

501-28 Roof Sheet Metal Repairs
Removal and Installation

2021 F-150

Procedure revision date: 10/8/2020

Roof Side Rail - Regular Cab

Special Tool(s) / General Equipment

6.5 mm Drill Bit
Polydrive Bit Socket
Self-Piercing Rivet (SPR) Remover/Installer
Belt Sander
Blind Rivet Gun
Hot Air Gun
Locking Pliers

Materials

Name	Specification
Metal Bonding Adhesive TA-1, TA-1-B, 3M™ 08115, LORD Fusor® 108B	-
Seam Sealer TA-2-B, 3M™ 08308, LORD Fusor® 803DTM	-

Removal

 **WARNING:** Electric vehicles damaged by a crash may have compromised high voltage safety systems and present a potential high voltage electrical shock hazard. Exercise caution and wear appropriate Personal Protective Equipment (PPE) safety gear, including high voltage safety gloves and boots. Remove all metallic jewelry, including watches and rings. Isolate the HV system as directed by the Ford Emergency Response Guide for the vehicle. Failure to follow these instructions may result in serious personal injury or death.

NOTICE: Battery electric vehicle (BEV), hybrid electric vehicle (HEV) and plug-in hybrid electric vehicle (PHEV) contain a high-voltage battery. Before cutting or welding near the high-voltage battery it must be removed to avoid damage.

-  **WARNING:** Before beginning any service procedure in this manual, refer to health and safety warnings in section 100-00 General Information. Failure to follow this instruction may result in serious personal injury.

Refer to: [Health and Safety Precautions](#) (100-00 General Information, Description and Operation).

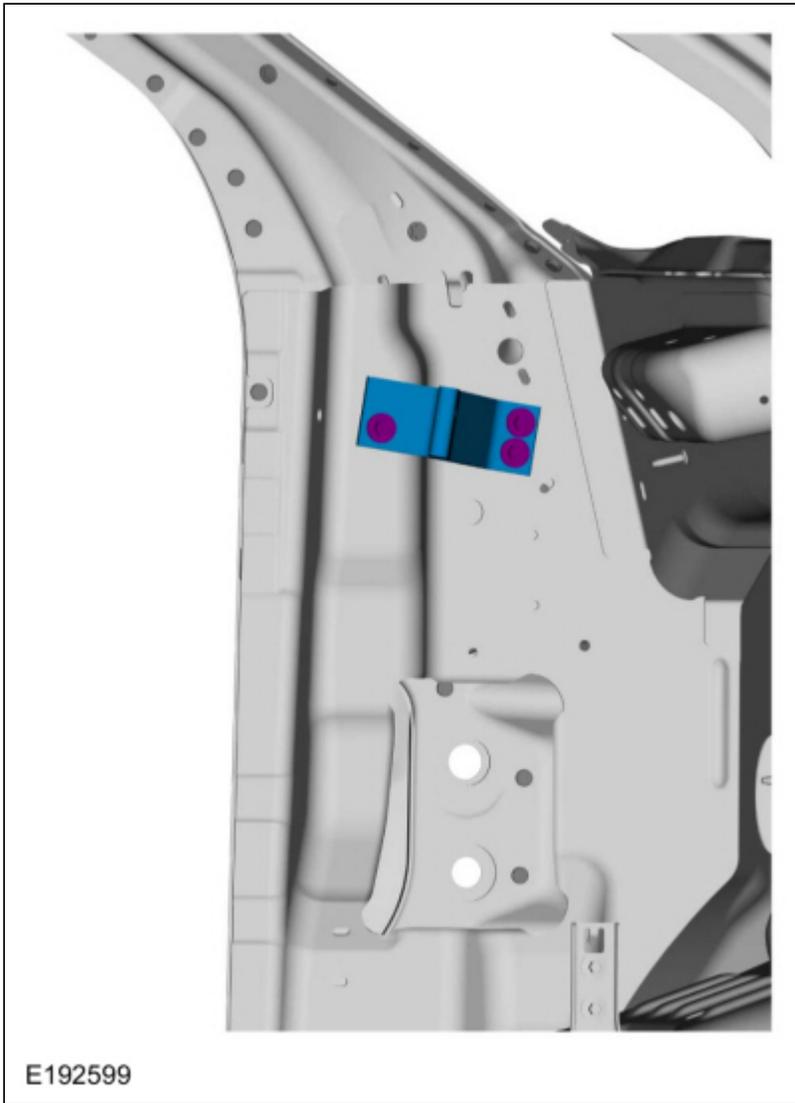
Refer to: [High Voltage System Health and Safety Precautions - Overview](#) (100-00 General Information, Description and Operation).

NOTE: Aluminum body panels are highly receptive to heat transfer. With the extensive use of structural adhesives and non-structural sealers used in vehicle construction, the potential of heat transfer could impact adhesives and sealers in non-associated panels during the repair process. Many repairs areas that utilize

structural adhesive may be separated after fastener removal by using a panel chisel along the joint/flange. Using heat not exceeding 425° F to loosen a bonded panel should only be done when all panels in the joint will be replaced and new adhesive applied.

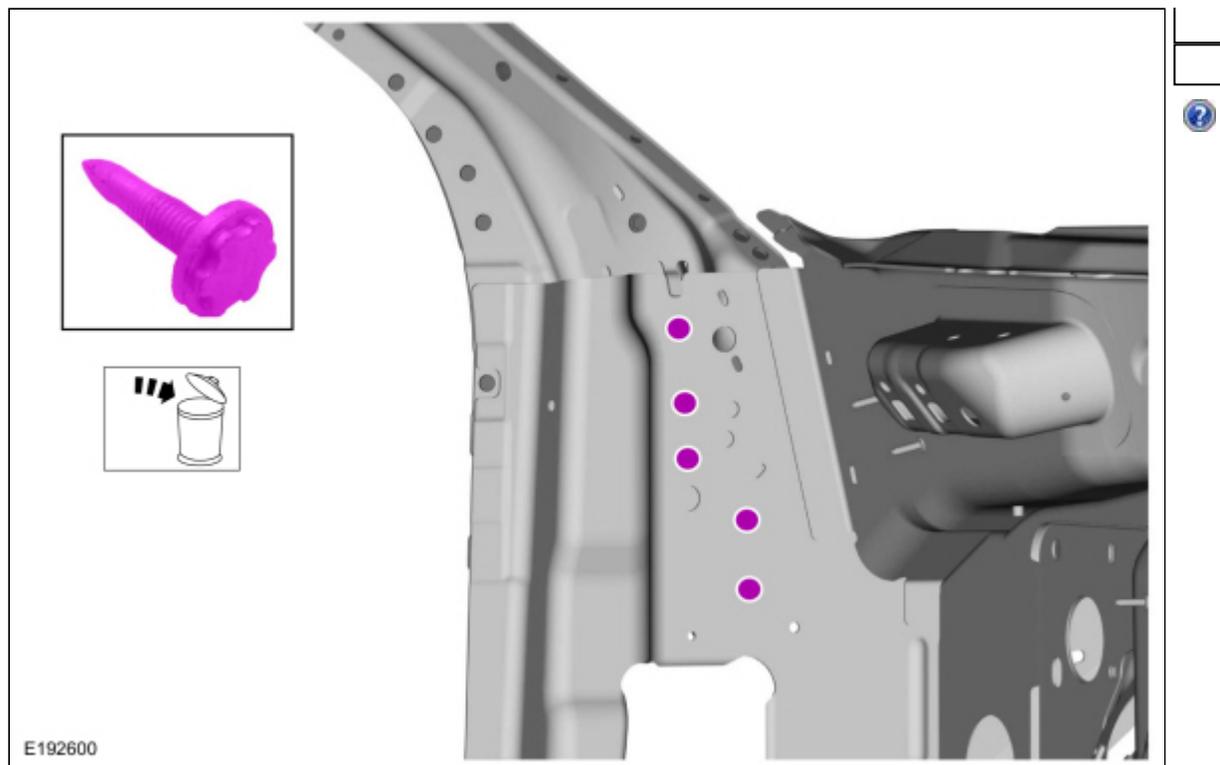
2. Remove the front fender.
Refer to: [Fender](#) (501-02 Front End Body Panels, Removal and Installation).
Refer to: [Fender Splash Shield](#) (501-02 Front End Body Panels, Removal and Installation).
3. Remove the front door.
Refer to: [Front Door - Regular Cab/SuperCrew](#) (501-03 Body Closures, Removal and Installation).
4. Remove the instrument panel.
Refer to: [Instrument Panel](#) (501-12 Instrument Panel and Console, Removal and Installation).
5. Dimensionally restore the vehicle to a pre-damage condition.
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).
6. Remove the outer roof panel.
Refer to: [Roof Panel - Regular Cab](#) (501-28 Roof Sheet Metal Repairs, Removal and Installation).
7. Remove the body side sheet metal in the repair area.
Refer to: [Body Panel Sectioning](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, General Procedures).
8. Remove the bolts and cross-car beam bracket.





9. Remove and discard the FDS fasteners.
Use the General Equipment: Polydrive Bit Socket





10. Remove the A-pillar reinforcement.

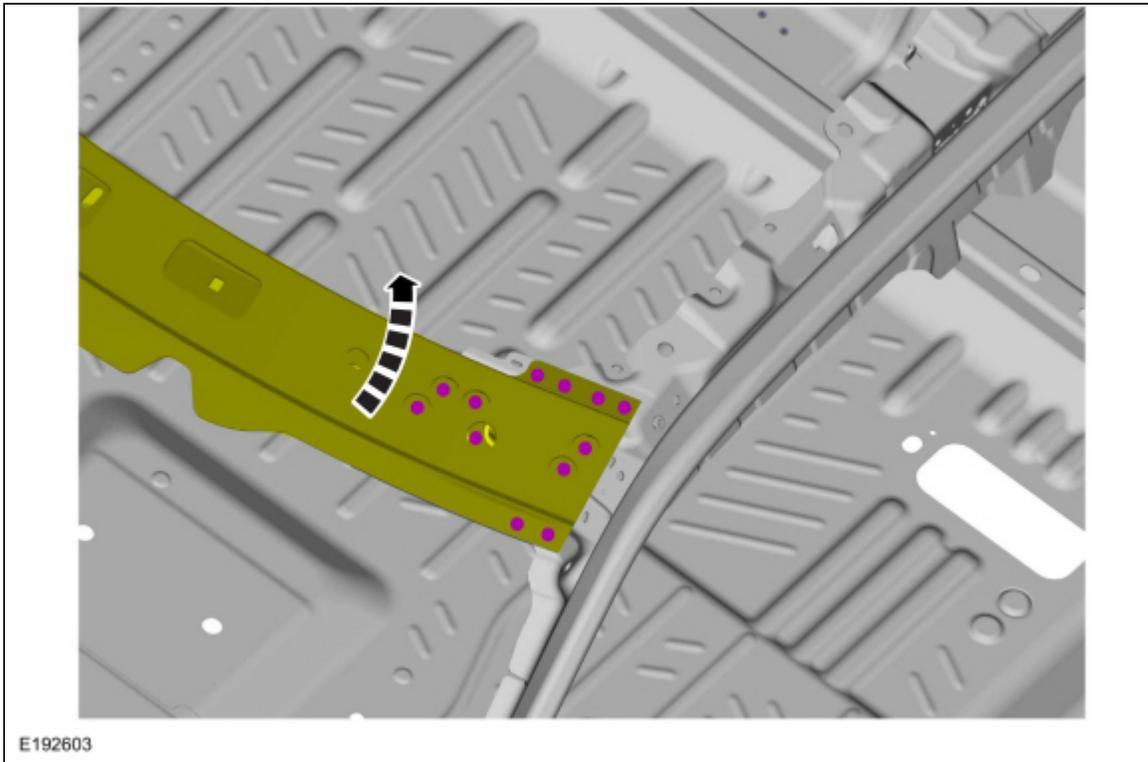
Refer to: [A-Pillar Outer Panel Section and Reinforcement](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).

11. Remove the SPR fasteners and position aside the windshield header panel.

Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer

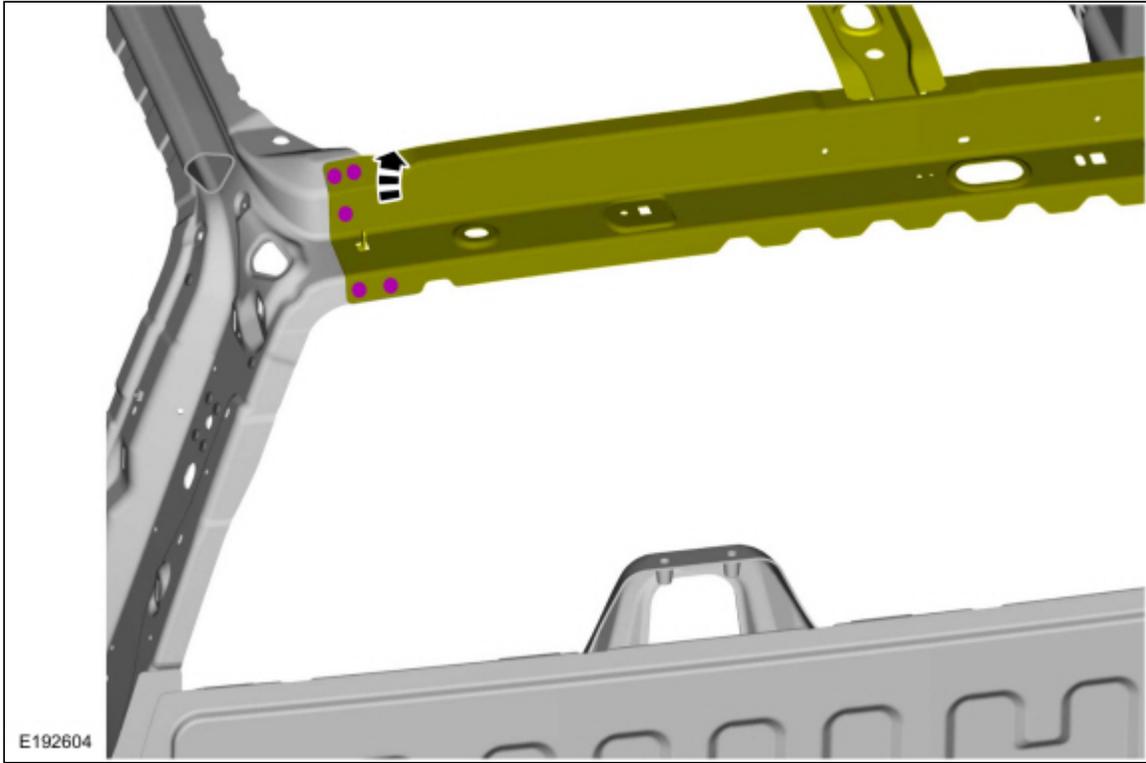
Use the General Equipment: Belt Sander





12. Remove the SPR fasteners and position aside the rear window glass header panel.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander

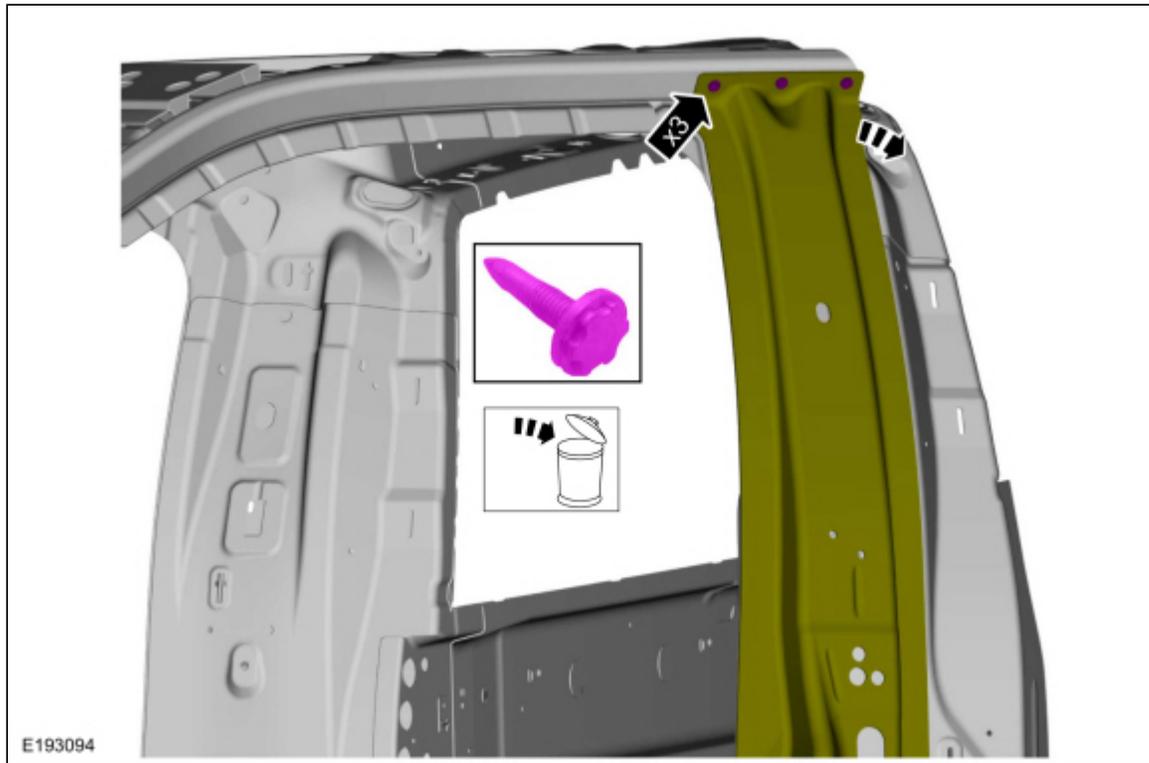




- 13. Remove and discard the FDS fasteners.
Use the General Equipment: Polydrive Bit Socket

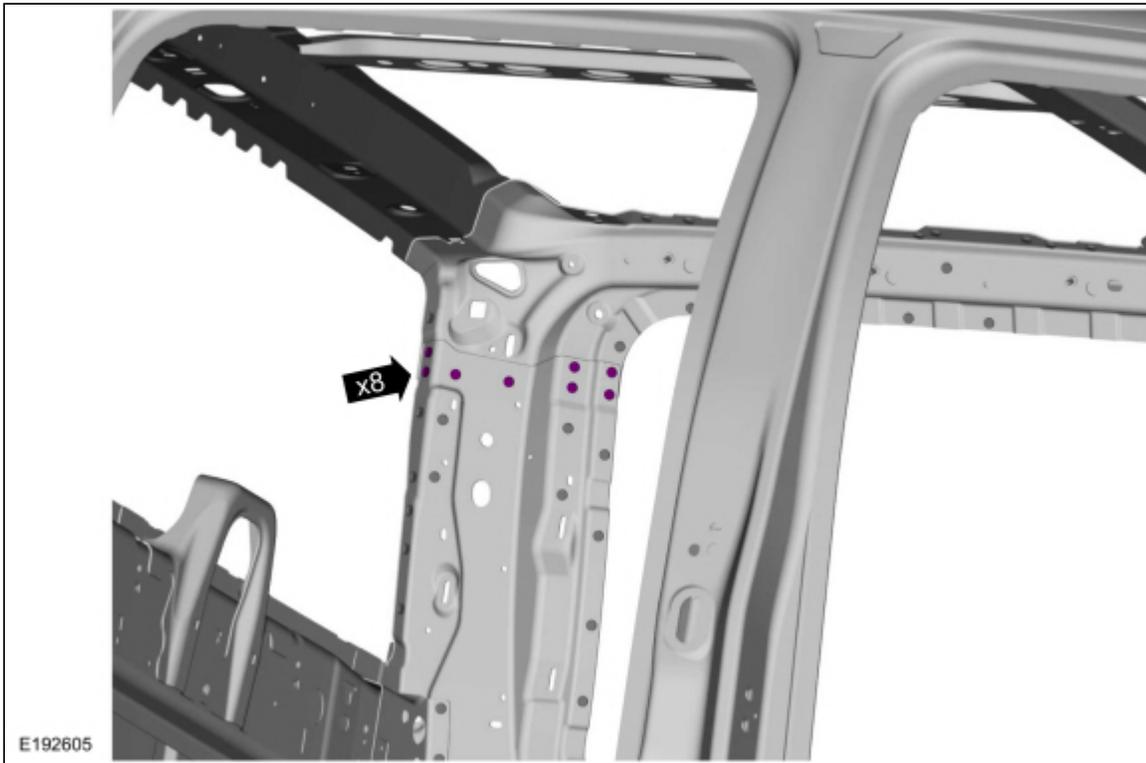






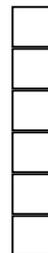
- 14. Remove the SPR fasteners.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander

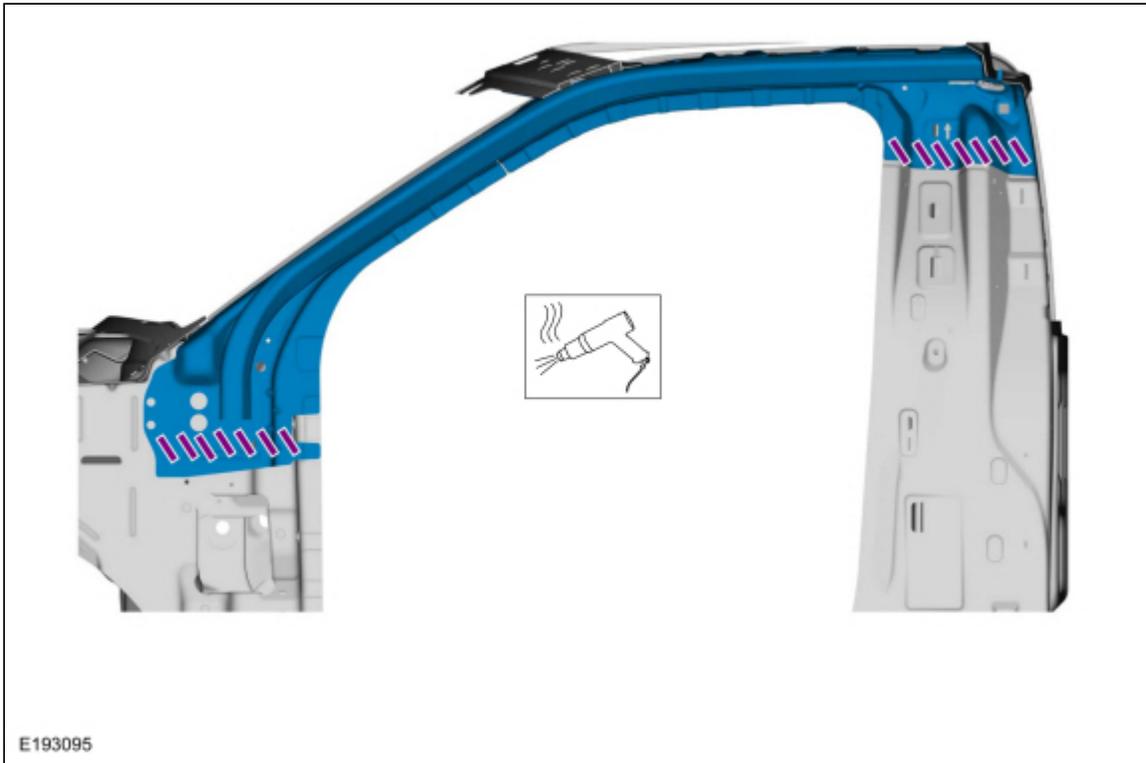




15. **NOTE:** *The use of heat may help in removal of the roof side rail. Do not exceed 425°F.*

Remove the roof side rail.
Use the General Equipment: Hot Air Gun





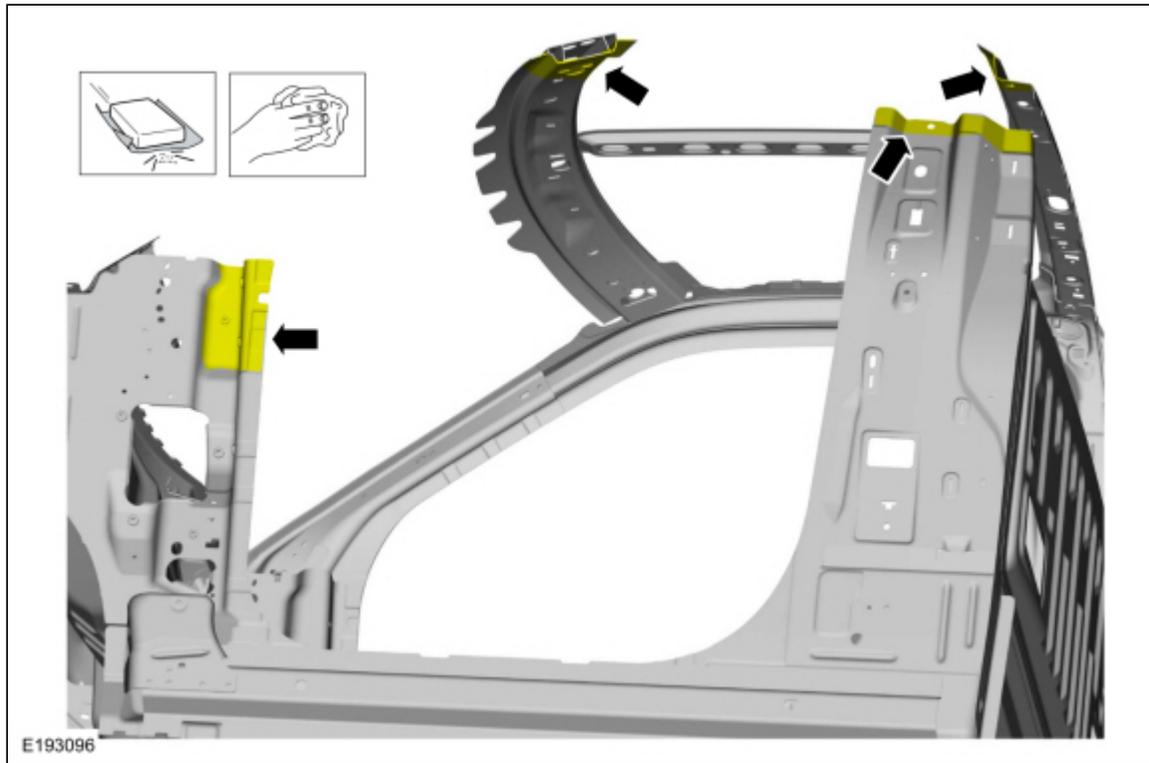
Installation

NOTE: SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

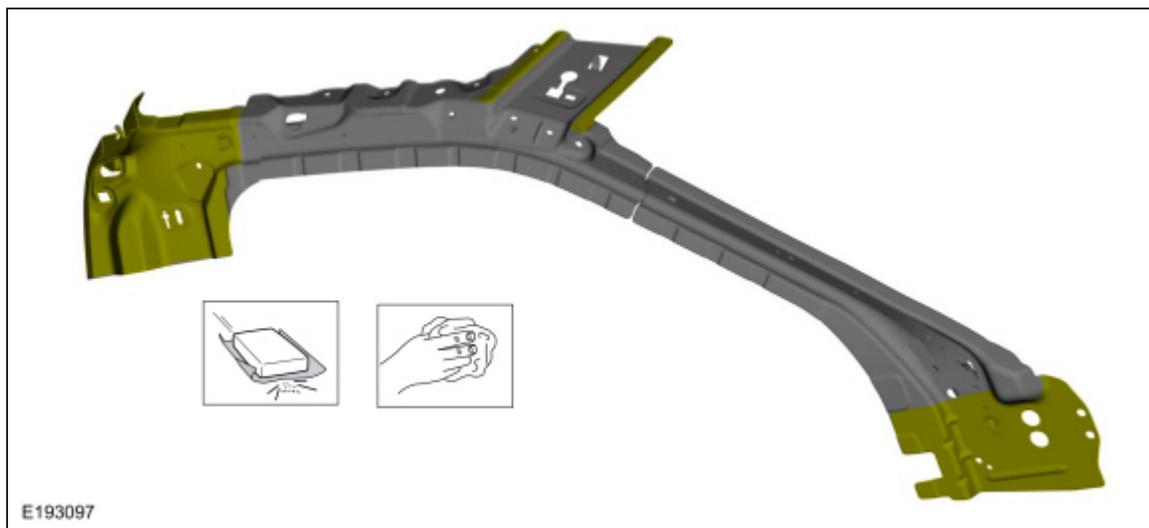
NOTE: Solid rivets or blind rivet fasteners may be used in place of SPR fasteners in original SPR location after enlarging hole to 6.5mm.

1. Sand to remove old adhesive using 80 grit sandpaper and clean.



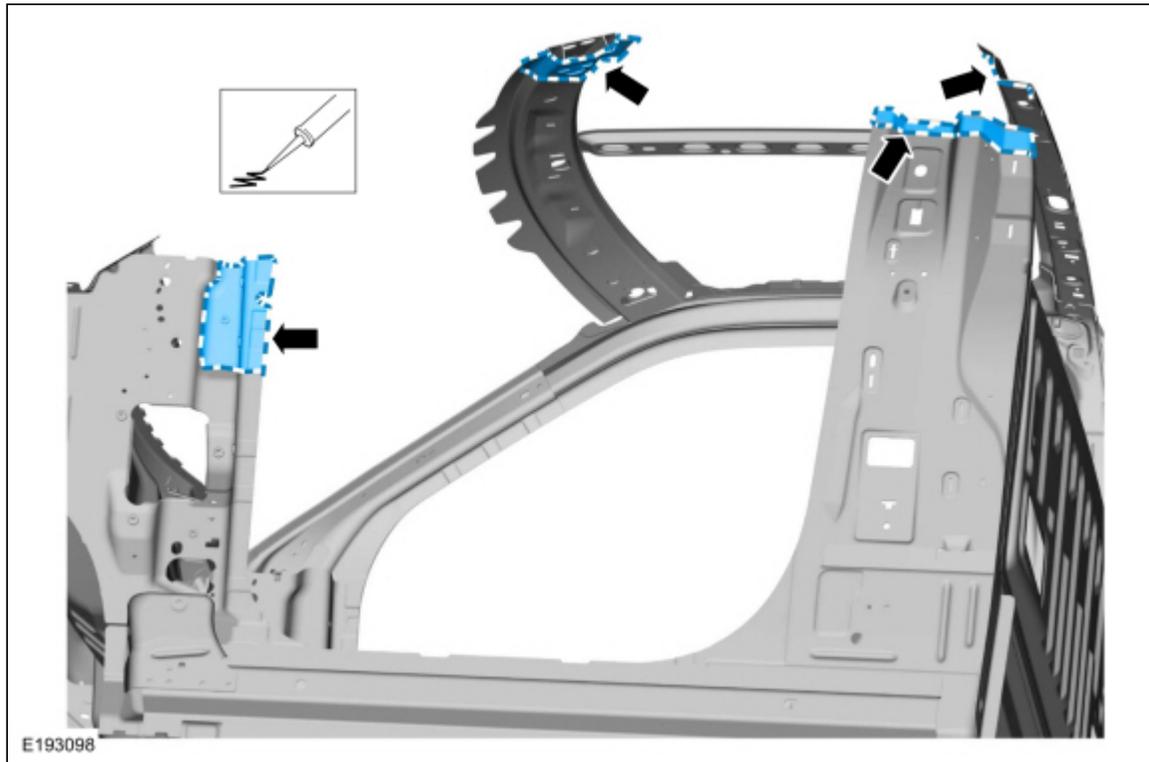


2. Sand to remove e-coat using 80 grit sandpaper and clean.



3. Apply adhesive.

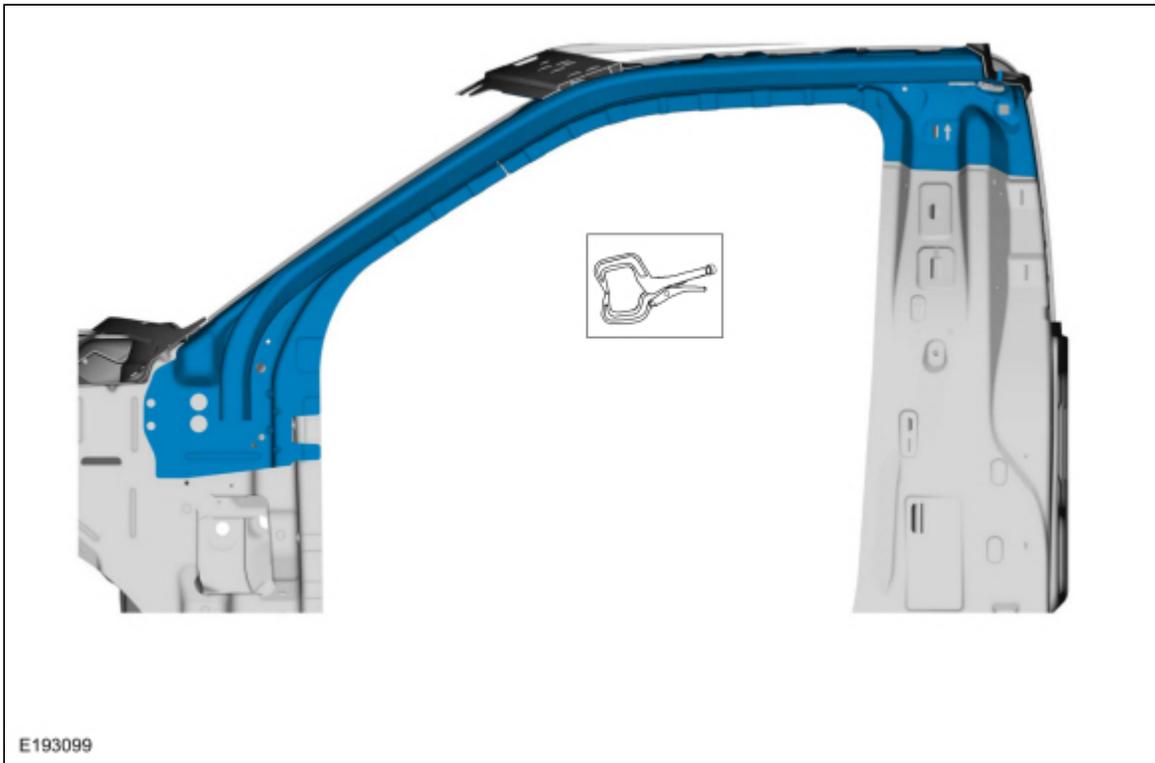
Material: Metal Bonding Adhesive / TA-1, TA-1-B, 3M™ 08115, LORD Fusor® 108B



4. Install and clamp in position.

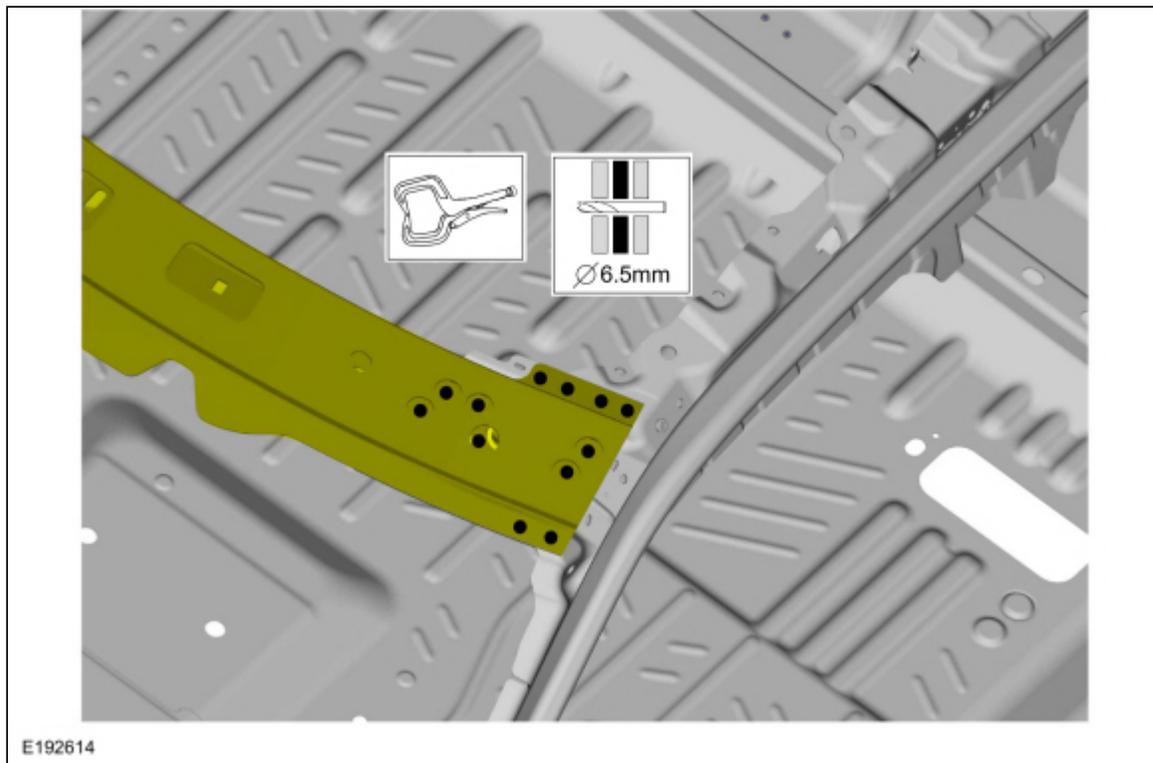
Use the General Equipment: Locking Pliers





- 5. Position the windshield header panel, clamp in position and drill as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit





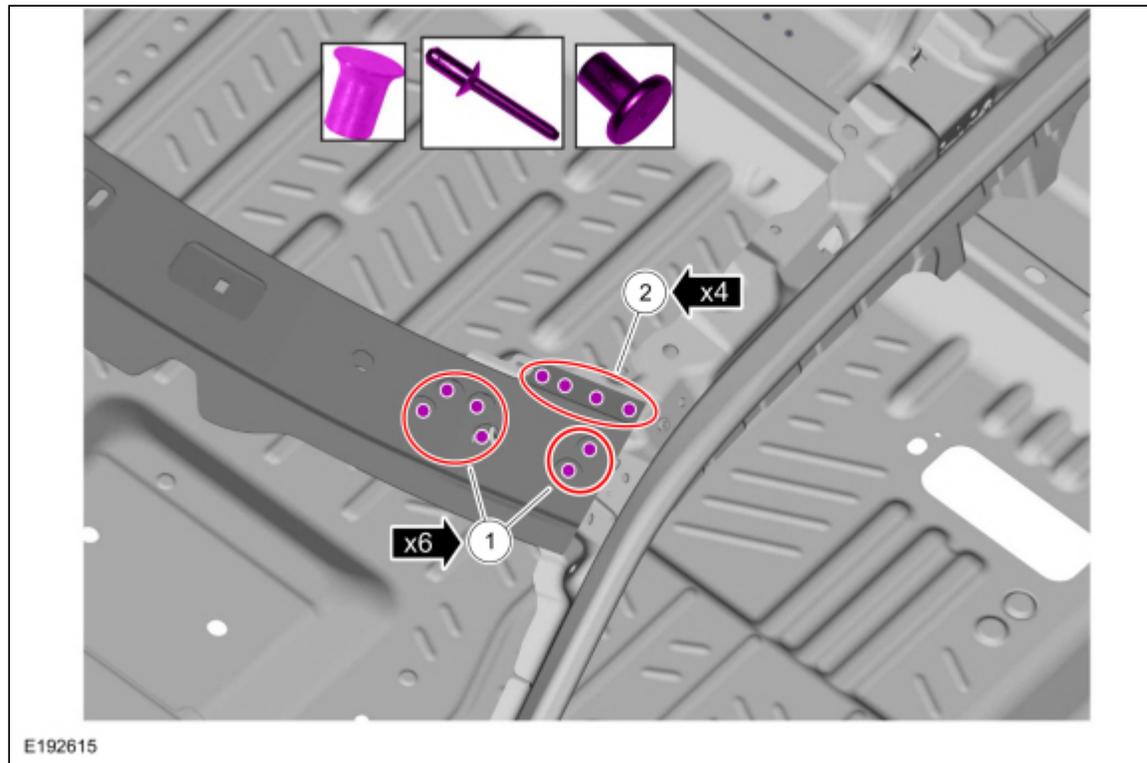
6. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

NOTE: Solid rivets or blind rivet fasteners may be used in place of SPR fasteners in original SPR location after enlarging hole to 6.5mm.

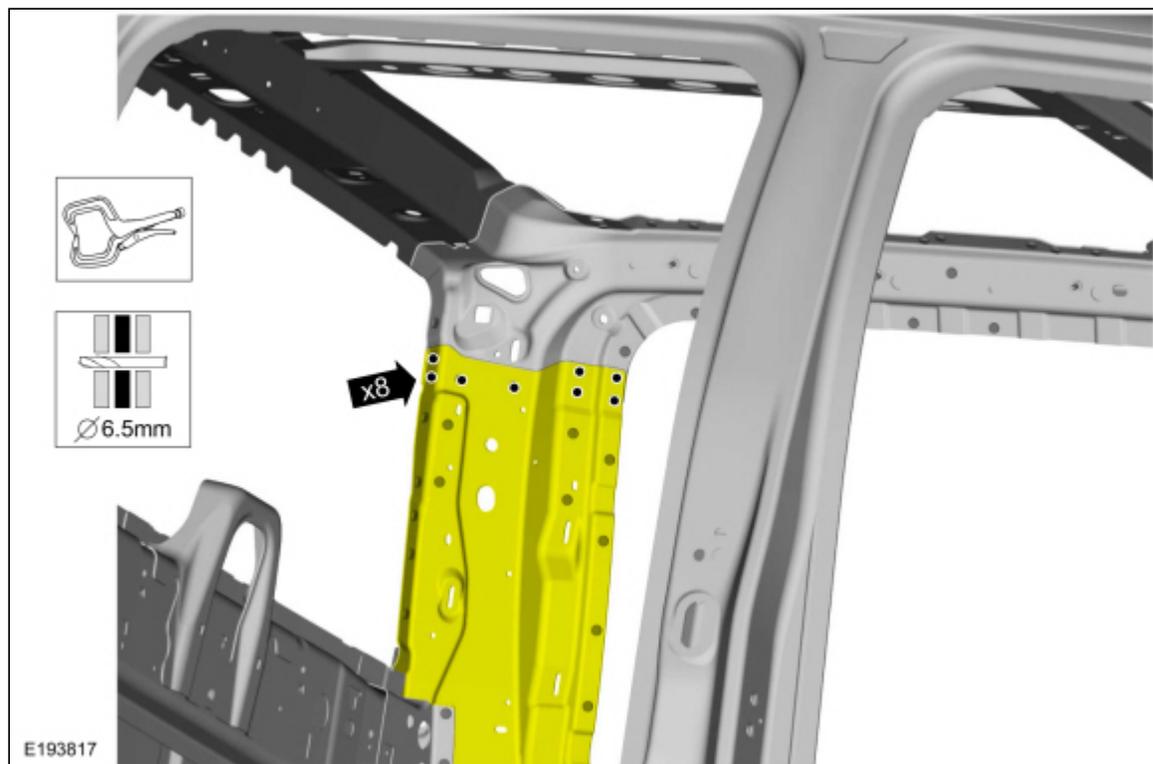
Install the fasteners.

Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W708777-S900C	-	-
2	W710246-S900	BN	DP10-200/H	SA-0400/SA-0402	-	W790377-S900	-

Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).
 Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
 Use the General Equipment: Blind Rivet Gun



7. Position, clamp and drill the C-pillar inner panel as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit



8. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

NOTE: Solid rivets or blind rivet fasteners may be used in place of SPR fasteners in original SPR location after enlarging hole to 6.5mm.

Install the fasteners.

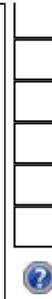
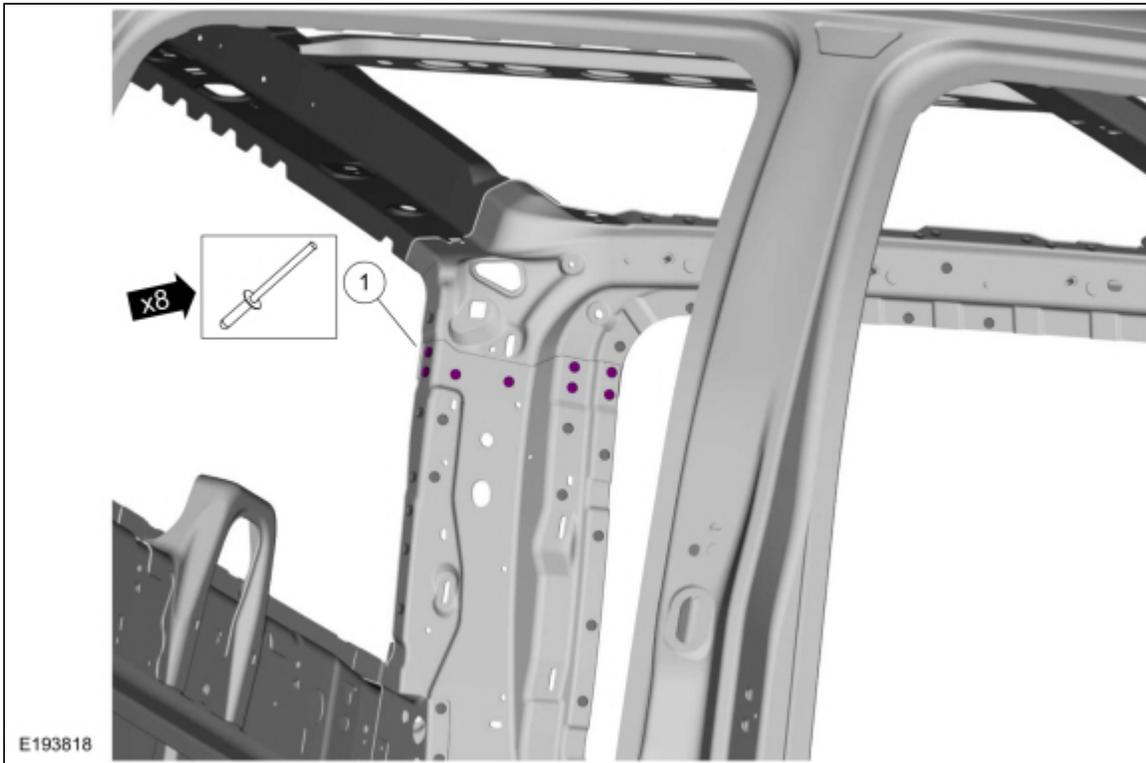
Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W708777-S900C	-	-

Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).

Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer

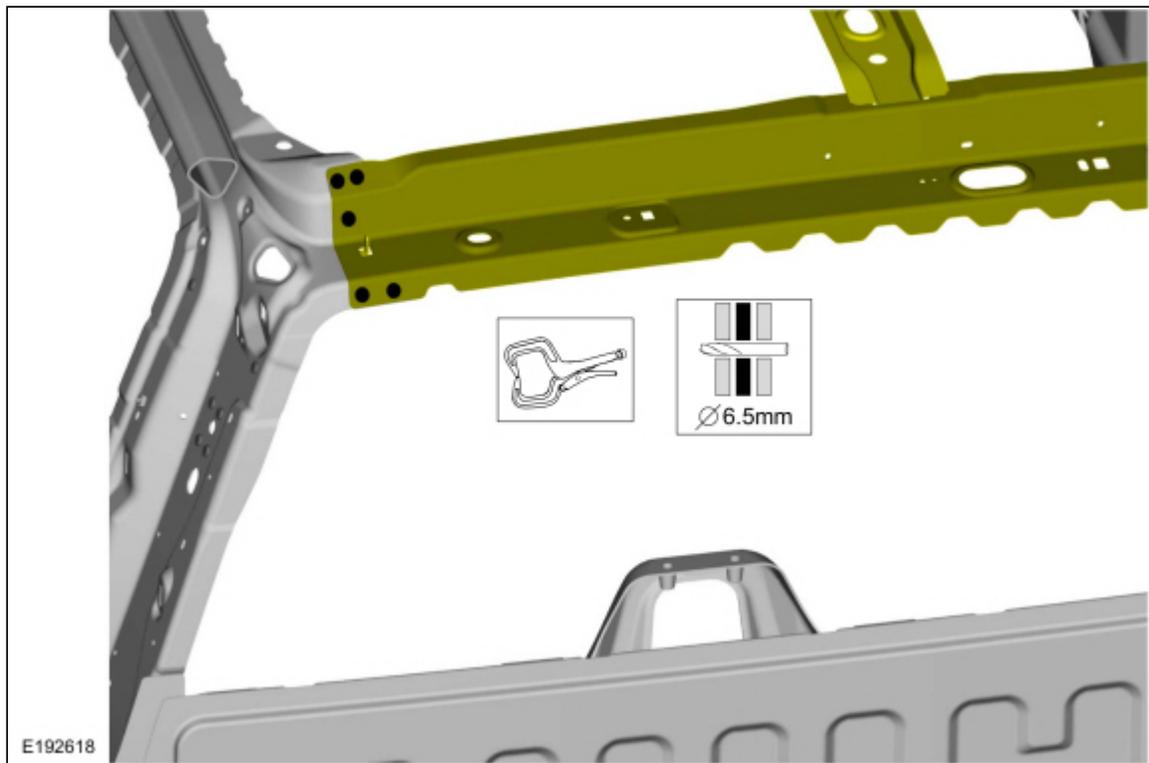
Use the General Equipment: Blind Rivet Gun





- 9. Position the rear window glass header panel, clamp in position and drill as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit





10. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

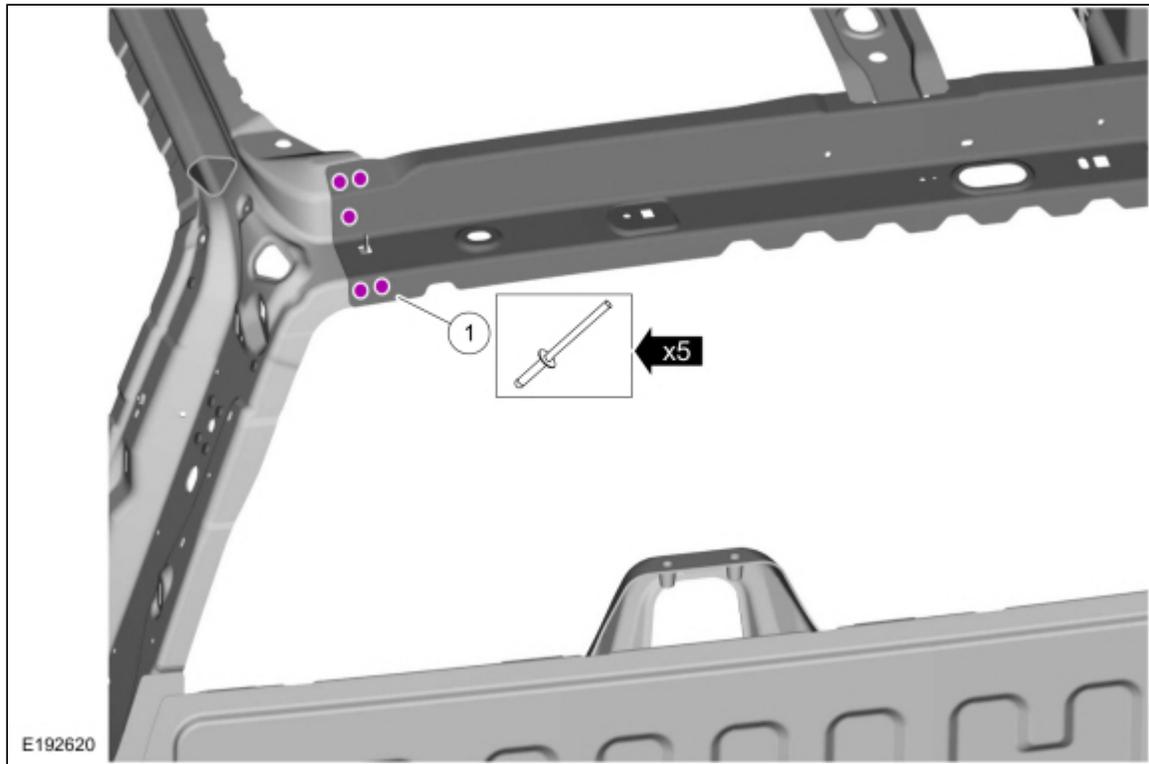
NOTE: Solid rivets or blind rivet fasteners may be used in place of SPR fasteners in original SPR location after enlarging hole to 6.5mm.

Install the fasteners.

Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W707638-S900C		-

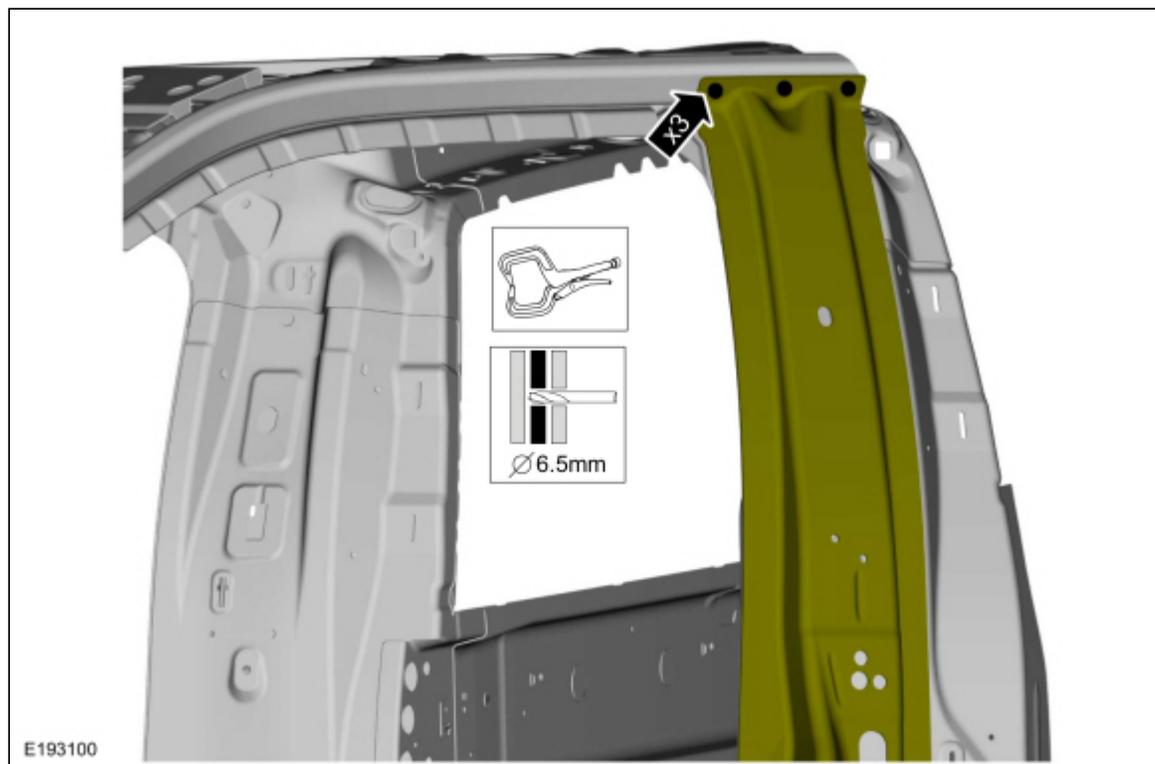
Use the General Equipment: Blind Rivet Gun





- 11. Position, clamp and drill the roof rail to C-pillar reinforcement as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit





12. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

NOTE: Solid rivets or blind rivet fasteners may be used in place of SPR fasteners in original SPR location after enlarging hole to 6.5mm.

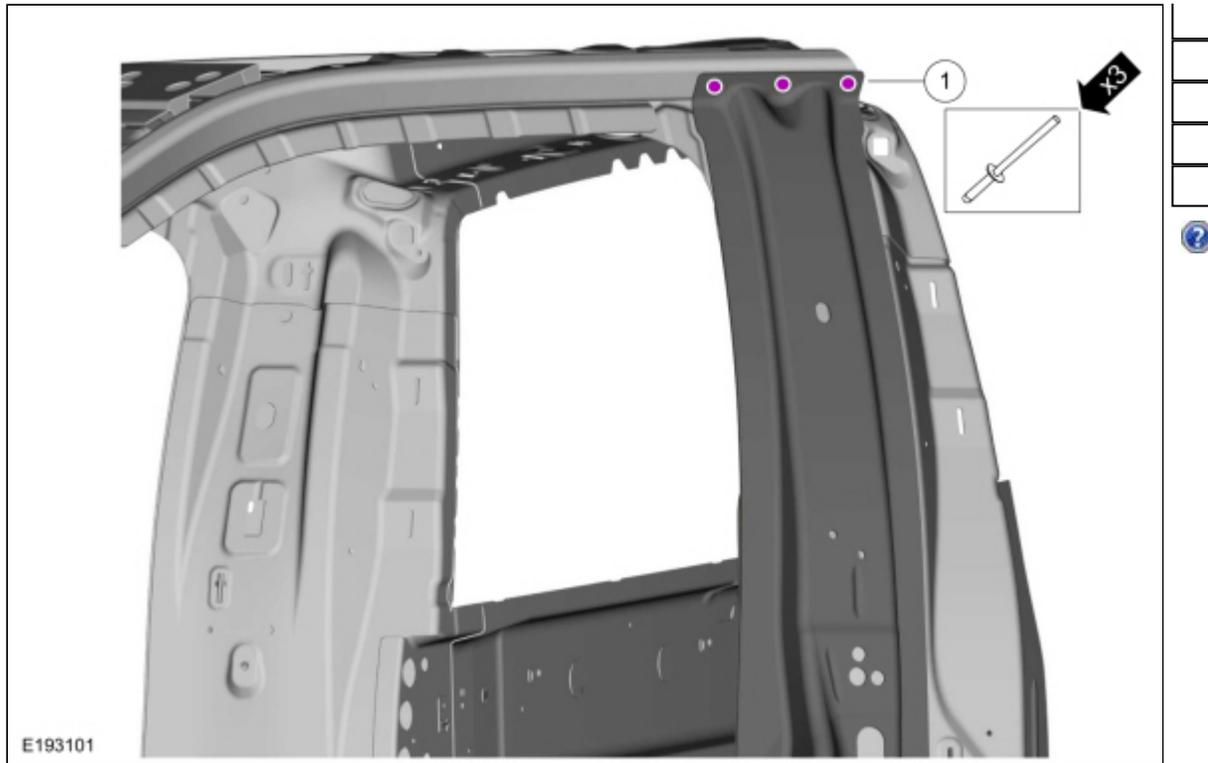
Install the fasteners.

Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W708777-S900C	-	-

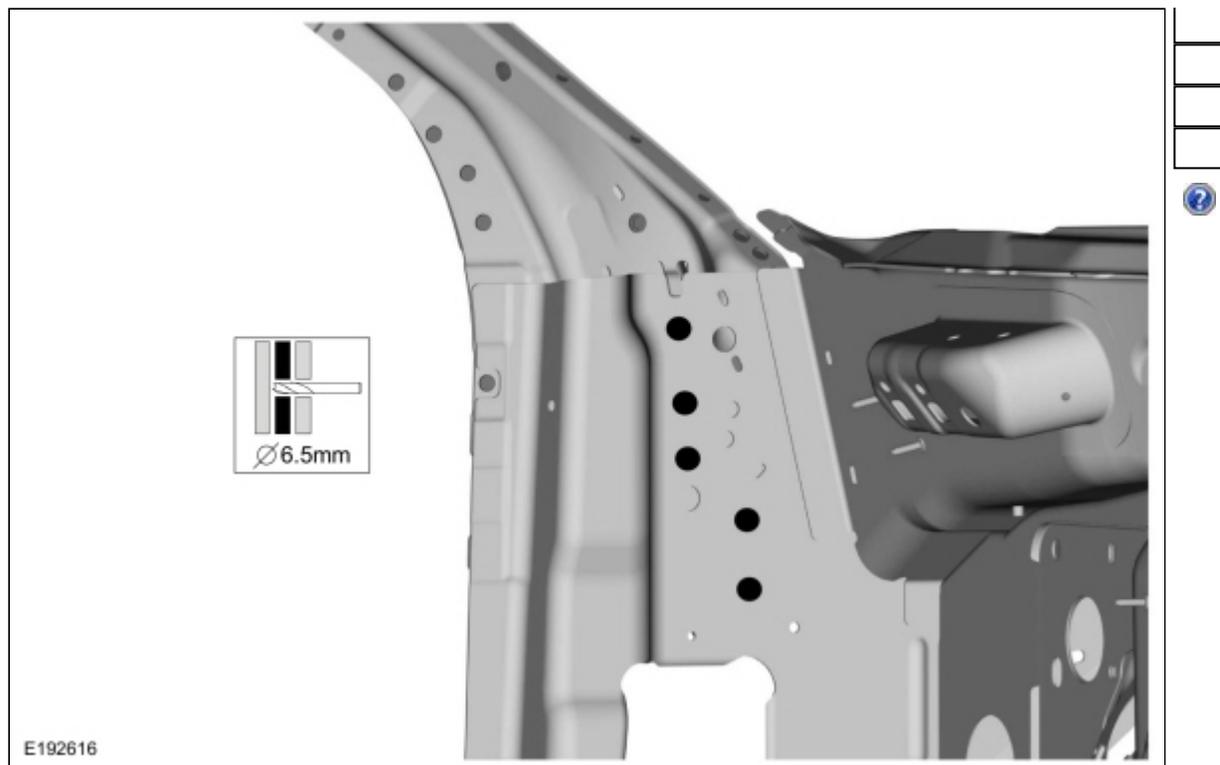
Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).

Use the General Equipment: Blind Rivet Gun





13. Install the A-pillar reinforcement.
Refer to: [A-Pillar Outer Panel Section and Reinforcement](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
14. Install the body side outer panel.
Refer to: [Body Panel Sectioning](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, General Procedures).
Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).
15. Install the roof outer panel.
Refer to: [Roof Panel - Regular Cab](#) (501-28 Roof Sheet Metal Repairs, Removal and Installation).
16. Metal finish using typical repair techniques.
17. Seam sealing: All seams must be sealed to production level.
Material: Seam Sealer / TA-2-B, 3M™ 08308, LORD Fusor® 803DTM
18. Enlarge old FDS holes as indicated.
Use the General Equipment: 6.5 mm Drill Bit



19. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

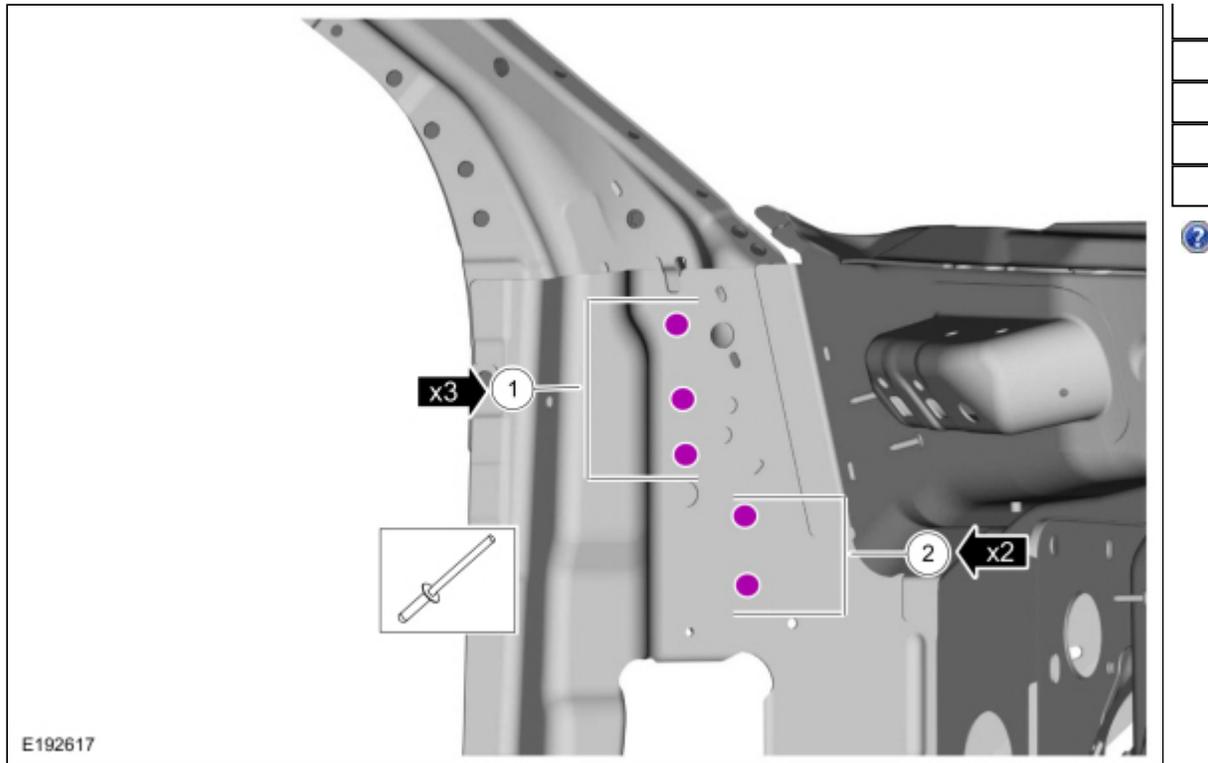
NOTE: Solid rivets or blind rivet fasteners may be used in place of SPR fasteners in original SPR location after enlarging hole to 6.5mm.

Install the fasteners.

Item	<u>SPR</u> Number	<u>SPR</u> Code	Henrob® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W702512-S900C	-	-
2	-	-	-	-	W708777-S900C	-	-

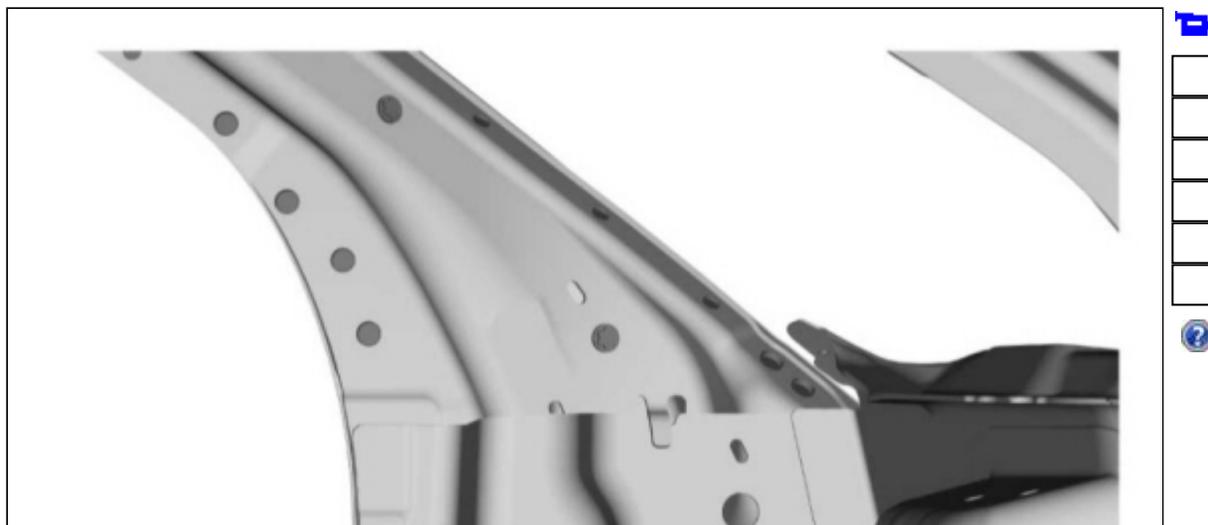
Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).
Use the General Equipment: Blind Rivet Gun

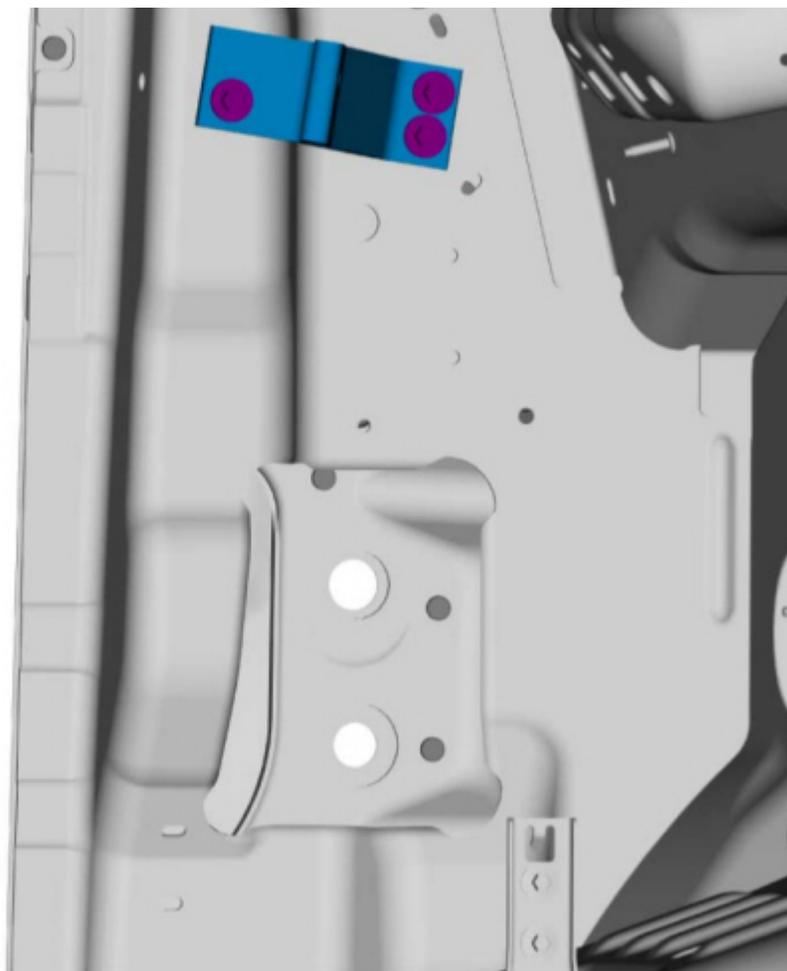




20. Refinish the repair area using a Ford approved paint system.

21. Install the cross-car beam bracket and bolts.
Torque: 18 lb.ft (25 Nm)





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22. Install the instrument panel.
Refer to: [Instrument Panel](#) (501-12 Instrument Panel and Console, Removal and Installation).
23. Install the door.
Refer to: [Front Door - Regular Cab/SuperCrew](#) (501-03 Body Closures, Removal and Installation).
24. Install the fender.
Refer to: [Fender](#) (501-02 Front End Body Panels, Removal and Installation).
Refer to: [Fender Splash Shield](#) (501-02 Front End Body Panels, Removal and Installation).
25. Align the door.
Refer to: [Front Door Alignment - SuperCab](#) (501-03 Body Closures, General Procedures).

