

On Target



For Ford and Lincoln wholesalers and the collision repair industry

Ford Bronco® Raptor® SUV Repair Details



On Target is excited to begin providing collision repair information specific to the Ford Bronco Raptor. Overall, the Ford Bronco and the Bronco Raptor share many similarities, including exterior body components, which were previously covered in all four volumes of On Target for 2021, and Volume 2 for 2022, all of which can be found on [FordCrashParts.com](https://fordcrashparts.com).

All repair information for the Bronco Raptor is found inside the official Ford Workshop Manual entry for the Bronco. Any repair material specific to the Bronco Raptor will be called out as such.

For this inaugural installment, we look at the removal and installation of the front bumper upper cover.

Please note 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 [FordServiceInfo.com](https://fordserviceinfo.com). Check back often as repair procedures can change without notice.

For more information, refer to **Section 501-19: Bumpers – Removal and Installation**

Special Tool(s) / General Equipment

- Interior Trim Remover

Removal

NOTE: Removal steps in this procedure may contain installation details.

1. Remove the screws and the front license plate bracket.
2. Using the interior trim remover, release the sides of the front bumper upper cover from the side brackets. [Figure 1]
3. Release the clips and remove the front bumper upper cover and bracket assembly. [Figure 2]
4. On both sides of the vehicle, inspect the side bracket for damage. [Figure 3]

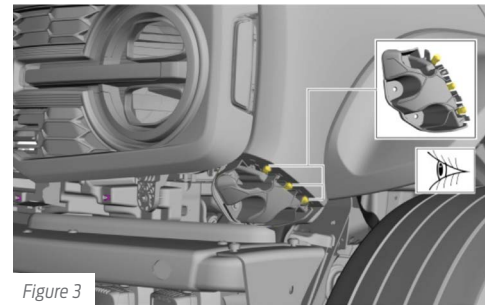


Figure 3

5. If required, on both sides, remove the screws, release the tabs and remove the damaged side bracket (torque: 18 lb.in / 2 Nm). [Figure 4]

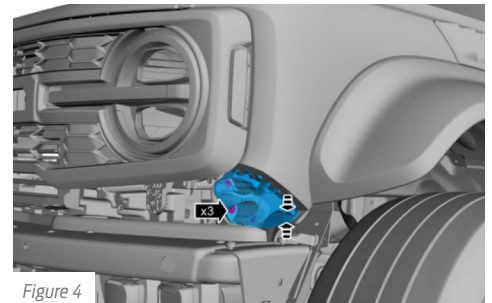


Figure 4

6. To install, reverse the removal procedure.

On Target plans to include more repair details on the Bronco and Bronco Raptor in future volumes.

For more information on these, 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.

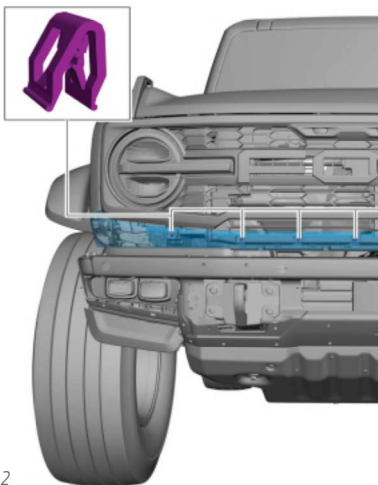


Figure 2

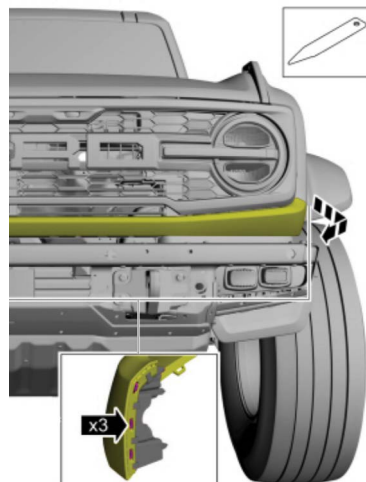


Figure 1

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More Details on Ford BlueCruise System

Using the 2022—current Mach-E® SUV as an example vehicle, *On Target* continues providing details on Ford BlueCruise* technology to help technicians correctly repair vehicles that include this feature.

BlueCruise allows owners to operate their vehicle hands-free on the highway while being monitored by a driver-facing camera. The technology is compatible on prequalified sections of divided highways called Hands-Free Blue Zones.

More information can be found in **Section 419-03A: Cruise Control, Description and Operation** of the official *Ford Workshop Manual*—accessible through FordServiceInfo.com or the Ford Professional Technician Society (PTS) site—where BlueCruise is referred to as Active Drive Assist with Intelligent Cruise Control (ACC).

Please note the vehicle owner's guide contains important information on the ACC system, including complete illustrations and graphic displays on control indicators and numerous warnings that need to be reviewed and followed.

Based on vehicle options and availability, Intelligent ACC can contain several features, such as Lane Centering, Stop-and-Go, Speed Sign Recognition with Navigation and Highway Assist that contains active drive assist.



Intelligent Speed Limiter

The intelligent speed limiter feature (if equipped) allows the driver to set a desired speed that the vehicle cannot exceed during normal driving conditions along with using the current speed limit detected by the traffic sign recognition system to set as a temporary speed limit.

This feature works in combination with the camera-based traffic sign recognition system and the navigation system data (if installed). When the feature is activated, the intelligent speed limiter detects the speed limit and limits the vehicle speed accordingly. An implicit speed limit also applies on freeways after a cancellation sign and the system automatically adopts this limit based on navigation system data if a navigation system is installed. If there is no navigation system installed, the speed limiter is interrupted and thus the speed is no longer limited.



The speed limit can be overridden without pressing the steering wheel switch. This is done by pressing the accelerator pedal to 90 percent of travel. The speed limit automatically resumes when the accelerator pedal is released, and the vehicle slows down to below the set speed limit. If the system is not overridden but the set speed limit is exceeded, an audible chime will sound after 20 seconds.

This feature operates independent of the cruise control and is not connected to the brakes. Applying the brake pedal does not override or deactivate the intelligent speed limiter feature.

Stop and Go

ACC with the stop-and-go feature uses the radar and camera sensors to maintain a set gap between the vehicle being driven and the vehicle that is being followed. Stop-and-go is set to follow the vehicle directly in front of the vehicle being driven and adjust the set speed. If the vehicle that is being followed comes to a complete stop, the vehicle that is being driven also comes to a complete stop.

On Target plans to include more details on BlueCruise in future volumes.

For more information, contact the Ford Crash Parts Hotline at cphelp@fordcrashparts.com.

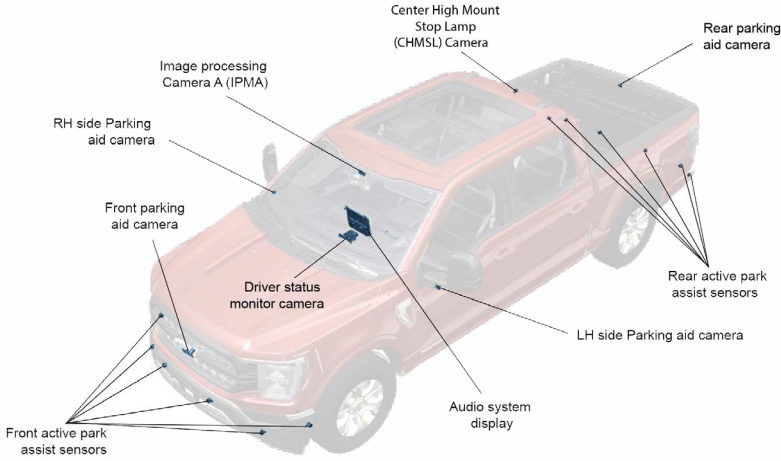


*BlueCruise requires a connected service plan that provides regular map updates, FordPass® App, and modem activation. Ford BlueCruise-equipped vehicles come with either a 90-day trial or a 3-year BlueCruise Connected Service plan, after which purchase is required. See your dealer to confirm BlueCruise Connected Service plan options for your vehicle. Owners, see the Connected Services section of your Ford Account for your BlueCruise Connected Service plan status.

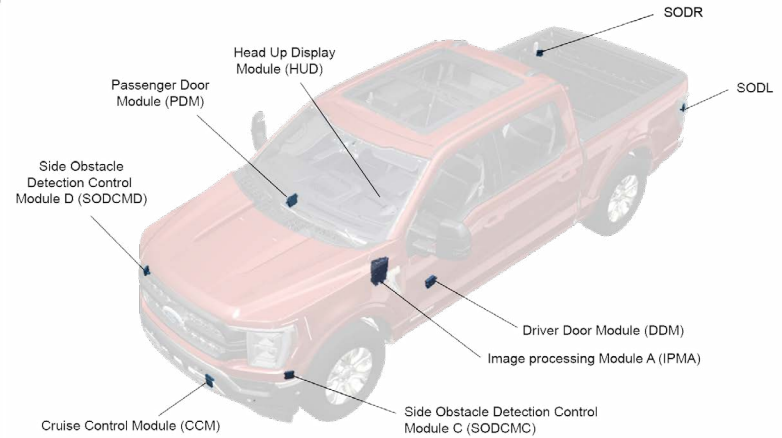
Driver-assist features are supplemental and do not replace the driver's attention, judgment and need to control the vehicle. Ford BlueCruise is a hands-free highway driving feature. Only remove hands from the steering wheel when in a Hands-Free Blue Zone. Always watch the road and be prepared to resume control of the vehicle. It does not replace safe driving. See Owner's Manual for details and limitations.

Ford and Lincoln Vehicles: ADAS Component Locations

SENSORS AND CAMERAS



MODULES



On Target provides another excerpt from the Ford Motor Company [job aids](#) on advanced driver assistance systems (ADAS) on Ford and Lincoln vehicles.

This installment covers ADAS components and their specific locations on a vehicle, utilizing the 2021–current F-150® as an example.

The information in the job aids is intended for reference only and repairers are reminded that when servicing or calibrating any ADAS component, the detailed procedures contained in the *Ford Workshop Manual (WSM)*—accessible through [FordServiceInfo.com](#) or the Ford Professional Technician Society (PTS) site—should *always* be followed.

On Target plans to include additional job aid details in future volumes. These job aids—and much more—can be found on [FordCrashParts.com](#).

For more information on electric vehicle repair, or ADAS calibration, contact the Ford Crash Parts Hotline at cphelp@fordcrashparts.com and visit I-CAR.com/ADAS.

ADAS Component Location	
Component	ADAS Component Location
Anti-Lock Brake System Module	Location varies between vehicle lines.
Cruise Control Module	In the front of the vehicle typically behind the front bumper cover.
Lane Keeping Camera	On the top edge of the windshield.
Head Up Display Module	On top of the instrument panel on the driver's side at the base of the windshield.
Image Processing Module A	On the windshield, below the interior rear-view mirror.
Image Processing Module B	Location varies between vehicle lines.
Parking Assist Control Module	Location varies between vehicle lines.
Front Parking Aid Camera	In the center of the front grille below the center emblem.
Front Parking Aid Sensors	Four sensors along the front of the vehicle on the front bumper.
Front Active Park Assist Sensors	In the front bumper on each side of the vehicle.
Rear Parking Aid Camera	In the tailgate on pickups, in the rear decklid on passenger cars, and in the liftgate on SUVs.
Rear Parking Aid Sensors	Four sensors along the back of the vehicle in the rear bumper.
Rear Side Sensors	In the rear bumper on each side of the vehicle.
RH Side Parking Aid Camera	On the underside of the RH exterior side-view mirror.
LH Side Parking Aid Camera	On the underside of the LH exterior side-view mirror.
Side Obstacle Detection Modules (SOD-R and SOD-L)	Behind the rear bumper on both sides of the vehicle.
Cruise Control Module (CCM) Radar Sensor	In an opening in the front fascia or bumper behind an unpainted plastic cover.



Ford Mustang® Mach-E® Emergency Response Guide Specifics

In an earlier volume (2022 - Vol. 4), *On Target* began introducing critical information on the Ford Mustang Mach-E SUV Emergency Response Guide (ERG). While the information is intended for emergency crews and first responders—including large, easy-to-read color-coded diagrams, photos, safety precautions and other details—it's worthwhile reading for every repairer as well. The guide contains special consideration for the high-voltage electric system components, which will allow a response to emergencies involving these vehicles to be as safe as those involving non-electric vehicles.

Electric vehicles (EVs) have been designed with many safety features for your protection, helping to provide safe access to the vehicle under various conditions. However, when approaching an electric vehicle in a fire, rescue or recovery situation, always follow one industry-standard rule:

ALWAYS ASSUME THE VEHICLE'S HIGH-VOLTAGE SYSTEM IS POWERED UP

BEFORE ACCESSING THE VEHICLE, MAKE SURE THAT ANY EXTERNAL POWER SUPPLY IS DISCONNECTED. Failure to follow these instructions may result in serious personal injury or death.

Removing the service disconnect plug will disconnect the high voltage from the vehicle, however, **the high-voltage battery pack will remain live and dangerous**. Do not cut or penetrate the high-voltage battery case. If possible, isolate and avoid contact with high-voltage vehicle components.

To prevent the risk of high-voltage shock, always follow all warnings and service instructions precisely, including instructions to depower the system. The high-voltage system utilizes voltage of more than 450-volts DC. This voltage is provided through high-voltage cables to components and modules. The high-voltage cables and wiring are identified by orange harness tape or orange wire coverings. All high-voltage components are marked with high-voltage warning labels featuring a high-voltage symbol. Failure to follow these instructions may result in serious personal injury or death.

Any time the ignition is in the OFF position (and the vehicle is not being charged) the high-voltage system is deactivated. Whenever the service disconnect plug is removed, the high-voltage system is also disabled.



High-Voltage System De-Energizing

Method 1

1. Ensure the vehicle transmission gear selector is in the PARK position. Check that the vehicle READY light is off to verify the high-voltage system is disconnected.



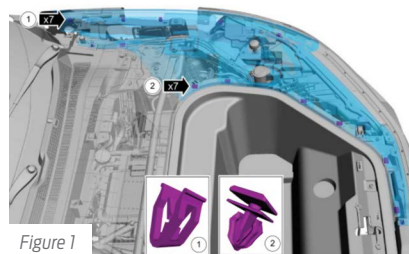
2. If the vehicle READY light is on, press the engine Start/Stop button to turn off the ignition.



Method 2

The high-voltage battery system uses a low-voltage disconnect plug that opens the 12-volt contactor control supply circuit. It is located in the engine compartment. When the service disconnect plug is disconnected, the high-voltage contactors that supply high voltage to the vehicle are unable to close.

1. Open the hood.
2. Detach the retainers and remove the left-hand cover. [Figure 1]



3. Release the connector position assurance (CPA) clip. [Figure 2]

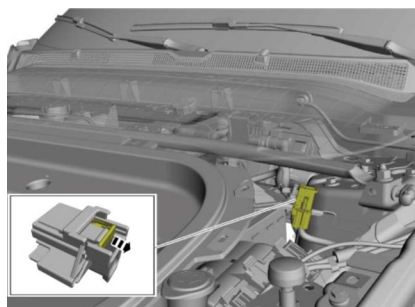


Figure 2

4. Press the tab while pulling the connector until the hole is completely visible on the top of the connector. Pull the upper part upwards until the OFF writing is visible. It is not possible to remove the sliding part of the header. [Figure 3]

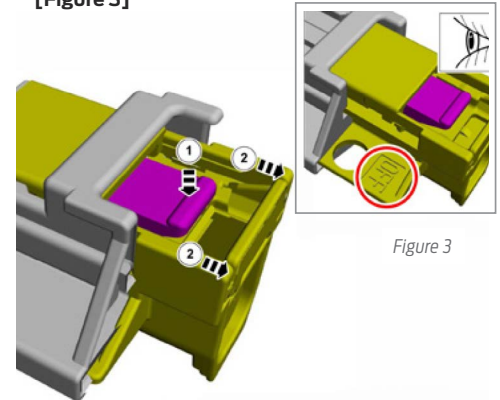


Figure 3

5. Insert a suitable tool into the lock to prevent reinsertion. [Figure 4]



Figure 4

The high-voltage system may retain a dangerous level of voltage for a short time after the high-voltage system is depowered. Wait a minimum of 5 minutes for the voltage to dissipate. Failure to follow this instruction may result in serious personal injury or death.

The emergency response guide can be found on the EV/hybrid page of [FordCrashParts.com](https://fordcrashparts.com). This page contains information on Ford's electric and hybrid vehicles including the Escape®, Corsair®, Maverick®, Explorer®, Aviator®, F-150® Lightning® and the Mustang Mach-E.

When repairing any Ford or Lincoln vehicle, **always** consult the official *Ford Workshop Manual* (found on [FordServiceInfo.com](https://fordserviceinfo.com)) as it provides step-by-step repair instructions. Technicians are encouraged to check back often as repair procedures can be updated without notice.

On Target will continue to provide installments from the emergency response guide and other important information on EVs in future volumes.

For more information on electric vehicles, or the repair of any Ford or Lincoln vehicle, visit [FordCrashParts.com](https://fordcrashparts.com).

Additional information on EVs can also be found on [FordServiceInfo.com](https://fordserviceinfo.com). Under 'Free Resources,' click on 'Rescue Cards.'

Repair Information for Ford F-150® Lightning® Truck

On Target continues with its new series (see *On Target - 2023, Vol. 1*) detailing important collision repair and safety information on the Ford F-150 Lightning, the first all-electric full-size pickup truck from Ford Motor Company. In this installment, we look at the front, under-hood storage compartment.

PLEASE NOTE: The following information is intended as a general guideline. For more in-depth repair information on this and other Ford and Lincoln vehicles, consult the *Ford Workshop Manual*, found at FordServiceInfo.com. Check back often as repair procedures can change without notice.

For more information, refer to **Section 501-02: Front End Body Panels—Removal and Installation**

F-150 Lightning repairs should only be performed by technicians properly trained for electric vehicles and with the proper personal protective equipment to safely conduct them.

Under-Hood Storage Compartment

REMOVAL

NOTE: These procedures refer to both sides of the vehicle.

1. Remove the trim pins and the under-hood front cargo cover. [Figure 1]



Figure 1

2. Disconnect the electrical connector. [Figure 2]

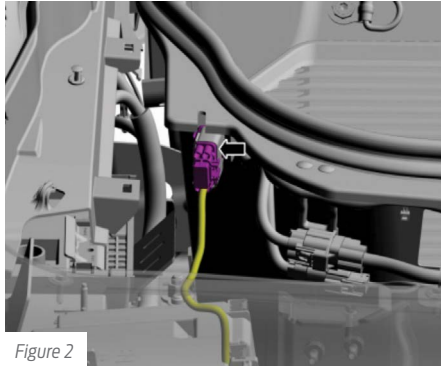


Figure 2

3. If equipped, remove the luggage hold down net.
4. Remove the load compartment floor storage cover.

5. With the aid of another technician, remove the bolts and the under-hood storage compartment (torque: 22 lb.ft. / 30 Nm). [Figure 3]

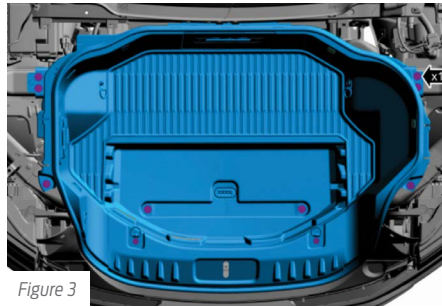


Figure 3

INSTALLATION

1. With the aid of another technician and using the locator pin, align the storage compartment.
2. Hand tighten the bolts at this stage.
3. Continue with the reverse of the removal procedure steps.

When researching the official *Ford Workshop Manual (WSM)*—a resource that should **always** be consulted when repairing any Ford or Lincoln vehicles as it provides step-by-step repair instructions—technicians will find the information for the Lightning inside the entry for the non-electric F-150. Any repair procedure that is unique to the Lightning will include the word “Electric” after the specific section repair topic.

On Target will continue to provide important information on the F-150 Lightning and other Ford EVs in future volumes.

Additional information on EVs can also be found on FordServiceInfo.com. Under ‘Free Resources,’ click on ‘Rescue Cards.’

For more information on electric vehicles, or the repair of any Ford or Lincoln vehicle, visit FordCrashParts.com.

How to Locate the Correct Ford OEM Replacement Glass

To properly repair Ford and Lincoln vehicles and ensure all their components are working as intended, it is important that the correct OEM glass components are utilized. **Carlex** provides a search feature that can quickly identify the correct replacement glass part number.

From the 2012 model year onward, Ford has included the part’s engineering part number embedded within the glass trademark. It is highly recommended that glass technicians take a photo of that number and input it into the search function to receive the correct NAGS (National Auto Glass Specifications) number.

A barcode next to the trademark can also be scanned with a smartphone. It will bring up the Ford engineering part number and a search can be made that way, avoiding any possible typos within the part number. Carlex, as a Tier 1 Ford supplier, will always have the most up-to-date engineering and design changes to ensure you are ordering the correct part.

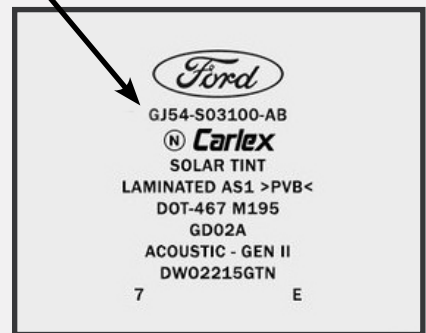
A VIN decoder is not required to search for the correct replacement OEM glass.

Using the engineering part number in the trademark, you can find the correct Ford or Lincoln OE replacement part in a few easy steps:

1. Go to Carlex.com
2. Click on



3. Click on “Ford Engineering Number”
4. Type in the Ford engineering part number found in the trademark



The corresponding Service or NAGS number will then populate in the results.

For more information on Ford/Carlex OEM glass, including job aids, official position statements, repair videos and more, visit FordCrashParts.com/Glass.

For more information on the Ford Certified Glass Network (FCGN), or to join the program, visit Collision.Ford.com/FordCertifiedGlassNetwork or call (833) 837-7694.

Carlex™



Ford and I-CAR® Unveil New Guide for Entry-Level Collision Repair Technicians



As the automotive industry continues to evolve with advanced technologies

and complex repair procedures, the need for entry-level technicians is more important than ever. Having fundamental knowledge provides a foundation for future learning and development, which is crucial to ensure a sustainable learning culture that contributes to complete, safe and quality repairs. That's why Ford Motor Company is excited to announce the launch of I-CAR's Entry-Level Tech Guide, a comprehensive resource available at [I-CAR.com](https://www.i-car.com).

The [Entry-Level Tech Guide](#) is designed to support entry-level collision repair technicians as they build their knowledge and skillset, providing them with a strong foundation to succeed within the industry. The guide covers a wide range of topics, from basic safety procedures and industry terminology to more advanced concepts such as blueprint reading and measuring techniques.

The guide is an essential tool for Ford dealerships and network collision repair centers that are looking to hire and train entry-level technicians. It provides a standardized curriculum that ensures all technicians receive the same level of training, which is critical for maintain-

ing consistent and high-quality repairs. By investing in the development of entry-level technicians, Ford is helping to build a pipeline of skilled professionals who can meet the needs of the industry today and in the future.

I-CAR—accredited through the [International Accreditors for Continuing Education and Training \(IACET\)](#) organization—remains committed to providing continuous improvement, which is reflected in its growing curriculum.

As a testament to the unwavering dedication by Ford to continue fostering the growth of technicians throughout the industry, the Entry-Level Tech Guide stands as a pivotal component for its network shops to prepare the next generation of collision repairers. The longstanding commitment by Ford to the technician training programs is exemplified by its collaboration with I-CAR, requiring repair facilities to achieve and maintain Gold Class® recognition.

To explore the Entry-Level Tech Guide and start your knowledge-building journey, visit [I-CAR.com](https://www.i-car.com). For more information on Ford-specific I-CAR training, visit [I-CAR.com/Ford](https://www.i-car.com/Ford) or call (844) 505-9557 to speak with a representative.



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 *OnTarget* for free at [FordCrashParts.com](https://www.fordcrashparts.com), or by clicking the Ford page on [OEM1Stop.com](https://www.oem1stop.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

The Crash Parts Corner

Did You Know That...

[FordCrashParts.com](https://www.fordcrashparts.com) remains an invaluable resource for collision repairers, as it offers a wealth of helpful content, including:

- Important repair and safety information and considerations for Ford Motor Company electric vehicles (EVs), including the Ford Mustang® Mach-E® and F-150® Lightning®
- Detailed repair information on advanced driver assistance systems (ADAS)
- Information on the Ford Certified Collision Network
- Information on the Ford Certified Glass Network
- Additional details related to OEM glass, including how to find the exact replacement part through Carlex®
- Official Ford and Lincoln position statements
- Instruction sheets for the F-150 and Super Duty®
- And much more!

In addition, the site includes instructional advice on Ford-approved paint and adhesive systems, covering material from AkzoNobel, Axalta, BASF, PPG, Sherwin-Williams, Valspar, Fusor, Motorcraft® and 3M; and repair equipment lists from Ford's Rotunda site.

Visit [FordCrashParts.com](https://www.fordcrashparts.com)—the authority on Ford collision repair—and check back often for new content throughout the year.

