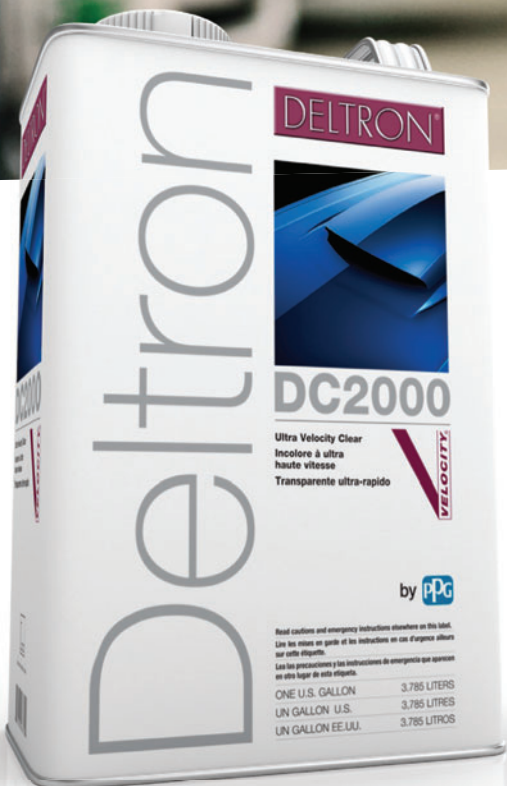


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Examining the future of our automotive ecosystem

**32 ALL-WHEEL WORK**

Use these instructions for some of your most common and challenging 4WD/AWD repairs



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### UNDERSTANDING WHEN TO REPLACE OR HOW TO REPAIR

Weight affects efficiency. That's why Toyota uses various plastic and resin body parts, which are lighter than steel. Some vehicles used to be manufactured with aluminum hoods and trunks to reduce weight. However, aluminum is expensive and hard to repair, therefore on select Toyota vehicles, aluminum has been replaced with resin.

When a Toyota is in your shop and has plastic or resin body parts, you'll need to question if the part should be replaced or repaired. If a repair is the answer, you'll need to know the proper repair techniques.

Learn more about identifying materials, handling raw plastic bumpers and how to do successful repairs.

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EDUCATION

## PPG'S PARTNERS IN EDUCATION ALLOWS GRADUATES TO BE PPG-CERTIFIED

after passing written and hands-on tests. PPG also footed the bill for the Envirobase HP mixing system and TouchMix XI computer/scale.

# COLORADO DISTRICT ADDS COLLISION REPAIR PROGRAM

JAY SICHT // CONTRIBUTING EDITOR

Each year, only half of the collision industry's hiring needs are met, according to the Collision Repair Education Foundation (CREF). A new Denver-area program is assisting with that shortfall. Graduates of the program can be ready to work as an entry-level technician with

certification and recognition, or they can continue their collision repair education at the college level with credit they earned while in high school.

Administration at the Adams 12 Five Star school district, in Thornton, Colo., identified a pressing need for collision repair technicians. So when it began

>> SCHOOL CONTINUES ON PAGE 6

BREAKING NEWS

RESOURCES

## I-CAR LAUNCHES ONLINE ADAS RESOURCE LIBRARY

I-CAR<sup>®</sup> announced the creation of a robust online ADAS resource library, <https://info.i-car.com/ADAS>, to provide the industry with a centralized information hub in support of the rapid growth of Advanced Driver-Assisted Systems (ADAS) and its accelerated impact on the collision repair process.

The complimentary resource features news and information relevant to ADAS training, topics and trends, including insights from ADAS Subject Matter Experts within I-CAR and the industry. For instance, a series of ADAS-related podcasts and webinars dive into considerations related to everything from proper calibration equipment to "[What Happens] When the ADAS Calibration Does NOT Work?" the title of a recent webinar featuring I-CAR Repairability Technical Support (RTS) Manager Scott Van Hulle, Automotive Technical Research and Development

>> I-CAR CONTINUES ON PAGE 8

TRENDING

### SATA INTRODUCES SATAJET X 5500 BIONIC

The SATAjet X 5500 Bionic reveals the unseen technology that makes SATA spray guns so special. With the gun's inner workings visible, it is fully functional and suitable for daily use in the spray booth.

[ABRN.COM/SATAJETX](http://ABRN.COM/SATAJETX)

### OEC APPOINTS NEW CEO

OECConnection LLC announced the appointment of Patrick C. Brown as its new president and CEO. He brings extensive experience running high-growth companies and is a proven strategic leader.

[ABRN.COM/BROWN](http://ABRN.COM/BROWN)

### MITCHELL BRINGS CLOUD ESTIMATING TO CANADA

Mitchell Cloud Estimating is now available in Canada. Carriers and collision repairers can use the cloud-based application to write estimates from anywhere.

[ABRN.COM/CLOUD](http://ABRN.COM/CLOUD)

### ATI HITS \$2 BILLION IN GROSS PROFIT LIFT FOR MEMBERS

Automotive Training Institute has reached a new milestone — a combined total of \$2 billion gross profit improvement "lift" for members since its inception.

[ABRN.COM/ATILIFT](http://ABRN.COM/ATILIFT)

### SHERWIN-WILLIAMS RELEASES APP

Sherwin-Williams Automotive Finishes has released Collision Core, an app that verifies and validates the repair process in real time with a focus on error elimination and labor optimization.

[ABRN.COM/CORE](http://ABRN.COM/CORE)



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**>> SCHOOL CONTINUED FROM PAGE 4**

planning for expansion, it budgeted for a new Automotive Collision Repair & Refinishing program at FutureForward at Bollman, which on Oct. 1 welcomed students in person for the first time.

Located in the northern Denver metropolitan area, the Adams 12 Five Star School District serves five cities: Broomfield, Federal Heights, Northglenn, Thornton and Westminster. The district's boundaries also include portions of Adams and Broomfield Counties.

In July 2019, ground was broken at the new FutureForward at Washington Square, the district's second career and technical education campus a little less than six miles up the road. The new facility opened up room for new programs, while some existing ones, such as Diesel Automotive Technology and Welding Technology, moved from FutureForward at Bollman. The space formerly occupied by the welding program was remodeled for the new Automotive Collision Repair & Refinishing program.

Donnie Smith, who has taught collision repair for 16 years, is the Automotive Collision Repair & Refinishing program's instructor, and he's charged with 55 students in three different sessions. He's had to adjust not only to a new area and school, but also to the curriculum's schedule, modified at the start of the school year to include online-only instruction, a necessity because of the coronavirus pandemic.

As of this writing, students are attending in a staggered schedule, to allow for social distancing in the classrooms and labs, with students broken up into two groups by last name. "I like to do a little bit of class time and a little bit in the shop to reinforce it, so we've been kind of content-heavy," Smith said.

The new program, which has a current capacity of 75 students, teaches non-structural collision repair and refinishing, Smith said. It uses I-CAR's Professional

Development Program-Education Edition, supplemented by PPG's Partnership in Education (PIE) program, and S/P2 Training, which provides industry-specific online training in not only safety and environmental issues, but also ethics, human resources and soft skills.

After graduation, students are eligible to achieve I-CAR Pro Level One recognition, and while they're training at Bollman, they're also earning college credit through the Automotive Collision Technology Program at Aims Community College, in nearby Greeley.

The PPG Envirobase HP mixing system and TouchMix XI computer and smart scale are housed in the Global Finishing Solutions (GFS) mixing room, attached to a new Ultra XD spray booth. Other equipment is still being added, although Matco tools and boxes, assigned one to a group of four or five students, were in place.

### **Partners in education program offer PPG certification**

A partnership with PPG Automotive Refinish could mean a more marketable graduate, said Chris Stevens, territory manager of PPG Automotive Refinish. Typically, he explained, PPG requires a painter to have one year of working experience before it will certify him or her.

The Partners in Education (PIE) Program is an online I-CAR-based module, and it's a proven program that Stevens also assists with in three other area secondary and post-secondary schools.

"The students work through the curriculum with the instructor, and they do classwork and hands-on work," Stevens said.

Each student receives a unique ID and password to log into the PPG training portal.

"It goes in-depth, from the composition of how paint is made, air compressors and spray booths... it's just a very thorough understanding of the industry,

and it even covers different segments. It covers fleet repairs, RVs and automotive collision."

When students have completed about 80 percent of their program and have passed all of their PPG online training, they have to pass an online assessment.

The final test before they can be PPG-certified is a hands-on test, administered by Stevens and assisted by a sales representative or technical representative from the PPG distributor, which for Bollman is NCS/Single Source.

"They'll have a panel or two that they've already completed as their project in class, and then I go in and put a big scratch in it for them to repair," he said. "They have to feather that, prime it, block it and then they have to do a spot seal, blend their color within the panel and then clearcoat the whole panel.

"We have a 10-segment criteria that we grade them on: Can you see any of their featheredges? Did they blend their color to an acceptable level, with an invisible blend? Is there any orange peel or dirt? We grade them just like it was a production vehicle in a shop."

Once the students pass those tests, upon graduation they receive a certificate from PPG that says they're a level-one PPG-certified technician.

"That helps them get into a shop a little earlier without having to pay \$30,000 for a trade school," Stevens said. "And since PPG has such a big market share in the Denver market, [between 40 and 50 percent, he said] there's a good chance that shops are gonna have PPG Envirobase in there. So they'll hopefully already be able to be prime and prep and get started in a good career."

Students will be using the latest technology, including PPG Envirobase HP waterborne basecoat, waterborne primer and aerosol UV primer.

"And PPG footed the bill for everything," Stevens said. "We just see the value in trying to support our industry." ■





# DRIVER ASSISTANCE SYSTEMS OPERATION AND CALIBRATION

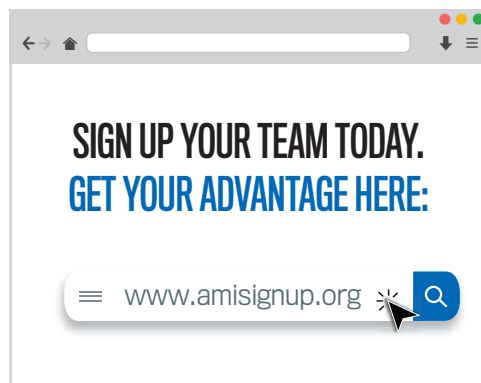
This web-based training course covers the operation and calibration of the different driver assistance systems used on Chrysler, Dodge, Jeep®, Ram and FIAT® Brand vehicles. This includes Blind Spot Monitor<sup>1</sup>, Rear Cross Path Monitor, ParkSense<sup>2</sup>, ParkView® Rear Back Up Camera<sup>3</sup>, Forward Collision Warning<sup>4</sup>, LaneSense<sup>5</sup>, rain-sensing wipers, advanced headlamp systems and adaptive cruise control.

## Additional Insight:

- ▶ Identifying if the vehicle is equipped with driver assistance systems
- ▶ Discovering what will contribute to a failed calibration
- ▶ Knowing when driver assistance system module calibration is required
- ▶ Understanding driver assistance system operation and limitations
- ▶ Preparing the vehicle for successful driver assistance system module calibration

**There are additional beneficial courses available online, as well, all developed to help ensure your employees have the knowledge required to put your shop in the best light. Sign up today at [www.amisignup.org](http://www.amisignup.org), choose the “FCA Certified Collision Network” as your area of interest and have access to online courses.**

**For more information, contact AMI at [supportingsuccess@amionline.org](mailto:supportingsuccess@amionline.org) or call 817-514-2929.**



1. Always check visually for vehicles prior to changing lanes. 2. Always look before proceeding. An electronic drive aid is not a substitute for conscientious driving. Always be aware of your surroundings. 3. Always check entire surroundings visually before proceeding. 4. This system is solely an alert system for the front of the vehicle that does not take any actions to change vehicle dynamics to avoid a collision, not a substitute for active driver involvement. The driver must remain aware of traffic conditions and be prepared to use brakes to avoid collisions. 5. This system is a driver's convenience system, not a substitute for active driver involvement. The driver must remain aware of traffic conditions and maintain control of the vehicle. ©2020 FCA US LLC. All Rights Reserved. Chrysler, Dodge, Jeep, Ram and Mopar are registered trademarks of FCA US LLC. FIAT is a registered trademark of FCA Group Marketing S.p.A., used under license by FCA US LLC.

>> I-CAR CONTINUED FROM PAGE 4

Manager Bud Center and Subject Matter Expert Manager Jeff Poole.

The most common problem in a failed calibration comes down to an incorrect repair or attachment, explained Center. To that end, Webinar Guest/Subject Matter Expert Paul Bostel, Master Technician at LaMettry's Collision, agreed and reinforced why it's "super critical to have photos [of the] repair process to understand what was done."

"The resource is another way

I-CAR can share its expertise in ADAS collision repair, and its neutrality in bringing together voices from OEMs, suppliers, insurers and others within the inter-industry, to tackle the challenges of today's ADAS repair while preparing us for what's ahead," explained I-CAR's Jeff Peevy, VP-Technical Products, Programs & Services.

The new ADAS resource library features:

- Webinars
- Podcasts
- Industry News

- I-CAR courses focused on ADAS
- Additional resources such as I-CAR's Collision Reporter magazine and Repairability Technical Support™ (RTS) Portal

"The ADAS resource library is an easy way to quickly see I-CAR's latest — and upcoming — ADAS courses," he said. Peevy suggested bookmarking the page to keep a pulse on regular updates, as ADAS technology continues to flood the market.

For more information, please visit [www.i-car.com/adas](http://www.i-car.com/adas). 📱

## NEW PRODUCTS

# AKZONOBEL INTRODUCES CONNECT TO ENHANCE SHOP EFFICIENCY

*Connect* is AkzoNobel's latest digital innovation to enhance efficiency in collision repair shops in North America. The application programming interface (API) facilitates the exchange of data between AkzoNobel's digital applications such as Carbeat™ and MIXIT™ and third-party software applications used by collision repair customers.

*Connect* delivers several advantages for collision repair customers: It drives efficiency in the body shop as it reduces time for data entry into multiple software while increasing the accuracy of data. Overall, it makes businesses more connected and efficient. The user doesn't interact with the application itself, as it is an API. The software runs in the background and seamlessly synchronizes data.

"We recognize that the growing number of software products used by our customers is creating significant challenges for them," said Mike Sillay, AkzoNobel Global Services Manager, Automotive and Specialty Coatings.

"Some shops have as many as 15 independent digital tools to operate and maintain. *Connect* will help reduce the burden by linking AkzoNobel digital tools to a wide array of Body Shop Management Systems, Dealer Management Systems and other critical systems being used in the shops' digital ecosystem."

## Carbeat *Connect*

With Carbeat *Connect*, AkzoNobel introduces the first application of this software solution. Carbeat is AkzoNobel's patented, state-of-the-art digital body shop workflow control solution that enables automotive body repair shops to track their work in production and thus operate more efficiently. First introduced in North America, the application is now also offered in Europe and first markets in Asia.

The Carbeat *Connect* module has been implemented in selected body shops for several months, and AkzoNobel recently opened it to other Carbeat customers in the United

States and Canada.

"The interface to Carbeat has allowed us to focus more on the floor and not have to worry about tedious data entry," said Mario Sano, General Manager, Brandywine Coach Works from Chadds Ford, Pennsylvania. "With the data updating automatically, we can focus on driving production - knowing the data we're looking at is accurate."

## MIXIT *Connect*

MIXIT *Connect* is the second module that AkzoNobel will introduce in North America. MIXIT is AkzoNobel's leading digital color application tool that enhances the workflow for technicians and provides valuable business insights for managers.

"The MIXIT *Connect* team did a great job setting up this new platform," said Steven Fielding, Collision Center Director, Rusty Eck Collision Center from Wichita, Kansas. "The setup, communication and follow-up was spot on!" 📱

## GLASS REPAIR

# FINDING A RELIABLE MOBILE AUTO GLASS SERVICE

ADRIAN BELL // Contributing Editor

With an average of 14 million windshields being replaced each year, performing glass repairs is proving to be an excellent way of doing business.

If you already do, then you will likely get your fair share of people bringing their cars to your shop for windshield repairs and replacements. You will even get more business if you provide mobile auto glass service as well.

However, many shops do not offer mobile auto glass services for various reasons. More often than not, it's a lack of manpower to spare, especially when the operation is small. It's difficult to be sending out technicians to motorists needing mobile auto glass repair and replacement when there's so much work that needs to be done within the shop.

Still, these shops have the option to partner with mobile auto glass companies if they want to help people stay safe after their windshield sustains damage while on the road.

If you want to offer mobile glass services, here are some of the qualities of a reliable company to help in your search.

## Reaching clients, wherever they may be

Once a call comes in, a mobile glass company should be able to travel to a customer's location if it's within its service area.

## Puts a premium on customer safety and security

Customers calling for mobile glass repair or replacement will be concerned about safety and security, especially if they're in an unfamiliar area. After all, they wouldn't know the faces of the technicians who will be providing them the service they need.

A mobile glass company that understands the importance of assuring a customer's comfort make it standard operating procedure to email profiles of the auto glass technicians they're going to send over, including their names, photos and credentials.

## Sets a specific time for the appointment

To spare customers from waiting needlessly wherever they have parked their car with a damaged windshield, a reliable glass service will set a specific time frame for the appointment.

## Sends over two technicians


If the windshield damage is so severe it will require a complete replacement, customers can expect reliable service to send over two technicians. The technicians only get one chance to do it right.

## Uses high-quality installation materials

For a dependable company, the only adhesive it will ever use is the same type that OEMs apply during the manufacturing. Typically, good mobile auto glass services use a urethane adhesive with a PSI of 1,000. This high-quality adhesive ensures that the windshield will be securely in place over time, even in the event of a collision.

## Offers a lifetime guarantee

When companies offer a lifetime guarantee, they are giving customers the best possible assurance of the quality of their services. A lifetime guarantee is their way of telling clients that only the best materials and industry-standard methods were used in installing their windshield.

There are many mobile auto glass companies out there, and there is no doubt that you will find some that observe the practices listed above. Once you find prospective partners, do your due diligence and work out the details before finalizing any deals with a mobile auto glass company. 



**Body Shop  
Requirements**  
FROM PULLING TO PAINTING

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# MOBILE APPS HELP WITH SAFETY, AWARENESS

NHTSA redesigns SaferCar; HONK adds security and captures data to speed FNOL

JAY SICHT // Contributing Editor

It may seem like only yesterday, but it's been more than a decade since Apple introduced its "There's an app for that" ad campaign for its iPhone. Today, the Apple App Store offers almost 1.85 million applications for the iPhone and iPad (iOS), while Android phone users can choose from 2.56 million applications. We've grown accustomed to having at our fingertips multiple social media platforms, the latest weather, stock market performance, games and ride-hailing platforms, to name just a few. Apps to assist with keeping vehicles safely on the road are just a few of those millions of choices.

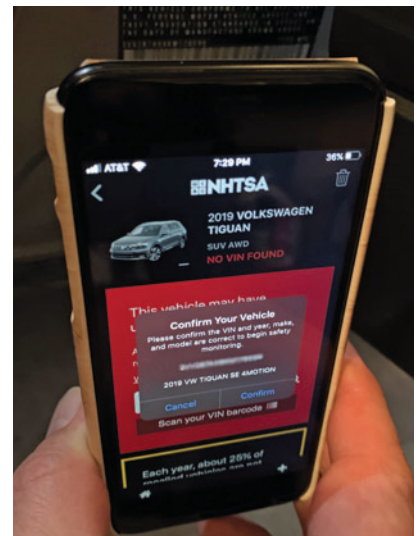
## NHTSA's SaferCar app notifies of vehicle and equipment recalls

Each year, about 25 percent of recalled vehicles are not fixed, according to the National Highway Traffic Safety Administration (NHTSA,) which oversees vehicle recalls and traditionally relies on automakers to mail postcards to notify consumers of pending recalls. In August, NHTSA released its redesigned SaferCar app ([www.nhtsa.gov/safercar-app](http://www.nhtsa.gov/safercar-app)) for iOS and Android to track recalls for cars, trucks, motorcycles, RVs, tires, trailers and child car seats.

"In today's world, smartphones are the tool of choice for many tasks — and the updated SaferCar app is a new safety tool at the public's disposal," said NHTSA Deputy Administrator James Owens in a press release. "The SaferCar app allows you to store your information locally on your device and then the app goes to work to inform you of recalls as they occur — and owners can more quickly get their free recall repairs scheduled."

The free app allows the user to save multiple vehicles in a "virtual garage," made easier through its native barcode-scanning feature: just scan the barcode on the dash or B-pillar to input the VIN for recall tracking. According to NHTSA, consumers' privacy is ensured by storing all data only on the user's device. The app checks for updates each day and alerts the user if a recall is announced. During our testing, the add-on feature for other products seems to be available only for products that have already been investigated, recalled, or for which complaints have been received; there is no option to input that set of new-to-the-market tires and their DOT numbers, as an example.

The app does also offer helpful quick links to online resources from [www.NHTSA.gov](http://www.NHTSA.gov), however. Consumers can compare vehicles' safety ratings, select a car seat (input your child's age, height and weight to help you find the appropriate-spec car seat), assist with car-seat



**NHTSA'S SAFERCAR APP** allows the owner to scan the vehicle's barcode to easily input the VIN. The app then checks daily for any recalls and notifies the user.

installation how-tos, locate a car-seat-inspection location, register a car seat for recall notifications and file a safety complaint for vehicles or equipment. Live chat is also available. Of course, some of those online features are most easily accessed via a tablet, not a smartphone's small screen.

## HONK is billed as "Uber for roadside service"

If your customers are not already a member of a roadside assistance club or do not have coverage through their insurance policy, HONK is an on-demand op-

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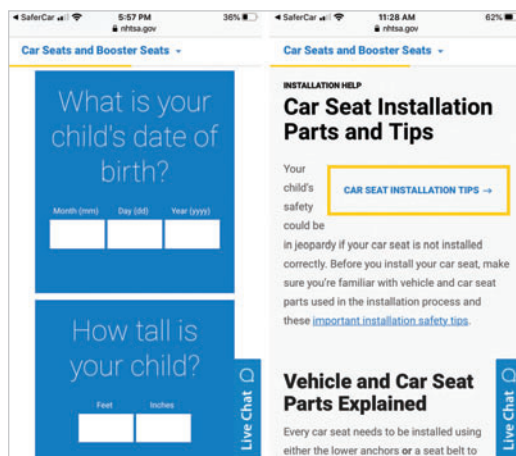
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tion available in all states except Montana and Oklahoma. The company, founded in 2014, refers to itself as the “Uber for roadside service.” Similar to the ride-hailing app, the HONK app ([www.honkforhelp.com](http://www.honkforhelp.com)) shows an ETA of expected roadside services, and there is no membership fee. In contrast to the variable rates of the popular ride-hailing app, though, each HONK service is priced at a flat rate for towing, tire changes, jump starts, fuel deliveries, lockouts and winch-outs.

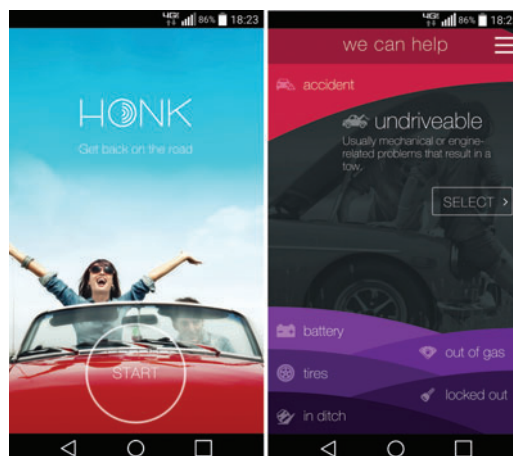
The app uses customer location to identify nearby professionals available to assist, then uses GPS to dispatch service providers based on a combination of ETA, quality score and rate. Towing professionals then get notifications in real time of service requests through the Partner app to view, accept and complete customer service requests.

HONK says response times average from between 15 and 30 minutes from its network of 75,000 service providers. To become a HONK partner, service providers must apply at [www.joinhonk.com](http://www.joinhonk.com) and pass a background check. In September, HONK announced it had implemented additional fraud-prevention measures through its existing partnership with Checkr.

“HONK will now look for recent changes in service providers’ operator’s data to supplement annual background checks,” according to the press release. “Additionally, HONK restricts previously banned service providers from re-entering the HONK network under a different contact phone number or email address, by matching each background check to



**SAFERCAR USERS CAN EASILY ACCESS** online features, such as child car-seat selection and installation tips, along with chat.



**USERS OF THE HONK APP** can get assistance with towing, tire changes, jump starts, fuel deliveries, lockouts and winch-outs.

an operator’s social security number.”

Andrea Hall, director of marketplace operations at HONK, said the company is notified immediately when a new charge appears for an enrolled service provider.

“New reckless driving charges or speeding tickets can strike at any time,” she said. “We take swift action to remove any operator we find to be a high risk or unsafe from HONK’s network.”

### HONK’s usage by insurers speeds FNOL, where damaged vehicle is towed

The HONK app’s artificial intelligence and machine learning are increasing its ease of use and speed of response, according to the company, which has increased retention for Farmers and Clearcover, insurers that currently use the app. But those carriers are using the app to not only assist customers with a flat tire, but to assist in managing first notice of loss (FNOL.)

“The accident scene is the very top of the funnel for an accident claim, and there are usually only three parties present: the insured, the police and a tow truck provider,” said Rochelle Thielen, EVP of partnerships at HONK. “AI tools available today now allow for ‘instant’

total loss and even estimation of damage, decisions that directly affect where that vehicle is transported. HONK is the first and only company capable of enabling its network to capture all of the required data at the scene of the accident, which saves time for insurers and shops by ensuring the vehicles that need to be repaired get to the right shop faster instead of parked in costly tow yards. This also prevents total loss vehicles from ending up at collision shops for repair, where often the shop can’t even charge for storage due to the agreement with the carrier.

“In the near future, this information will beat the vehicle to the collision facility, which will enable the repair cycle to begin pre-vehicle delivery. Insurers are already looking to the true beginning of the claims process, before FNOL. The initial tow is rapidly becoming a lot more than just the transport of the vehicle to their shop. It’s becoming the initiation of the claim cycle and the true ‘top of the funnel.’”



**JAY SICHT** has worked in a number of roles in the automotive aftermarket for more than 25 years. Based in Columbia, Mo., he has covered all industry segments of the business as a writer and editor for 15 of those years. [jaysicht@gmail.com](mailto:jaysicht@gmail.com)

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# Adding new shop revenues through innovative culture

Shop owner finds ways both inside and outside of the shop to increase sales

In last month's column ("A blueprint to adding new shop revenues"), I shared shop owner DeLee Powell's idea that adding mechanical repair to the offerings at Baker's Collision Repair in Mansfield, Ohio, gives the company a shot at thousands of dollars more revenue from a customer in the years between their need for body repairs and paint work.

But that's only part of the company's strategy to develop new sources of revenue — a strategy made possible because Powell has built a team and a culture that fosters innovation. It was that culture, for example, that led the company to bring its glass work in-house.

"As we grew, the guy from [outside glass provider] was at our place about four hours a day," DeLee said. "Unbeknownst to me, he was checking out our culture. He said to me one day: 'I know your people. I'd really like to come work at your company.'"

DeLee knew the shop had enough glass work to keep him busy 50 percent of his time. So they just needed to find a way to use the remainder of the time as they built up the glass portion of their business.

"We found he had a lot of good skills we could use in our blueprint department, disassembling cars, distributing parts, etc." DeLee said.

As the company began promoting glass work, DeLee said that also brought in more collision work, just as it did when they began promoting mechanical services.

"People might just hear 'Baker's Collision Repair' and not really hear the rest of the ad," she surmises.

Back before COVID-19, DeLee looked at her business and knew there wasn't space to add employees. So she considered ways to add revenue beyond the shop's walls. The answer: becoming part of the AAA light-duty roadside assistance program.

"If someone runs out of gas, we take some out to them. If they lock their keys in the car, we get them in. We do tire changes and take new batteries out to them," DeLee said. "A



**WHAT WORKS FOR ONE SHOP MAY NOT WORK FOR YOU. BUT NOW MORE THAN EVER, COLLISION SHOPS NEED TO DEVELOP NEW SOURCES OF REVENUE.**

lot of times we'll go out to their home because they think their car needs to be jump-started, but we discover it needs a starter or fuel pump. Since we're the ones right there, we usually get that job."

The program doesn't involve towing, but the truck they use has both the AAA and Baker's name on it. "It's great marketing, like a drivable billboard," DeLee said.

Another investment that has paid off has been OEM certification. After spending about \$75,000 to get certified to repair aluminum Ford F-150 trucks, DeLee said she thought getting certified to repair the Cadillac CT6 made sense. But her sons who work with her in the business thought the shop would never see a return on that investment.

"I'm thankful that most other shops thought that same thing. We have done more CT6s than we have Ford F-150s" DeLee said, noting that restrictions by GM on the sale of some CT6 structural parts makes the difference. "We've had them come in from Kentucky, Indiana, New York and Pennsylvania. In some of those cases there had to be a

certified shop that was closer. But insurance companies have learned we fix the CT6 and are reasonable to work with. They pay us a higher rate for those jobs because they know we've invested in a lot of special equipment for it."

Customers also see it as more of a "Cadillac certification" than just a certification for the CT6 model, DeLee said. The increase in their repair of other Cadillacs has also helped make the CT6 certification pay off.

What DeLee and her team at Baker's have done may not necessarily pay off for you. The key takeaway is that now more than ever, collision shops need to develop new sources of revenue. Baker's has done that because of the team and culture DeLee has cultivated within the business. 📌

**STEVE FELTOVICH** of SJF Business Consulting, LLC, works with dealers, MSOs and independent collision repair businesses to make improvements and achieve performance goals.  
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# BUILD ESTIMATE CONSISTENCY WITH A BLUEPRINT APPRAISER

Use a blueprint appraiser to streamline and simplify the repair process

**JOHN SHOEMAKER //** Contributing Editor

Inconsistency among appraisers in a shop is commonly found during my appraisal reviews. This is mostly in direct repair program-focused shops, but it is visible in other shops as well. It is quite normal for an appraiser to have a specific focus, especially one who has had detailed processes engrained in them through insurer performance reports. However, it isn't beneficial to the needs of the vehicle being repaired. Because of this focus, required repair operations are often missed and either not performed or identified late in the repair process.

A solution to this is to use an appraiser independent of the front office whose focus is ensuring vehicle repair processes are followed. The appraiser would be positioned in the blueprinting area, documenting the repair during the disassembly process. Equipped with access to OEM repair procedures and repair process websites, the blueprint appraiser can ensure repairs are documented accurately and consistently.

As repairs are written in a more exact and consistent manner, shops will see an increase in body and paint hours per RO, touch time improvements and a higher overall average RO. I can hear some own-



ers saying that they don't need any increase in their severity as well as worries about how they would pay for this "extra" person, but let's take a look and see how this process benefits the repair facility.

Using the SCRS Guide to Complete Repair Planning as a resource and reviewing a fender repair, I identified some common missed operations: R&I fender liner, R&I mud flap, R&I rocker cover, feather edge, sand and block, restore cavity wax and R&I wheel, totaling around 2.4 additional repair hours. On the refinish side, I generally find refinish edge and clear coat on

edge missed, which averages around .6. Using \$36 as a body labor rate, the missed operations are worth \$86.40 and the .6 in refinish calculates to \$39.60, including materials, which brings the total of missed operations to \$126. That is just by reviewing the SCRS guide, so you can imagine what you would find after reviewing the OEM repair procedures and other repair process guides.

For those concerned about an increase in severity at first glance, only 3 repair hours and \$126 was added to the damage appraisal. Not an amount that would

bring any severity review concerns. Some additional calculations will help satisfy the concern about the cost of the “extra” person. I base shop efficiencies on five repairs a day. The \$126 we found would bring a shop another \$630 per day, \$3,150 per week and \$163,800 in sales per year when multiplied by those five repairs a day. Reviewing average salaries for appraisers I believe you will be dollars ahead by hiring a blueprint appraiser, especially considering the additional operations that would be found reviewing OEM repair procedures.

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Let’s turn the discussion to touch time. The items I mentioned as missed operations are frequently being performed out of habit by technicians and painters without being on the damage appraisal nor being paid. Using the fender repair example above with a total repair hour calculation of 12 hours and touch time of 3.5 hours per day, you would have the repair completed in 3.5 days. Since the technicians are likely already doing the tasks, recalculating your touch time with the addition of the 3 additional hours creating a 15 repair and using

the same 3.5 repair days, you now have 4.3 hours per day touch time. The increase in touch time would outweigh any concerns about the severity increase.

Identifying all the needed repairs upfront is another benefit of a blueprint appraiser. Most of the concerns I detect when looking into cycle time issues are repairing a vehicle using an initial estimate,

misidentified operations and additional parts orders. The consistency a blueprint appraiser provides will eliminate the work stoppages associated with the items I uncover during cycle time audits.

Will this work in your shop? That is for you to decide. I hope I have given you enough information and value to make a decision that will support your business. 📧



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# Small business owners show concern, criticism of PPP

The SBA is being asked for simpler process, clearer guidance on forgiveness

**T**he Paycheck Protection Program (PPP) was established as part of the Coronavirus Aid, Relief and Economic Security (CARES) Act that the U.S. Congress passed in late March to alleviate the health and economic crises of COVID-19. The program, which is operated by the Small Business Association (SBA), has distributed 5.2 million PPP loans totaling \$525 billion. According to data released by SBA and the U.S. Treasury Department, auto repair shops received between \$1.2 billion and \$2 billion in loans for nearly 20,000 businesses.

The Paycheck Protection Program has been essential in keeping small businesses afloat during the pandemic. However, there are criticisms and concerns about the program's implementation and reliability. The SBA has been accused of overlooking certain safety and anti-fraud procedures in an attempt to get the program up and running as soon as possible. Additionally, applicants have been frustrated with the confusing and evolving eligibility requirements and application process.

In August, the SBA opened the loan forgiveness portal, which allows small businesses with a PPP loan to submit their application for full reimbursement. As of late August, the SBA reported that they have received 96,000 applications for loan forgiveness — less than 2 percent of the number of total loans dispersed. According to the CARES Act, the SBA has 90 days after receiving an application to remit payment for the loan to the lender. Last month, the first payments were distributed.

Although repayment is in process, many remain wary of the program and nervous their loan will not be forgiven. The U.S. House of Representatives Committee on Small Business held hearings in September in which they discussed the process with SBA officials, small business owners and lenders.

During the hearing, witness Lynn Ozer, president of SBA Lending at Fulton Bank, testified that lenders were struggling



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to understand their role in the loan forgiveness process, and they felt the SBA was not fulfilling their role to guide them effectively. She stated:

“When it comes to forgiveness, significant concerns need to be addressed now. Piecemeal guidance continues to create confusion. There is still no guidance for major issues, and without answers, I cannot help my borrowers... More importantly, borrowers are confused by the burdensome forgiveness process and panicked that the loans they believed would be grants if they followed the rules may become burdensome debt because they can't muddle through the paperwork.”

Others echoed Ozer's concerns and implored the subcommittee to establish clear, simple guidelines for loan repayment. Witnesses also expressed hope for Congress to pass “automatic forgiveness” legislation, allowing for loans under \$150,000 to have an automatic forgiveness.

Currently, stimulus legislation is stalled on Capitol Hill. Democrats are seeking a large, comprehensive package of over \$2 trillion, while Republicans have proposed a smaller, less expensive bill.

On Tuesday, President Donald Trump ordered stimulus negotiations to a halt, stating that Speaker of the House Nancy Pelosi is “not negotiating in good faith.”

The Paycheck Protection Program still has an allotted \$138 billion remaining for loans, if Congress is able to pass a new stimulus that includes a second round of PPP. In one of the hearings, SBA Chief of Staff William Manger stated that, for the SBA, implementing a new round of PPP would be “as easy as flipping a switch,” since infrastructure for the program is already established. 📄

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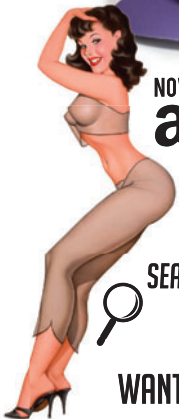
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# Illustrious illusions

Pursuing their passion led to a collision repair career

**ROBERT BRAVENDER** // Contributing Editor

➔ In something of a reverse of how most body shops develop, Mark and Allen Adkins started out as a custom paint shop before evolving into collision repair. Passion usually precedes practicality — in other words, the desire to do the work comes before the need to make money — but with Illusions Custom Paint & Body in Bristol, Tenn., the brothers were able to pursue their dream shop courtesy of another passion: drag racing.

“We started off doing custom work kind of exclusively,” explains Allen Adkins. Started in 1999, the brothers’ first major patron was a drag racer who drove in Pro Mod and Funny Car. It was a package deal; the brothers painted the team’s vehicles and also served on the pit crew. This gave them great exposure in the motorsports community, bringing them even more business. At one time their facility, about a mile from the fabled Bristol Motor Speedway, was clogged with race vehicles ranging from dragsters to giant pulling tractors.

“Any tractor pulling fans out there will know Stan Shelton,” says Allen. “We paint all of Stan’s stuff, the General Tire truck, the Sawblade truck.” They also branched out into street rods and Harleys, and finished a couple of project cars for the old Street Rodder television show on ESPN2.

It is the integration of paint schemes with airbrush work that catches the eye and creates Illusions’ unique look. Car bodies can appear to be clad in rusting steel plates and rivets; menacing clowns seem to burst through sheetmetal panels; entire cityscapes are wrapped around a vehicle’s perimeter. It is their ability to turn conception into fully-rendered reality that gives Illusions their well-earned reputation.

“We’ve also done murals of Carroll Shelby,” Allen continues. “We’ve done graphics — everybody remembers the (Pro Mod) AMS jackhammer cars, Von Smith and Howard Moon and the Dr. Rage stuff; we really ran the gamut. We really didn’t specialize in this or that; anything somebody wanted, we put it on a car body.”

But with the economic downturn of the last decade, motorsports patronage started to dry up, and the brothers decided it was time to diversify. “We knew in order for us to succeed long-term as a business here,” comments Allen, “we needed



## ILLUSIONS CUSTOM PAINT & BODY

Bristol, Tenn. // [www.illusionscollisioncenter.com](http://www.illusionscollisioncenter.com)

**Allen Adkins**  
Owner

**12**  
No. of employees

**1**  
No. of shops

**16**  
No. of bays

**21**  
Years in business

**26**  
No. of customer vehicles per week



to get into collision repair.”

They already had some of the best equipment. “We’ve got a Quick Liner frame machine,” lists Allen. “We’ve got two booths — a side draft Accu-Cure and a downdraft Accudraft that we just purchased in 2010. Paint-wise we’ve got the complete PPG

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line and the complete line of the Vibrant custom colors that they offer. If we get something with suspension damage or anything that needs a lift, we have two above ground ones in the Rod Shop.”

And they already had a sterling reputation; after all, they’ve been featured in 28 publications — this one makes it 29 — and won a Rat’s Hole bike show in Daytona, Fla., with a custom Harley. So the transition turned out to be relatively simple. “We’ve got great relationships

with the car dealerships around here,” Adkins explains, “so now we’re the body shop for one of the largest Chevrolet dealerships in the state of Tennessee.”

Their collision business has grown significantly over the years. What is now the 7,500 square foot Rod Shop was once their sole building; they nearly tripled in size when they bought the

12,000 square foot building next door, which became the collision shop. But all of this was back from the road behind another row of businesses, so in 2008 they purchased the one nearest their drive “to give us more access and be more visible to customers.” Fronting on Volunteer Parkway, it’s now where customers drop off and pick up their vehi-





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cles. It has a couple of bays, one used to inspect vehicles and write up estimates; the other is for washing and detailing.

"I would say we're definitely one of the bigger shops," says Adkins of the area's facilities. "A 12,000 square-foot body shop with seven to eight guys is fairly big. Right now we've got four body men, one painter, one prepper. While in the office here we've got Ron Street and his son Austin, who's the parts manager, and one detail guy who cleans our cars. Mark is the production manager down in the shop; Ron and I run things up front."

So how do the Adkins brothers balance the custom work with the collision work? "When we have a wreck come in it automatically becomes a priority," Allen explains. "If we are working on a custom project at the same time, one big thing now is we never have two or three of them in here at once. We schedule them one at a time; that way we're able to flow the collision with it so we're able to get the custom stuff out also. We'll do eight or nine custom cars a year now; back in the day we were probably doing 40 or 50 a year."

Their custom work gets them projects from all over the country — New York, California, etc., — but for collision work their market extends out about 50 to 60 miles, which includes Virginia, since Bris-



tol is situated right on the Tennessee-Virginia line. In regards to marketing, Adkins says they've dabbled in a few things, "but to be perfectly honest, word of mouth has really been the way we've grown. I haven't spent a lot of money on advertising, but we've had some billboards up, we've done a couple radio ads, a few things like that."

A unique opportunity arose when a season of *Motorhead Garage* on the Motor Trend Network was shot in the Rod Shop. "People would stop by and ask about putting running boards on a pickup truck, stuff like that," recalls Adkins, "and they'd say they saw it on *Motorhead Garage*. We've definitely had some people stop in because of that show."

So whether you're bringing in a BMW with rear fascia damage, a hot

rod that requires suspension upgrades, or a fiberglass funny car body that needs a whole new paint scheme designed around the logo of a new sponsor, Illusions Custom Paint & Body is uniquely staffed and equipped to provide precisely that.

*This article previously appeared in Automotive Report, [www.automotive-report.net](http://www.automotive-report.net).* 📧



#### ROBERT BRAVENDER

graduated from the University of Memphis with a bachelor's degree in film and video production. He has edited magazines and produced

shows for numerous channels, including "Motorhead Garage" with longtime how-to guys Sam Memmolo and Dave Bowman.

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# MOBILITY AND OEM INFLUENCE

## EXAMINING THE FUTURE OF OUR AUTOMOTIVE ECOSYSTEM

**JEFF WILMAN //**  
Contributing Editor

To understand the increasing influence of automotive OEMs in the collision industry, you need look no further than the Alliance of Automobile Manufacturers and Association of Global Automakers statement on the use of OEM repair procedures. Wayne Weikel, senior director of government affairs for the Alliance of Automobile Manufacturers, stated the following: “There was a time when a basic understanding of auto body repair would allow a repairer to fix nine out of 10 vehicles that come into a shop. That time has passed.” Safety is among an automaker’s top priorities and this includes not only new vehicles rolling out of the factory, but also ensuring that vehicles are repaired properly and safely after a collision.

Convenience and safety features are the primary influences for many consumers when purchasing a new vehicle. They view new vehicle technology as a way to stay connected, and Advanced Driver-Assistance Systems (ADAS) features like lane departure warning, blind spot monitoring and automatic emergency braking reduce safety concerns if they become distracted while driving. Approximately 90 percent of all auto accidents are caused by human error, and drivers and passengers expect these fea-



tures to keep them safe and work properly every time.

Automotive OEMs are only at the beginning of a cultural shift in the way society views mobility. ADAS is the first step towards autonomous vehicles, electric vehicles, connected vehicles, shared mobility and cybersecurity. To remain competitive, it is imperative for automakers to develop innovative technology, but they also need to build consumer trust in their technology.

What is the impact of this technology for repairers, and have the OEMs considered the repair process as they forge ahead with this cultural shift? New safety technology will reduce the number of accidents, but additional electron-

ics and sensors in these safety features will also increase the complexity and cost to properly repair the vehicle.

Although most collision repairs are completed by independent collision centers, automakers take repair process seriously not only to ensure safety, but also to build trust in the technology and brand loyalty. It has long been known that more than 60 percent of vehicle owners will sell their vehicle after a collision, and if they had a poor repair experience, more than 60 percent of those will switch vehicle brands. Whether vehicle technology is functioning properly after a collision repair is a major influence on customer satisfaction for the collision center, dealer and OEM. As previously mentioned, con-

sumers have come to rely on and trust the ADAS features on their vehicles and expect them to work properly every time, even after a collision repair. A 2019 IHS Markit survey conducted for Toyota found that the No. 1 influence on brand loyalty is the collision repair experience. These factors are the driving force behind OEM collision networks.

It is imperative that shop owners recognize how quickly the industry is shifting and adjust their business plans and processes to adapt to the “new normal.” Today’s vehicle repairs are more complex because OEM repair procedures must be researched and followed. They require specialized diagnostic and multi-material tools and processes, system calibrations and the knowledge to properly repair and ensure all vehicle systems are operating correctly before returning the vehicle to the owner. COVID-19 has also impacted how we repair vehicles by how we protect our employees, work with insurance providers and meet new customer expectations for sanitation and a touchless experience.

Although every OEM certification program has its own specific set of requirements, they all include four basic areas of focus: repair procedures, equipment, knowledge and process.

1. The only way to properly repair a vehicle today is by researching and following the OEM repair procedures for every repair. A vehicle may look the same as the previous year’s model, but the only way to know if an OEM has made changes to the underlying structure, substrates, bonding processes, etc. is by researching the current OEM repair procedure.

2. New technology, substrates and electronics may require the specialized equipment to properly complete a repair safely.

3. It is also important that everyone in the collision center has the knowledge required to provide the vehicle

owner with a safe and proper repair. Training is required for all positions so that a complete repair blueprint can be created, trust can be developed, expectations set with the customer and technicians have repair procedures and knowledge of tools and equipment required to complete a proper, safe repair.

4. Collision centers must also have processes in place to ensure the entire repair process is completed properly and safely in a timely fashion while keeping the customer informed and providing a touchless and frictionless experience.

Most OEMs are building repair networks to ensure that all of their customers have the opportunity to have their vehicle properly repaired by an OEM-certified collision center. However, they also realize that they do not need every collision center to be part of their network and those that are continuing to maintain the OEM standards and investments required to be part of the network expect an ROI on that investment.

While the OEMs are building their networks, shops may question the value. However, once they are built, the OEMs will leverage the network to provide more value for the shop, vehicle owner and the OEM itself. Telematics provide OEMs with INOL (Instant Notice of Loss). Connected vehicles know when a collision occurs and can contact first responders using artificial intelligence immediately. They can also arrange a tow truck and rental car, provide a recommendation to an OEM-certified repair center and notify the insurance carrier. Once OEM-certified networks are large enough to serve the market, OEMs will be able to utilize telematics to recommend certified collision centers through INOL.

As shop owners position themselves for these changes and begin aligning with OEM-certified networks, it’s important to understand your market

and business to determine which OEM program will bring the most value. How can you increase the value of these certifications today? Your main areas of focus should be repair planning, OEM repair procedures, dealer relationships, marketing of your OEM certifications, your advanced training and a touchless customer experience.

OEMs are also aligning with insurers, and companies like Toyota, Ford, Tesla and others have begun to offer OEM-branded insurance to vehicle owners. These policies may require usage of OEM parts, repairs completed by a shop in the OEM-certified network and the utilization of telematics to provide Usage-Based Insurance (UBI). As vehicles continue to increase their connectivity, it will be imperative for OEMs and repairers to address cybersecurity in the repair process. This is a new aspect of customer safety that is coming fast.

If you are a shop owner reading this article, start taking steps to prepare for how the future of OEM influence and certification will change the way you run your business. Do not wait until things have evolved too far beyond your present capabilities and miss the opportunity to join an OEM network that will help bring consistent business to your shop. Mobility is the future of this industry, and it is imperative to keep up with the changes as they come. Keep in touch with your reps and technical experts and ask questions about how to set yourself up for long-term success and remain competitive in your market. 📧



**JEFF WILMAN** has over 25 years of experience in the automotive refinish industry. He currently works as the OEM and Industry

Relations Manager for BASF Refinish of North America and specializes in educating industry professionals on OEMs and how they will change the way we use transportation and the challenges they face with repairing today’s vehicles.

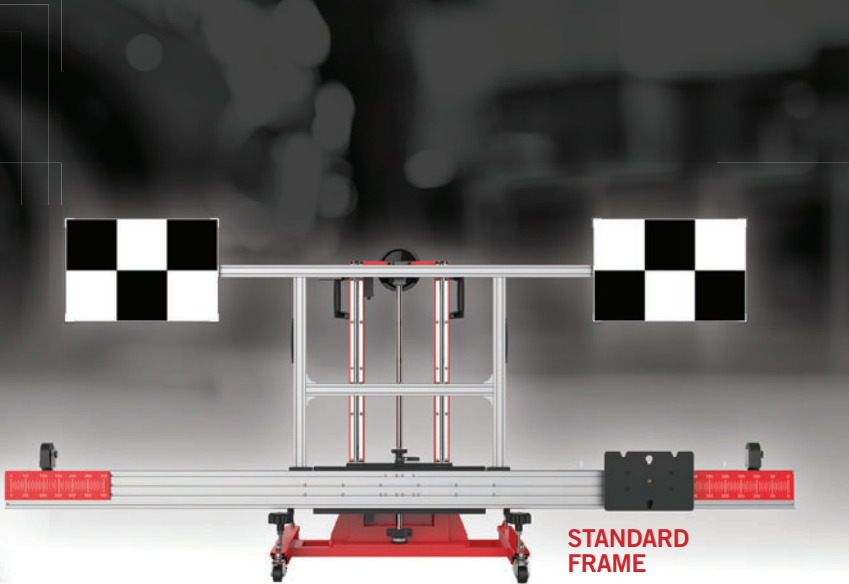
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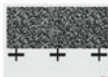


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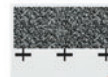


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# PRODUCT TRAINING IN 2020

## WHAT'S NEW AND OFTEN IMPROVED AND HOW YOU CAN BENEFIT

**PATRICK MALONEY //** Contributing Editor

In March 2020, when pandemic-related lockdowns were adopted around the country, people were quick to pivot to online educational and networking opportunities. Individuals signed up for webinars and learned how to navigate Zoom; companies and other organizations quickly produced online offerings.

Initially, there was a sense that everyone must make do until things could return to “normal.” But an interesting

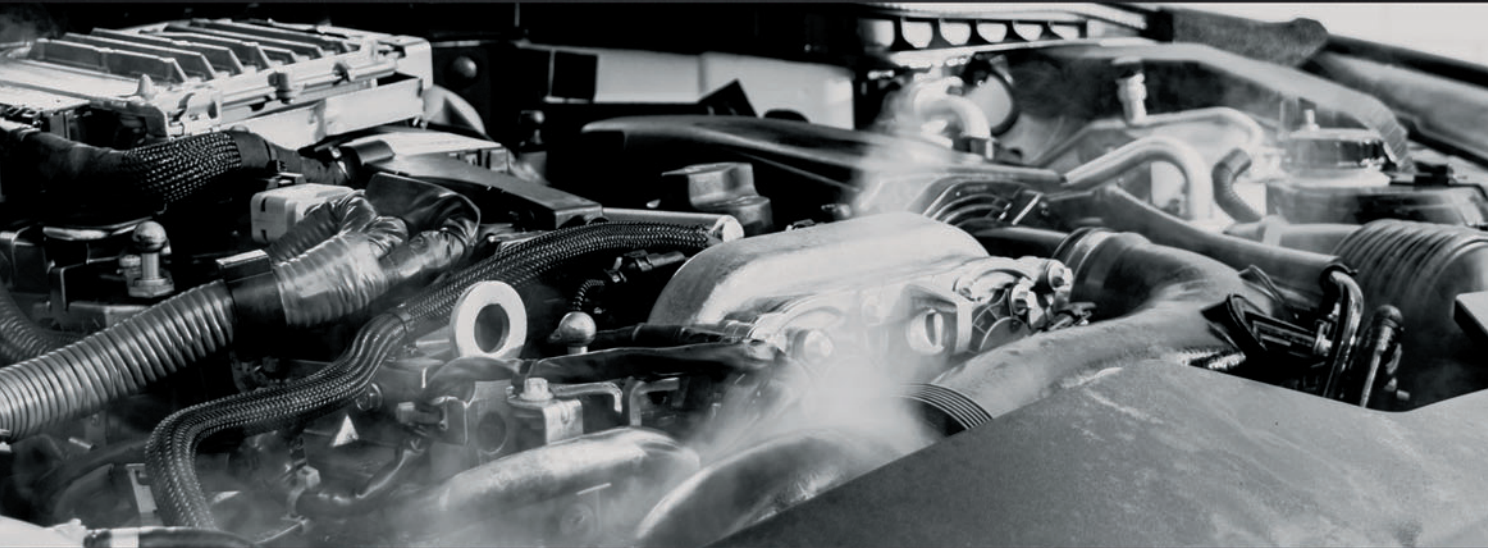
shift happened along the way. Hidden benefits to online gatherings were discovered, not only for the organizations offering the online experiences, but for participants.

### **Virtual training: Is the change permanent?**

Some aspects of post-pandemic training are likely to be one-time events. For example, with fewer cars on the road in early 2020, there were fewer

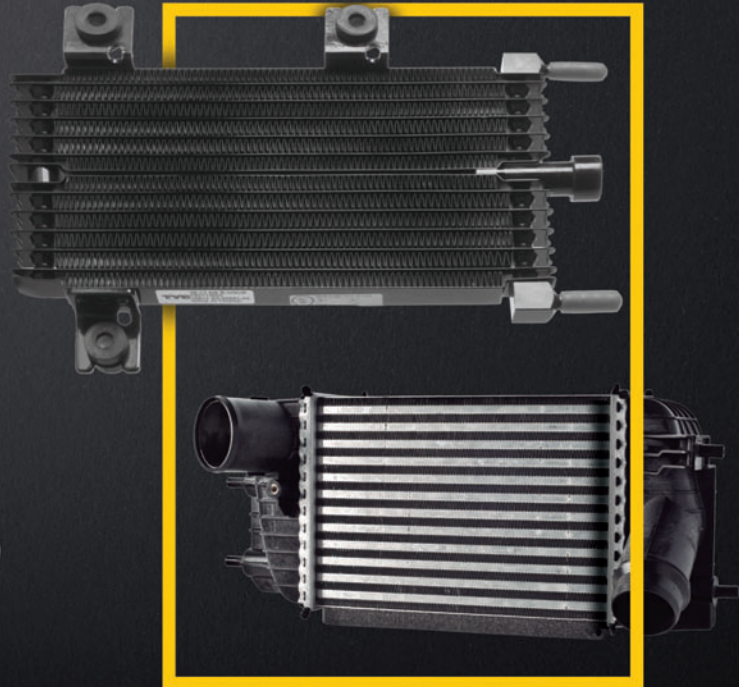
accidents and therefore fewer new repair jobs coming in. Shops were able to work through their backlogs and focus on other priorities — sometimes for the first time in years. This change was situation-specific and not likely to be ongoing, but it presented a valuable opportunity. When shops are too busy to slow production, crews may fall behind when it comes to building expertise on the newest products and repair techniques. The respite shops experienced

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## STAYING COMMITTED TO TRAINING DURING A PANDEMIC

**CHRIS CHESNEY //**

Contributing Editor

Our industry continues to fight to try to survive the pandemic. It is a watershed moment in time that will shape what our society and our industry look like in ways we probably don't yet understand. The challenge is that your new normal will look different than your neighbors or your competitors or your customers. The driver of these differences is fear; fear of the unknown or the things we can't see or control. It is our fear of the "new normal" and how we conquer that fear that will determine how our industry looks two years from now. As Winston Churchill stated during World War II, "We have nothing to fear but fear itself."

But fear not! When it comes to growing talent in our industry, there are many resources available. We, along with our competitors, have always offered training opportunities either via self-paced online training or live classroom training events. We have seen an incredible increase in online activity as many of our larger strategic account customers leverage this scalable way to educate their team without

endangering them when social distancing is required. However, we, along with all other classroom training organizations, have canceled our face-to-face events.

For us the question is will you return when this is all over, or will some of you fear coming to the classroom like you did in the past? My team has had thousands of conversations with our customers and have asked that question, and the answer is mixed at best. Many can't wait to return to "normal," while others are cautious, stating they worry about being in large groups again when there is so much we don't know about COVID-19 and our ongoing immunity. The challenge to training organizations is scale. If a significant percentage don't want to be in large groups for whatever period of time, can we afford to hold as many classes as we did pre-pandemic? These are real questions that we are preparing for. But there is one thing I'm certain of. Our "new normal" will be determined by you. And that's the way it should be.

As you decide what your new normal is, you should consider some things we are learning and creating to accommodate everyone.

There were many companies who provided a tremendous amount of variety in regards to their webinar-style training. I take my hat off to not only the companies that stood up these opportunities, but especially to the trainers that offered their time, knowledge and passion at no charge as a way to stay engaged enable you to take exceptional care of your customers during a unique period in our history. My organization led the way with two separate programs that reached tens of thousands of industry professionals, some of which attended one of our events every night. We saw it as an opportunity to serve those who work so hard in this industry, but we also realized it was a great way to learn about new delivery models that make training more convenient, focused, digestible and affordable than ever before. Instead of committing to attend a classroom event over a weekend or number of nights after working hard in a hot shop, now you can potentially spread out your training over several weeks or months taking small bites that can be put into action before taking the next bite.

Continue reading at **[ABRN.com/committed](https://www.abrn.com/committed)**.

in 2020 allowed the value of training to outweigh the value of production for most owners. While no owner is ever comfortable with a drop in production, it is important to remember that training is a long-term investment that will improve profitability over the long term.

Another unique aspect of 2020 was that employers throughout the industry had to furlough employees, reduce hours,

etc., and many senior staff chose retirement options if they were offered. This led to a sudden drop in team-wide experience levels. Because the repair industry had already struggled to fill its talent funnel due to workforce shortages, these retirements exacerbated the knowledge gap. Shop owners responded by conducting more training than they might have been planning for at the outset of the year.

### Benefits of virtual training

Perhaps the biggest benefit to virtual training has been a fuller understanding of the opportunity costs imposed by constant physical travel. The logistics of travel, hours spent in transit and the inconvenience of ad-hoc working conditions while on the road — all, ultimately, can represent time and money that is better spent elsewhere. One



of the best places to reallocate funds is toward more touchpoints, including those with previously underserved customers.

Auto body shops in remote areas, for example, may have historically received far fewer in-person visits from vendors than their urban counterparts. But with Webex, Skype, Zoom and many other platforms now offering a simple way for product representatives and technicians to connect, ample training opportunities are available. Moreover, virtual “visits” from a product representative can happen in more than one location simultaneously. For example, one training event was attended by several multi-shop operators, spread across five different states. A total of more than 70 individuals participated in that session. Having a single educator conduct training in more than one location at once is an efficiency that was undreamt of before the pandemic.

In addition to body shops, distributors need to keep up to date with new products and repair procedures. The more knowledge a distributor can pass along to the shops who purchase from them, the more valuable the service they are providing. Distribution owners, therefore, have shown great interest in using down time to train their sales teams.

### How does virtual training work?

An important discovery enabled by the country’s sudden, enforced learning curve was that even “hands-on” training can be conducted remotely. With proper planning and set up, in which trainees have workstations and supplies at the ready, remote instructors can guide them and give feedback very effectively.

Employers or other point persons within the shop should gather train-


ing materials (such as panels or other substrates) well in advance of the training date. Adequate time should be factored in to contact the vendor for any additional materials needed (such as adhesives), including time to have the material shipped.

Breakout rooms — a feature many software platforms now provide — can be used to separate large groups into smaller ones, enhancing the personalization of the training and potentially increasing participants’ comfort with speaking out and asking questions. It is even possible to have breakout teams present to the larger group. The chat feature of software can be used to optimize the efficiency of a training session. Instead of setting aside a long block of time for questions and answers, questions can be submitted in real time and answered by a moderator. This not only captures questions while they are fresh, but can shorten the total time of the training event.

Shops and distributors should invest in stable Wi-Fi, webcams, microphones and any other equipment necessary to ensure every attendee can see and be seen (as well as heard). The team should be fully briefed on how interactive software works; for example, they should be shown what control features will enable them to record the session (if desired), initiate a two-way chat, share information from their own computer screen or manage settings such as volume. Employers should also make sure that employees attending training are comfortable talking and asking questions in the new, virtual format. As with in-person training sessions, it should be emphasized to attendees that all the normal rules of etiquette apply: personal devices should be put away, email programs should be turned off and full attention should be paid to the speaker. Finally, any

drawbacks associated with not having the trainer on-site to provide physical help are greatly offset by having a better trainee-to-instructor ratio. Remote instructors are often able to dedicate themselves to one-on-one instruction as opposed to being in a large classroom setting.

Most people are looking forward to a slow return of face-to-face meetings. Many experts, however, predict that there will never be a full return to what we once viewed as normal: cross-country trips undertaken for relatively low ROI training sessions. In the future, in-person meetings are likely to be deployed much more strategically than they were before — owners and employers will want to be sure that those meetings are high value. Employees, too, are likely to weigh in with their preferences. Overall, teams will be able to achieve a balance between in-person and digital formats, catering to personal preferences, budgets and logistics.

While a “can-do” spirit and sense of perseverance may have prompted the mass migration to online venues, now that the formats are established, they are likely to have staying power. The reduction in workload and decline in institutional knowledge that took a toll on the aftermarket repair industry in 2020 brought training needs to the forefront — but those needs were well-answered by the industry’s willingness to transition to new ways of learning. 



#### PATRICK MALONEY

has more than 20 years of experience in the OEM automotive manufacturing and aftermarket repair equipment market. He is currently the Sales and Business Development Manager at Parker LORD focused on automotive aftermarket solutions. His passion is to educate body shop technicians on the importance of following proper OEM repair procedures and understanding the implications if not followed correctly.

# ALL-WHEEL WORK



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## USE THESE INSTRUCTIONS FOR SOME OF YOUR MOST COMMON AND CHALLENGING 4WD/AWD REPAIRS

**TIM SRAMCIK //** Contributing Editor

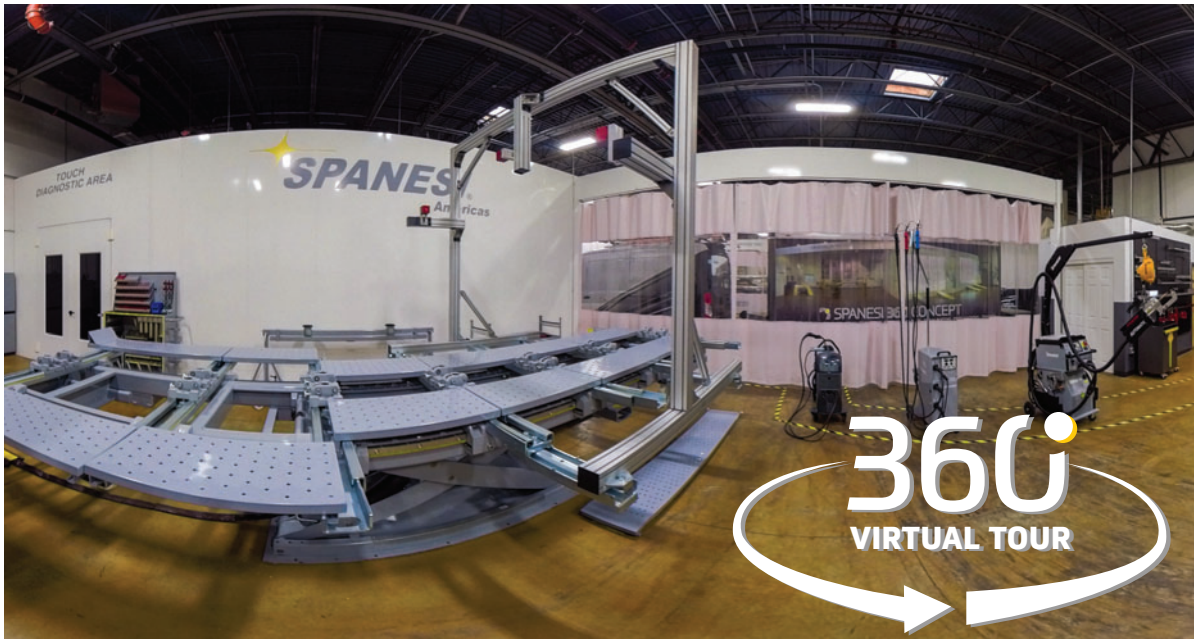
**W**hat a Long Strange Journey It's Been — the title of the Grateful Dead's second compilation album — has long been used to describe any odd path in life, from stories of personal growth to the histories of great people of business. It may be applied to the popularity of 4WD/AWD vehicles. Four-wheel drive has been around for 100 years, but it took some strange turns to evolve from a drive-system for heavy vehicles to an absolute necessity for new vehicle buyers.

WWII contributed in the form of the much-loved Jeep that was at home in both the muddy fields of Europe and those in the U.S., along with dusty, near-impassible trails across the country. But it took efforts from smaller players like Subaru, which made AWD mainstream, and the oddball AWD AMC Eagle to capture the public's full attention. From there, a buying movement away from cars and into trucks and SUVs where 4WD/AWD was usually an option only drove the popularity of these systems. The advent of crossovers made them a normal part

of the automotive landscape.

The public decided 4WD/AWD tech was a worthy investment that kept them safer and their vehicles further out of harm's way. There's plenty of truth to that, but these vehicles are far from accident-free. American drivers have a tendency to push such technology to its limits, oftentimes foolish limits such as caution-free driving on icy roads where 4WD/AWD may be ineffective. Then there are accidents that can't be avoided because they're the fault of the other driver. Whatever the case, odds are you

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see plenty of 4WD/AWD drive vehicles come through your doors.

Repairing these systems has become an increasingly challenging endeavor. This is especially true with AWD, since AWD systems tend both to incorporate more electronic components and use automatic/part-time versions requiring more input from sensors and other electronics. (Also, 4WD systems tend to be more robust and hold up better in many collisions.) Repairing these systems can involve some intense diagnosis and post-repair checks to ensure the work is done thoroughly. Use the following directions supplied by GM to guide your work on AWD.

### All-wheel drive system function inspection

The following steps for a 2020 Chevrolet Trax (the small GM crossover) should be performed after a repair to test the AWD and determine that it is working properly.

Check the rear axle activation and operation by positioning the four wheels off the ground. Then, start the vehicle, fully applying the parking brake and selecting the drive position.

Caution: To avoid rear differential damage, do not exceed 20 percent accelerator pedal application or apply throttle for more than 5 seconds while the parking brake is applied.

1. Lift the vehicle.
2. Ask another technician to lightly depress the accelerator pedal.
3. Watch the rear wheels. They will rotate slightly as the drive line winds-up. This indicates the AWD is functioning.

### Tracing the source of a ratcheting noise during AWD engagement – Replacing the propeller shaft

Some AWD damage may not turn up until you're able to test drive the vehicle. As always, you should perform a full



**TRACKING DOWN AWD DAMAGE IN VEHICLES** like the 2020 Chevrolet Traverse sometimes begins only after the vehicle can be driven.

diagnostic of the vehicle and look for any sensor issues. Some problems still aren't going to reveal themselves until a vehicle's wheels hit the streets.

The following steps outline tracing the source of a clicking/ratcheting noise to a damaged propeller shaft and then replacing the part on a 2020 Chevy Traverse.

Note that a clicking or ratcheting noise that is heard during AWD engagement or disengagement often is related to the AWD disconnect components internal to the power transfer unit. A single light click noise that is heard during AWD engagement is a normal operating characteristic of the vehicle.

#### Diagnosis

1. Compare the noise to a similar vehicle to see if it is a normal condition.
2. Note specifics such as vehicle speed, road conditions, whether the noise is present on acceleration, deceleration, coast, turns or other specifics. Also note if the noise is present in 2WD, AWD-Sport, AWD-off road, or AWD-trailer (model dependent) mode.
3. Identify the source of the noise using chassis ears and refer to the appropriate service manual section.
4. If the source of the noise is the power transfer unit, inspect for the correct fluid level. Refer to GM's Power Transfer Unit Case Fluid Replacement

documentation.

5. Inspect the drain plug for large metal deposits. Small metal flakes and fine metal dust on the plug magnet are to be considered normal.

6. Inspect for a broken propeller shaft-to-power transfer unit retaining ring. Use the following steps to perform the repair.

### Two-piece propeller shaft replacement

#### Special Tools

- DT-51329-A Drive Shaft Remover Adapter

- GE-2619-A Slide Hammer

Equivalent regional tools: Refer to GM's documentation on Special Tools

#### Removal Procedure

1. Raise and support the vehicle.
2. Using a paint pen or a suitable marker, mark the relationship of the propeller shaft to the differential carrier assembly. This will be used as a visual reference for proper engagement location after re-installation.
3. Using a paint pen or a suitable marker, mark the relationship of the propeller shaft to the power transfer unit. This will be used as a visual reference for proper engagement location after re-installation.
4. Support the front of the differential carrier assembly with a jack stand.

5. Lower the front of the differential carrier assembly to provide additional clearance between the propeller shaft and the fuel tank.

**Caution:** Use only the GM Special Tools Specified to remove the Propeller Shaft from the Differential Carrier Assembly. Prying on these components with any other tools may cause damage to either part, which will result in improper performance or future failure.

6. Note the correct location of the propeller shaft service groove prior to installing the DT-51329-A Drive Shaft Remover Adapter.

**Caution:** When removing the propeller shaft, DO NOT pry against the rear differential module slinger. Prying against the rear differential module slinger may cause damage to the slinger, which will result in unnecessary replacement of the rear differential module slinger.

**Note:** The 5/16" - 18x3.5" bolts included with the tool are to be used for this application.

7. Install the DT-51329-A Drive Shaft Remover Adapter at the service groove located on the propeller shaft.

8. Install the GE-2619-A Slide Hammer to the DT-51329-A Drive Shaft Remover Adapter.

9. Using the GE-2619-A Slide Hammer and the DT-51329-A Drive Shaft Remover Adapter, separate the propeller shaft from the rear differential carrier assembly.

10. Remove the GE-2619-A Slide Hammer and the DT-51329-A Drive Shaft Remover Adapter.

11. Using a suitable jack stand, support the propeller shaft.

12. Note the correct location of the propeller shaft service groove prior to installing the DT-51329-A Drive Shaft Remover Adapter.

**Caution:** When removing the propeller shaft, DO NOT pry against the power transfer unit. The power transfer unit



**AWD DOES PROVIDE BETTER TRACTION AND HANDLING** in many environments, but in icy conditions drivers can push an AWD vehicle past safety limits, resulting in an accident.

will be damaged if it is pried against, which will result in unnecessary replacement of the power transfer unit.

**Note:** The 5/16" - 18x3.5" bolts included with the tool are to be used for this application.

13. Install the DT-51329-A Drive Shaft Remover Adapter at the service groove located just forward of the propeller shaft bearing bracket.

14. Install the GE-2619-A Slide Hammer to the DT-51329-A Drive Shaft Remover Adapter.

**Caution:** Use only the GM Special Tools Specified to remove the Propeller Shaft from the Differential Carrier Assembly. Prying on these components with any other tools may cause damage to either part which will result in improper performance or future failure.

15. Using the GE-2619-A Slide Hammer and the DT-51329-A Drive Shaft Remover Adapter, separate the propeller shaft from the power transfer unit.

16. Remove the GE-2619-A Slide Hammer and the DT-51329-A Drive Shaft Remover Adapter.

17. Remove the Rear Propeller Shaft Bearing Bracket Bolt.

**Caution:** When servicing the propeller shaft, support both ends of the propeller shaft evenly to limit the

movement of propeller shaft joints to a maximum of 10 degrees. Do not let the propeller shaft hang unsupported at any time, as it will cause damage to the propeller shaft boots

**Note:** Due to the weight and length of the propeller shaft, not allowing excessive movement of the joints may be difficult during removal and installation. It is recommended to use the aid of an assistant to remove and install the propeller shaft.

18. Remove the Propeller Shaft.

19. Remove and discard the Propeller Shaft to Differential Carrier Interface Retainer.

20. Remove and discard the O-Ring at the Differential Carrier Assembly.

21. Remove and discard the Power Transfer Unit Propeller Shaft Retainer.

22. Remove and discard the Power Transfer Unit Propeller Shaft Seal.

#### **Installation Procedure**

1. Tighten the Differential Carrier Front Bolt referring to GM's Differential Carrier Assembly Replacement documentation.

2. Install the new Power Transfer Unit Propeller Shaft Seal.

**Note:** Walk on the retaining ring over the nose of the shaft to avoid distortion.

3. Install the new Propeller Shaft to

Differential Carrier Interface Retainer.

**Caution:** When servicing the propeller shaft, support both ends of the propeller shaft evenly to limit the movement of propeller shaft joints to a maximum of 10 degrees. Do not let the propeller shaft hang unsupported at any time, as it will cause damage to the propeller shaft boots.

Note: Due to the weight and length of the propeller shaft, not allowing excessive movement of the joints may be difficult during removal and installation. It is recommended to use the aid of an assistant to remove and install the propeller shaft.

4. Using a suitable jack stand, support the propeller shaft.

Note: When installing the propeller shaft to the differential carrier assembly, align the balance index paint mark on the propeller shaft to the paint mark on the differential carrier assembly shield/slinger.

5. Install the propeller shaft so that it aligns with the reference mark at the differential carrier assembly.

6. Install the propeller shaft so that it aligns with the reference mark at the power transfer unit.

**Caution:** Refer to GM's Fastener Caution document.

7. On the Rear Propeller Shaft Bearing Bracket Bolt, install and tighten at 58 Y (43 lb ft).

8. Conduct a retention check on the propeller shaft front and rear interface. Place your hands around the propeller shaft tube just behind the interface and lightly pull on the propeller shaft tube without using leverage or body weight. For rear, place hands around the rear CV joint and pull without using leverage or body weight. The intention is to check that the retaining ring snapped into position, not to forcefully remove a correctly installed propeller shaft.

9. Remove the support and lower the vehicle.

## Rear wheel bearing and hub replacement (AWD)

Use the following directions to remove and replace the rear wheel bearing and hub on a 2020 Chevrolet Traverse AWD. Note that this procedure differs for the AWD version of the Traverse, something you'll want to keep in mind when working on such vehicles.

### Removal Procedure

1. Raise and support the vehicle referring to GM's Lifting and Jacking the Vehicle documentation.

2. Remove the rear tire and wheel assembly referring to GM's Tire and Wheel Removal and Installation documentation.

3. Remove the rear wheel speed sensor at the rear suspension knuckle referring to GM's Rear Wheel Speed Sensor Replacement documentation.

4. Remove the rear brake rotor referring to GM's Rear Brake Rotor Replacement documentation.

5. Separate the appropriate rear wheel drive shaft from the affected rear wheel hub:

- Refer to GM's Rear Wheel Drive Shaft Replacement - Left Side documentation.
- Refer to GM's Rear Wheel Drive Shaft Replacement - Right Side documentation.

Remove and discard the Rear Wheel Hub Bolt.

6. Remove Rear Wheel Hub.

### Installation Procedure

**Note:** Avoid applying grease to any other machined surface, holes or threads. Ensure the drain channel at the bottom of the bore is not blocked with grease or debris.

1. Apply grease evenly and ensure complete coverage to the knuckle bearing pilot bore only. Refer to GM's Adhesives, Fluids, Lubricants, and Sealers documentation.

2. Install the Rear Wheel Hub.

3. Due to the unknown shelf life of the adhesive patch, prepare the NEW

rear wheel hub bolts as follows:

1. Remove all traces of the adhesive patch from the bolts and the mating threads using the appropriate tools.

2. Clean the threads of the bolts and mating threads with denatured alcohol or equivalent and allow to dry.

3. Apply thread locking adhesive to the bolts.

4. Ensure there are no gaps in the thread locking adhesive once applied to the bolt. **Caution:** This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

**Caution:** Refer to GM's Fastener Caution documentation.

4. Install and tighten the Rear Wheel Hub Bolt.

— First Pass: 100 Y (74 lb ft)

— Final Pass: (15 - 30 degrees)

5. Install the rear wheel drive shaft to the rear wheel hub:

— Refer to GM's Rear Wheel Drive Shaft Replacement - Left Side document.

— Refer to GM's Rear Wheel Drive Shaft Replacement - Right Side document.

6. Install the Rear Brake Rotor using GM's Rear Brake Rotor Replacement documentation.

7. Install the Rear Wheel Speed Sensor at the Rear Suspension Knuckle using GM's Rear Wheel Speed Sensor Replacement documentation.

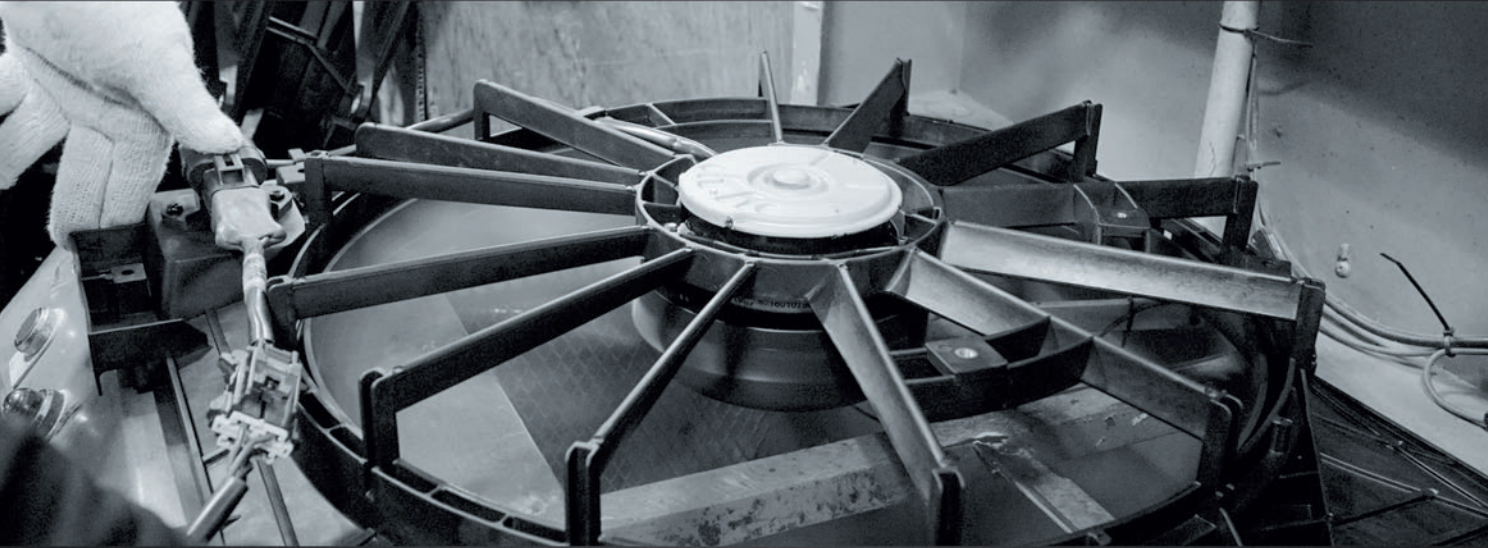
8. Install the rear tire and wheel assembly using GM's Tire and Wheel Removal and Installation documentation.

9. Remove the support and lower the vehicle. 🚗



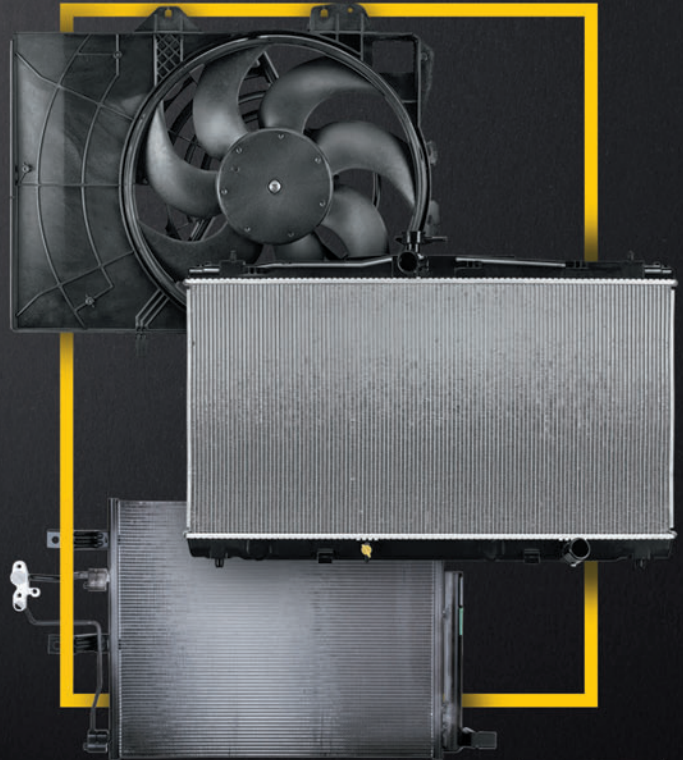
**TIM SRAMCIK** has written for ABRN and sister publications *Motor Age* and *Aftermarket Business World* for more than a decade. [tsramcik@yahoo.com](mailto:tsramcik@yahoo.com)

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# PREPARING FOR ADAS

**IN PART II OF THIS SERIES, WE EXAMINE USING THE PROPER TOOLING TO CALIBRATE THESE MISSION-CRITICAL SAFETY SYSTEMS**

**ERIC ZIEGLER //** Contributing Editor

In last month's "Getting ready to service ADAS-equipped vehicles," we discussed how Advanced Driver-Assistance Systems (ADAS) seemed to be everywhere we turned. TV commercials, print ads, tool sales pitches for scan tools and calibration equipment are all a buzz about this latest "it" topic. The first part (of this two-part series) introduced the different levels of autonomy defined by SAE.

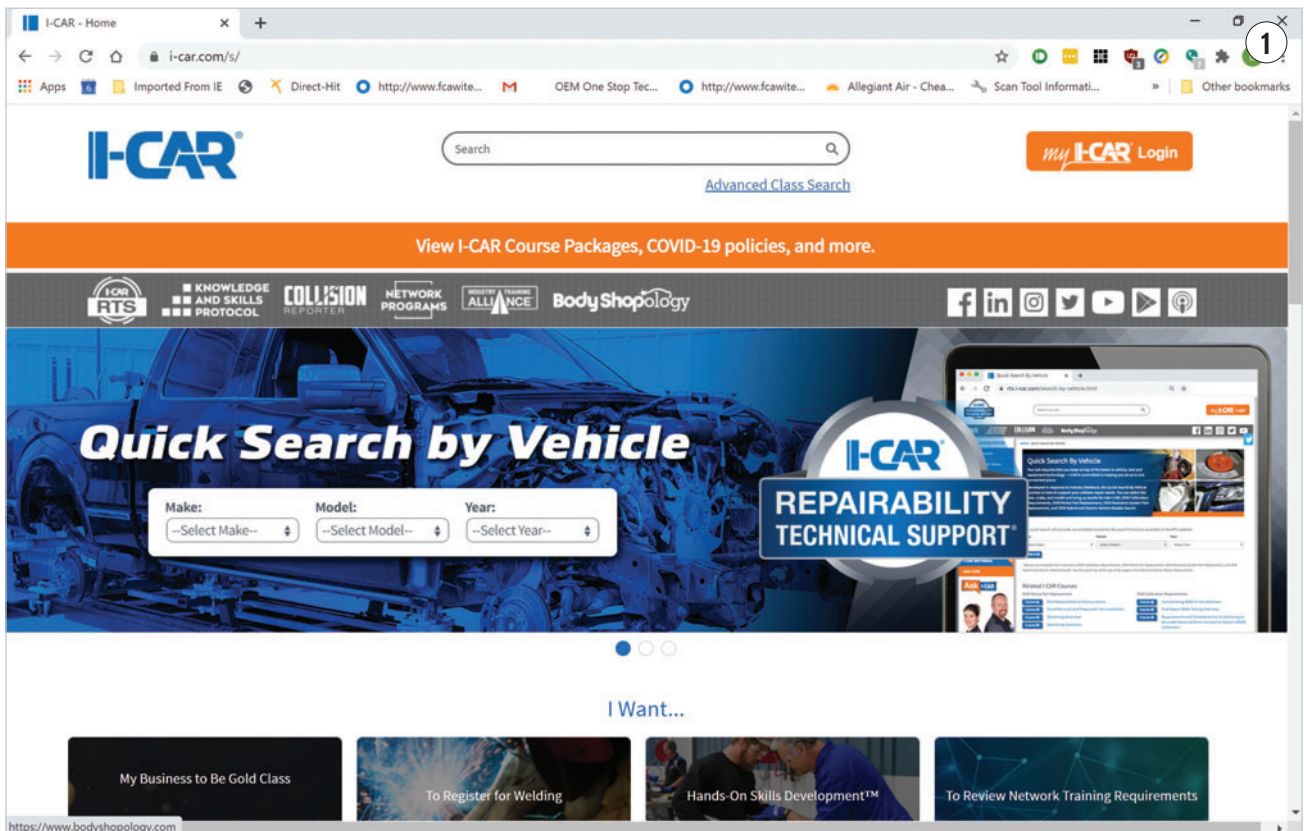
We discussed some of the fundamental systems and how through sensor fusion, they integrated. Moreover, I discussed how it was of the utmost importance to have the proper information as to the when, where and how to calibrate these mission-critical safety systems. There is a continuum in the modern automotive industry between OE tooling and after-market systems.

Hopefully, the takeaway from the Part 1 article is that this technology is not a red herring (like the 42-volt sys-

tems of the past), but is here to stay and provides us in the automotive service industry another revenue stream at a time when what so many other previous revenue streams afforded us are fading away! We merely need to tool up, train up and educate ourselves on these high-tech systems that have become standard equipment on both higher-end and base model, newer vehicles.

### Let's get after it!

In addition to being an automotive





Quick Search By Vehicle

OEM Information

Collision Repair News

OEM Calibration Requirements Search

OEM Partial Part Replacement Search

OEM Restraints System Part Replacement Search

OEM Hybrid And Electric Vehicle Disable Search

OEM Glass Replacement

I-CAR Best Practices

I-CAR 360 Videos

Ask I-CAR



## OEM Calibration Requirements Search 2

2018 Honda Accord

Print

Click the links below for directions; definitions; articles; and additional RTS portal information such as OEM position statements and publications.

[How To Use The OEM Calibration Requirements Search](#)

[Vehicle System Definitions](#)

[ADAS, Calibration, and Scanning Article Hotspot](#)

[Additional RTS OEM Information](#)



### Vehicle System Options

Adaptive Cruise Control

Adaptive Cruise Control

**Cameras/Sensors:**

[Camera Near Rearview Mirror Sensor\(s\) Behind Front Bumper Cover/Grille](#)

	Yes	No	Not Identified
DTCs Set	X		
System MIL	X		

Collision Warning

Forward Collision Warning (Collision Braking)

**Cameras/Sensors:**

[Camera Near Rearview Mirror Sensor\(s\) Behind Front Bumper Cover/Grille](#)

	Yes	No	Not Identified
DTCs Set	X		
System MIL	X		

Collision Braking

Collision Mitigation Braking System

**Cameras/Sensors:**

[Camera Near Rearview Mirror Sensor\(s\) Behind Front Bumper Cover/Grille](#)

	Yes	No	Not Identified
DTCs Set	X		
System MIL	X		



training instructor, I own and operate a mobile automotive diagnostics and programming company (EZ Diagnostic Solutions), which specializes in serving repair shops, fleets and especially collision repair centers. Each year our workload becomes more and more focused on collision repair centers. This is largely driven by the greatly increased number of vehicles that are equipped with ADAS safety systems and that oftentimes need to be calibrated post-

collision repair to ensure they have been restored to safe, pre-loss condition. Our phone rings regularly with questions about lights being on in the dash (MILs), prompts on the driver's information center (DIC), loss of ADAS functionality or, more commonly, questions regarding potentially required calibration for any particular system. So, the question of when is indeed one of the most important ones when working on ADAS-equipped vehicles!

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This is where I believe that information/knowledge is power. I prefer and subscribe to many OEM service information systems. For me, it is part of the modern cost of doing business (CODB). I believe no one knows the OE ADAS systems better than the original equipment manufacturer or OEM. Many OEMs have service information (SI) available at a very affordable short-term subscription. There are also service information providers that purchase, copy and paste the actual OEM SI procedures.

## ADDRESSING ADAS CALIBRATIONS

If you work on ADAS-equipped vehicles for general maintenance, service or repair after an accident, this webinar from Motor Age Training is must-see for you. Technicians of all levels will benefit from the live online training offered only from Autel, Motor Age, PTEN and ABRN. Suited for all general repair and collision repair shops, and looking at Advanced Driver-Assistance Systems in how they have evolved over the last 20 years (and especially in the last two to three years), this webinar dives into the increasing number of ADAS calibrations that need to be performed today and in the future.

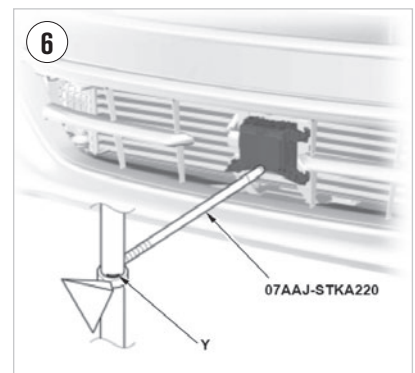
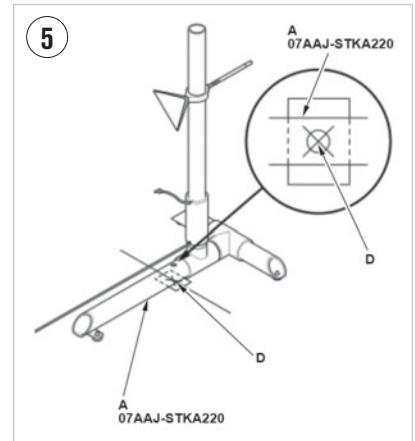
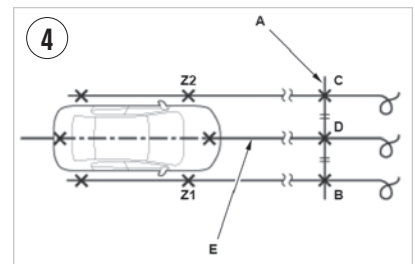
The webinar discusses why ADAS calibration is important, common services that may require ADAS calibrations, what you need to perform them, best practices, dynamic vs. static calibrations, common myths and misconceptions and industry trends.

Go to **ABRN.com/modernADAS** to watch.

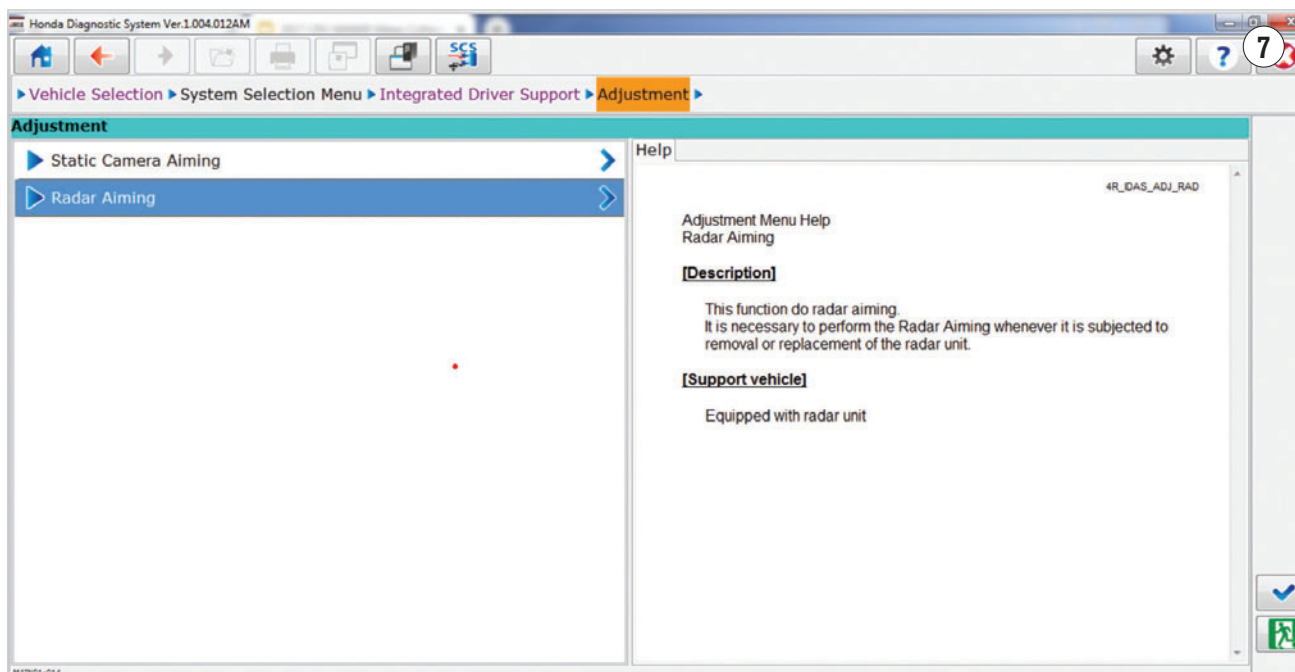
I ALWAYS check the OEM SI procedure before performing any calibrations. I would recommend this especially if you are using an aftermarket tool that incorporates the procedure in the scan tool, as functions can be erroneous, omitted or lost in translation. The “when” to perform calibrations is kind of obvious when components like the millimeter-wave radar unit is physically replaced. But, what about when a bumper cover is simply removed to repair a cracked headlight, or suspension work and/or wheel alignment work has been performed, or how about just a simple battery disconnect? This is about knowing how and where to find the appropriate and accurate information, and it is key. I am also a firm believer in performing pre- and post-repair scans on vehicles we service, preferably with an OE scan tool. This is two-fold. First, it gives the technician valuable information and documentation of a baseline at the beginning of the repair. Secondly, it often will help to guide the technician to what ADAS systems (and subsystems) were affected and might require more research and attention. The post-repair scan gives us documentation that the vehicle left with a clean bill of health. So where would we start that information search?

### Information is key

There are some awesome non-OEM websites that can help point us in the right direction. I like the website [www.oem1stop.com](http://www.oem1stop.com). It is a great centralized portal to point the technician to the OEMs’ websites with the click of a mouse! Also, there are valuable OEM position statements regarding SRS wiring repair, when OE glass is required or even if the forward-looking radar must be recalibrated for something as simple as a front bumper cover removal! Another great source of information especially for (but not limited to) collision repair centers is [www.i-car.com](http://www.i-car.com)



(Figure 1). This is a great source of the where and when to perform the necessary ADAS calibrations. Moreover, it is a great place to educate oneself on the operation and repair of vehicles equipped with these mission-critical systems. On the I-CAR site, the technician or service writer can do a quick OEM ADAS Calibration Requirements Search to get a vehicle-specific idea of the systems the vehicle could be equipped with, as well as the componentry, the locations and the calibrations requirements for the ADAS equipment (Figure 2). This system



is easy to navigate and gives valuable information about where and when to calibrate a particular ADAS system. Let's use an example of a 2018 Honda Accord Adaptive Cruise Control, or ACC (**Figure 3**). The search matrix quickly identifies that this system works off the millimeter-wave radar sensor (or MMWR, which is the component that determines the distance from the vehicle in front of it). With a couple of clicks of the mouse, one can determine what components are involved and the systems that are affected. Furthermore, it explains in clear terms as to when calibration of the MMWR unit is required. For example, if the unit has been removed or replaced, if there was impact within 300mm of the unit, if an airbag deployed, or if something as simple as a wheel alignment was performed. Another handy feature is that the search matrix will indicate whether the vehicle will set DTCs or turn on a MIL, whether a scan tool will be required to calibrate, and whether special tools are required. I am a big fan of where one can glean a lot of information in one centralized location; the I-CAR website does this

thoroughly and simply.

Let us look at the OEM SI to figure out the how, where and when to calibrate the ACC system. This is for the same 2018 Honda Accord. Honda publishes a great document that is known as a Job Aid for Aiming Driver Support Systems. The most recent publication is April 2020, which supersedes the April 2019 document. This also illustrates the need to make sure your information is up to date and how in the ADAS world, change is constant. I was able to find this information while logged into one of the two Honda OEM SI options. They are called Service Express or Service Information System (SIS). Both are located at [techinfo.honda.com](http://techinfo.honda.com). SIS is available for \$25 a day. A quick Google search revealed a downloadable PDF version as well. I would STRONGLY suggest downloading and saving this valuable service document. The OEM SI 29-page document details where the ADAS components are located and gives precise details as to when calibration is required. But, most importantly, lists the OE tool part numbers and pictures of the tools required for the job. If a shop was

interested in doing ADAS calibrations, this would give you an idea of the tools required to service Honda vehicles. So, in the case of the 2018 Honda Accord ACC, if the MMWR component was removed or replaced, an airbag deployed, was involved in a collision (where the structural repair was done), wheel alignment was performed, or if any DTCs set (such as P2583-xx), a recalibration or aiming of the MMWR is required. The Job Aid lists the tools as follows:

- 07AAJ-TK8A100 stand
- 07AAJ-STKA200 reflector
- 07AAJ-STKA210 alignment set

These tools are required to perform the ACC recalibration. The Job Aid does not offer how to perform the calibration and is not a substitute for the appropriate SI regarding how to perform the calibration. In addition to the above-listed tools, you will need a tape measure (metric scale preferred), some painter's tape, a felt tip marker (or ballpoint pen), some string and a capable scan tool (my business model is to use the OE scan tool, the i-HDS).

I always suggest consulting OE SI or a service information system that



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copy/pastes OE SI on the calibration of ADAS systems. Often, crucial details change from year to year and model to model. Here is a suggested pathway. Go to [www.oem1stop.com](http://www.oem1stop.com) and select the Honda icon. This leads to the Honda SIS website. Select your subscription and pay for it. Then, simply log in. Build the vehicle by entering the year/model and a searchable term. In this case, we will use “radar.” Perhaps I had a DTC (such as P2583). I would enter that in the search box and the diagnostic troubleshooting measures would appear. All the instances of the term radar that pertain to it will be displayed. Millimeter-wave radar aiming is selected and the document is displayed. It starts with the special tools required to perform the calibration. Next, there is information regarding when to perform the MMWR aiming/calibration, followed by a specific amount of space required to execute the procedure. In this case, the amount of space required in front of the vehicle is 10 m (33 ft), measured from the front bumper. 4 m (13 ft) in width, 1.5 m (4.9 ft) in height, measured from the floor.

Next, there is a section on the setup of the lines or grids (**Figure 4**). The first step is written in blue (representing a

hyperlink) to a prerequisite section. This is needed for the setup of the lines and determining the centerline for aiming. I like to think of it as building a box, squaring the box with the vehicle and determining the true centerline of the vehicle, projecting it forward. This centerline is critical for the calibration! This is also why it is imperative that the thrust angle of the vehicle is correct, and wheel alignment is often required before the MMWR calibration (or aiming), especially if the vehicle was involved in a collision. This is where technicians tend to over complicate things.

### It's geometry class all over again

To be successful and proficient in ADAS calibrations, one must have good reading skills and the ability to thoroughly follow directions. Paying attention to detail is critical as well. At the end of the day, this is just that same math you learned in high school geometry!

So now that you have set up your lines/grids square to the vehicle and determined your centerline (built your box), you now must place the target in front of the vehicle. The target is a triangular-shaped device with a pointer on

the back of it that slides on to the stand, which is made of PVC (**Figure 5**). Before placing the target in front of the vehicle, the target height needs to be configured. The pointer that is on the opposite side of the triangle is placed up against the bottom edge of the MMWR unit. This will be done after the radar cover bezel is removed from the lower bumper cover, allowing access to the MMWR unit. You'll then draw a reference line with a pencil (or use a piece of tape) at the top of the target collar indicated at reference Y. Now, raise the triangle 22mm to establish reference point Y1. The triangle target is now at the proper height to calibrate the MMWR unit (**Figure 6**). Before the target placement at point D (outlined in the setup), prepare to aim/calibrate the MMWR unit. Per Honda SI, the steps are as follows (**Figure 7**):

1. Connect the HDS.

*NOTE: Keep the aiming target away from the vehicle until you are instructed in a later step. Make sure that the front license plate frame is removed if equipped.*

2. Check for DTCs with the HDS.

*NOTE: Troubleshoot any DTCs first before proceeding. If DTC P2583-54 is indicated, proceed with the aiming procedure.*



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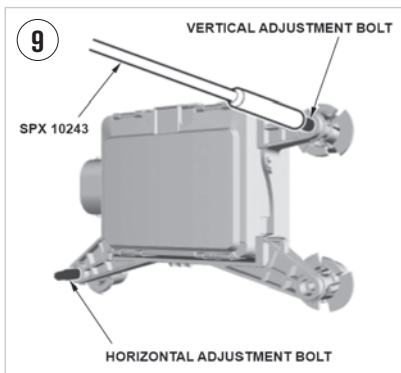
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3. In the DRIVING SUPPORT MENU, select INTEGRATED DRIVER SUPPORT SYSTEM, ADJUSTMENT, then Radar Aiming and follow the screen prompts.

4. Press ENTER on the HDS to enter the aiming mode.

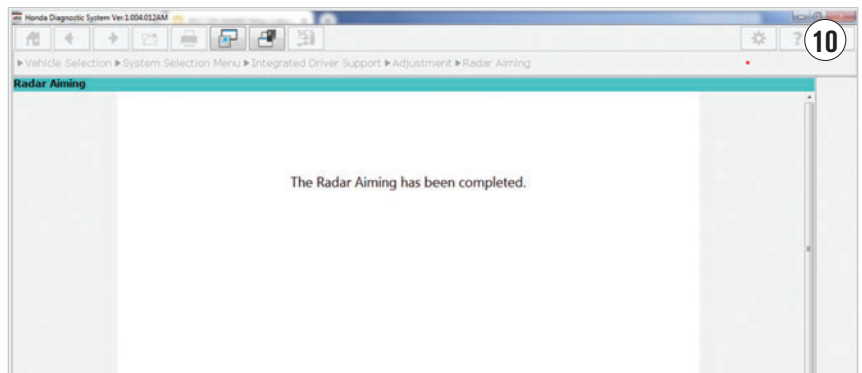
*NOTE: The ACC and LKAS indicators (amber) blink when aiming mode is activated.*

5. The MID will indicate the number 4 for a few seconds, then displays NO TARGET.

6. Make sure the MID indicates NO TARGET on the display (Figure 8).

*NOTE: If NO TARGET is not indicated, the stand set is placed in front of the vehicle or there is an unwanted radar reflection in front of the vehicle, in the range of the radar. Make sure the stand set is set aside away from the range of the radar until you are instructed to place it in front of the vehicle. If you are still getting an unwanted radar reflection, stack tires about 1.5 m (4.9 ft) in height in front of either the immovable object, such as a pole or in front of any object causing the unwanted reflections. The tires will block the radar reflections. Make sure NO TARGET appears on the MID. If it still does not appear, move the vehicle to a different location until NO TARGET appears on the MID.*

Now place the triangle target and stand at point D measured out earlier. This is 4000mm from the centerline of the front wheels as well as the line that



bisects those lines, and the centerline of the vehicle, projected forward. There is a hole in the stand that corresponds with the face of the triangle. It must line up with point D. Now select “enter” on the scan tool to calculate the alignment angles used to aim the MMWR. The tolerances are 0 +/- 0.1 degrees for both the horizontal and vertical angles. If either angle is out of specification, the technician must adjust by rotating the adjustment bolts with a 3.5 mm driver. You can usually watch (in real-time) the adjustment by viewing the data on the scan tool, provided the radar zone to the target is not obstructed (Figure 9). If the zone is obstructed, 12.8 degrees will be displayed. If 12.8 degrees is displayed for longer than 15 seconds the aiming process will stop. After the horizontal and vertical alignment angles are within a specified range, select “enter” on the scan tool. This will record the angles to the MMWR unit. The scan tool should now display, “the radar aiming has been completed” (Figure 10). “Enter” is selected one more time and the ignition is switched to the locked position. The radar cover can be reinstalled and the vehicle should be test driven.

### Cover your tail!

I also like to document the process for liability’s sake. I would suggest keeping screenshots of the scan tool’s horizontal and vertical angles, both before and after adjustment. Capture the screen in-

dicating the “radar aiming completed” as well. Programs like Google Slides, Paint or the Window Snipping tool work well for this. I would also suggest taking pictures of the target setup. Include the vehicle and its license plate. Ensure a time/date stamp is exhibited and keep a copy for your records. A verification test drive should be performed on any ADAS calibrations before returning the vehicle to the customer.

ADAS systems are here to stay and are becoming more and more prevalent on the vehicles that are coming into your bays. While the actions involving a vehicle’s functionality vary from car to car, they all seem like they are from a sci-fi movie. Many of their calibrations may require some specialized tooling, but, ultimately, it just good old-fashioned geometry. Following detailed instructions from quality service information and attention to detail is absolutely critical. It’s not rocket science, it just requires us to do what we have always done — research, train and adapt to the changes in our industry!! 📧



**ERIC ZIEGLER** is an ASE Certified Master Tech who specializes in module programming, drivability, electrical and network systems diagnostics. He owns and operates EZ Diagnostic Solutions Inc. and is a trainer for Automotive Seminars and The Driveability Guys.

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# DETERMINING IF THE TIRE SHOULD RETIRE

LEARN HOW TO PROPERLY EVALUATE A DAMAGED TIRE

BRANDON STECKLER //

Contributing Editor

**O**f the wear items found on vehicles, I could think of nothing more crucial to the safety and well-being of everyone on the road than a vehicle's tires. Carrying a vehicle down the highways of the world at more than 65 mph with thousands of pounds upon them and navigating and cornering under temperature ranges far below freezing and well above 120 degrees F, the tire has to endure a lot of punishment. And if properly maintained, can do so sufficiently for tens of thousands of miles. But proper tire maintenance and thorough inspection are equally as crucial to ensuring the safety of the tire. Learning how to properly evaluate a damaged tire for potential repair is taken for granted all too often and could be the difference between life and death. I'd like to clear up any misconceptions.

## The tech's task at hand

According to the National Highway Traffic Safety Administration (NHTSA), in 2017 alone, 3.2 trillion miles were driven in the United States. Each one of those miles was driven atop a set of tires. I know that is a silly statement to make, but think of the potential danger each time a set of tires carries that vehicle (more importantly, its passengers) down the crowded



Tire Pressure / Threshold Value [psi(gauge)]				Compensation Pressure [psi(gauge)]	
Sensor 1:	37.16 / 28.68	Sensor 2:	35.91 / 28.68	Front :	39.6
Sensor 3:	37.41 / 28.68	Sensor 4:	36.16 / 28.68	Rear :	39.6
Sensor 5:	56.36 / 28.68				

**Health Check Results**

- Health Check does not display live data.
- Changes in vehicle condition will not update automatically.
- To update Health Check, click the Refresh button on the bottom of the Health Check screen.

streets and highways. In 2017, there was more than 730 traffic-related fatalities associated with tire failures. This information is indicated by the Fatality Analysis Reporting System (FARS), a nationwide census that supplies the NHTSA with data. There is a lot at stake and we as

technicians are offering our input as to the safety and reliability of the tires. We are the ones who determine if they are up to the task. We had better know what we are doing or someone could get hurt. A tire is only as sound as the inspection process used to evaluate its condition.

## Dynamic Hydroplaning

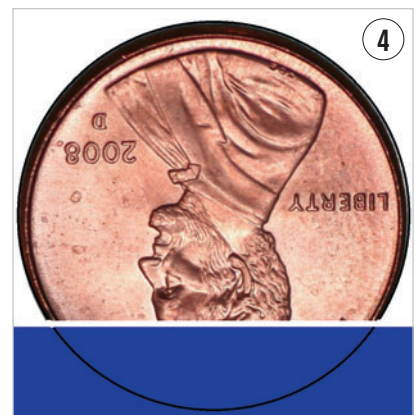
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One of the most important aspects of an inspection is to verify and maintain the proper pressure for the tire (this may be found on the tire placard, or in an owner's manual). The pressure indicated on the tire itself is an indication of maximum allowable pressure. This is not necessarily what the vehicle manufacturer recommends. Always follow the recommended specifications for the vehicle. Although the tire pressure monitoring system (TPMS) had been implemented more than 10 years ago, they typically don't exhibit a warning unless a tire pressure is significantly out of range. To operate a vehicle with a significantly out-of-range tire pressure can lead to blow-outs (**Figure 1**). A tire blowout is a rapid loss of tire air pressure that can cause your vehicle to lose control. Although it's not always possible to prevent blowouts, maintaining proper tire pressure can certainly help you avoid them. Pressure not only affects the safety and longevity of the tire, but also has a large impact on fuel economy. In fact, instructing a vehicle owner to have the tire pressure maintained monthly (including the spare tire) can extend the life of the tire up-

wards of 4,700 miles. The specifications for tire pressure are recommended for "cold." This means the tire should have been stationary for at least three hours. To get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires. A helpful tip comes from an example involving a Toyota. Displayed is a capture of the Toyota TechStream scan tool (**Figure 2**). It has a feature called Tire Pressure Utility that compensates for ambient temperature and the effect on tire pressure accuracy. The compensating factor of the utility allows the tech to inflate the tire at a pressure different than what is designated on the placard. In this example, it's recommended that the tires be inflated to a gauge pressure of 39.6 psi. Sensor #5 is showing that a tire's pressure is too high (in this case, it's the spare tire). This allows for a higher setting under warmer conditions and a lower setting under cooler conditions. It just goes to demonstrate that accurate and correct tire pressure is crucial to the longevity and safety of a tire.

The next aspect to consider is the amount of safe and useable tread left to



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the tire's surface. Of course, this tread provides the necessary friction, maintaining a firm grip on the road, even under not-so-ideal conditions. Without the proper amount of useable tread, the tire simply can't maintain traction safely. The tread is not only designed to improve friction between the tire and the road surface. It has to also manage water and direct it away from the contact area in between the tire and road surfaces. This is to limit the effect of hydroplaning. Hydroplaning is an uncontrollable slide of the vehicle that occurs when friction is lost between the surface of the tire and the road it is operating on. This happens when the water



between the tire and the road can't be displaced fast enough. The tire begins to float on the surface of the water and lifts the tire from the road (**Figure 3**). Hydroplaning is possible whenever water accumulates to a depth of one-tenth of an inch (0.3 centimeters) or more for at least 30 feet (9.14 meters) and a vehicle moves through it at 50 miles per hour (22.35 meters per hour) or more [source: Crash Forensics]. Hydroplaning is caused by a combination of standing water on the road, car speed and under-inflated or worn-out tires.

It is advised that tire tread be inspected about once monthly (ideally at the time the pressure is being checked and/or adjusted). The treadwear indicators can be found in between the tire treads and are raised sections of rubber. These tread wear indicators represent the minimum safe amount of useable tread remaining and, once in contact with the tires rolling surface, are an indication that tire replacement is necessary.

Another trick is to use a penny as a measurement indicator. Simply place the penny (Lincoln's head upside-down) within the tire tread. If the top of his head is invisible, it's time for new tires (**Figure 4**).

Some states in the U.S. still adhere to a motor vehicle safety inspection program. Typically, the boundaries of tire wear are a lot more stringent in these programs than what the vehicle manufacturers are stating. With that said, local mandates trump all others to legally operate the vehicle within that state's borders and with that state's inspection certification. In my experience, I find that most tires don't last long enough for the tread wear indicators to serve their purpose, though. Other determining factors that limit the tire's longevity come into play. These factors can be avoided if proper inspection and maintenance are followed diligently. We'll cover them later.



### Age is NOT a beauty

You may tend to notice this on the older vehicles that don't have many miles accumulated. Although the paint and interior seem to be in fantastic shape, it's the tires that are the age-revealer. Age is a very real factor when it comes to evaluating a tire's ability to perform properly. As tires age, they are more prone to failure. Some vehicle and tire manufacturers recommend replacing tires that are six to 10 years old, regardless of treadwear. You can determine how old your tire is by looking at the sidewall for your DOT Tire Identification Number (TIN). The last four digits of the TIN indicate the week and year the tire was made. If the TIN reads 0308, it was made in the third week of 2008. Look on both sides of the tire. The TIN may not be on both sides (**Figure 5**).

As tires age, the effect of heat from the sun and heat from the road (and other environmental conditions) create a breeding ground for dry rot. The rubber of the tire starts to discolor as it deteriorates and becomes rigid or brittle and begins to fracture (**Figure 6**). Once dry rot appears in a tire, you only have a short time to attempt to repair the damage before the tires become unsafe for driving. Minor dry rot can be addressed by using a tire sealant, similar to ArmorAll. Tires with advanced dry rot must be replaced. Dry rot allows air to escape the tire, making it difficult or even impossible to keep the tire properly inflated. Dry rot can also cause unnatural rubber expansion while driving that breaks the tire apart. Tires with dry rot are

much more likely to develop leaks, holes and blowouts. In extreme cases, the tread may separate from the rest of the tire entirely. As the name suggests, the tires will dry and crack. Below are some characteristics to keep your eyes open for:

- **Brittleness** — Dry rot dries out your tires. As essential oils leech out of your tires, you may notice that they appear and feel more brittle. You may even observe small pieces of rubber breaking away from the tire.

- **Cracks on the tread** — Advanced dry rot can cause small cracks on the outside edges of your tire tread. These cracks can affect your car's handling, even if your tread still has adequate depth overall.

- **Cracks on the sidewall** — Even in minor cases of tire dry rot, you may notice cracks on the sidewall of your tire. These cracks may appear in an isolated area or extend around large portions of your hubcap.

- **Faded color** — If your tire begins to look more gray than black, it may be developing dry rot. Fading may appear before or in tandem with cracking.

Inspect tires for signs of dry rot at least once a year. Inform your customers of the importance of inspecting tires in the early spring or early fall, since winter and summer conditions can contribute to the development of dry rot. Below is a list of things to avoid that you can advise your customers of, too:

- Abrasive or corrosive chemicals, such as pool treatment chemicals, motor oil and industrial cleaning solutions
- Excessive or direct sunlight that exposes the tires to harmful UV rays
- Extremely low temperatures
- High temperatures
- Long periods of disuse
- Ozone generated by electrical equipment
- Underinflation, especially when the car is driven regularly



## Getting to the root of the problem

Discovering that a tire (or a pair, or even a full set of tires) requires replacement is just the first step of the process. Like any other approach, a good technician should take to a problem the realization that the tire has worn out for a reason is what is important. Getting to the root cause of the wear issue is what needs to be discovered. Otherwise, we have customer dissatisfaction, and nobody wishes for that. Like any other fault that occurs within an automobile, it does so for a specific reason. So, too, does premature tire wear, whether the wear occurs due to age, lack of maintenance or some other underlying cause. It's up to

us as automotive technicians to uncover it. Learning to read the treads as well as we do our scan tool or lab scopes will help keep us efficient, our customers happy and generate some profitable supplemental work for us to perform.

As I mentioned, being able to read the tire treads to determine what an underlying cause of premature wear is will certainly serve you well. The treadwear in the following areas is an indication, if you know what to look for:

- **Wear on outside edges** — Under-inflated tires wear on the shoulders or outside edges. There is excessive contact with the outer edges of the tire and the road surface as the vehicle travels down the road

- **Worn center of tire** — Overinflated tires wear in the center. There is excessive contact with the center of the tire and the road surface. Always use a tire air pressure gauge when inflating tires and be sure to set them to the OE recommended specification. Advise your customer to do the same. Be sure to verify the accuracy of the gauge, too!

- **Wear on one of the edges** — When the tire is worn on one side, but not the other, the camber angle is likely not within specification.

- **Cupping** — Resembles the surface of a rough lake. When cupping occurs, it usually leads to poor shock/strut performance. It can also be caused by improperly balanced tires. Both conditions can allow the tire to “hop.” Jounce the vehicle and look for excessive oscillation.

- **Feathering** — Looks like the end of a bird’s wing across the tread of the tire. Could be an indication of worn tie rod ends. The wear is typically caused by the tire excessively toeing in/out as the vehicle is driven down the road.

All of the above are just some examples of what can be learned by reading the tire tread wear. These are all visual indicators that can lead to faults found through physical inspection and wheel alignment. Carrying out this process can save you a lot of grief and your customers a lot of money in the long run.

## Repairing a serviceable tire

For a tire to be labeled as serviceable, it must be able to fulfill its function adequately. Although a tire can be worn, it still may be serviceable. We will find ourselves as technicians faced with a punctured, yet serviceable tire. When the tire has been deemed safe for repair, only then should we proceed to do so.

For starters, I’ve seen many tires arrive at the shop damaged with multiple punctures. This usually occurs after a drive near the scene of a home having its roof replaced. If multiple punctures




are present, those punctures should be no closer than 16” apart. Otherwise, the structural integrity of the tire is compromised and the tire should be replaced. If the tire has sustained serious damage in a crash (such as big cuts or treads separation), it should be replaced, not repaired (Figure 7). The maximum repairable injury size for passenger and light truck tires through load range E is 1/4 inch or 6mm in diameter. If the puncture in your tire is larger than the allowable repair size, the tire must be taken out of service.

If the situation arises when a tire is to be repaired, it cannot have a puncture in the area closest to the edge of the tread (Figure 8). A tire plug does not offer a permanent seal and neither does a patch. I’ve been in many shops and a common practice is to eliminate the use of patches or plugs and to only use a patch/plug combination. This offers the best of both options simultaneously, and also serves as redundant. Once the tire is removed from the wheel, a thorough inspection from within must be carried out.

As a tire rotates in an underinflated condition, the tire sidewalls flex in and out as the tire meets and leaves the road’s surface. This creates heat and

causes the internal surface of the tire to breakdown. This can typically be seen as handfuls of pulverized rubber (resembling pencil eraser shavings) are found throughout the inside of the tire. This is a sure sign the tire is need of replacement, as it is no longer structurally sound (Figure 9).

If a punctured tire is found to be in a serviceable condition and multiple punctures are neither too close to one another nor exceed the maximum safe diameter, the tire can be repaired. Although repairing a tire is not a difficult task to carry out, it must be done so properly and with great care. Learn the proper way to repair a tire by watching <https://youtu.be/sx1p2bOaIU0>. Follow all directions that occupy the contents of the repair solutions your facility provides. And always remember what is at stake and what is riding on those tires. Safe rather than sorry is definitely the way to travel. 



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# Finding success through a strategy of hope

What you do, how you talk and what you achieve is evidence of your belief

**W**hen writing about hope, I realize it could be seen as soft or not relevant to the collision repair industry. But stick with me for a few more lines and let me attempt to change your mind. Recently I was doing a book study with my two teenage kids — my son is 15, and my daughter is 14. My summer reading assignment for them (and with them) was *Sometimes You Win, Sometimes You Learn for Teens* by John C. Maxwell.

Chapter 6 in the book is entitled “Hope: The Motivation of Learning.” I had never really identified with the word hope or put a lot of energy into the meaning of how it affects us as humans. But this summer, when I read that word and the stories of people who weathered some unimaginable experiences and were stronger on the other side because of their hope, I was moved. Maybe it was that I needed hope this year. When we started this journey in March, I had no idea we would still be dealing with this pandemic’s challenges. We were ready to face these challenges because of how we invested in ourselves and our team over the last five years. Although I did have brief moments of panic, I made a choice to choose hope. Not an illusion or fairytale, but a belief that we will come out of this stronger, better and more equipped than ever before to face the challenges our industry brings.

Hope allows us to believe the best is still to come, and our actions will follow that belief. Belief drives behavior. What you believe about yourself, your work, your business, your department and your family will show itself in your action. What you do, what you don’t do, how you talk, what you achieve and your effort is evidence of your belief.

I have hope that one day we will not be fighting the same fights with insurance companies to pay to repair cars according to the manufacturer’s repair procedures. The engineers who built these vehicles are the expert on how to repair it, not an



**BELIEF DRIVES BEHAVIOR. WHAT YOU BELIEVE ABOUT YOURSELF, YOUR WORK, YOUR BUSINESS, YOUR DEPARTMENT WILL SHOW ITSELF IN YOUR ACTION.**

insurance company. That hope leads me to action. My belief drives my behavior. And when we all act, collectively, we accomplish more than we thought possible.

I do not know what weighs heavy on you; it is a little different for all of us. I recently heard someone say, “Smooth seas do not make a skilled sailor.” Life and business will have its full share of storms. As leaders, we must teach the people around us how to create a strategy of hope. We must teach people to think about what a better future looks like, what success looks like, then take the hope for that success and put action behind it — daily consistent, deliberate, intentional effort to reach that specific, envisioned future goal. We must teach those around us that there will be obstacles that come our way, but it is how we overcome those obstacles that make us stronger, more resilient and gives us the momentum to keep moving towards our goal.

The difference of hope as a strategy and hope as wishful thinking is looking to the future, envisioning a strategic outcome and then putting in daily action to reach that outcome. This hope strategy includes:

1. Set a realistic, obtainable, strategic goal (60-90 day goal).
2. Create a list of focused daily activities that inches you closer to that goal.
3. Create a point system for each focused activity.
4. Set a daily points goal. Compete against yourself or include other people. Including others helps keep you accountable and moving forward.

Finally, do the uncomfortable. Make the phone call, send the email. Whatever it is that you have been putting off, do it. Then do it again, again and again. 📧

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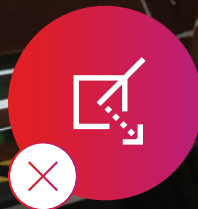
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