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- 2019 Ford Ranger: A-Pillar Sectioning
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- New I-CAR Video on 2019 Expedition/Navigator
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Figure 1
Ford Glass Trademark

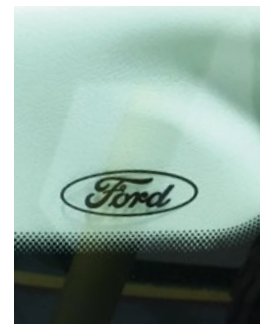


Figure 2
2019 F-150 Branding

HOW TO KNOW YOU'RE USING GENUINE FORD GLASS

OEM WINDSHIELDS ARE MORE IMPORTANT THAN EVER

Special thanks to Ken Pew, FCSO/Carlex Technical Service Manager

Ford Motor Company has reminded collision repairers for many years that vehicle fixed glass—including and especially the windshield—plays a critical role in the overall strength, stability and structure of the vehicle, and can affect how it performs in a collision event. With the implementation of Advanced Driver Assistance Systems (ADAS), the importance of using OEM glass and OEM-approved repair procedures increases when it comes to ensuring safe, quality repairs, and that the ADAS technologies—which frequently utilize cameras looking directly through the glass—are operating at peak performance.

To ensure the windshields technicians are using in their repairs are Ford OEM replacement parts—and not aftermarket versions—repairers are urged

to check for the Ford trademark (Figure 1), usually located along the lower edge of the windshield, often in either the passenger- or driver-side lower corner.

The trademark on a genuine Ford windshield is distinguished from the one that may appear on a non-OEM part by the inclusion of the Ford Oval, “FoMoCo” or Lincoln Star at the top, followed by additional details and the engineering part number. Searchable at Carlex.com, the engineering part number includes the windshield’s specifications, dimensions and other data detailing its fit within the vehicle’s substrate, and is the best way to be sure it’s the correct Ford windshield for your repair.

In addition, the 2019 F-150 now sports the Ford Oval near the bottom of the windshield, on the driver’s side (Figure 2), while the Ford “SoundScreen”

(Figure 3) brand appears on all genuine Ford acoustic glass. Featured on nearly all Ford and Lincoln vehicles, SoundScreen® acoustic windshields and doors are engineered to help reduce road, wind and other exterior noise surrounding the vehicle, and the technology is now being included on rear doors as well.

For more information on the parts search feature, National Auto Glass Specifications (NAGS) cross-reference part numbers, and other important technical glass data, visit Carlex.com.

For questions on this, or the proper repair of any Ford or Lincoln vehicle, contact the Ford Crash Parts Hotline at cphelp@fordcrashparts.com.

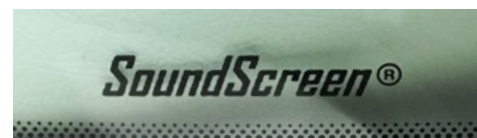


Figure 3 - SoundScreen® Logo

THE FORD BRAND - CARLITE

**It's your decision. Make the right one.
Demand OE replacement glass.**



Carlite

ADDITIONAL VEHICLE DIAGNOSTIC METHODS FROM THE FORD WORKSHOP MANUAL

In the second volume of *On Target* (2019 - Vol. 2), we detailed proper vehicle scanning and effective diagnostic techniques, including proper use of scanning equipment and explanation of diagnostic trouble codes (DTCs).

In this installment, we delve into checking electrical circuitry, including terminals and power circuits.

Please note that the following steps (presented from the 2019 F-150) are intended as a general guideline and are not all-inclusive. For more in-depth repair information on this and other Ford and Lincoln vehicles, consult the *Ford Workshop Manual* at Motorcraftservice.com.

DIAGNOSTIC METHODS, SECTION 100-00: GENERAL INFORMATION – DESCRIPTION AND OPERATION

EFFECTIVE DIAGNOSTIC METHODS

NOTE: Do not use this document in place of Ford-prescribed Symptom-Based Diagnostics or Workshop Manual Diagnostics. Diagnostic methods are intended to provide Ford vehicle diagnostic information only for support of Ford-prescribed diagnostics.

The following diagnostic process is critical for consistently successful diagnoses. Random methods work inconsistently and often lead to multiple repairs.

Wiring Pin (Terminal) Fit and the Use of Rotunda Flex Probes

- To avoid wiring pin (terminal) damage, Rotunda Flex Probes NUD105-R025D or Terminal Probe Kit 29-011A must be used to connect test equipment or jumper wires to pins (terminals).
- Male-to-female pin (terminal) fit is critical for correct connection and durability.
 - Pin (terminal) fit may be checked by using the mating pin (terminal) to test for normal separation force (a damaged pin or terminal will have very low separation force from the mating pin or terminal).
- Correctly checking the separation force of small pins (terminals) may require removal of the connector terminal guide/retainer if it adds drag to the pin (terminal) insertion or removal.
- Replace damaged connectors or pins (terminals).

For additional information, refer to **Section 100-00: General Information, General Procedures.**

CHECKING POWER CIRCUITS

- Measuring a power wire with the intended load disconnected using a digital multimeter (DMM) will only find open circuits (open fuse or wire).
- Recommended practice:** Circuits carrying approximately 200-1000 mA* may be loaded with a 250-350 mA test light. Measure circuit voltage with a DMM while the test light is connected and illuminated. A reduction in the voltage present during test-light-loading indicates excessive circuit resistance.
- Recommended practice:** Circuits carrying more than one ampere* should be loaded with a device requiring similar current (e.g., a headlamp bulb may be effective). A reduction in the voltage present during loading indicates excessive resistance.

Information on diagnostic methods will conclude in the next edition of *On Target*.

**Circuit current is matched to wire gauge/size:*

- Conductor sizes of 24-gauge (.5 mm) or smaller are generally used to carry approximately 1 ampere (1000 mA) or less. Use of the test-light to load these circuits is appropriate.
- Conductor sizes of 20-gauge (.8 mm) or larger are generally used to carry approximately 5 amperes (5000 mA) or more. Match the substitute load (measure substitute load current first, as necessary) to this current level.



ON TARGET CONTINUES WITH MORE LANE KEEPING SYSTEM DETAILS

As driver-assistance technologies become more commonplace, technicians will need to become very familiar with the detailed steps needed to complete approved, proper and safe vehicle repairs. To help repairers make those proper repairs, we continue our series of repair directives on the Lane Keeping System, straight from the official *Ford Workshop Manual*. For the first installment of this series, see *On Target*, 2019 - Vol. 3.

Please note that the following information is intended as a general guideline and is not all-inclusive. For more in-depth repair information on this and other Ford and Lincoln vehicles, consult the *Ford Workshop Manual*, found at Motorcraftservice.com.

For more information, consult Ford's Workshop Manual, **Section 419-07: Lane Keeping System, Description and Operation.**

HANDS-OFF WARNING

When the lane keeping aid is active, the PSCM continuously monitors the torque sensor in the EPAS system to determine if a hand is on the steering wheel and sends the data to the IPMA. If the IPMA detects that the driver's hands are off the wheel for more than a few seconds, the hands-off warning is generated.

The hands-off warning is generated in two levels. The first is a message center warning only and is triggered after three seconds of hands-off driving is detected. The second consists of a message center warning plus an audio chime and is generated after six seconds of hands-off driving.

NOTE: Due to certain road conditions and the driver's individual grip/touch on the steering wheel, the system may generate a hands-off warning when hand(s) are still on the steering wheel.

[Editor's Note: driver-assist features are supplemental and do not replace the driver's attention, judgment and need to control the vehicle.]

Additional installments on the Lane Keeping System—as well as information on proper ADAS functionality, features and proper repairs—will continue in future installments of *On Target*.

FOR ANY QUESTIONS, CONTACT THE FORD CRASH PARTS HOTLINE AT cphelp@fordcrashparts.com OR VISIT I-CAR'S RTS PORTAL AT RTS.I-CAR.COM.

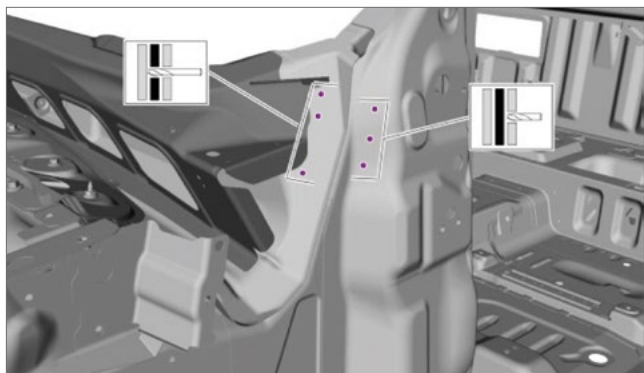


Figure 1

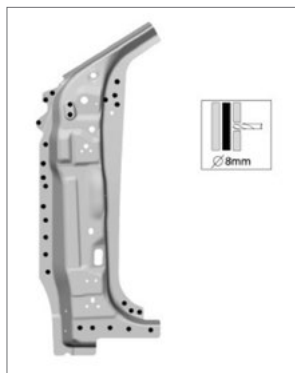


Figure 2

2019 FORD RANGER: A-PILLAR OUTER PANEL SECTION AND REINFORCEMENT

On Target continues to provide repair details on the 2019 Ranger, resuming its discussion with Ford Senior Damageability Engineer Gerry Bonanni. This time, we examine proper repairs to the A-pillar outer panel section and reinforcement, after detailing both the removal (2019 - Vol. 2) and installation procedures in our previous installments.

Please note the following repair information and steps are intended as a general guideline and are not all-inclusive. For more in-depth repair information on this and other Ford and Lincoln vehicles, consult the *Ford Workshop Manual*, found at Motorcraftservice.com.

SECTION 501-29: SIDE-PANEL SHEET METAL REPAIRS, REMOVAL AND INSTALLATION

The repair procedure begins by detailing the tools, equipment and materials needed for the repair:

- Resistance spot-welding equipment
- Hot air gun
- 8mm drill bit
- MIG/MAG welding equipment
- Spot-weld drill bit
- Locking pliers
- Metal bonding adhesive (TA-1, TA-1-B, 3M™ 08115, Lord Fusor® 108B)
- Flexible foam repair (3M™ 08463, Lord Fusor® 121)

REMOVAL

First, de-power the supplemental restraint system (SRS), referencing **Section 501-20B: Supplemental Restraint System, General Procedures**. Then, verify that the vehicle is dimensionally correct, referring to **Section 501-26: Body Repairs – Vehicle Specific Information and Tolerance Checks, Description and Operation**.

“Now, the repairer can remove the A-Pillar outer panel (detailed in *On Target 2019 - Vol. 2*) and remove the spot welds with the spot-weld drill bit,” instructed Bonanni. (Figure 1)

“Using a hot air gun, break the adhesive and NVH foam bond, then remove the A-pillar reinforcement and begin with the installation procedure,” said Bonanni.

INSTALLATION

Using 80-grit sandpaper, sand and clean the body side to remove old adhesive and flexible foam residue, and remove the e-coat from the reinforcement.

Using the 8mm drill bit, drill the panel for plug welding. (Figure 2)

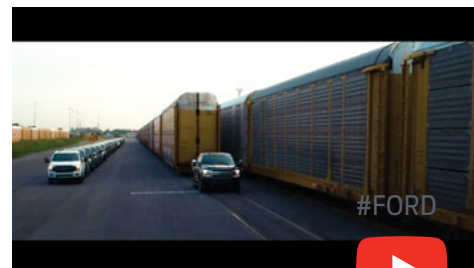
“The panel is now ready to receive new adhesives and NVH flexible foam,” said Bonanni.

Apply metal-bonding adhesive TA-1, TA-1-B, 3M™ 08115, LORD Fusor® 108B and flexible foam repair 3M™ 08463, LORD Fusor® 121.

Install and clamp the reinforcement panel in place using the locking pliers. Using the MIG/MAG welding equipment, weld the panel-to-cowl reinforcement, then weld the reinforcement panel, also utilizing resistance spot-welding equipment.

“Finally, metal finish all seams using typical metal finishing techniques, and re-install the A-pillar outer panel to complete the repair,” said Bonanni, who also reminded repairers about the importance of researching the repair. “Referencing the workshop manual for official Ford repair procedures is the only way to ensure the vehicle is repaired correctly and safely, and its components will continue to work as designed and intended,” concluded Bonanni.

On Target will continue detailing repair information on the Ranger in its next issue, including procedures on the B-pillar.



FORD VIDEOS SHOW POWER OF EVs

Over the past few months, Ford has released a series of [YouTube](#) videos dispelling myths about the power and strength of all-electric vehicles, as the automaker prepares to launch its own EV lineup.

One of the first videos, released in late summer, showcased a [prototype all-electric F-150](#), as it successfully towed 10 double-decker freight cars—collectively weighing over 1 million pounds—over a thousand feet.*

Ford continued busting EV myths with two additional videos. The first showed the fun and exhilaration that can be experienced driving an all-electric vehicle, as a pre-production all-electric Ford model was taken out for a spin at [Michigan's Grattan Raceway](#).

The second video proved that all-electric vehicles are more than capable of handling the [harsh conditions of winter](#), as an all-electric Ford test vehicle was brought to a testing center located in Michigan's Upper Peninsula, where it was subjected to extreme driving conditions including deep snow, ice and temperatures as low as 40° below zero.

To learn more about electric vehicles, visit [Ford's Electric Learning Zone](#).

Ford's Mustang-inspired, all-electric SUV—the Mustang Mach-E—is expected to be available in the fall of 2020.

On Target will include more details and repair aspects of all-electric vehicles as the information becomes available.

*The F-150 prototype is towing far beyond a production truck's capacity in a one-time, short event demonstration. Never tow beyond a vehicle's towing capacities. Always consult the Owner's Manual.

FOR REPAIR QUESTIONS ON THE RANGER, OR ANY FORD OR LINCOLN VEHICLE, CONTACT THE FORD CRASH PARTS HOTLINE AT CPHELP@FORDCRASHPARTS.COM OR VISIT I-CAR'S RTS PORTAL AT RTS.I-CAR.COM.

MORE 2020 FORD EXPLORER BODY CONSTRUCTION DETAILS



In its last issue, *On Target* (2019 – Vol. 3) began providing collision repair information specific to the 2020 Explorer, including the material makeup of the front bumper and body-side outer panels. Here, Ford provides details on front structure vehicle components, including the dash panel and front fenders.

Please note that the following information is intended as a general guideline and is not all-inclusive.

For more in-depth repair information on this and other Ford and Lincoln vehicles, consult the Ford Workshop Manual, found at Motorcraftservice.com.

Below are some callouts on the 2020 Explorer highlighting specific component-level material construction. For more information, refer to **Section 501-26: Body Repairs – Vehicle Specific Information and Tolerance Checks, General Procedures**.

On Target plans to include additional repair information on the 2020 Explorer in future issues, continuing with vehicle-specific body construction details as well as body-panel sectioning options.

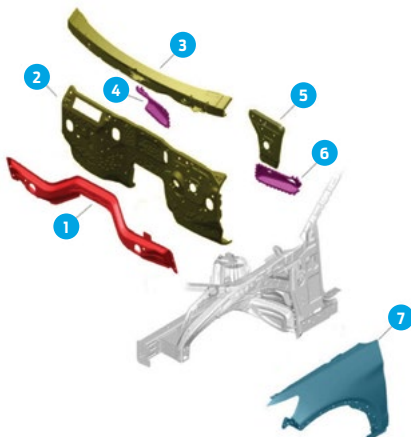
For more information on the Explorer, or any Ford or Lincoln vehicle, contact the Ford Crash Parts Hotline at cphelp@fordcrashparts.com or visit I-CAR's RTS Portal at RTS.i-car.com.



FRONT STRUCTURE COMPONENTS

ITEM	DESCRIPTION	METAL TYPE
1	Radiator Support	Magnesium Alloy
2	Bracket	Aluminum
3	Bracket	Aluminum
4	Suspension Housing	Aluminum Alloy
5	Reinforcement	Dual Phase (DP) 600 Steel
6	Reinforcement	Boron Steel
7	Reinforcement	Boron Steel
8	Bracket	Aluminum Alloy
9	Side Member Assembly	Aluminum Alloy
10	Fender Apron Tube	Dual Phase (DP) 800 Steel

NOTE: Right-hand side shown; left-hand side similar.



DASH PANEL AND FRONT FENDERS

ITEM	DESCRIPTION	STEEL TYPE
1	Crossmember	Boron Steel
2	Dash Panel	Mild Steel
3	Cowl Top Panel	Mild Steel
4	Reinforcement	Dual Phase (DP) 800 Steel
5	Front Crossmember Extension	Dual Phase (DP) 600 Steel
6	Reinforcement	Dual Phase (DP) 800 Steel
7	Fender	Bake Hardened (BH) 210 Steel



FORD PAINT AND BODY TECHNOLOGY CENTER SPONSOR-VENDOR PROFILE: SPANESI

Over a century ago, Henry Ford forever put his mark on the automotive industry. Ford's natural curiosity and determination to see things in a different way produced manufacturing innovations that forever changed the way automobiles would be built throughout the world and had a broad impact on the second industrial revolution.

Many new industries sprouted from the early success of Ford Motor Company: blacksmiths evolved into automotive mechanical and collision repairers; automotive insurance policies were first written; automotive paint came in synthetic resins; and automotive glass manufacturers began to enter the marketplace.

In the 1940s and 1950s, Ford's automobiles fascinated a young man in Italy by the name of Orazio Spanesi. At the age of 14, Orazio went to work in his first collision repair shop but soon found the tools and equipment of the time were not adequate to complete safe, approved repairs.

Unable to find an owner that would invest in new tools, Spanesi quit his job and started his own business in 1969 in Padova, Italy, and soon began creating new tools in his own facility. After traveling the world in the 1970s and 1980s, and learning all he could about automotive repair systems, Orazio realized he could fill the void in the collision repair industry with his years of experience and knowledge.

In 1989, he founded Spanesi, SpA, and thanks to a series of technical breakthroughs, Spanesi

succeeded in developing a range of products that includes the Spanesi Universal Jig System and the Totem Lift. These products altered the collision repair market and brought the Spanesi brand worldwide recognition and success. Today, Spanesi is a leading international manufacturer of automotive repair equipment and continues to create effective solutions that enable collision technicians to perform vehicle repairs according to OEM standards.

Spanesi's product lines include:

- Straightening benches
- Touch Electronic Measuring System
- Fixed and portable vacuum systems
- Welding machines
- Spray booths and preparation stations
- Aluminum tools and repair systems
- Manual, pneumatic, electric and hydraulic tools

Spanesi's dedication starts with a research & development department that continually improves product quality and the technology needed for repairing vehicles today and in the future. Spanesi continues to operate a collision repair facility on the same property as its manufacturing facility.

Spanesi's Car Service Centre provides real life "field testing" that ensures all Spanesi products will perform to Spanesi's exacting standards.

In 2012, **Spanesi Americas** was established near Chicago to focus directly on the North American market. The company has positioned itself to be able to support the global market and offers training in regional centers located worldwide, and earlier this year it earned a Global Certification from Ford Motor Company.

Spanesi's Ford-approved equipment includes:

- Spanesi SPR Rivet Gun
- Spanesi 106 Series Straightening Benches
- Spanesi Touch Electronic Measuring System
- Spanesi Squeeze-Type Resistance Spot Welders (STRSW) and the Q5.2 3 Torch MIG Welder

"Spanesi is very proud to be included in Ford's continued efforts to present OEM-certified tools and equipment to the collision repair industry," said Timothy W. Morgan, chief operations officer of Spanesi Americas, Inc. "For the past several years, we have been working diligently with our OEM partners to provide collision repair facilities, tools and equipment that meet and exceed the requirements necessary to properly repair collision-damaged vehicles back to OEM standards."

For more information, visit Spanesi.com or contact them at sales@spanesi-americas.com.



VIDEO HIGHLIGHTS REPAIR CONSIDERATIONS FOR 2019 FORD EXPEDITION/LINCOLN NAVIGATOR

By Mark Bochenek, Principal, OEM Business Development, I-CAR

The I-CAR Repairability Technical Support® (RTS) team has released a new I-CAR 360° video highlighting many of the features and changes to the 2019 Ford Expedition/Lincoln Navigator. The video includes an overview of the vehicle structure, highlights the Advanced Driver Assistance Systems (ADAS) technologies—detailed below—and discusses some of the required calibrations that need to be completed after other repairs are finished.

The new video—as well as other I-CAR 360° videos—can be accessed on I-CAR's RTS Portal at RTS.i-car.com/icar360.

The 2019 Expedition/Navigator features an all-aluminum body with a high-strength steel (HSS) frame. Some of the latest ADAS features have also been added, which collision repair professionals need to be knowledgeable about in order to perform complete, safe and quality repairs.

Starting at the front of the vehicle, there are park-assist sensors located in the front bumper, and a Cruise Control Module (CCM) located behind the front bumper. In the case of an accident or removal of the bumper, both types of sensors must be calibrated following OEM repair procedures.

There is also a camera located in the windshield that is part of the Lane Keeping System (LKS), which requires calibration by the collision repairer after either its removal or replacement.

The frame offers two replacement options: a short front-frame rail procedure and a front-frame section procedure. Both procedures utilize welded lap-joints at factory seams.

Technicians familiar with the aluminum body on the Ford F-150 can transfer their knowledge to the Expedition/Navigator's repair procedures from the front of the vehicle to the B-pillar because they are identical. However, from the B-pillar to the back of the vehicle, the repair procedures are exclusive to the Expedition/Navigator.

The lower A-pillar and B-pillar reinforcements must be replaced at the factory seams, but both can be removed without removing the roof. Keep in mind that the outer-side has various sectioning procedures available, including the outer A-pillar and the outer B-pillar. The door skins can be replaced using a rivet bonding procedure covered in the official Ford Workshop Manual, located on Motorcraftservice.com.

In addition, the floor pan has sectioning procedures, and notes sectioning must be 50mm—roughly 2 inches—away from all seat-anchoring parts. Reference the Ford Workshop Manual for full details.

Like the front bumper, the rear bumper incorporates parking-assist sensors. If the bumper is removed or replaced, the parking-assist sensors must be re-calibrated.

Blind-spot radar sensors are located in the corner of the bumper. When mud, ice or debris is present, these sensors could be affected and may not provide the desired level of driver assistance.

One of the optional ADAS technologies is the 360° camera system. In vehicles with this feature, cameras in the mirrors and grille work in conjunction with the backup camera. In the case of removal of any one camera, all items (the mirrors, grille and backup camera) must be re-calibrated.

Learn more about Ford's and I-CAR's training relationship by visiting I-CAR.com/Ford or the RTS Portal at RTS.i-car.com.

2019: A YEAR IN REVIEW

AS 2019 WINDS TO A CLOSE, WE LOOK BACK AT SOME OF THE STORIES ON TARGET COVERED THROUGHOUT THE YEAR.

The first volume of *On Target for 2019*—released in the spring—featured material related to pre- and post-repair vehicle scanning, anchored by the release of Ford's [official position statement](#). Volume 1 also included technical information on Ford's diagnostic software and hardware related to Ford's Integrated Diagnostic System and the Ford Diagnostic & Repair System, as well as the first entry on proper diagnostic methods straight from Ford's workshop manual. The issue also introduced the new [Ford Certified Collision Network \(FCCN\)](#), and detailed repairs for the front fender apron panel of the 2019 Ranger.

The [second volume](#)—published in the summer—continued to supply repair material on the 2019

Ranger, including the A-pillar outer panel removal, and the appearance of the frame display at the 2019 NORTHEAST® Automotive Services trade show. The issue also detailed the importance of fixed glass repairs, and included updates on the FCCN, focusing on the [Ford Collision Locator Services](#).

[Volume 3](#)—distributed in the fall—contained the first installment of the Lane Keeping System overview, including component location and details regarding the various control modules involved in its successful operation. A history and overview of the [Ford Rotunda Equipment Program](#) was also provided, along with details on Ford becoming the first automaker to join the [I-CAR® Sustaining Partner™ Program](#).

New and past issues of *On Target* are available on [FordCrashParts.com](#), [OEMISStop.com](#), and I-CAR's RTS Portal at [RTS.i-car.com](#).

On Target plans to produce four new volumes—detailing critical, OEM-approved repair procedures and other important information—in 2020.



On Target

Scheduled to be published four times a year, *On Target* aims to provide Ford and Lincoln dealership parts departments and independent collision repair shops with the technical information needed to deliver efficient, high-quality repairs to Ford and Lincoln vehicle owners.

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On Target Digital

Download *On Target* for free at [FordCrashParts.com](#), or by clicking the Ford page on [OEMISStop.com](#).

GENUINE PARTING THOUGHTS

Have an idea?

We'd love to hear from you. Your comments and article suggestions can be sent to:

cphelp@fordcrashparts.com

INSIDE THE INDUSTRY

NH OEM Procedures Bill Vetoed; State Groups Weigh In

New Hampshire's bill requiring insurers to reimburse repairers for all repairs where OEM collision repair procedures, recommendations or service bulletins are followed (HB 664) has been vetoed by Gov. Chris Sununu, and the state House failed in its attempt to override the veto. In his veto message, the governor said the bill would disadvantage smaller, independent shops, limit consumer choice and raise insurance rates. The measure was supported by all three national collision repair trade associations.

Just days after the New Hampshire veto, 22 state collision trade associations endorsed a statement released by the three national groups—Alliance of Automotive Service Providers (AASP), Automotive Service Association (ASA), and Society of Collision Repair Specialists (SCRS)—restating their position that OEM repair procedures are the standard of repair.

DOJ Proposes Terminating Consent Decree

As part of an initiative to eliminate hundreds of longstanding antitrust judgements without sunset dates, the U.S. Department of Justice has proposed terminating the 1963 auto insurance Consent Decree. The settlement in that case saw auto insurers agree to halt a number of anticompetitive practices of which they were accused, and it's been cited in numerous court cases in the years since.

A number of collision repair associations and U.S. Senator Richard Blumenthal have called on the Justice Department to reverse its decision, saying the Consent Decree remains important in preserving the rights of shops and consumers in the collision repair process.

Traffic Deaths Decline

The number of fatalities on U.S. roadways declined 2.4 percent in 2018, to a total of 36,560. That's according to the National Highway Traffic Safety Administration, which estimates the trend is continuing in 2019, with highway deaths down 3.4 percent for the first half of the year.

CREF 2020 Career Fairs

The Collision Repair Education Foundation has announced a schedule of at least 14 transportation career fair events around the country in 2020. The events aim to put entry-level technician applicants in touch with potential employers.

The early schedule includes:

- Pittsburgh, PA — January 24
- Indianapolis, IN — February 7
- Kansas City, KS — February 21
- Chicago, IL — March 6
- Boston, MA — March 13
- Salt Lake City, UT — March 20
- Denver, CO — April 3

For more information, visit the [CREF website](#).