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JANUARY 2015

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DETERMINE WHY CHANGE IS NEEDED, THEN IMPLEMENT THE HOW

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WHAT YOU NEED TO GROW

SHOP MANAGEMENT SYSTEMS, ORGANIZATIONAL STRUCTURE, RIGHT PEOPLE KEYS TO SUCCESS

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COMMENTARY

Insurers' out-of-date rules are limiting estimate accuracy

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NEWS ANALYSIS, INSURANCE MATTERS & TRAINING ISSUES

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KNOW THE WHY, HOW FOR EFFECTIVE CHANGE

BY **KRISTA MCNAMARA** | MANAGING EDITOR

To implement effective business change, first answer for yourself the why, then implement the how.

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10 Shops in nearly 35 states have been coordinating efforts and joining or filing suit against insurers they claim conspired to suppress reimbursement rates.

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NASTF PANEL BEGINS DIALOGUE ON OEM EDUCATION RESOURCES

10 The National Automotive Service Task Force has begun discussion on a solution to a mismatch between inconsistent OEM resources and technician expectations.

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ARE YOU LACKING WHAT YOU NEED TO GROW YOUR BUSINESS?

BY **ROBERT SPITZ** | ABRN BLOGGER

Shop management systems, organizational structure and the right people in your business are the keys to success.

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[COMMUNITY PULSE]

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18 You not only have to find and retain the right people for your business. You also need to ensure those right people are in the right position within your company so you can all succeed together.

THE LAST DETAIL

BY MIKE ANDERSON

YOU DON'T KNOW WHAT YOU DON'T KNOW

58 Insurance companies using old and outdated rules or edicts — such as limiting the amount of lines on an estimate — may have made sense at some point, but now hold no relevance. These prevent shops from writing complete estimates and ensuring that vehicles are fixed safely and properly.

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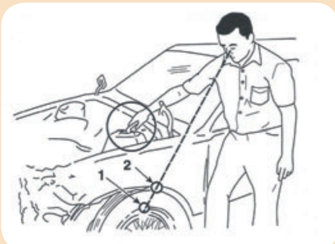

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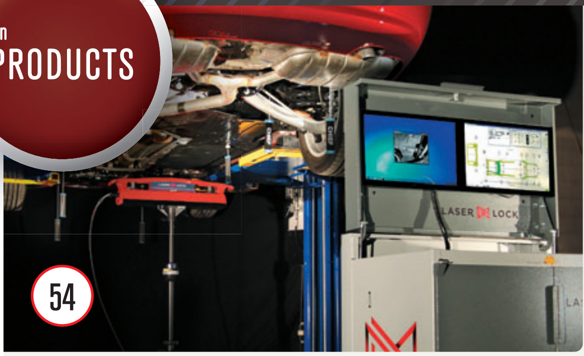

PRODUCT SPOTLIGHT

Chief Automotive's LaserLock live mapping system features a portable laser scanner that can be used for blueprinting throughout the shop, freeing up your frame racks.

PRODUCT FOCUS

54 Dent Fix Equipment's DF-DB69 Dead Blow Hammer is three paintless dent repair tools in one, and can knock down dents or pry off door panels or residue.

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JANUARY'S FEATURED VIDEO

REPAIRING OEM TRANSLUCENT FINISHES

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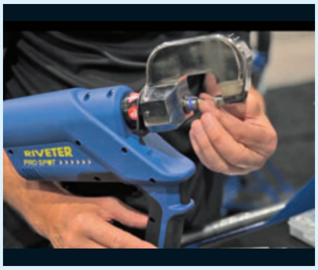
VIDEO SPOTLIGHT

PRO SPOT aluminum self-piercing rivet

Pro Spot's PR-5 Riveter is a SPR Rivet Gun that applies and removes rivets as a cold joining process on heat sensitive materials, like aluminum. The Riveter comes with a variety of magnetic discs for applying SPR and solid rivets, removing rivets and flattening.

[URL ABRN.COM/PR5]



BLOG SPOTLIGHT

MARK SALEM, owner of Salem Boys Auto in Tempe, Ariz., says older technicians have nothing to fear when it comes to repairing today's advanced, computer-controlled vehicles.

[URL ABRN.COM/NOFEAR]

BOLT-ON TECHNOLOGY founder and CEO Mike Risich demonstrates the digital multi-point inspection process made possible through the company's Mobile Manager Pro automotive Software Solution.

[URL ABRN.COM/BOLTONDEMO]

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The National Auto Body Council has elected new board members and officers to lead the organization in 2015.

»» *ABRN.COM/NABC2015*

HOUSE EXPLORES REGULATING INTERNATIONAL INSURANCE MARKET

A U.S. House Committee on Financial Services' subcommittee held a hearing on potential methods for insurance regulation worldwide.

»» *ABRN.COM/GLOBALREGS*

DUST EXTRACTION SYSTEM CAN AID ALUMINUM REPAIR

Ford F-150 standards are driving the industry to equip for aluminum body repair work, including a dedicated dust extraction system to handle airborne aluminum dust.

»» *ABRN.COM/DUSTEXTRACTION*

INSURER ANTI-TRUST CASES PILING UP

Shops in nearly 35 states have been coordinating efforts and joining or filing suit against insurers they claim conspired to suppress reimbursement rates in violation of the Sherman Act and state laws.

»» *ABRN.COM/ANTITRUSTSUITS*

NASTF PANEL BEGINS DIALOGUE ON OEM EDUCATION RESOURCES

The National Automotive Service Task Force has begun discussion on a solution to a mismatch between inconsistent OEM resources and technician expectations.

»» *ABRN.COM/NASTFPANEL*

VENDOR EDUCATION

Know the why, how for effective change

NAPLES — To implement effective change, first answer for yourself the why, then implement the how.

"Why is a very good question. We all need our own list of whys. Why put it all on the line? Why compete? Why get up in the morning?" said G.B Outlaw of G.B. Outlaw & Associates during his keynote address at the Sherwin-Williams Automotive Finishes Vision Group Conference in Naples, Fla., Dec. 10-12.

Implementing effective change extends beyond just the "why" to the why not? "Why not see how much you can learn, how much you can earn, how many processes you can improve?" Outlaw says. "And why not you? If you know why you need to learn new technology, develop a performance driven culture, why not you?"

Lastly, he encouraged attendees to ask, "Why not now? There has never been the right time. Why not see how much farther you can take your organization?"

Improving business success starts with being on P.A.C.E — purpose, awareness, clarity and empowerment.

Have an effective purpose for your business, whether it be to improve customer service, boost margins or profitability. Spread awareness to your team on this purpose and how you are going to get there. Be clear about business expectations, and give your staff the tools they need to empower change.

Building an exceptional organization has many layers. First, Outlaw suggests treating your team satisfaction with the same focus dedicated to customer service. Continue reading at ABRN.com/SWAFVision.

Photos: ABRN

BREAKING NEWS

TRAINING COURSE

NEW I-CAR TECHNOLOGY, TRENDS COURSE

The new I-CAR® course, Vehicle Technology and Trends 2015 (NEW15), is now available industry-wide. This course brings the excitement of the auto show to the classroom and provides a preview of the latest trends expected to impact the collision repair industry.

Vehicle Technology and Trends 2015 provides information on upcoming vehicles and technology trends that will impact repair processes, including structural design innovations, system changes and new materials and electronics throughout new and redesigned vehicles. The course also provides a glimpse into some of the aluminum-intensive vehicles coming to market that will require new training on aluminum repair. Continue reading at ABRN.com/New15.


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Q+A WITH DAVID J. BRUNORI

DIVISIONAL PRESIDENT,
QUEST AUTOMOTIVE PRODUCTS

QAP PRIORITIZES PROFITABILITY, INDUSTRY RECRUITMENT AND ALUMINUM REPAIR TO HELP ITS SHOPS SUCCEED DAILY

BY **KRISTA MCNAMARA** | MANAGING EDITOR

ABRN: What are the biggest challenges facing your shops today?

DB: The concerns shop owners share with us are the same across the nation: profitability, consolidation and talent.

Regarding profitability, shop owners continue to see profit margins driven down primarily by DRP programs and lowered insurance compensation rates. In addition, we are starting to hear that national chain consolidators are affecting market practices and prices. Independents need to adjust to compete and remain relevant and profitable. Quest Automotive Products (QAP), with the Prospray and Matrix brands, has seen increased success in all market segments over the last couple years because we are the largest non-OE paint manufacturer and our brands not only deliver excellent results but our shops significantly increase their profitability.

In every market, finding and retaining qualified, trained, experienced talent is a challenge. QAP has partnered with the Collision Repair Education Foundation to help attract and train upcoming generations. In 2014, QAP donated over $300,000 to CREF through monetary and product donations and fundraisers, like Artists 4 Education.

ABRN: Aluminum and other alternative metals are taking more of a front seat in vehicle construction. What impact does this have on the paint process?

DB: The use of lighter and alternative substrates is not new. QAP's Prospray brand originates from the UK where Jaguar, Land Rover and Aston Martin have been using aluminum for decades. And our products have been used to restore those vehicles to pre-collision condition. Because of increasingly stringent government standards and regulations, more domestic OEMs, like Ford, are turning to these substrates to meet the requirements. At Quest, our focus is on providing training to the shops and jobbers to help them understand each substrate, how they act and how they should be repaired. QAP is increasing the scope and frequency of training at our facilities, at the field tech level and via online strategies. Our global research centers are not only testing current systems for compatibility but also developing new, advanced systems.

ABRN: What are some key areas of focus for shops looking to streamline and improve their bottom line?

DB: When our shops succeed, we succeed. As a paint manufacturer, we exist to service the collision repair shops. If shops manage their paint and material spend as a percent of sales, they can see immediate increases in profitability. We help our customers succeed by getting paint costs in the 4-6 percent range, then help them improve process efficiency and repair consistency, through lean management and process training, estimate writing, and other business mentoring.

ABRN: What does QAP anticipate the collision repair industry will look like in 5 years?

DB: Our industry will continue to experience rapid change driven primarily by market consolidation, substrate technology and profitability. Consolidation will continue at all levels – manufacturer, distribution and shop. Consolidators and national chains will further reinforce their position as the main player in all major and secondary markets, affecting rates, consumer expectations and PB&E distribution. Import and domestic manufacturers will continue to use alternative substrates to meet stricter standards. This will impact shop processes, equipment, products and training.

Shop owners will continue to see their bottom line squeezed by compensation rates and increased expenses. It's our job to make sure our customers understand these changes and the evolution they must make to remain relevant, and provide them with the products and knowledge to compete and triumph.

Photo: Quest Automotive Products


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COLLISION REPAIR INDUSTRY Stats & Trends

Industry experts say 10 global production platforms will be the basis for 30 million vehicles by 2018, according to Greg Horn with Mitchell International.

FROM THE BLOG SPHERE

Are you lacking what you need to grow your business?

Shop management system, organizational structure and right people keys to success

BY **ROBERT SPITZ** | ABRN BLOGGER

In the past, it was enough to have good mechanical skills, some common sense and a dose of good luck to be successful in the auto repair business. But there have been a lot of changes since that time. The increase in environmental demands, government regulations, more competition, continuously advancing vehicles, less qualified help and an economical environment that has changed significantly since 9/11, all have contributed to making it tougher to make a profit.

Growth tied to knowledge, skill

In looking at the growth of thousands of shops, there is a definite pattern which is directly tied to the owner's business skill and knowledge. Often times, the growth and success of the business can be tied to the owner's background and experience.

Small to mid-size shops

In most small shops, those that have been in business for longer than 5 years and are doing somewhere between $5,000 to $25,000 in sales a month, the owners have come from the technical side of the business. Their time is primarily spent fixing cars.

Other shop owners have pushed their monthly sales up into the $25,000 to $45,000 range. In those shops, the owners tend to be service writers who oversee the rest of the business. Their technicians fix most of the cars. In a small percentage of shops, the owner hires a service writer, while continuing to work on cars himself. Sometimes owners bring in their wives or girlfriends to help out and eventually handle customers.

What all the shops in this range have in common is that their business grew to a certain level of monthly sales and then ran into

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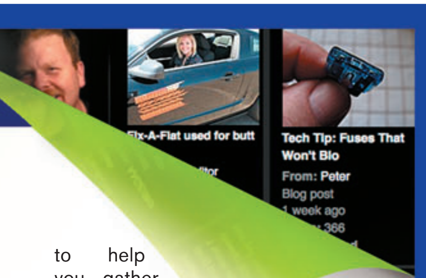

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Asking the right questions
BOLT ON TECHNOLOGY

If you plan to attend industry trade shows this year — like Automechanika Chicago, NACE, AAPEX or SEMA — you will encounter thousands of exhibitors and countless products. Therefore, it's important to know which questions to ask.

Shops should first consider researching the exhibitors whose products or services align most closely to their main goals and map out a plan to make the most of the limited time available.

Once you've decided which booths you would like to visit, think about what questions you might want to ask exhibitors. With so many booths, education sessions, networking events and so little time, you will want each interaction to count. This handy guide will help you stay focused.

1. **Find the correlation.** You determined which exhibitors are worth your time. Be sure to ask questions that allow the exhibitor to explain how their products or services could help your business.

2. **Avoid questions with yes or no answers.** Vague questions, such as, "Does your product integrate with my shop management system?" may yield a response of "Yes," but you need more information to make a decision.

3. **Ask for the "how."** The answers to these types of questions will likely give you more insight and a better sense of whether the product is truly a match for your shop's goals.

4. **Show, don't tell.** Even better than the "how" of the product or service is seeing it in action. See for yourself the product's attributes, or shortcomings, by asking for a demonstration.

5. **Ask the same questions.** The only way to truly compare apples to apples when considering similar products offered by competing exhibitors is to ask the same questions of each exhibitor.

6. **Don't be afraid to follow up.** You asked all the questions on your checklist. But, something the exhibitor said raised another question, or caused confusion. While it's fresh in your mind – and while the exhibitor is in front of you – ask for clarification. But follow up can go beyond your show visit. At ABRN.com/followup, we offer some simple tips to help you gather all the information you may need, post-show, to make an informed decision.

7. **Write it down.** Perhaps just as important as asking the right question is remembering the answers. The likelihood of remembering one company or product's attributes over another may be difficult that night in your hotel room and even more so after the show is over. Jot down notes highlighting things that matter to you and your business. A few notes should be enough to jog your memory after the fact.

For more information, visit www.boltontechnology.com.

Continue reading this blog at ABRN.com/RightQs.

a barrier that seemed to stop the business from growing and expanding.

Common barriers

1. Having problems finding good help.
2. Not enough customers.
3. Working too many hours.
4. Not making enough money.
5. Owner in overwhelm. (My shop is not organized and I don't have time to think.)
6. Owner has to handle every problem and check on everything or else it doesn't get done right.

The barriers become unsolvable. Owners try everything they can think of to solve the problems. Continue reading at ABRN.com/ KnowledgeImpact.

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- **Chip Foose reveals 1960 Starliner**
This 1960 Starliner by Chip Foose is painted Foose colors for Glasurit and was revealed by BASF during SEMA 2014 in Las Vegas.
[URL: ABRN.COM/STARLINER]

- **Sherwin-Williams, Richard Childress partner on custom trucks**
Sherwin-Williams Automotive Finishes and Richard Childress Racing have partnered to create 25 Off-Road Signature Series custom pick-up trucks.
[URL: ABRN.COM/SWAFCHILDRESS]

- **Unmasking the ultimate defender**
3M gives a behind-the-scenes look at the development of the Paint Defender System, a paint protection film that sprays on as a liquid and dries into a film.
[URL: ABRN.COM/3MPAINTDEFENDER]

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Noteworthy ONLINE COLLISION REPAIR DISCUSSIONS

Lori Lorenz, Automotive Academy: A technician has a 15-year-old, top-of-the-range spot welder, and he is working on a 2014 model car. Before he welds, he performs a series of test welds and is able to match the OEM nugget size. The welder loses performance as it gets warner, so he does a few welds at a time and lets it cool down in between. Is this acceptable, or does he need a new generation spot welder?

Thomas C. Balliet, Pacific Collision Equipment: The real question is can that old welder achieve the required squeeze pressures and amperages. For example, Chrysler states 700 lbs of pressure with the largest arm set and also weld bonded. It is not wise to only go by nugget size as really large electrodes can give the impression of a large nugget, but don't have enough pressure to properly secure the weld. It is good to hear and good to practice doing destructive tests periodically. Also, most smart welders are liquid cooled and require much less operating amps. It is always the most important step when looking at STRSW — what does the manufacturer recommend or require for those specific areas of the vehicle and also is this type of joining method acceptable.

Larry Montanez, Lange Tech and P&L Consultants: First question is what 2014 vehicle is it? It may require STRSW, weld bonding, rivet bonding or some combination of these. By your description, it sounds as if the equipment is the older air cooled type RSW. As Thomas mentioned, it may not be the right machine as it may not meet the Dan/PSI and the amerage may not be great enough. The reason the equipment loses nugget size is due to overheating and letting it cool down is the only way for the machine to operate properly. I also agree that practice welds and destructive tests must be performed. One important thing everyone seems to forget is that the first weld in each area must be shunted with shunting pliers to ensure proper proceeding welds. Additionally, when making practice welds, shunt the first weld and make a second weld with the proper pitch and then peel the samples apart. Both should pull holes. Measure the second weld hole and it must be 5 times the metal thickness or greater, if both are the same thickness.

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STREAMING PROGRAMS

- **Ensuring DRP compliance**
Most people in a collision repair facility will tell you there are few requirements as difficult as pleasing insurers. Darrell Amberson, Director of MSO Relations, and Cheryl Magers, compliance manager with LaMettry's Collision discuss ways to stay compliant with DRP agreements while still maintaining a profitable business model.
Visit: www.abrn.com/DRPcompliance
- **Considerations for shop acquisitions across state lines**
ABRN Director of MSO Relations Darrell Amberson, Consultant Marcy Tieger and Pat James, former MSO CEO, discuss the considerations when openeing a new location across state lines. What is different? What do we need to look for? What do we need to prepare for?
Visit: www.abrn.com/StateLines

2015 INDUSTRY CALENDAR

JANUARY 14-16
- Collision Industry Conference; Palm Springs, Calif.

APRIL 8-9
- Collision Industry Conference; Atlanta, Ga.

APRIL 17-18
- Southern Automotive Repair Conference; Biloxi, Miss.

APRIL 24-26
- Automechanika Chicago; Chicago, Ill.

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BY MIKE LEVASSEUR | COLUMNIST
mikel@keenanautobody.com

Matching job duties to skills

You not only have to find the right people but get them in the right place

In previous columns, I wrote about our internal process for finding and retaining the right people for our business. But part of that effort I didn't mention was making sure those right people also are in the right position within our company so that we all succeed together.

Prospective employees may apply for one position, but, after the interview process, start in another. I remember when our marketing director, Craig Camacho, contacted me about 12 years ago to see about coming to work for our company. Craig and I had previously worked together for a couple years at a dealership where he was selling cars, and I was managing the body shop. We'd both since moved on, but eventually he contacted me here at Keenan Auto Body to ask about an estimating position.

One of the things I remembered about Craig was that people saying "no" to him didn't phase him one bit. He would just persevere in a very intelligent way. So I told him, "I don't think you're an estimator. I think you're a marketer."

Despite his lack of marketing experience, my hunch paid off. Craig's marketing over the past dozen years has played a significant role in our growth.

"WE'VE SEEN PEOPLE WHO WE KNOW ARE AN ASSET FOR OUR COMPANY, BUT WHO DON'T BELONG IN THE DEPARTMENT THEY ARE IN."

In other instances, we've seen people who we know are an asset for our company, but who don't belong in the department they are in. We've moved people from body to paint (and vice versa), from blueprinting to parts, and from parts to estimating.

Sometimes, like with Craig, we've seen strengths and potential they may not recognize in themselves. The manager of one of our locations, for example, started out in the detailing department and then moved into disassembly and reassembly. But we saw what a sharp and organized person he was, and how good he was talking with customers. We just knew we needed him in the office. We trained him first as an estimator, and now he's among our best location managers.

In other cases, our people have come to us, waving a white flag and saying, "I'm really struggling here, but I want to stay." They may find there's too much computer work, for example, yet their technical knowledge and mechanical aptitude may make them ideally suited for a job out in the shop. If we agree they might succeed elsewhere within the company, we try to get them a position in that department.

One advantage of being an MSO is having the option of moving them into an opening at another location. And that's where the consistency you develop within your operation can really pay off. Think about walking into a particular brand of convenience store for a particular brand of gum; no matter which of that company's stores in any state you go into, you probably know just where to find that gum. We strive for that same sort of consistency. So if we move people from one location to another, it will feel much the same to them. They will know where things are and how things operate.

In short, it will help you, once you've found the right people, to make sure you've put them in the right position.

By the way, in my previous column about retaining the right employees, I mentioned we were in the midst of an annual reexamination of our health care benefits. I'm happy to say that after months of negotiations involving three different brokers and four different insurers, we were able to come up with a plan that allows us to still afford to cover healthcare for all our employees. It's been great to hold meetings at each of our locations to let them know we're working to help ensure that they not only have a safe and great employment experience here, but a great life experience, too.

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Tell Me What YOU THINK

If there's a topic you'd like me to address, I'd love to hear from you.

Mike LeVasseur is president and COO of Keenan Auto Body, which has 11 shops in Pennsylvania and Delaware.

PROFIT MOTIVE: YOUR COMPASS TO FINANCIAL SUCCESS

Pouring green cash into the radiator

Document fluid used, and other minor services, or you are giving it away free

BY **TOM MCGEE** | CONTRIBUTING EDITOR

At this time of year, we see many vehicles that have minor front-end damage. It is pretty common to be at an intersection and see a car slide on the snow or ice and hit the car in front of it. And this makes great work for collision repair shops.

But when vehicles with this type of damage arrive at your shop, does your repair plan address all the damage?

Structural alignment

When I perform an estimate audit or am in a shop and I see a core support being replaced, several things go through my mind. First, was the vehicle measured to determine if there is structural misalignment? Shops should measure a vehicle as part of their repair planning. We need to be able to say, "Yes, there is misalignment; here is where and how far out of specs it is," or, "There is no structural damage." If there is, we know it up front and correct it as part of a planned repair flow. It shouldn't be a surprise during the repair. We also need to consider what is now dependent on the alignment of the core support, rails and bumper. What about the sensors, cameras, sonars and radar units that are being mounted in the front of the vehicle? We need to really consider how they are going to operate following repairs if there is structural misalignment that was not identified and not corrected.

Materials and methods

Let's say it was determined that the core support needs to be replaced. The next questions should be, "What is it made out of?" and, "How is it attached?" We need to determine what tools, equipment and supplies are needed for that material and attachment method. If it's a welded-on part, then the repair plan needs to include the repair and refinish of weld damage done to the adjacent parts. Include repair and refinish time to the upper rails, aprons and lower rails. Remember paint times need to include inner and outer surfaces. Your staff is doing this work; you just may not be getting paid to do it.

Disable and re-enable

Let's stay with the idea that the core support is being replaced. Did the repair planner include disconnect and reconnect the negative battery cable, removal or repositioning of wiring and electronics within 12" of the areas to be welded, disable and re-enable the airbag, hybrid or other systems? These are critical to preventing damage to the vehicle or dangerous situations for the technician.

Fluid types and capacities

I audit several estimates every month and find it very common to see that the estimator replaced a radiator and a condenser. The problem is that for the radiator, they either did not include the coolant or they include one gallon. When they add a cost for the gallon, they do not consider the capacity of the system or the type that is required. They just put in a dollar figure that usually ends with .00.

What is the coolant capacity of a 2013 Ford Truck F 250 4WD Super Duty with a 6.2L V8? If the estimator did not include any coolant or only charged for one gallon, the cooling system was filled with your green cash! They filled the system, but it was done for free. This vehicle has a capacity of 25.4 quarts or 24 liters. With a 50/50 mix, you need 6.4 gallons to fill the system.

On the condenser they do better, but it's still common not to charge for the oil that needs to be installed when a part is replaced. They also frequently list recover and recycle both refrigerant and coolant. Not an easy task if it was left at the intersection where the collision occurred!

Cooling system capacities

I would encourage you to develop a standard operating procedure that provides for consistently documenting the fluid types and capacities required for the vehicles you are repairing. If you aren't determining the type and capacity of the cooling system on the repair plan, then just remember that the liquid your staff is using to fill the system is your green cash. To help you see the differences in fluid capacities, we have developed a list of vehicles and their cooling system capacities. Try it free for a limited time by going to www.ationline-training.com/abrn1501.

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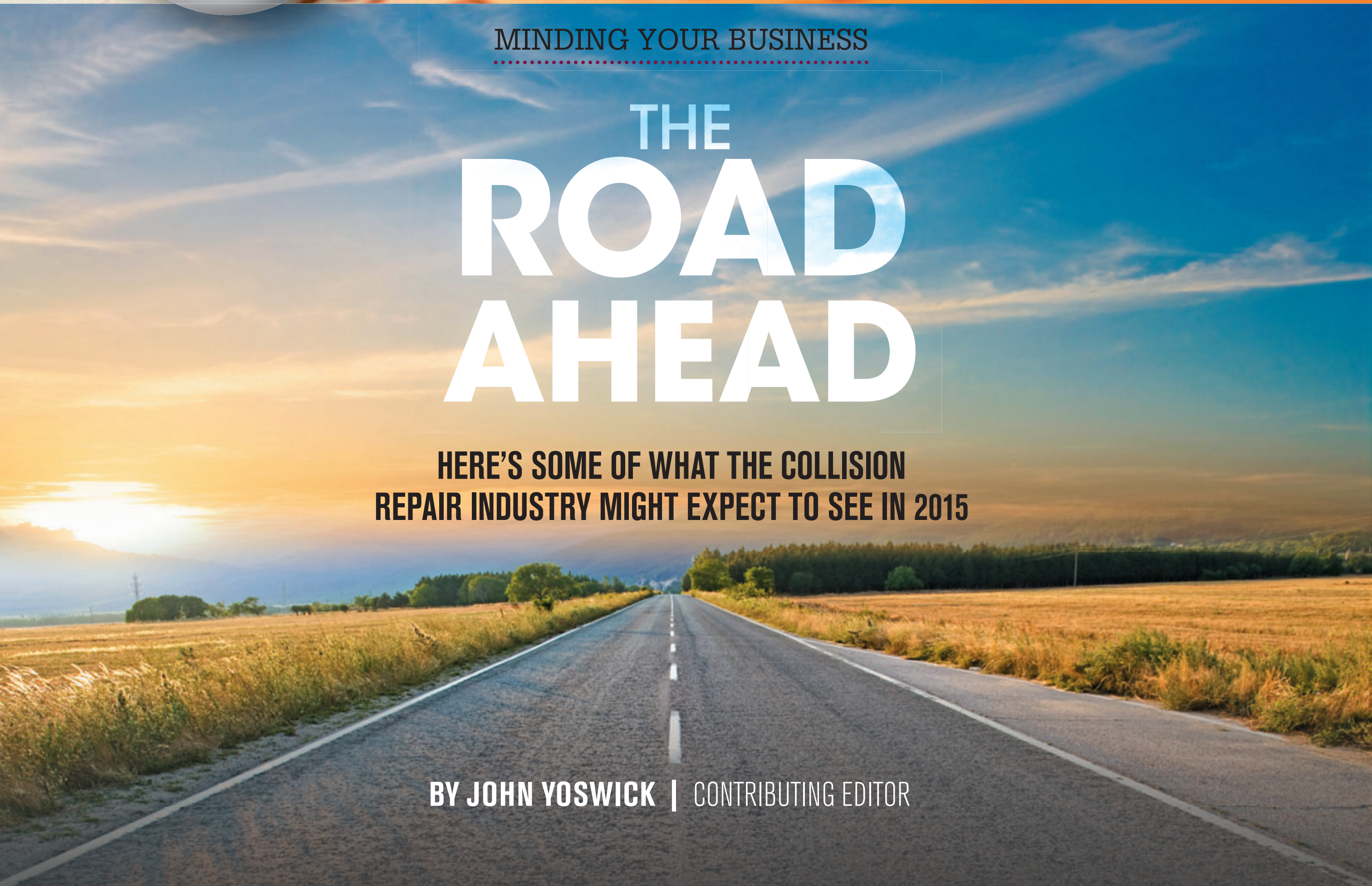
MINDING YOUR BUSINESS

THE ROAD AHEAD

HERE'S SOME OF WHAT THE COLLISION REPAIR INDUSTRY MIGHT EXPECT TO SEE IN 2015



BY JOHN YOSWICK | CONTRIBUTING EDITOR

THE COMING year could be a raucous one for the collision repair industry between lawsuits, accelerating consolidation and the non-stop pace of change in the new technology and materials the automakers are forcing shops to confront. As 2015 begins, here's our annual preview of what to look for in the coming year.

A judicial battlefield

Lawsuits between shops and insurers have been a regular part of the collision repair landscape, but they may have reached a new level in recent months. As 2014 came to an end, there were at least 19 similar lawsuits in 17 states in which shops and their trade associations accuse insurers of conspiring to manipulate labor rates and other shop charges to reduce costs.

It's far too early to know where those lawsuits may go. A U.S. District Court in Florida last year dismissed one of the first such suits filed – though it did give the shops a chance to resubmit an amended lawsuit (which they did). Now that same court may end up overseeing all 19 of those lawsuits if efforts by insurers – largely unopposed by the shops – to consolidate them there pan out.

That could mean a quick end to the lawsuits if the judge dismisses them with prejudice (meaning they can't be amended and refiled). Or 2015 could be a long year of the suits making their way through a judicial process that will extend far beyond the coming 12 months.

Needless to say, there will be a lot of eyes on that U.S. District Court in Florida as 2015 progresses.

States eye insurer activity

If the end of 2014 is any indication, shops won't be the only ones in 2015 putting some pressure on insurers for activities that regulators or other government entities view as questionable.

In addition to two lawsuits filed against insurers by shops in Louisiana, similar charges are being levied against State Farm by Louisiana's Attorney General James "Buddy" Caldwell. His state filed suit against the insurer last August, contending that State Farm's practices and its Select Service program result in manipulation of shop labor rates and compensation, and strong-arm shops into using unsafe parts.

"State Farm has created a culture of unsafe business practices in which consumer vehicle repairs are performed with

cost-savings as the primary goal rather than safety and reliability," Caldwell said at a press conference announcing the suit.

State Farm has said the allegations in the suit are "not in line with State Farm's mission to serve the needs of its customers, and our long, proud history of achievements in advancing vehicle safety." It also is working to have the suit moved to the same U.S. District Court in Florida handling the shop suits, something Caldwell is opposing.

Other regulators are also calling out insurer activities. Oklahoma Attorney General Scott Pruitt in November issued a warning in his state about the practice of "steering" by insurers, in which "insurers strongly push consumers to autobody repair shops that may provide substandard service to consumers."

Pruitt said some insurers "may be crossing the line, making dishonest statements" that lead some consumers to use a shop they might not otherwise – or not even realize the choice of shop is their own.

Shops in at least a handful of other states are in concerted talks with insurance commissioners and attorneys general. Those shops say they expect to see in 2015 more of these strongly worded messages to insurers about obeying the spirit as well as the letter of the law.

No big swings in the numbers

Don't look for any dramatic changes in the volume or average repair cost of claims in 2015, nor a big shift in the percentage of vehicles being declared total losses. Analysts see some conflicting trends that make projections difficult, but also limit how much swing there likely will be one way or the other.


Rick Tuuri

Aside from what may happen weather-wise, economic issues and the continued shift toward higher deductibles should continue to keep claims flat or down slightly, says Rick Tuuri, vice president of industry relations with AudaExplore."This has been the trend and will remain so," he said.

Susanna Gotsch of CCC Information Services also foresees a continued trend toward fewer but perhaps higher-dollar claims. With more car-sharing, telecommuting and other alternatives to the traditional notion of transportation, she said, vehicle miles traveled has still not returned to pre-recession levels.


Susanna Gotsch

But the continued rebound in new car sales will have several impacts on shops. The growing number of these more complex vehicles may boost average repair costs somewhat, Gotsch predicts. The recession's impact on new car sales drove the average age of repairable vehicles up from 5.1 years in 2006 to 6.4 years in mid-2012. But it has plateaued there ever since, and may even start trending down in 2015, Gotsch said. That would be a good thing for shops, she said, because "younger" cars are more likely fully insured and repaired after an accident.

But with 70 percent of all vehicles in operation now being seven or more years old, Gotsch doesn't foresee much decline in the rate of total losses. If new car sales continue to be strong, the percentage of total losses may drop one or two points, she said, but that decline will take several years.

Used car prices are another key indicator of what to expect in terms of total losses, Tuuri said. If a wrecked vehicle had a lower pre-accident value, repairs are more likely to reach the total loss value. The growth of new-car sales has been among the factors that led used car values to drop during much of 2014. But Tuuri said that could change over the next 12 to 18 months, tempering any slight near-term rise in total loss percentages.

New trade show premiers

For a number of years, the industry had one destination for a national tradeshow: Las Vegas in the fall, when both NACE and SEMA took place, if not in the same week, then only less than a month apart. That changed in 2014, and will change again in 2015.

SEMA will continue to be held in Las Vegas in the fall this year (November 3-6), with a large and growing collision repair section in the otherwise massive tradeshow filling the convention center and adjoining spaces.

NACE, however, had a successful move to summer in Detroit this past year, seeing its first uptick in attendance and exhibitors in several years. Many attendees seemed surprised by the vibrancy they found in Detroit's core, and liked the live product demos on the tradeshow floor that many other venues couldn't offer. NACE organizers saw that growth and heard the positive comments. It will return to Detroit this July 21-25.

The new option for shops in 2015? Automechanika Chicago, the first U.S. edition of the massively successful European event, comes to McCormick Place West in Chicago April 24-26. Organizers, which include Advanstar Communications (publishers of *ABRN* and *Motor Age*) are predicting 400 exhibitor companies and 8,500 attendees at the premier event.

That gives shops opportunities in spring, summer and fall to see the new products and services available to the industry, and take advantage of the training and networking all these events offer.

Access to OEM information

Though it launched last summer, 2015 should be the year more shops in the industry begin taking advantage of all that I-CAR's new Repairability Technical Support Portal has to offer. Its goal is to put repair procedures and vehicle information as close to technicians as the nearest computer, tablet or smartphone screen.

"We really want to put this information into technician's hands," said Jason Bartanen, director of industry technical relations for I-CAR. "They may not walk up to the front of the shop to ask a technical question. But if they have the answer in their pocket, maybe they are more likely to take a look to see what they can find on the website."

The website is available through the Technical Knowledge section of I-CAR's website – www.i-car.com – or directly at http://rts.i-car.com. It feature six primary features, including:


Jason Bartanen

- An OEM Information section, with a page for each automaker, listing what types of collision repair procedures and information each makes available and how to access it. It offers not just links to the

automaker's repair information websites but often some of the actual procedures, bulletins and information technicians or estimators may need.

- Other sections, searchable by year-make-model, list what sectioning procedures are available from the automakers, and offer a guide to automaker information on which parts require inspection or replacement following an airbag deployment.
- The Ask I-CAR section is just that, a way for a portal user to email or call I-CAR with a technical question for which they haven't been able to find an answer.

Bartanen said to watch for lots more information to be added to the portal in 2015 as many automakers are anxious to use it to put technical information and procedures into collision repairers' hands, often at no charge.

New parts pricing model

General Motors dropped jaws last November when it announced it was making a switch to a new real-time pricing system for crash parts, discontinuing the publication of traditional list prices. The launch of MyPriceLink was initially set for December 1, but within days GM, while still "committed to the initiative," had pushed the start to "early 2015." Publicly, GM said that "workflow pressures on outside parties have brought to light enhanced solutions and the increased desire for integration opportunities," necessitating the delay.

As described by GM, the new system means that parts prices will no longer be available within the estimating systems. Instead, shops will need to upload all estimates requiring prices for GM parts to MyPriceLink, which will then return the estimate back with current, competitive prices.

It will mean some change to standard operating procedures for shops, but late in 2014, much of the industry was trying to get their hands around what all it will mean. How it plays out in 2015 will likely impact whether other automakers follow GM down the same road.

Aluminum repair work grows

As the 2015 Ford F-150s start making their way from showrooms to the highways, many shops will get their first experience with aluminum repair this year. During 2015 and 2016, Ford hopes to certify another 1,400 independent shops (in addition to the 750 dealerships and 860 independents already certified) as prepared to repair aluminum. That will mean a lot of shops investing this year in equipment and training.

Ford and aluminum industry executives hope it will also mean a heavy emphasis on safety for shops working on aluminum. Aside from the risk of galvanic corrosion if aluminum or steel 'contaminates' the other, a separate work area and aluminum dust extraction system is required because aluminum dust is potentially an explosion hazard.


Doug Richman

"I don't ever want to hear about a shop having a fire or explosion with aluminum dust," Doug Richman, vice president of engineering and technology for Kaiser Aluminum, said. "I know this hazard isn't news, but I want to reinforce it."

The first 500-shop MSO?

This could be the year a multi-shop operation reaches the milestone of having 500 shops. Just like a year ago, two franchise operations, Maaco and CARSTAR, each with about 450 shops, are the closest to that milestone. Other chains are growing significantly faster, however.

Of those, only The Boyd Group (which also operates shops under the names True2Form and Gerber) is significantly more than halfway to 500 shops. But the next three biggest chains combined have more than 600 shops. With ABRA, Caliber and Service King (like Boyd) all adding dozens of shops each year, a merger or acquisition within these top MSOs – something that is often rumored – could easily launch one over the 500-shop mark.

More than one industry analyst has predicted that 2015 will be the year that happens.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TRAINING IN FOCUS

COMPLETE COMPLIANCE

MAKE YOUR PAINT DEPARTMENT AS SAFE AS POSSIBLE

BY TIM SRAMCIK | CONTRIBUTING EDITOR

IMAGE: PPG

Let your painters try out a variety of protective gear so they can pick gear that offers the most comfort. Upgrade to fresh air supplies if possible.

One of the biggest challenges when dealing with shop safety is not knowing you have a problem until it's too late. Consider the Montana shop that grabbed industry attention in late 2013 after a paint department explosion killed one employee and left another seriously injured.

The workers had been pouring lacquer from a barrel through a funnel into a smaller container when fumes from the lacquer ignited. An investigator from the Occupational Safety and Health Administration (OSHA) later determined a lack of grounding and no physical clip between the containers were the cause. These violations were among the nine OSHA issued the shop, along with a proposed fine of $51,000.

While it may be convenient to write off this accident as a rare occurrence, repairers need to keep a couple of things in mind. One, this was no fly-by-night shop. It had been in business for over three decades and was very successful, commanding more than 30 percent of its market. In the previous five years, the shop had received no OSHA citations. Finally, how many shops can say, in complete confidence, something like this could never happen in their paint departments?

Strictly adhering to regulations set by OSHA, the Environmental Protection Agency (EPA), and state and local governments is the cornerstone of your shop's safety. Considering the number of regulations, along with new rules being added, this can be difficult — especially considering you need to make sure every one of your employees sticks to them. Managing an effective shop safety program in your paint department, as part of an overall safety plan for your business, is your answer. Here's what you need to know and do to put one in place.

Stumbling blocks

What are your biggest safety issues in your paint depart-

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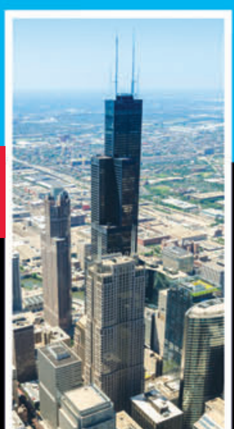

Chicago Fast Fact:

Indiana, Illinois, Michigan and Wisconsin are all visible from the top of the Willis Tower in downtown Chicago.

ment? The answer to that question will, of course, vary from one shop to another. There are several specific issues that cause the industry, as a whole, the most problems.

Judging from a review of the most common OSHA citations and input from paint companies and repairers, two major areas are the sources of most problems — personal protection gear and the mixing room.

In the first case, getting repairers to wear mandated equipment like OSHA-approved respirators and eye protection has bedeviled shops for years. Over a decade ago, the EPA published an article that declared the main challenge for shop owners — "nine times out of 10" — is getting employees to wear protective gear.

In the mixing room, as evidenced by the Montana explosion, employees often fail at properly sealing containers and transferring flammable liquids. Other problems arise due to the fact mixing rooms fall under a host of federal and regional regulations covering everything from storage to the room construction.

Tony Wise, owner of Wise's Expert Auto in Charlotte, N.C., has spent several decades in the industry and has dealt with these issues at several different shops. Recently, he continued renovations on his business by relocating then redesigning his mixing room, a task he calls "the single biggest self-inflicted pain" of his entire career. He believes failures with protection and the mixing room have two main sources.

"First, you're dealing with employees who are working too fast to do their jobs properly — which means thoroughly and safely," Wise says. "Today's paint departments are under incredible pressure to push out work as quickly as possible."

The second source, he notes, is "a failure of management to follow up." There too, says Wise, managers often are so focused on production, they overlook safety.

"When you're trying to squeeze every last dollar from your paint operation, it's way too easy to simply put off fixing a broken fan switch or ordering new storage containers because your old ones may be leaking," he explains.

Wise also suspects some repairers might have trouble maintaining OSHA compliance in their mixing rooms because they may be relocating them to open up production areas, as he did. Also, with shops expanding their operations to multiple locations, owners may be overlooking safety problems in shops they purchase. Owners may be taking on employees they assume are following OSHA codes when, at times, they are not.

Regulation complications

Problems like these can be further complicated by new regulations. The most significant recent regulatory change affecting your business is the EPA rule commonly referred to as 6H, which aims to reduce pollutants released during automotive painting.

Note: This rule, as with other EPA regulations, is targeted more at health than safety. Because the areas and issues they cover also fall under OSHA

IMAGE: LEFLER COLLISION AND GLASS

An effective safety program will help create a problem-free, profitable paint department.

IMAGE: SHERWIN-WILLIAMS

Mixing rooms fall under a number of federal and local regulations. Avoid issues with yours by keeping it as clean and orderly as possible.

regulations, you need to tie health and safety together. This approach reduces complexities and helps ensure your business's total regulatory compliance.

Existing shops needed to become compliant with 6H more than three years ago (new structures have 180 days), but repairers still have plenty of concerns with it, according to paint vendors *ABRN* has spoken with.

Those concerns stem from the extensive requirements tied to 6H that cover everything from products, spray guns, spray booths, training and documentation. It's therefore worthwhile to re-examine the basics of the 6H rule:

Mixing scales provided by your paint vendors will reduce waste and help maximize profits.

IMAGE: SHERWIN-WILLIAMS

Products

- If more than one ton of Methylene Chloride (MeCl) products are used per year, management must develop and implement a written MeCl minimization plan
- If less than one ton are used annually, no written plan is required, but the following MeCl alternatives must be considered:
  - Stripping agents that do not contain MeCl (such as formic acid or benzyl alcohol)
  - Mechanical stripping
  - Thermal or cryogenic decomposition
  - Blasting with wet or dry media
  - Intense light

Spray guns

- Spray-applied coatings must be applied with HVLP spray guns, electrostatic application, airless or air-assisted airless spray guns or equivalent technology.
- Spray gun cleaning must be done so that an atomized mist or spray of the cleaning solvent is not created outside a container that collects used gun cleaning solvent.

Spray booths, spraying areas

- Filters achieving a minimum 98 percent capture efficiency must be installed on the exhaust of all spray operations.
- Shops that refinish complete motor vehicles or other mobile equipment must spray in a fully enclosed spray booth or station and operated under negative pressure. Fully enclosed booths using an automatic pressure balancing system can be operated up to 0.05 inches water gauge positive pressure.
- Shops that refinish parts, products or vehicle "subassemblies" must spray in an area with a full roof and at least three complete walls or side curtains. This area must be vented to draw air throughout it.
- Mobile spot repairers must enclose the area being coated, capture paint overspray and filter the exhaust.

Training

All personnel that spray-apply coatings must be trained and certified on spray gun equipment selection, spray techniques, maintenance and environmental compliance.

Documentation

- Records must be maintained for 5 years and must be kept on site for at least 2 years:
- Shops must maintain painter training certification with training dates, along with documentation of filter efficiency and documentation from the spray gun manufacturer that the gun is permitted under 6H.
- Document annual usage of MeCl or MeCL minimization policies (if applicable)

Your safety program

The best way to approach safety is with a program that highlights its importance in your business and puts a consistent focus on it. Use these steps to develop your safety plan.

1. Designate a safety leader. Whether it's a manager, foreman or another employee, put someone in charge of your program who already holds a leadership position. The leader will possess a thorough understanding of all the regulations that affect your operation and will track any updates or changes. Next, build a team around that leader with one person representing each operational department who will. Your leader should set goals and discuss safety as part of regular shop meetings.

Goals for the paint department can include cutting waste, replacing toxic products and recycling finishes and other solvents. Goals also should include seeing that everyone in your organization fully understands and follows safety guidelines, even those that fall outside their job descriptions. Safety is a team effort, and everyone needs to be involved.

2. Get help. Plenty of assistance is available to ensure you meet safety and health guidelines. Paint and supply vendors and industry groups typically either offer programs or can put you in contact with compliance experts. Organizations like the Automotive Services Association of Ohio offers mock OSHA inspections. Federal and state EPA and OSHA offices can provide help, as can companies that insure your business and buildings.

Keep in mind that you'll also need to abide by state and local regulations that frequently build upon federal rules. New York state, for example, requires shops to file an Environmental Report Form. Locally, many cities and municipalities adopt recommendations from the National Fire Protection Association. Many of the same sources who help with federal compliance can offer aid here as well.

Utilize inventory systems and controls, like this inventory cart, to help reduce the number of products in your inventory.

IMAGE: PPG

3. Organize. Bad practices often arise from disorganization. Set up your paint department so protective gear and other supplies are easy to locate and store. Remove all clutter and see that employees keep their work areas neat. Keep your mixing room clean and

orderly with sufficient shelving and storage areas that are clearly marked.

Since mixing rooms are frequently areas of trouble, consider updating yours or investing in a prefabricated unit. Prefab mixing rooms can offer terrific advantages since they arrive compliant with all federal and regional codes.

4. Get up to speed. Using available assistance and tools, make your shop is fully compliant and capable of passing any inspection. Address all problem areas and inform employees of your "fixes."

5. Train regularly to maintain your program. Don't simply state your safety guidelines and goals. Demonstrate them with hands-on training. Have your employees repeat them so you'll know they understand. Note that OSHA requires you to provide training on the use of safety equipment, and other agencies can have similar mandates. Create an annual safety test for employees.

6. Optimize your safety. Your paint department is a veritable toxic stew of products that are dangerous, flammable and capable of causing immediate and long-term health problems. The best way to cut down on safety concerns is by removing/reducing threats where possible. Replace solvents and other products with environment-friendly versions. If you haven't already, move to waterborne paints. Track your inventory so you can stock minimum amount of finishes and other products. Use paint mixing systems from your vendors to ensure you're creating minimal waste. Utilize spraying techniques that reduce overspray.

Invest in an automated spray gun cleaners since they protect employees from cleaning solvents and use smaller amounts of them. Help ensure employees utilize protective gear by allowing them to try out a range of respirators, eyewear, gloves and paint suits so they can identify the versions that give them the most comfort. Upgrade your protective gear. If possible, move to fresh air respirators.

7. Accountability. Your safety program won't work unless your make your employees fully accountable. This means routinely reviewing their safety performance and noting any problem. Put penalties in place for failures to comply with your standards. This can include verbal or written reprimands, loss of pay, suspension, etc. These actions may seem harsh, but they drive home just how important your rules are. (Also, would you rather reprimand a worker or visit one at a hospital or funeral home?)

Once you get your plan in place you'll find that maintaining it actually involves little time. Most employees simply will need to take add just a few extra minutes to some of their work tasks. You'll end up with a safer, more profitable paint operation.


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A VEHICLE ALIGNMENT EDUCATION

TECHNICIANS CAN RESTORE DAMAGED STEERING SYSTEMS WITH DILIGENCE, KNOWLEDGE

BY **LARRY MONTANEZ** | CONTRIBUTING TECHNICAL EDITOR

Steering and suspension components have changed drastically over the last 10 years. With the advancement in so-called smart suspension systems and steering assist systems, damage assessors and technicians have had a difficult time diagnosing the damage sustained. In many cases, damage goes undiscovered until the vehicle goes in for a wheel alignment, or technicians change parts until the vehicle will take a wheel alignment. Another issue is that many OEMs are now requiring that if there is damage to a suspension component, many of the components in that area be changed. Likewise, damage to the tie rod end requires the rack and pinion assembly to be changed per the OEMs. The above issues not only show the importance of pre-measuring and diagnosing steering and suspension components, but also address the importance of checking with the OEM repair manuals for what is required after a collision event.

Diagnosing damage

Understand what type of collision the vehicle was involved in and what occurred in the event. For example, a vehicle traveling at 15mph on snow that slides into a curb and causes scraping of the rim and bending of the outer tie rod is completely different than a vehicle traveling at 30mph and impacting a pothole that bends the rim and the outer tie rod. Many OEMs are utilizing aluminum to make the suspension components. During collisions, the applied impact forces can cause the aluminum components to bend and deform — not only at the point of impact, but often also to the suspension components in the opposite area of the impact. Damage is frequently not visible to the naked eye and requires mechanical or electronic measurements to ensure there is no sustained damage. Damage assessors and technicians must never assume that damage is or is not present; they must measure. They must also check the OEM information on procedures after a collision event and position statements on suspension and steering component damage and repair.

Measuring suspension components can be done comparatively and mechanically with tram gauges and tape measures. If components are found to be misaligned, then we recommend electronic measurements be taken with three-dimensional structural repair measurement equipment from manufacturers such as Car-O-Liner, Spanesi, Chief or similar companies. If wheel alignment equipment is available, we recommend a four-wheel alignment check be performed. Either of the electronic systems will determine the extent of damage, if any. This will ensure that the technician knows what needs to be replaced — or not replaced.

Many vehicles have multiple electronic assist components and electronic controls that must be initialized and reset after component replacement. Many vehicles also come with an automatic cruise control system that works with the steering system, and most vehicles also have a backup camera that works with the steering angle and/or yaw-rate sensors. These systems must also be checked during the analysis process.

Many OEMs have serviceable tie rod ends, but these replacement parts are only for normal wear and tear and not for collision damage replacement.


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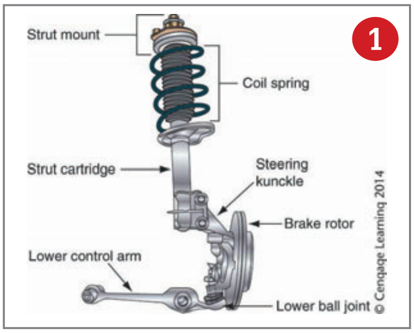
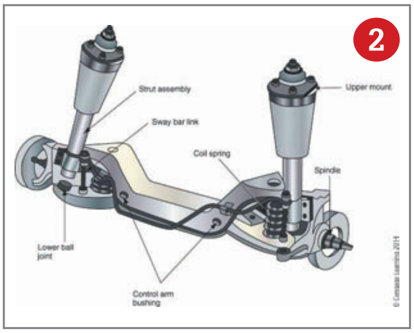
In this case, if the tie rod is damaged in a collision event, the OEM would require the replacement of the rack and pinion steering assembly. Additionally, if the rim and tie rod are damaged, all the suspension components on that side may require replacement. Generally, when a tie rod sustains damage, the rim also sustains some damage. Rim assemblies need to be evaluated for the extent of damage sustained.

Most of the OEMs have position statements that state "no bending, reshaping, adding material, removing material, welding or heating of the rim." This is why refurbishing a wheel assembly is really not a good idea. The extent of damage sustained is often unknown due to the fact that the main issue is micro cracking that may be present and undetectable without Magnafluxing or X-Raying the rim — procedures that are not typically cost effective.

Today's damage assessors need to become para-engineers due to the changing complexity of vehicle designs and components. This industry needs to raise the bar on education and training. The driving public is relying on us to ensure their vehicles are repaired safely. Too often, we inspect vehicles post-repair or during accident reconstruction and discover incorrect repair procedures attempted where those procedures were a contributing factor in the subsequent collision event. Many times, we find that suspension components failed in those investigations. Failure of steering and suspension components that were damaged and left undetected during the repairs can have disastrous results, and all the liability rests solely on the repair facility. Always follow the OEM repair procedures and protocols. Making a business decision to appease a third party can expose you to a huge financial loss, if you were negligent.





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AN ALIGNMENT REFRESHER

BY **ALFRED THOMAS** | CONTRIBUTING EDITOR

Caster, camber, toe-in/toe-out, toe-out on turn, steering axis inclination, included angle, thrust angle — the list could go on. All of these conditions, angles and measurements must be returned to their vehicle-specific settings after a repair so that the car will steer correctly, have proper tire wear and be safe to operate. The task can seem daunting. Yes, there are technicians that only do alignments, both following collisions and for normal vehicle and tire wear.

So as collision technicians, what should we know? This article is not intended to teach you all there is to know about steering and suspension components, aligment procedures and/or damage analysis. What it is meant to do is refresh your memory or highlight the important areas you should know concerning a vehicle's alignment following a collision. First let's start with some suspension types. So as collision technicians, what should we know? Let's start with some suspension types.

MacPherson suspension system

Though there are many different types of front-end suspensions, the MacPherson is by far the most common. It is used commonly on front-wheel drive vehicles and on all-wheel vehicles of monocoque design. The position of the upper mount is critical to the vehicle's steering angles, especially the steering axis inclination (SAI). The strut assembly, which is also the shock absorber, if bent, will greatly alter the spindle's position. A test for a bent strut assembly will be discussed later.

The location of the spring on a MacPherson suspension is normally high on the strut, as in ***FIG 1***, but may be located lower between the control arm and the vehicle's body, as in ***FIG 2***.

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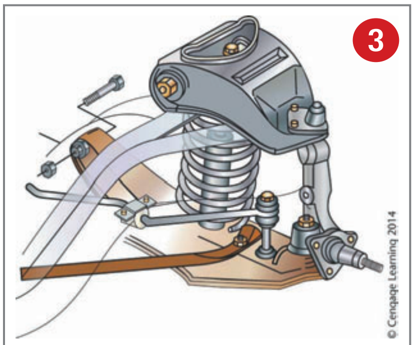

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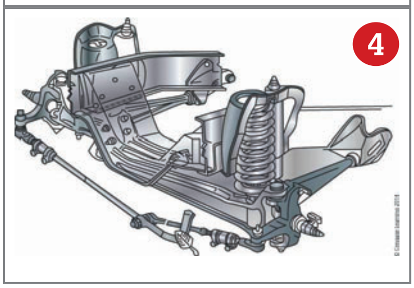


SLAs

Short and long arm suspension (SLA) ***(FIG 3)*** is also a frequently used type of suspension, commonly found in vehicles with rear-wheel drive.

In the illustration, the lower long arm cradles the lower spring and the upper short control arm cradles the upper part of the spring, with the shock absorber running in the center.

I-beam suspensions
I-beam suspensions, either single or twin ***(FIG 4)***, were once found on light duty trucks and have now been replaced with SLA on most pickups. They can be found on heavy trucks, however, because of their ability to suspend higher weights of the bigger vehicles.

Next let's look at steering terms and angles.

Camber
Camber ***(FIG 5)*** is the inward or outward tilt of the top center of the wheel when viewed from the front of the vehicle. It is commonly identified as either negative camber (inward), positive camber (outward), or zero camber. The camber angle is measured in degrees from true vertical or zero camber.

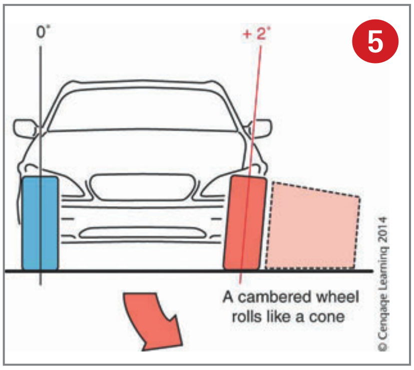
Camber is a wear angle, and if the angle is incorrect, either the inside or the outside of the tire contacts the surface exclusively. This places the entire weight of the vehicle on a small part of the tire, thus wearing it down more than the remainder of the tire. An incorrect positive camber will wear the tire more on the outside, while an incorrect negative camber setting will wear the inside of the tire more. Keep in mind that vehicles may have a proper camber setting that may be either positive or negative which is correct for that vehicle and will not wear the tire incorrectly. It is only when the camber setting is more (either positive or negative) than specified that results in abnormal tire wear.

The vehicle's tires should be inspected for such incorrect tire wear, which may indicate that the vehicle was not in proper alignment prior to the collision.

Caster
Caster is described as the forward or rearward tilt of the front wheel on the steering axis, when viewed from the side, which is straight line from the upper pivot point, strut or upper ball joint, through the lower pivot point, the lower ball joint. Camber is also referred to as either positive (rearward of the steering axis) or negative, which would be forward of the steering axis ***(FIG 6)***. Again remember that a setting for a vehicle may be either positive or negative and still be correct. It is only when the setting is outside these prescribed settings that steering troubles result.

Toe in/toe out
Toe is the dimensional difference between the front of the front wheel and the rear of the front wheel ***(FIG 7)***. Toe is the single most critical angle that is set during an alignment, and it is always set last after all other measurements have been taken and adjusted. It is a wear angle, and if incorrect, it can cause excessive tire wear in a very short time. It is also described as positive (toe-in) or negative (toe-out). Incorrect positive or negative toe can cause tire scrubbing, and / or feathering.

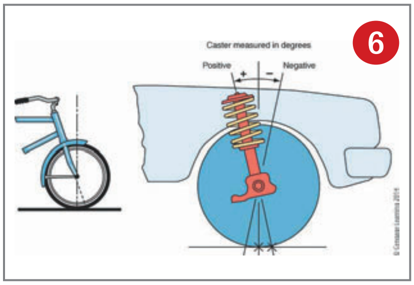
Toe-out on turn ***(FIG 8)*** is a nonadjustable angle that is affected by the steering arm only. It can be corrected by replacing one or both of the



steering arms that may have been bent during a collision. This is also a tire wear angle, but it affects the vehicle most significantly during a turn. Each wheel takes a slightly different path on a turn that is affected by the steering arms on the vehicle. Turn angle out of specifications will have a poor response on a turn, squealing tires, and/or excessive front tire wear.

Steering axis inclination

Steering axis inclination ***(FIG 9)*** is the degree or amount of inward tilt



of the upper pivot point from a true vertical line on the steering assembly. This inward tilt tends to keep the wheel pointed straight ahead. It is also largely responsible for returning the wheel to a straight-forward position after a turn is completed. In older service manuals, it may be referred to a King pin inclination (KPI), but if used correctly, SAI is only correct on I-beam suspension. Possible causes for out-of-spec SAI include: tip pivot point moved in or out, bottom pivot point in or out, or unibody structure out of specs. SAI plus actual camber (positive) or minus actual camber (negative) is the included angle. When camber is positive, add it to the SAI angle. If camber is negative, subtract it from the SAI angle. This angle is used as a diagnostic tool to determine if structural misalignment is present or suspension parts are bent

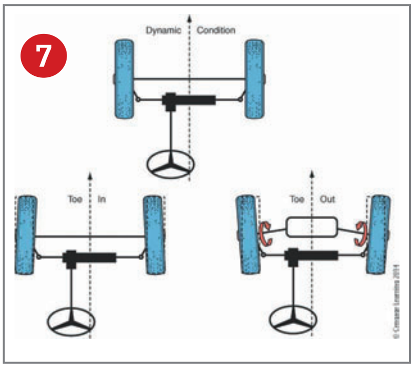
Thrust angle

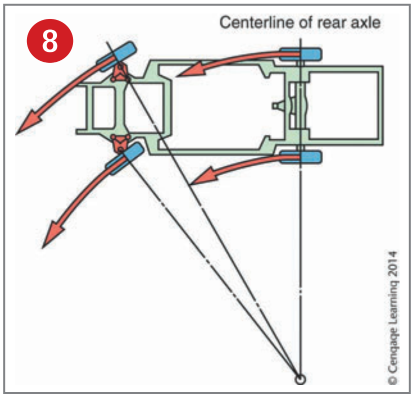
The thrust angle ***(FIG 10)*** is the direction all four wheels move in relation to the vehicle's centering. It is determined by the position of the rear axle and the toe of the wheels. If the rear wheels are aimed straight forward and are parallel to the centerline, the vehicle will move straight forward. This is referred as a zero-thrust angle or no-thrust angle, which is the ideal effect. On the other hand, if one of the wheels is toed-out and the other is toed-in, the rear of the vehicle will tend to run out toward the side with the toed-out wheel. This is commonly referred to as dog tracking. An out-of-specs thrust angle will dog-track, have unbalanced steering on turns, oversteering or understeering, and/or fast tire wear.

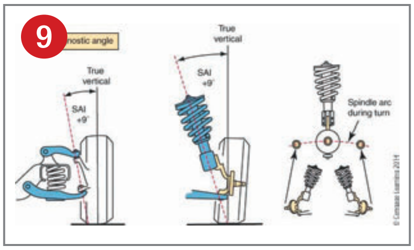
Bump steer

Bump steer ***(FIG 11)*** is not considered one of the alignment geometry angles or one of the alignments usually made as part of a wheel alignment, but it is a condition that can become an issue after a frontal collision. Bump steer describes a condition in which, after a vehicle hits a bump, it wants go in one direction and then another, or it darts and dives, without moving the steering wheel. Bump steer is caused when the rack and pinion steering system is misaligned. The rack is usually the cause of the bump steering. A variance of as little as 3mm (1/8 in) can cause the vehicle to bump steer. Normally the causes of bump steering in rack and pinion steering vehicles are misaligned rack and pinion, improperly repaired strut tower, misaligned engine cradle, or misaligned lower control arm mounting locations.

Bump steer can also be experienced on vehicles that have a standard gearbox/steering box and idler arm. With this diagnosis, the cause for the bump steer response is the intermediate tie rod not being parallel with the vehicle.





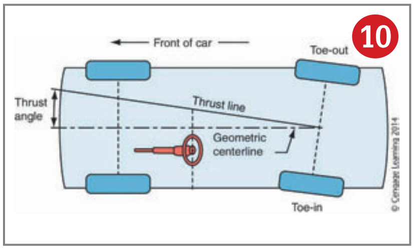


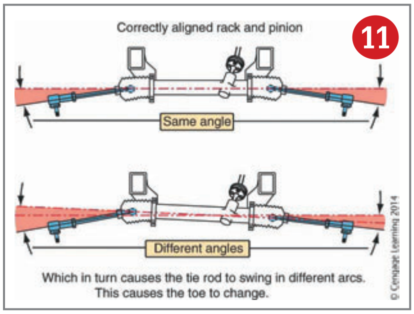
Following a collision, a vehicle will often need to be aligned to completely to return the vehicle to its pre-collision state. There are two possibilities that could cause a vehicle to be out of alignment: body/frame damage or damaged components. On occasions a collision-repaired vehicle is sent to the alignment tech who finds that the vehicle cannot be adjusted back to alignment specifications. It is likely that the vehicle will then be sent back to the body shop, the thinking being that the vehicle's structural components were not repaired properly. In reality, the vehicle has probably been repaired correctly, but there still may be steering components that have been bent and are in need of replacement. If collision repair technicians are to be certain that the repairs they perform are complete, they will need to check not only the structural frame/body alignment, but also components of the suspension, engine cradle or sub frame, and steering gear. Vehicles that have sustained collision damage to steering or suspension mounting locations, damage to suspension parts, engine cradle damage or misalignment, or damage in a rollover, will need to be inspected for proper alignment and adjusted as needed. This is why it is imperative to measure the vehicle three dimensionally.

There is a series of checks that should be performed while the vehicle is still in the collision repair shop, prior to sending it to the alignment department. The checks include such measurements as ball joint location, shock tower location, and thrust line. Also, such inspections as ride height and checks for tie rod damage, bent strut, bent steering knuckle, bent sector shaft; and tests for wheel run out and bump steer should be completed. If the vehicle is within tolerance structurally and the above checks and tests have performed (thus necessary parts have been replaced), it is likely that the vehicle will align properly when sent to the alignment technician.

Strut tower location

The strut tower location strongly influences a vehicle's alignment, and though some vehicles provide adjustment for camber using slotted holes in the top of the strut tower, these adjustments are limited. The proper location of the strut tower should be verified while structural analysis and repairs are being performed. Camber problems, especially one-sided (on the damaged side) camber problems, often indicate that another problem exists, one possibility being a bent strut. If Steering Axis Inclination is measured and found to be out of alignment, structural damage is likely. If a camber problem is identified on any suspension type (McPherson, Short/long arm or solid axle), the cause of the camber misalignment should be identified. The technician should recheck mounting locations, and should also perform an inspection for bent components.





Bent strut

A bent strut ***(FIG 12)*** can be identified by loosening the strut shaft upper lock nut and rotating the shaft 3600 with a wrench. While rotating the shaft, and using the fender lip as a reference, look for a change in the tire tilt. Movement indicates a bent shaft. (REMINDER: When the test is completed, retighten the locking nuts.)

Ball joint location

Most structural measuring devices provide specifications and are capable of measuring the location of the lower ball joint. If these measurements are not available, the technician could take a comparative measurement from right to left. If there is damage on both sides of the vehicle, taking a comparative measurement to a non-damaged vehicle is also an option. If, after structural

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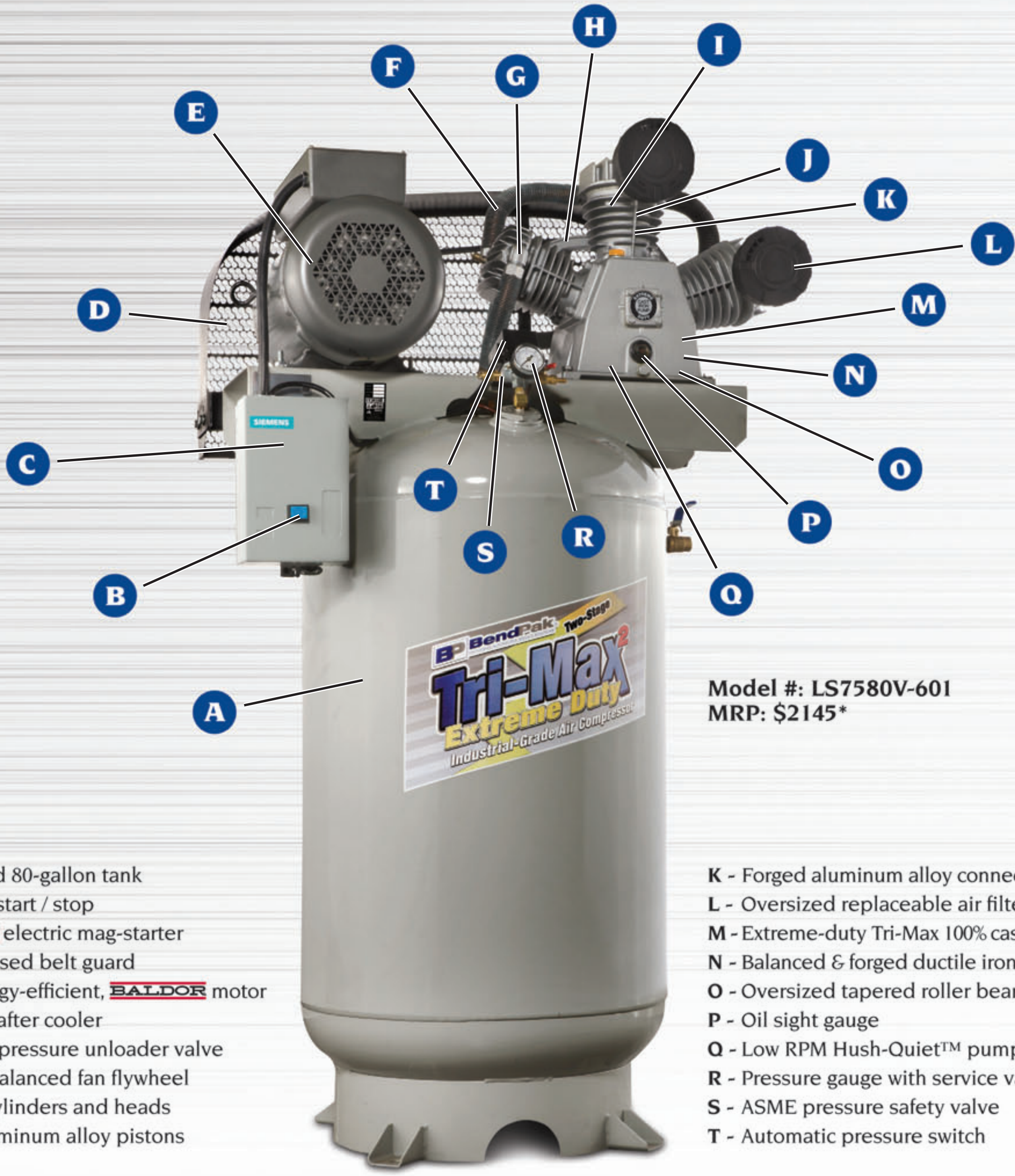

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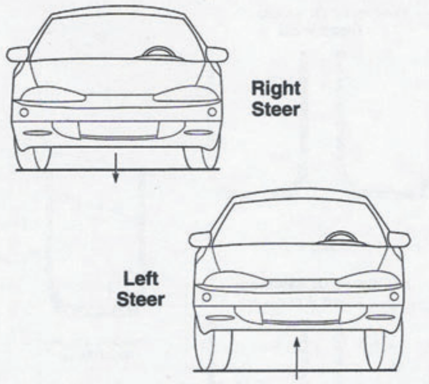

To check for bump steer conditions:

1. Begin with vehicle level.
2. Place turnplate beneath the front wheels.
3. Make sure the wheels are straight ahead and the steering wheel is locked.
4. Zero the turnplate.
5. Pull the center of the vehicle down about 76mm (3").
6. Note the toe readings.
7. Raise the center of the vehicle about 76mm (3").
8. Check the toe readings.

alignment is completed, the technician finds the lower ball joint to be misaligned, further inspection must be performed.

The lower ball joint, when moved toward the front or rearward of the vehicle, affects caster — the tilt of the steering axis toward the front or rear of a vehicle compared to true vertical. Vehicles with caster problems are likely to have a pull steer problem.

Engine cradle misalignment

Engine cradle, K-member, sub frame — it may be called different names by different manufacturers, but the structure that holds the engine and often the steering components such as the rack and pinion in the vehicle must also be checked for proper alignment. If the rack and pinion is misaligned, bump steer may occur. Bump steer is a change in tow as the vehicle's suspension moves up and down while in motion. Bump steer can cause a vehicle to pull, even when the steering wheel is in the straight-ahead direction. If the rack and pinion is not mounted on the engine cradle, its proper alignment should be checked.

All of the above measurement and alignments checks should be performed prior to removing the vehicle from a structural alignment machine. Strut tower measurements, lower ball joint, thrust line and engine cradle alignment all are performed on the frame machine. The test for bump steer should be performed after the engine cradle alignment is confirmed, off the machine ***(FIG 13)***.

Ride height

This measurement will give a good indicator of worn or damaged parts. The vehicle is placed on a level surface with the suspension loaded (the weight of the vehicle on the suspension). No abnormal weight should be in the vehicle's passenger compartment or trunk, as this may cause a misalignment. Measurements are taken from side-to-side, measuring from symmetrical locations to determine if the vehicle is level. Inspect for sagging suspension, unevenly worn tires, and dipping in the front or rear. Check for worn or sagging struts when side-to-side measurements are compared. A thorough inspection of a vehicle's ride height can indicate worn or bent suspension components.

Tie rod damage

With the vehicle on a level surface, following the ride high inspection, a vehicle should be inspected for tie rod/steering arm damage. If, when the steering wheel is in the locked straight-ahead position, both wheels are facing the same direction, then it is likely that the steering is not damaged. If, however, one wheel is facing forward and the other is turning in or out, it is likely that a steering arm and/or a tie rod is damaged.

Bent steering knuckle, spindle

To check for a bent steering knuckle or spindle, place a straightedge vertically on the rotor. Measure from the straightedge to various points on the strut, and then compare those measurements to a non-damaged side for comparison. Damaged parts must be replaced. In some states, used (LKQ) suspension parts cannot be used; check in your area for restrictions. Contrary to some misinformation, knuckles do bend and can deform greatly prior to fracturing.

Bent sector shaft

Evaluation of suspension parts on a damaged vehicle is not complete until the technician has inspected the sector shaft for wear or damage. This will generally be on vehicles with a steering box, parallelogram steering system. During a collision, severe direct impact to front wheels can twist the sector shaft, and in severe cases the shaft can be completely broken. (Though a broken sector shaft is rare, it is more easily identified than a twisted one.) Close and careful inspection should therefore be performed.

Conclusion

Steering and suspension assessment, diagnoses, and repair can be complex, primarily due the number of components involved. The consequence of incomplete operations in any of these areas, though, is a steering system that does not function as it should after repair. With a good knowledge of the different types of steering systems on vehicles, along with a close and careful inspection of their components, the diligent technician can restore damaged vehicles to their pre-accident conditions during the repair process. For further training in collision repair steering and suspension, I-CAR offers a series of face-to-face classes; if interested, log into to www.icar.com for more information.

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No-start diagnostics

You need a working knowledge of the ins and outs of vehicle systems to properly diagnose and treat problems.

BY **DONNY SEYFER** | CONTRIBUTING EDITOR

WHEN IT comes to no start conditions, it is just part of the job. Things happen to vehicles during and after accidents that can render them inert. The key to solving the problem has less to do with throwing a jump box on it than reading the service information to be sure you are not doing damage. To start, let's look at a few basic triage methods you can use that will give you the information to begin sorting out a problem.

First things first

Use a digital multi meter (DMM) check across the battery leads and see what your available voltage is in the storage device (battery). If you see anything less than 12 volts, the battery is effectively dead. A fully charged battery will read around 12.7. Your problem could simply be that when the starter tries to engage, the load pulls battery voltage too low for the control modules on the network to stay "turned on." It is very important to not assume you can throw a battery charger on a battery, turn it up to stun and everything will work. Many battery chargers will rise to more than 17 volts when they are charging, and attempting to start a car could cause Diagnostic Trouble Codes (DTC) to set for overcharge. There are great resources on SearchAutoParts.com for properly charging batteries, but you first will need to identify the battery type. Many late-model cars are using absorbed glass mat (AGM) batteries that require different charging techniques. If you overcharge a Toyota Prius 12-volt battery, you will destroy it.

By overcharge, we are talking anything more than 3 amps. There are Honda vehicles out there that have worked perfectly until the battery is discharged, and now they require a software update to work properly going forward. Is that customer or insurance pay? The very loud message I am sending is be sure to use your service information and determine what the battery is, sometimes where it is and how the system functions to ensure success.

Key on, engine off or one click on the push button start without touching the brake pedal should give you the instrument cluster's bulb check mode.

The no crank, no start

So you have determined the battery is OK, but there is simply nothing that happens when you turn the key. Not to worry — our service information can rescue us here, too. First, turn the key and see if you are getting lights on the dash. With the key on and the engine not running, you should see pretty much all the lights in a mode called "bulb check." If not, you have a power interruption.

Perhaps a first responder clipped the battery cable or a master power fuse is damaged. The key here is to determine what the vehicle needs to start. In most late-model cars, the ignition switch no longer carries any power. It is basically a digital demand switch that tells the network what the driver wants to do; start the car, run it or shut it off. Most do not have accessory positions anymore. In most cases when the key is turned or button is pushed, a signal goes out across the vehicle's network — usually the high-speed controller area network (HS-CAN) — telling the module in charge of security that an approved key is present. If the key is damaged, you could have a problem. Once that recognized key signal is sent, the controller in charge, generally a body control module (BCM), instrument cluster (IC) or power train control module (PCM), authorizes a crank signal to a smart junction/relay box that in turn sends battery current to the starter.

Any problem on the network can cause this chain of events to stop.

Many vehicles have systems integrated into the supplemental restraints system (SRS) that will send a message to the PCM to shut off the fuel pump in an accident. Unlike the old inertia switches that had to be reset, there are simple key and button dances you can do to reset these systems. By the way, the Ford systems like this use the dome light circuit to turn on the in-tank fuel pump and pressurize the system prior to crank so that the high-pressure pump for their gas direct injection system is primed. If the dome lamps do not come on, the fuel pump probably will not either. If the fuel pump does not run, it is likely the SRS has commanded shutdown.

The low capacity 12-volt accessory battery on the Toyota Prius lives behind a pair of back-up capacitors (black box). If it is discharged, the vehicle is disabled.

As I have suggested in previous articles, it is wise to collect all DTCs and record them before you do a hard reset on the network with the scan tool. If there is freeze frame data present, you should look at it to know — if the problem is accident related — what was going on at the time.

What it needs to start

Before we go on to no start problems where the engine cranks, let's review the basic starting requirements of a vehicle. We need adequate battery power, fuel supply with the correct pressure and an ignition system of some sort. The engine must be mechanically sound and free from any reason that it cannot physically turn (like rails smashed into the crank pulley). We need a security system that is not trying to "secure" the car by disabling things, and we need a group of

Smart junction or relay boxes receive low amperage commands from the vehicle network and perform high amperage work like engaging starters or turning on wiper motors.

IMAGE: HOLLANDER SOLUTIONS

modules all doing their intended electronic symphony in time.

Cranking no start

For the most part, vehicles built in the last few years do not have security systems that allow a cranking no start. Generally speaking, they just won't crank at all or they will start for a second and die immediately with a flashing security light. This would lead us to believe that if a vehicle is cranking but not starting, we are missing one of the old-school starting requirements: fuel, spark or compression.

If an engine cranks irregularly, a mechanical issue is very suspect. You will need a method such as a coil-on plug inductive wand to determine if there is spark present on most late models because the old spark plug tester is not going to work on most coil-on plug applications.

Ford and Toyota have the ability to determine if there is spark built into their scan tools. Most others are going to require a more sophisticated tool and skill set. You can often check a crank and cam sensor signal with a scan tool package pretty easily. If one of these signals is missing, you may have damage to a sensor or wiring since these are usually close to the front of the engine.

The idea here is to find a way to check the electrical heartbeat of the ignition system and the fuel injectors quickly and without taking a bunch of things apart. This would be something your scan tool should do, or you should become proficient with a lab scope.

These new disciplines are far more worthwhile to learn than probing wires to see if there is power on them. If you have a set of injector noid lights, you can see if the injector is receiving a signal. A fuel pressure test will tell you if there is fuel pressure. Once you get to this point, you should have already performed a careful visual inspection for damaged wiring and electrical.

The big picture

The only way to really learn about how each system you work on operates is to get training. This can come from reading service information in a just-in-time fashion, but if you really want to work on a brand of car it is time to join your mechanical service brethren at the many fine classes that are out there to learn the ins and outs of various vehicle systems.

Vehicles have become too complex, and the risk of labor hours is much too high to waste time without a good working knowledge of a given system and the necessary tools to perform the functions required to test them.

As we tell our customers, those magic scan tools are of no value at all if you don't have somebody who knows how to wield them.

DONNY SEYFER
CONTRIBUTING EDITOR

Donny co-owns Seyfer Automotive, Inc. in Wheat Ridge, Colo., and is chair-elect of ASA. He is a regular contributor to ABRN and sister publication Aftermarket Business World.

E-mail Donny at Donny@SeyferAuto.com

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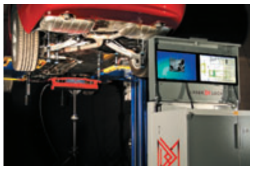

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YOU DON'T KNOW WHAT YOU DON'T KNOW

Outdated rules keep us from using estimates to get the info we need

You've probably heard the story about the newly married guy who watches his young wife prepare a ham for their Christmas dinner, carefully cutting a slice off each end of the ham before putting it in the oven. When he asked her why she did this, she said she wasn't sure, but that is how her mom taught her.

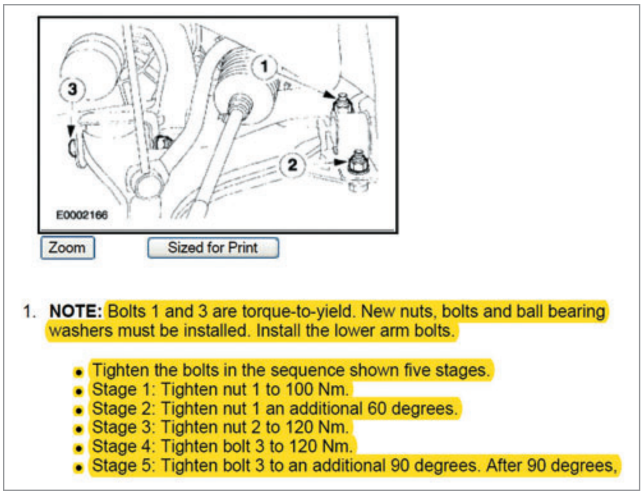
So the young wife calls her mom and asked the same question. Her mom also doesn't know, but says that is how her own mother had showed her. So the woman calls her grandmother and asks her why they slice off the ends of the ham before putting it in the oven.

"I don't know why you or your mother do it," the grandmother responds, "but I did it because my oven wasn't big enough."

That story comes to mind every time I hear about an insurance company using some old rule or edict that might have made sense at some point, but now is just absolutely stupid.

A case in point: Insurance companies that penalize shops for having too many lines on their estimates or for listing procedures as line items on an estimate even though they are included in other line items.

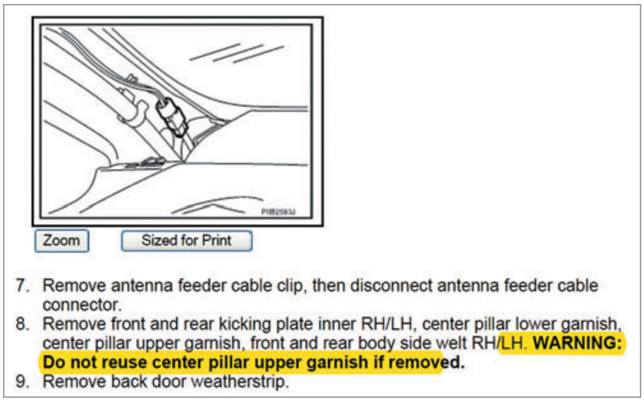
Such rules may have had some logical basis at one point, but now they're the equivalent of that young woman needlessly cutting off the ends of the ham.



Insurers using such stupid rules clearly don't understand how tools like ALLDATA, Mitchell International's RepairCenter TechAdvisor or CCC ONE Repair Methods work to provide collision repairers with important OEM repair information. These tools analyze the words on the estimate, and when they find certain verbiage, they provide the estimator with whatever the auto manufacturer offers in terms of repair information related to those items on the estimate.

So if you leave certain lines off the estimate because some insurer has a rule about not listing included items, or because some insurer is going to penalize you because your estimate has too many lines, those third-party tools may not provide you with vital information you need to fix that car properly.

Here are some examples. Let's say you're working on a 2008 Nissan Versa and you need to remove and reinstall (R&I) the trim panel to replace the quarter panel. That's an included operation. But if you don't list it on the estimate because of some insurer's stupid rule, the system might not provide you with the bulletin that indicates that trim panel is



non-reusable and must be replaced (see image, left).

Or maybe you're replacing a frame rail on a 2003 Ford Focus and you need to R&I the suspension to do that. If, in order to reduce estimate line items because of some insurer's stupid rule, you put down only "R&I suspension" instead of "R&I control arm," "R&I strut" and all the other line items required to do that, you may not get important information from Ford. In this case, that information includes the fact that two of the bolts are torque-to-yield and thus must be replaced with new bolts, nuts and washers (see image, above).

If our goal as shops and insurers is to make sure vehicles are fixed safely and properly, this is vital information we need as collision repairers. These systems can't get us this information if we're following stupid rules that limit what line items we're including on the estimate.

It's time to stop needlessly cutting the ends off the ham. We need these systems to analyze a complete estimate so we have the vital repair information we need.

Mike Anderson, *a former shop owner, currently operates CollisionAdvice.com, a training and consulting firm.*

If you have a business issue or question you'd like Mike to address, email him. mike@CollisionAdvice.com