but can attest to its other key attribute: the peppy performance and precise handling of a lower-profile vehicle.

With the muscle memory of a sedan in a spacious crossover body, Subaru Forester's formula has given it a happy buyer base. ■

SPECIFICATIONS

SEATING	.....5-passenger
ENGINE	.....2.5L boxer (horizontally opposed) 4-cyl, alum/alum DOHC, dual active valve control
HP/TORQUE	.....182 hp / 176 lb-ft
COMPRESSION RATIO	.....12.0:1
DRIVETRAIN	.....Symmetrical AWD, vehicle dynamics control w all-wheel all-speed traction control, rollover sensor
TRANSMISSION	.....CVT, 7-spd manual mode
TRANSFER	.....electronic contin variable hydraulic
SUSPENSION	.....four-wheel independent: F: MacPherson-type struts, lower L-arms, coils, stblzr bar, hydraulic engine mounts; R: dbl wishbone, coils, stblzr bar
STEERING	.....elec pwr assist rack & pinion
BRAKES	.....F: 12.4 vented; R: 11.2 vented
WHEELS	.....18x7 alum alloy, machine finish
TIRES	.....225/55R18 98H all-season
LENGTH / WHEELBASE	.....182.1 / 105.1 in
GROUND CLEARANCE	.....8.7 in
APPRCH / DEPART / BRKOV	.....22.9 / 24.6 / 19.6°
TURNING CIRCLE	.....35.4 ft
HEADROOM (F/R)	.....w moonroof 40.2 / 37.7 in
LEGROOM (F/R)	.....43.3 / 39.4 in
CARGO CAPACITY	.....w moonroof 28.9 / 70.9 cu.ft
WEIGHT / DISTRIB	.....3589 lb
FUEL CAPACITY	.....16.6 gal
MPG	.....26/33/29 (city/hwy/comb)

BASE PRICE (Touring)	.....\$34,895
DESTINATION CHARGE	.....1050
TOTAL	.....\$35,945

2021 SUBARU FORESTER LINEUP

(base)	.....\$24,795
Premium	.....27,795
Sport	.....29,395
Limited	.....31,395
Touring	.....34,895



ON THE WILD SIDE

BY JOE SAGE

Subaru has long offered wide appeal to the outdoor adventure set—one of the most likely brands you'll see with a couple of mountain bikes or kayaks on the roof, headed somewhere exhilarating and, well, wild.

With the entire lineup all-wheel-drive (with the current exception of the BRZ sports coupe shared with Toyota 86), any Subaru will get you through rain and snow. The most popular for tackling off-road conditions are Outback and Crosstrek, with advantages in ground clearance and tougher build, rounded out by degrees of rugged styling.

While both have had the same 8.7-inch ground clearance, Crosstrek has held advantages in departure and breakover angles (though surprisingly not approach) due to its slightly shorter wheelbase (by 3.2 inches) and notably shorter body length (by 14.8 inches)—while Outback holds the advantage in cargo capacity (by about 20 cu.ft., or over a third

again more volume behind the front seats).

Outback has more powerful powertrains—two offerings for either, with Crosstrek's bigger engine equaling Outback's smaller one—but weighs generally 5-600 pounds more than Crosstrek. The advantage remains Outback's, strong enough to tow 2700-3500 pounds; Crosstrek is not tow-rated.

Enter a new model to close these gaps: the new 2022 Subaru Outback Wilderness. Virtually every advantage of this new build is achieved through one simple trick and all that comes with it—its ride height is increased by almost an inch (ground clearance grows from 8.7 inches to 9.5).

If that doesn't sound like a lot, it is. It's enough to give Outback approach, departure and break-over angles all in the 20s (or exactly 20.0 for approach)—along with ground clearance now all beating the Crosstrek except for departure. The departure difference is of course because Outback



still hauls more gear inside, hence there are still interesting points to consider between the two.

Along with the boost in height, Outback Wilderness has upgraded suspension (not only raised but retuned) and bears Yokohama Geolandar A/T tires, with a full-size matching spare. The wheels are 17-inchers for increased sidewall in tough conditions. This model includes an additional X-Mode that switches from crawl speeds to speeds over 25 mph seamlessly. It also has the bigger engine with higher 3500-lb tow capacity. As on all Outbacks,



the Wilderness has a CVT with 8-speed manual mode and paddle shifters.

Outback Wilderness is recognizable by mustard-toned (they call it copper) nameplates, rocker panel badging, stylized markers on front, rear and rack, and name tags stitched into the upholstery.

Our love affair with this vehicle had started as soon as we sat down, setting up via a generally standout smaller vertical screen interface. It continued as we experienced the subtle but significant feel of its increased height—migrating it noticeably farther than even a standard Outback



on the continuum from station wagon to SUV.

Wilderness, of course, has no roads. But virtually anyone headed to the wilderness will get there by roads—roads that are increasingly wild, the farther along the path they progress. We took the new Outback Wilderness for a three-or-four-hour trek through upper Maricopa County and on into lower Yavapai, on many miles of such a route.

While noting a few bad habits in town—we were hammered by speedbumps, at even the slowest speeds, and long uphill climbs brought mild power surges that begged for use of the manual feature—we overall fell for this one.

As capable, reliable and well equipped—and as great a value—as any Subaru is, most are generally more likely to register on our “solid provider” scale than to ignite the enthusiast fire within us. This one, though, is a gotta-have-it model for anyone tackling tougher conditions, or just wanting to be ready for them. We had a blast. ■



SPECIFICATIONS

SEATING	.....5-passenger
ENGINE	.....2.5L boxer (hznly opposed) 4-cyl, alum/alum DOHC, DFI and ETC, twin-scroll turbo, chain-driven cams, dual active valve control
HP/TORQUE	.....260 hp / 277 lb-ft
COMPRESSION RATIO	.....10.6:1
DRIVETRAIN	.....Symmetrical AWD, electronically managed variable hydraulic transfer clutch, continuously variable front-rear torque split (based on accel, steering and yaw, responding to wheel slip).
	• EXCLUSIVE TO WILDERNESS: advanced X-mode optimized engine output and CVT ratio, increased active AWD, enhanced control logic for vehicle dynamics to reduce wheel slip and increase ability on slippery surfaces and inclines, Snow/Dirt and Deep Snow/Mud modes (below 25 mph), Deep Snow Mode (above 25 mph), Low Speed/Low Ratio Gradient Control.
TRANSMISSION	.....high-torque Lineartronic CVT w 8-spd manual mode, paddles, revised lower ratios Wilderness exclusive
SUSPENSION	.....four-wheel independent, raised 0.8 in for Wilderness:
	F: MacPherson-type struts, internal rebound springs, alum lower L-arms, coils, stblzr bar, liquid-filled engine mounts;
	R: dbl wishbone, coils, stblzr bar
STEERING	.....elec pwr assist rack & pinion, variable gear ratio rack
BRAKES	.....power-assist 4-whl disc w EBD, 4-channel 4-sensor ABS, brake assist, brake override, auto vehicle hold;
	F: 12.4 vented dual-piston;
	R: 11.8 vented single piston
WHEELS	.....17x7 alloy, matte black finish
TIRES	.....Yokohama Geolandar A/T 225/65R17 102T all-season, RWL
LENGTH / WHEELBASE	.....191.3 / 108.1 in
GROUND CLEARANCE	.....9.5 in
OVERHANG (F/R)	.....39.6 / 43.7 in
APPRCH / DEPART / BRKOV	.....20.0 / 23.6 / 21.2°
TURNING CIRCLE	.....36.1 ft
HEADROOM (F/R)	.....w moonroof 37.7 / 39.1 in
LEGROOM (F/R)	.....42.8 / 39.5 in
REAR GATE OPEN / LIFTOVER	.....29.5 / 29.2 cu.ft
CARGO CAPACITY	.....32.5 / 75.7 cu.ft
WEIGHT / DISTRIB	.....3896 lb
TOW CAPACITY	.....3500 lb
FUEL / CAPACITY	.....reg 87 oct unl / 18.5 gal
MPG	.....22/26/24 (city/hwy/comb)

2022 SUBARU OUTBACK LINEUP

(base)	.....\$26,945
Premium	.....29,145
Limited	.....33,595
Touring	.....37,495
Onyx Edition XT	.....35,145
Wilderness ▼	.....36,995
Limited XT	.....37,995
Touring XT	.....39,945

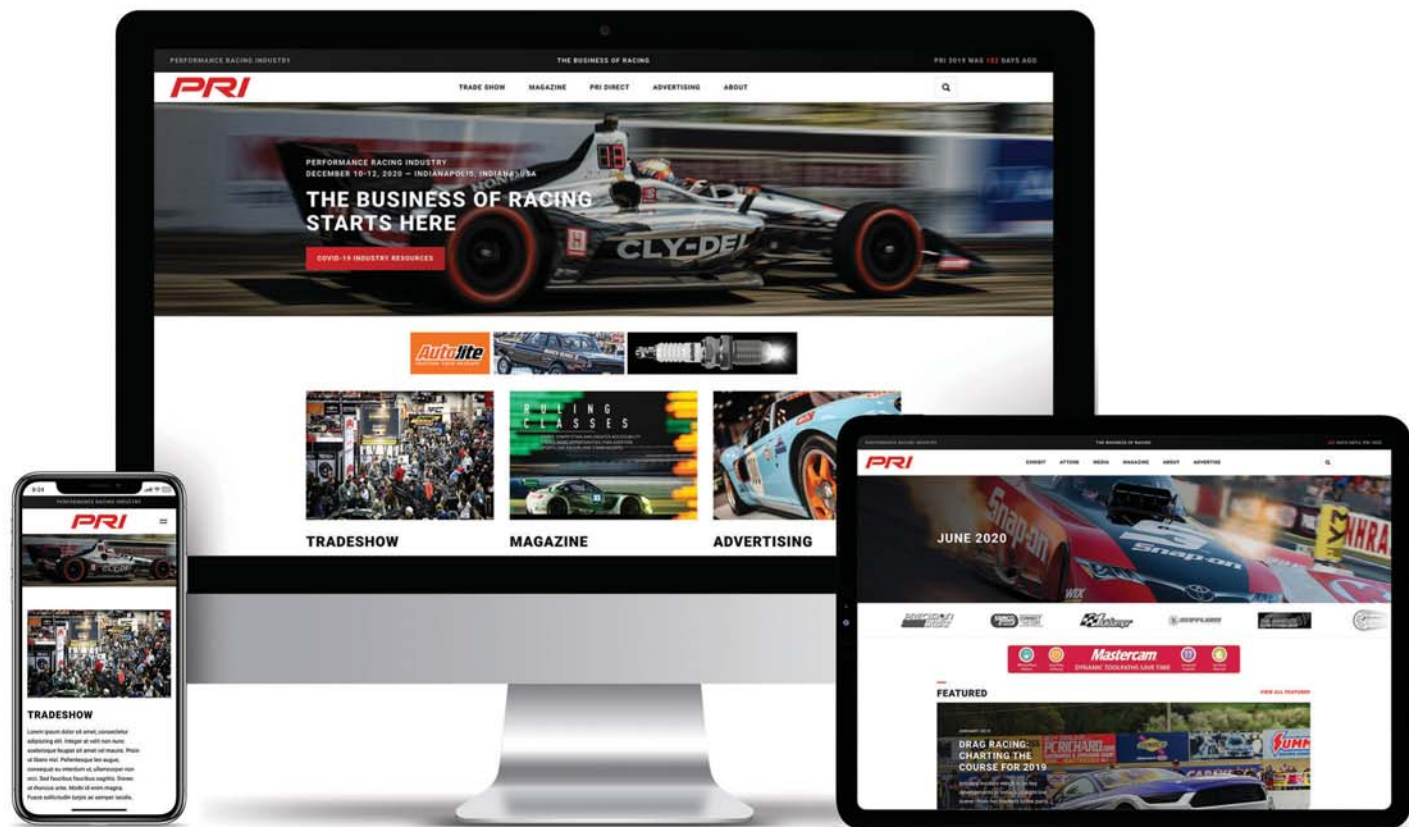
BASE PRICE (Touring)	.....\$36,995
MOONROOF + NAV + REV AUTO BRAKE	.....1845
DESTINATION CHARGE	.....1125
TOTAL	.....\$39,965





PERFORMANCE RACING INDUSTRY

The New Website is Here



LEARN MORE AT
PERFORMANCERACING.COM



GRANDSTANDS TO BE FULLY OPEN

There will be no restrictions on the number of fans allowed to watch the action from the grandstands and hillside when NASCAR returns to Phoenix Raceway to crown four Series champions during NASCAR Championship Weekend, November 5-7, 2021.

This is the second consecutive year hosting four championship celebrations over three days, with events in the NASCAR Cup Series, NASCAR Xfinity Series, NASCAR Camping World Truck Series and ARCA Menards Series West.

"Our loyal and passionate fans have shown tremendous support for Phoenix Raceway and our entire sport throughout the pandemic, including

the inaugural NASCAR Championship Weekend at our facility last November," said Phoenix Raceway President Julie Giese. "We are ecstatic to have the opportunity to celebrate the crowning of four champions in front of a packed grandstand and to showcase to the world what this community of race fans in Arizona is all about."

Fans will once again have the option to upgrade to the Infield Experience—an opportunity to experience NASCAR Championship Weekend with amazing access to the garage walkways, pre-race festivities, victory lane and post-race championship celebrations

Camping restrictions will also be lifted.

NASCAR and Phoenix Raceway will continue to work closely with local and state government and health officials throughout the year on any necessary health and safety protocols and adjustments to ensure a safe environment for fans, competitors, employees and the community, as their top priority for NASCAR Championship Weekend. Any updates can be found at PhoenixRaceway.com.

TICKETS & INFO: Tickets for November's NASCAR Championship Weekend are available online at PhoenixRaceway.com, or by calling the Phoenix Raceway ticket office at 866-408-RACE (7223).

For the full 2021 NASCAR Cup Series schedule and other tickets, visit nascar.com/tickets.

FALL NASCAR CHAMPIONSHIP WEEKEND

FRIDAY, NOVEMBER 5
NASCAR CAMPING WORLD TRUCK SERIES: LUCAS OIL 150
5:00 pm

SATURDAY, NOVEMBER 6
ARCA MENARDS SERIES WEST: ARIZONA LOTTERY 100
12:00 noon
NASCAR XFINITY SERIES CHAMPIONSHIP RACE
5:30 pm

SUNDAY, NOVEMBER 7
NASCAR CUP SERIES CHAMPIONSHIP RACE
1:00 pm

Details subject to change



THE INSIDE TRACK: BRIEFS & RUMORS



2010 BMW M3 GT2 Art Car by Jeff Koons

▼ The **BMW** Art Cars go digital this year, as Acute Art and BMW celebrate 50 years of cultural commitment by presenting the first ever BMW Art Cars exhibition in augmented reality. The project launched on July 21 via the free Acute Art app (download from Apple or Google), making this the first time the digital rolling sculptures are available to everyone around the world at any time. Initiated by French race car driver and art aficionado Hervé Poulain and conceived in collaboration with BMW Motorsport founder Jochen Neerpasch, the first BMW Art Car was commissioned when the two asked Alexander Calder to design Poulain's BMW race car in 1975. Since then, 19 prominent artists from throughout the world have designed BMW automobiles of their times, all making extremely different artistic statements and reflecting the cultural and historical development of art, design and technology. On the occasion of 50 years of BMW Group Cultural Engagement, the Art Cars finally enter the digital realm and can be virtually staged in a wholly immersive 360-degree exhibition—indoors, outdoors or in any location the user desires. The first BMW Art Cars, posted on July 21, include works by Alexander Calder (BMW 3.0 CSL, 1975), Michael Jagamara Nelson (BMW M3, 1989), Ken Done (BMW M3, 1989), Matazo Kayama (BMW 535i, 1990), Esther Mahlangu (BMW 525i, 1991), Jeff Koons (BMW M3 GT2, 2010) and John Baldessari (BMW M6 GTLM, 2016). Since then, further BMW Art Cars have been

integrated into the Acute Art App every two weeks, with the full collection in place in time for the Art Basel in Basel, Switzerland, September 24-26, 2021.

▼ **RED Aircraft GmbH** flagship engine—the lightweight, 12-cylinder, compression-ignition RED A03—has been certified and approved by the Russian Federal Air Transport Agency (FATA), which RED says represents a significant milestone in their



progress to becoming one of the world's leading producers of high-powered and fuel-efficient aero engines, joining previous certifications from the European Aviation Safety Agency (EASA) and United States Federal Aviation Authority (FAA). The new certification will allow the revolutionary RED A03 engine to be fitted and operated on Russian-registered aircraft, a particularly important milestone, as a new

Russian-built twin-engine aircraft designed by Pro-Avia has been utilizing the RED A03 Engine during its design phase. The RED A03 offers unsurpassed efficiency, impressive power-to-weight ratio, a reduced fuel burn, excellent high altitude performance and significant cost savings for operators. Deployed in several diverse roles and on several different types of aircraft, the engine's benefits are being realized across the industry, from agricultural aircraft and advanced trainer aircraft, such as the Russian-built YAK-152, to new and innovative designs. Existing types have benefited, and new types, such as the Otto Celera 500L and Airlander Hybrid Air vehicle, have also utilized the superior performance and green efficiency provided by the RED A03.

▼ The latest addition to **McLaren Automotive's** lineup is in their junior Ride-On model range. The new McLaren GT Ride-On, based on the lightest and quickest accelerating vehicle in its class, follows successful P1™, 720S and Senna electrified children's models, aimed at supercar fans from three

to six years old. The new Ride-On has authentic McLaren design detailing and an impressive list of standard features including working dihedral doors for the ultimate entrance and getaway and a functional storage compartment for any junior driving essentials. Just like the real thing, the GT Ride-On has workable dashboard controls with a key start that activates McLaren engine sounds. Tiny journeys

can also be accompanied by music from an infotainment system accommodating a USB device or SD card with optional MP4 display screen. The working accelerator pedal produces a revving sound as the

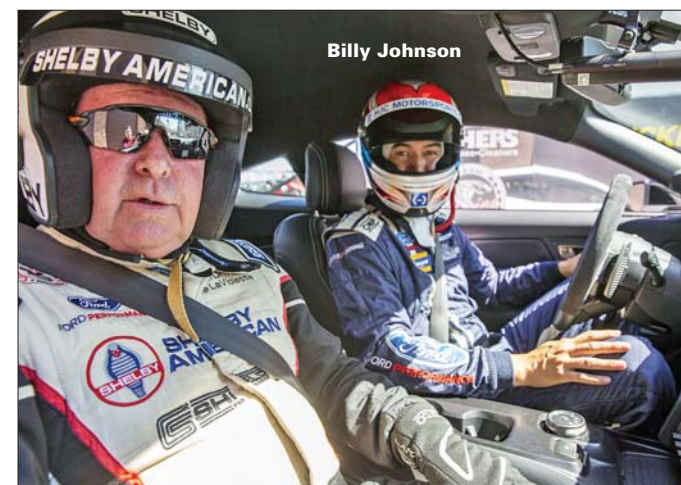
support Shelby American's efforts to further refine Shelby suspensions, chassis, engine tunes and performance parts. A decorated racer, Johnson, who turns 35 in October, has raced in the FIA WEC, British



McLaren GT Ride-On

kids speed off on their mini adventures, and the brake pedal activates brake lights. The McLaren GT Ride-On is available in six eye-catching authentic McLaren colors: Burnished Copper, Silica White, Onyx Black, McLaren Orange, Amaranth Red and Burton Blue. The McLaren GT Ride-On is priced from £163 to £234 (at the moment about \$225-325), depending on options selected, and is available to order now from selected global toy retailers.

GT, NASCAR Cup, NASCAR Xfinity, IMSA, IMSA Michelin Pilot Sports Car Challenge (MPSC), Blancpain GT World Challenge America, Formula Star Mazda Pro, Formula BMW, Skip Barber Regional and National Series. In addition to competing worldwide in a Ford GT, he was involved in the refinement and development of the highest performing cars at Ford over the past few years. Johnson raced for the Ford Chip Ganassi Racing Team at the 24 Hours of Le



Billy Johnson

▼ Billy Johnson, who competed in a Ford GT at Le Mans for Chip Ganassi Racing and was a development driver for both Ford Motor Company and Multimatic, has joined the testing team at **Shelby American**, a wholly owned subsidiary of Carroll Shelby International Inc. Key in production of the latest generation Shelby GT350, Shelby GT500 and Ford GT, Johnson will

Mans for four consecutive years (2016-2019) piloting the #66 Ford GT. He is 2016 IMSA Continental Tire Sports Car Challenge GS champion and won the 2018 endurance race at Spa-Francorchamps in a Ford GT. In the past decade, Billy has more victories and top-three podium finishes than any other driver in the Grand-Am Continental Tire Sports Car Challenge Series, with 23 wins, 49 podiums and 61

top five finishes. Johnson and the team have already begun testing new high-performance suspension and chassis solutions, brake components and engine tunes. They are also evaluating Johnson-derived aftermarket components for their Shelby Performance Parts division.

▼ **REE Automotive Ltd.** has announced it will open its US headquarters in Austin, Texas, to address the growing US market demand for mission-specific EVs from delivery and logistics companies, mobility-as-a-service and new technology players. In addition, Austin will be the location of REE's first asset-light Integration Center for assembly and testing of its disruptive REEcorner™ technology and ultra-modular EV platforms. REEcorner integrates critical vehicle components—steering, braking, suspension, powertrain and control—into a single compact module between chassis and wheel, using x-by-wire technology for steering, driving and braking, allowing a highly adaptable fully flat modular skateboard chassis with more room for passengers, cargo and batteries. REEcorners can be used on vehicle platforms of any size, design or power source, opening up a \$700 billion total addressable market including OEMs, delivery fleets and other mobility players—getting them to market



REE Automotive REEcorner™ technology

faster at a fraction of the cost. Headquartered in Tel Aviv, Israel, with subsidiaries in the US, UK and Germany, REE has a capital expense-light manufacturing model that leverages its Tier 1 partners' existing production lines. REE is exploring several collaborations with a number of Koch Industries Inc. companies. The new Austin facility is expected to create about 150 jobs over upcoming years. ■

UPCOMING FEATURES

2021 Mercedes-AMG GT43



Upcoming track, on- and off-road comparo events



2021 GMC Yukon AT4



LA Auto Show



Specialty and personalized plates primer



How freeway interchanges and HOV lanes evolve



Global YouTube sensation Sarah-n-Tuned of Tucson



K1 Speed indoor kart racing



THE BUSTED KNUCKLE GARAGE AN AUTOMOTIVE GIFT SHOP



Commercial Strength Shop Stools

Heavy duty garage counter shop stool with full swivel seat & great vintage look! Built in the USA, this shop stool is an industrial/restaurant grade counter stool built for long lasting durability, comfort and strength. Available in 36 designs!

- 30" standard counter height to seat • Vinyl covered seat is 14" wide
- Full 360 degree swivel seat • Industrial strength chrome plated legs
- 1600 lb weight capacity (vs imports rated at 300 lb) • Backrest option available • Built to order, allow 10-15 work days for delivery
- Minor assembly required • Tables to match—please inquire

Miracle Car Repair Shop Stool / SKU: 09-BKG-MCR

Gas, Oil & Toil Shop Stool / SKU: 09-BKG-TOIL

~~Were \$179.95~~ Now \$159.95 each

Free ground shipping in the lower 48 states!

Neon Garage Clocks

USA Made Neon Automotive Garage Clocks with old school vintage car guy looks for your man cave. No disappointments. Highest Quality & Reliability available.

- Features a spun aluminum black case, glass face and a separate on/off switch for the white neon lamp. (100,000 hours of neon, that's 11 years continuous running!)
- Measures a large 20" in diameter and 5" deep • 8' Power Cord, Chain Pull for Lamp • Limited warranty against defects in material and workmanship; runs on 110 Volt AC • Several Car Guy Styles to Choose From...Check 'Em All Out! • We've been selling these clocks for over 15 years; Never a Return, Never a Complaint, you have our word on it • Looking for something smaller? Check out our BKG-76600 for a 12" alternative

Shown: Vintage Iron Speed Shop Clock / SKU: 09-BKG-VI

~~Were \$399~~ Now \$349 / Free shipping on this item!

All-Steel Toolboxes

The Greasemonkeys have the feeling their full line of durable all-steel portable toolboxes with lift-out tray and a variety of the most cool car guy graphics (five styles now and more coming!) just may be too good to stash tools in—we may have to call them "deco-boxes"!

- Rugged all steel end cap construction • Powder coated, rust resistant • Heavy-duty stainless steel handle • Nickel-plated steel latch and hinge for added security • Full length lift-out tote tray
- Cool car guy quality color graphics • 6 lbs • 16" x 7" x 7.5"

Wrench-In-Hand Steel Tool Box / SKU: 10-BKG-WCL

Vintage Pickup Truck Steel Tool Box / SKU: 10-BKG-VT

\$49 each / Eligible for free shipping!

♥ Not only are your products awesome, but the service and the people are too! I very much intend to pass the word along about how great it is to do business with the Busted Knuckle Garage.
— Many thanks! Jackie B.

♥ I just had the most wonderful buying experience! I only hope my father asks for something from The Busted Knuckle Garage for Christmas so I can do business with such a wonderful company once more.
— Cheers! Michelle

♥ My husband just loves everything, especially me for getting him such cool stuff. I'd have to say we will be lifetime customers, oh ya!! Thank you, Greasemonkeys.
— Sincerely, Pam

♥ First, let me be the one thanking you! I honestly cannot remember such extraordinary customer service.
— Thanks again, "JR" Jean



Furnishings | Clothing | Signs | Barware | And More!

FREE FedEx SmartPost Ground Shipping over \$99.99!

Check us out on Facebook and Instagram! / www.bustedknucklegarage.com
Need a volume discount for your shop or business? Call us: 928-708-0987



GO FARTHER



Jeep Rentals • 4wd Instruction
Overlanding & Guided Trips



Barlow Adventures Sedona

3009 W SR 89A

Sedona, AZ 86336

928-282-8700



Barlow Adventures Moab

284 N. Main St.

Moab, UT 84532

435-259-3195

www.Barlows.us