

501-28 Roof Sheet Metal Repairs  
Removal and Installation

2021 F-150

Procedure revision date: 10/8/2020

### Roof Side Rail - SuperCrew

#### 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).

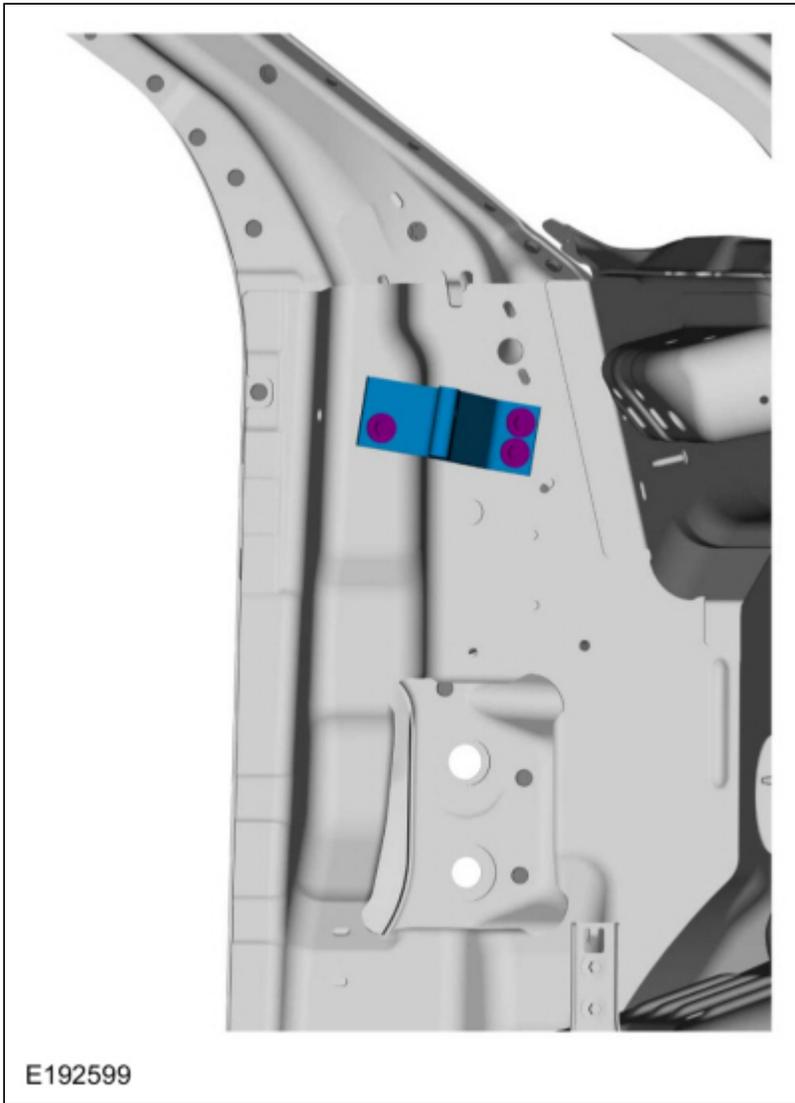
Refer to: [High Voltage System Health and Safety Precautions - Overview](#) (100-00 General Information, Description and Operation).

**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.*

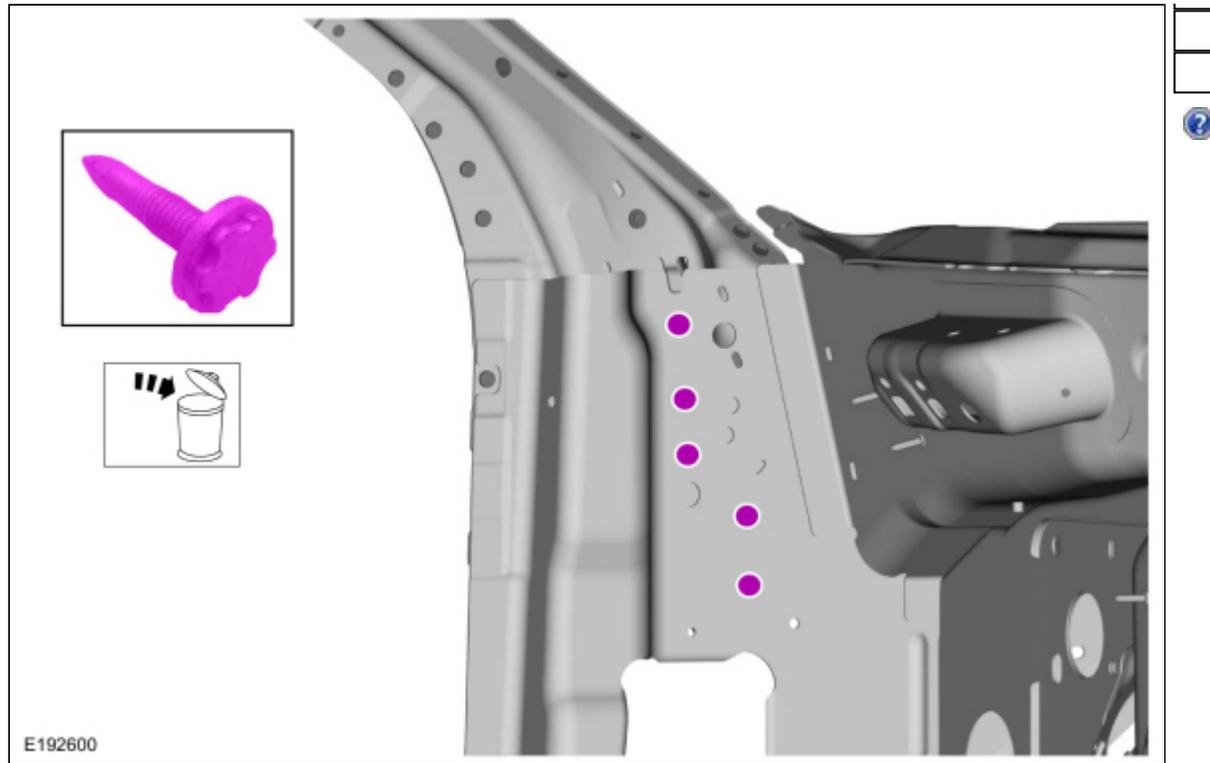
2. Depower the SRS.  
Refer to: [Supplemental Restraint System \(SRS\) Depowering](#) (501-20B Supplemental Restraint System, General Procedures).
3. Remove the front fender.  
Refer to: [Fender](#) (501-02 Front End Body Panels, Removal and Installation).
4. Remove the front door.  
Refer to: [Front Door - Regular Cab/SuperCrew](#) (501-03 Body Closures, Removal and Installation).
5. Remove the rear door.  
Refer to: [Rear Door - SuperCrew](#) (501-03 Body Closures, Removal and Installation).
6. Remove the instrument panel.  
Refer to: [Instrument Panel](#) (501-12 Instrument Panel and Console, Removal and Installation).
7. Verify the vehicle is dimensionally correct.  
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).
8. Remove the roof outer panel.  
Refer to: [Roof Panel - SuperCrew](#) (501-28 Roof Sheet Metal Repairs, Removal and Installation).  
Refer to: [Roof Panel - SuperCrew, Vehicles With: Roof Opening Panel](#) (501-28 Roof Sheet Metal Repairs, Removal and Installation).
9. Remove the body side outer sheet metal in the repair area.  
Refer to: [Body Panel Sectioning](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, General Procedures).
10. Remove the 3 bolts and the cross-car beam bracket.



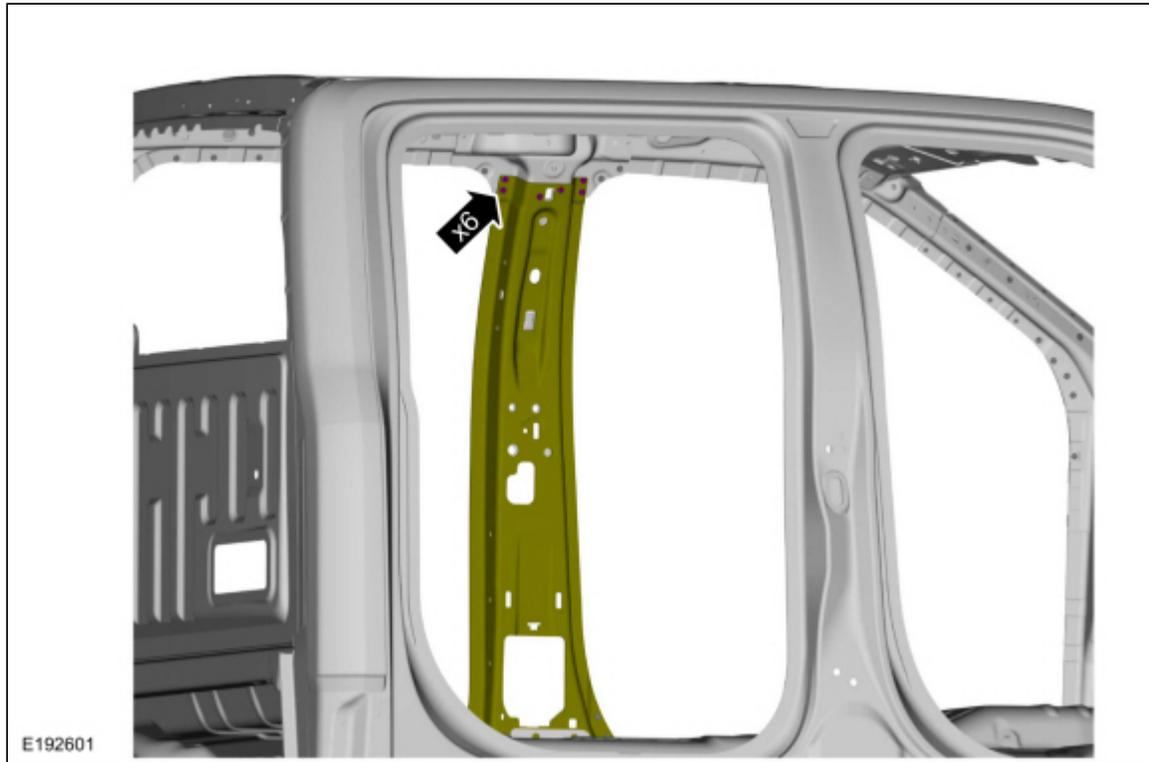


11. .  
Remove and discard the FDS fasteners  
Use the General Equipment: Polydrive Bit Socket



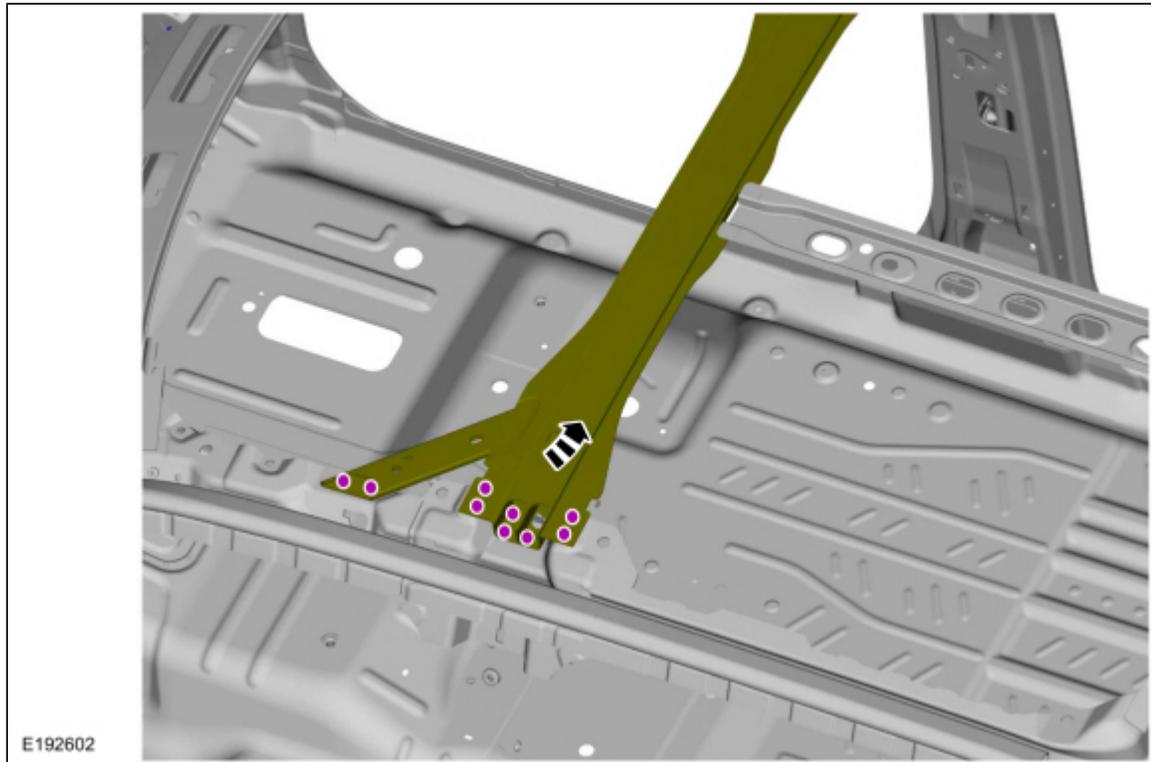


12. Remove A-pillar reinforcement.  
Refer to: [A-Pillar Outer Panel Section and Reinforcement](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
13. Remove B-pillar reinforcement.  
Refer to: [B-Pillar and Reinforcement - SuperCrew](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
14. Remove the SPR fasteners and position aside the B-pillar inner panel.  
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer  
Use the General Equipment: Belt Sander



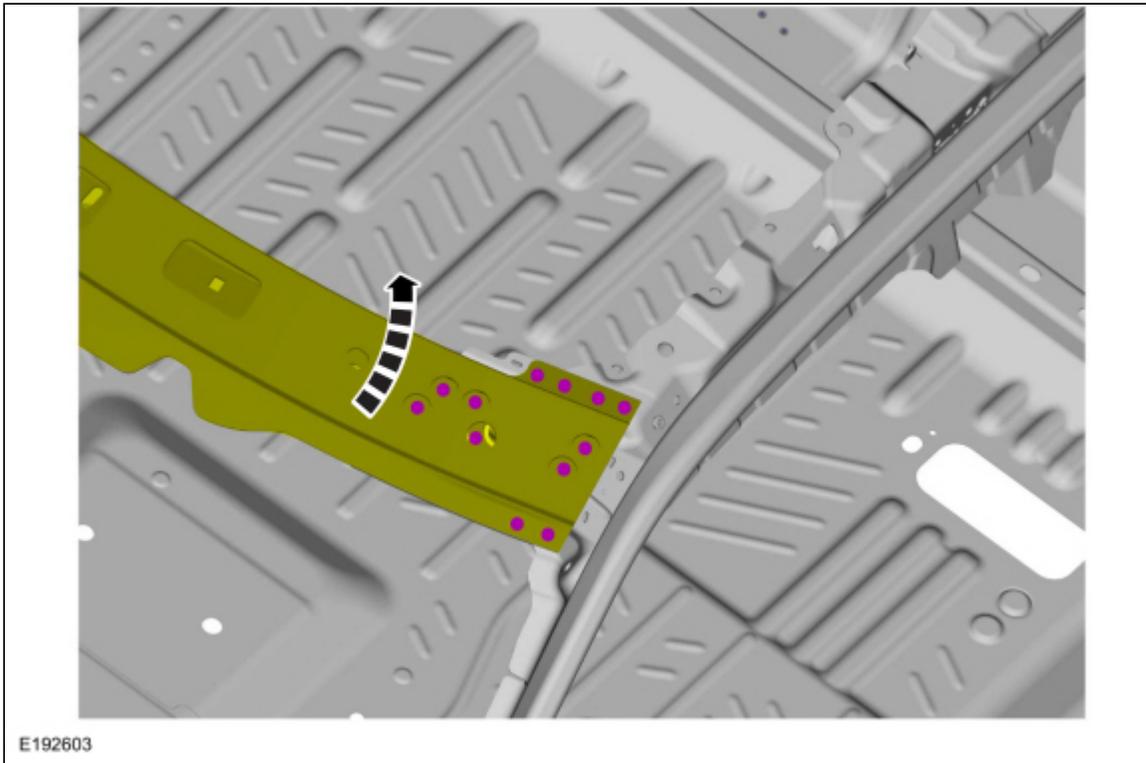
15. Remove the SPR fasteners and position aside the roof panel reinforcement.  
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer  
Use the General Equipment: Belt Sander





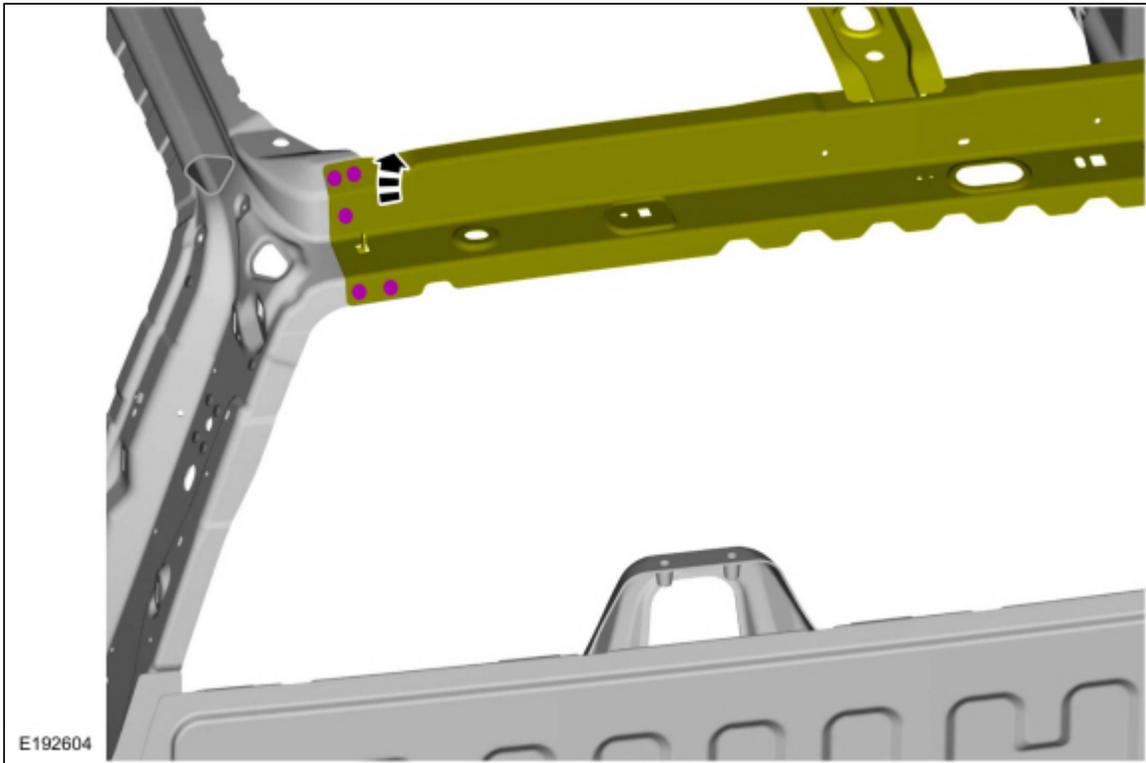
16. Remove the SPR fasteners and position aside the windshield header panel.  
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer  
Use the General Equipment: Belt Sander





- 17. 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

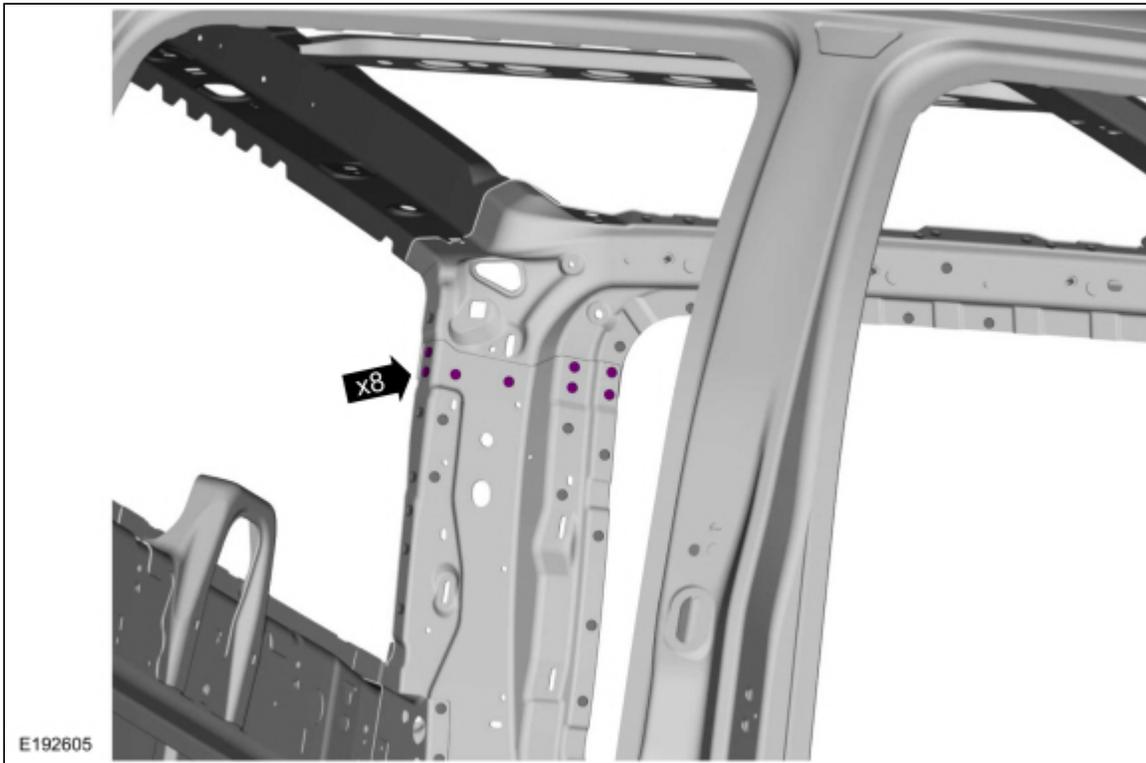




- 18. Remove the SPR fasteners on the C-pillar inner panel.  
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer  
Use the General Equipment: Belt Sander

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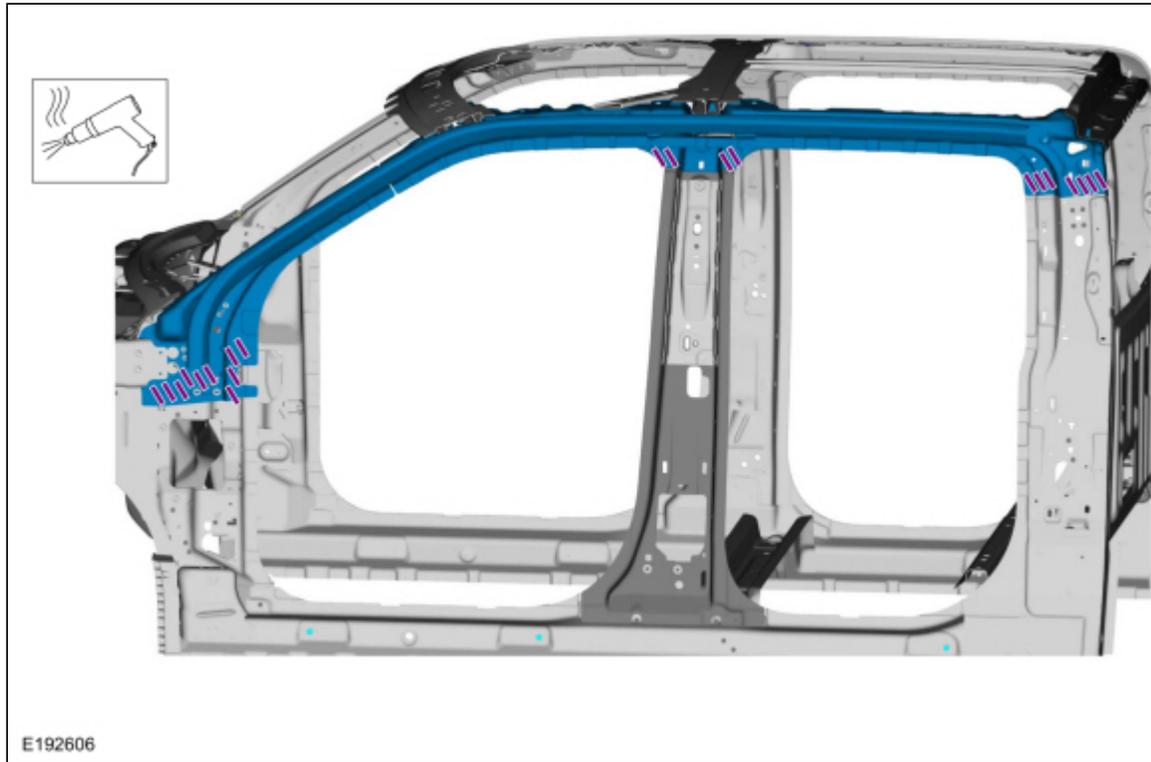

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19. **NOTE:** *The use of heat may aide in the removal of the roof side rail. Do not exceed 425° F.*

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



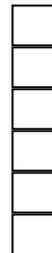


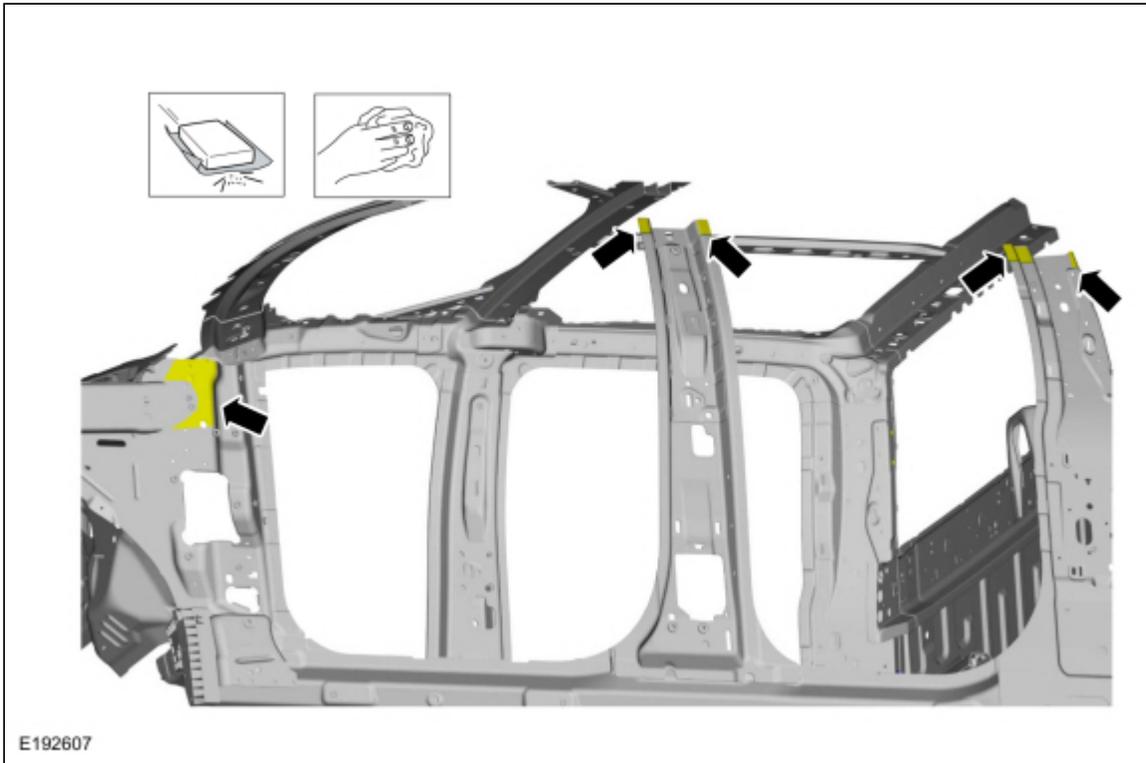
### Installation

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

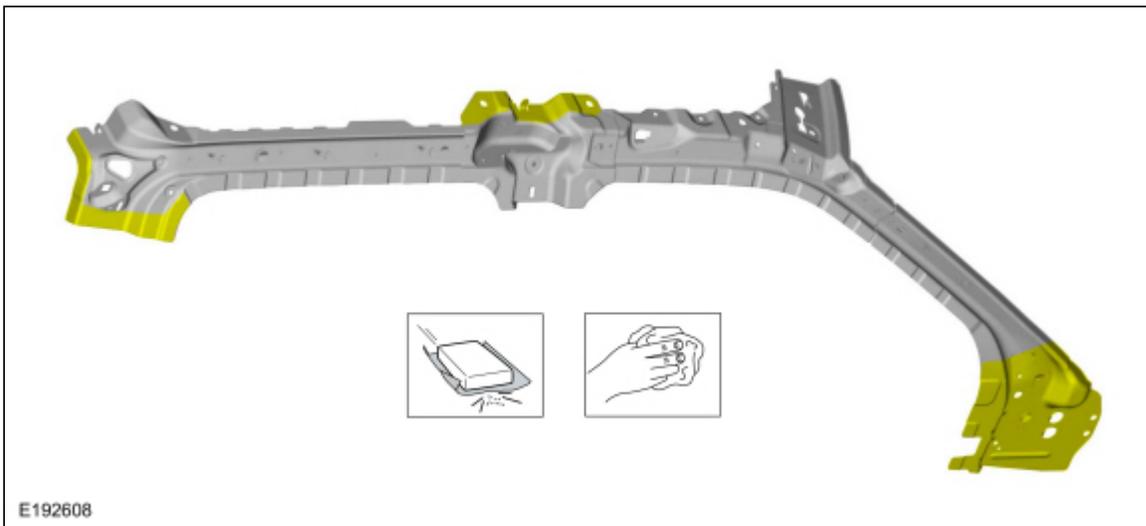
**NOTE:** Solid rivets or blind rivet fasteners may be used in place of SPR in the original SPR location after enlarging hole to 6.5 mm.

1. Sand to remove all remaining adhesive on the body side to roof mating surfaces using 80 grit sandpaper and clean.



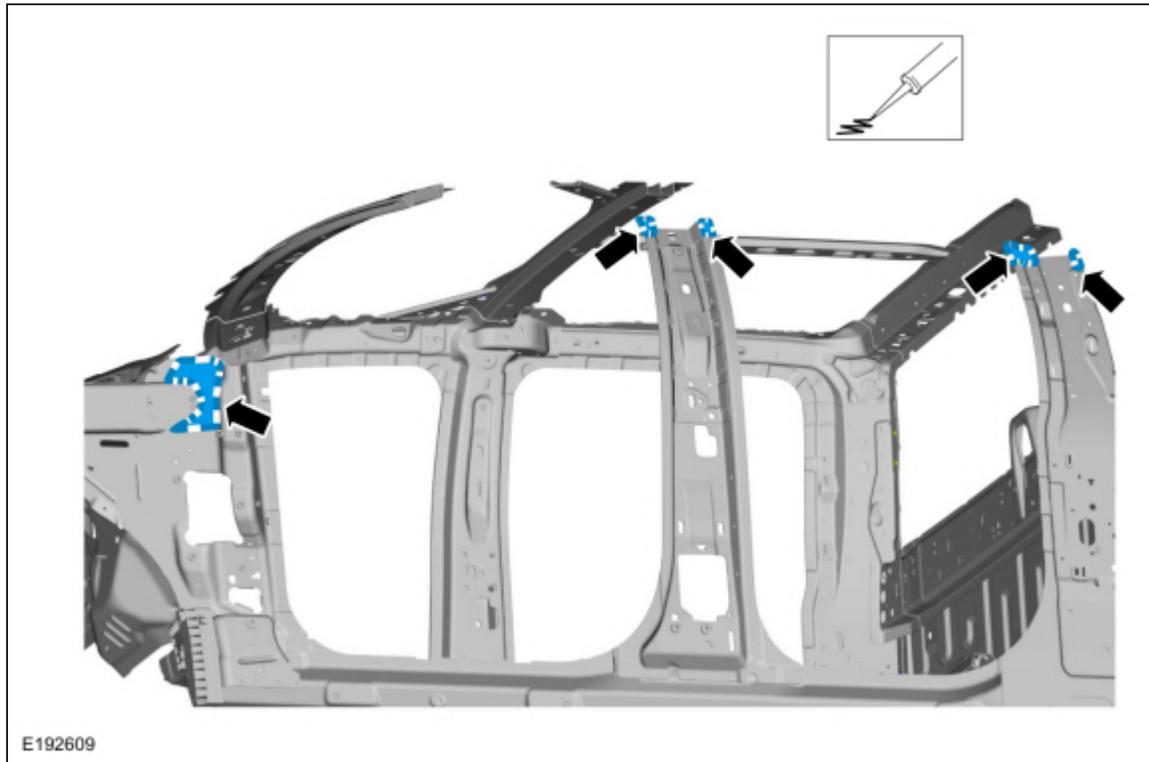


2. Sand to remove e-coat on the roof rail to body side roof mating surfaces using 80 grit sandpaper and clean.



3. Apply adhesive.

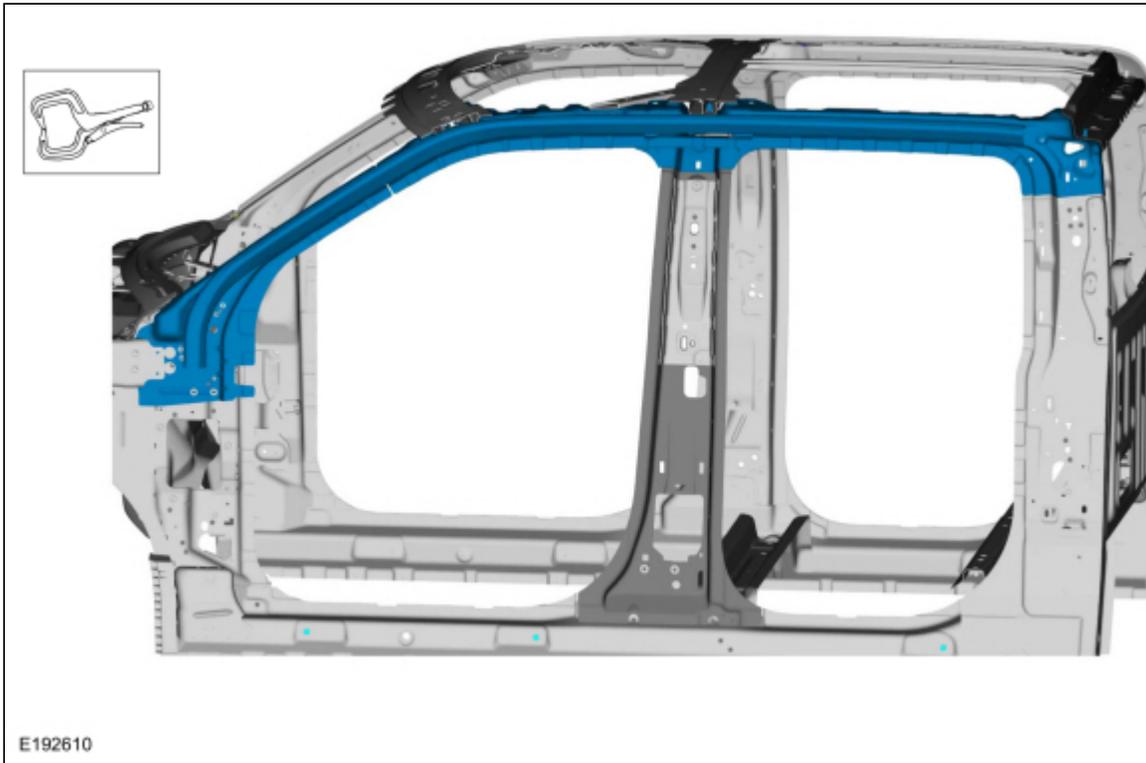
Material: Metal Bonding Adhesive / TA-1, TA-1-B, 3M™ 08115, LORD Fusor® 108B



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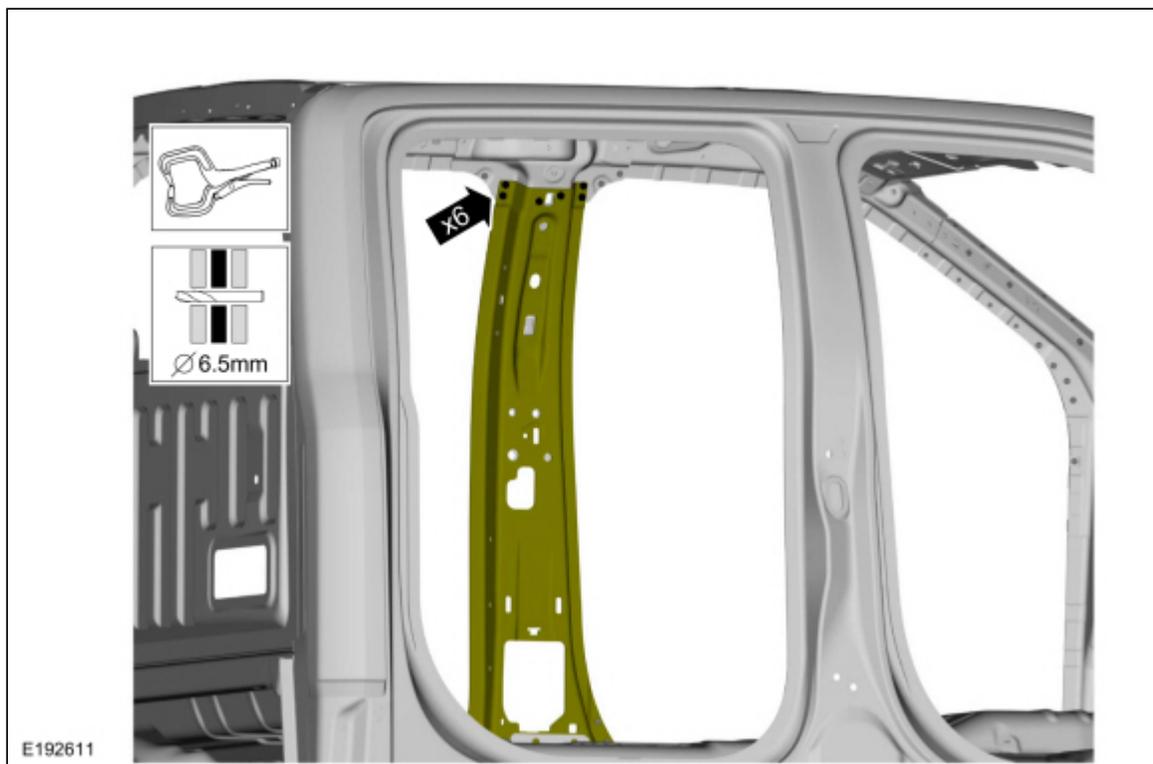
4. Install and clamp the roof side rail in position.  
Use the General Equipment: Locking Pliers





- 5. Reposition the B-pillar inner panel, clamp and drill for blind fasteners.  
Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).  
Use the General Equipment: 6.5 mm Drill Bit





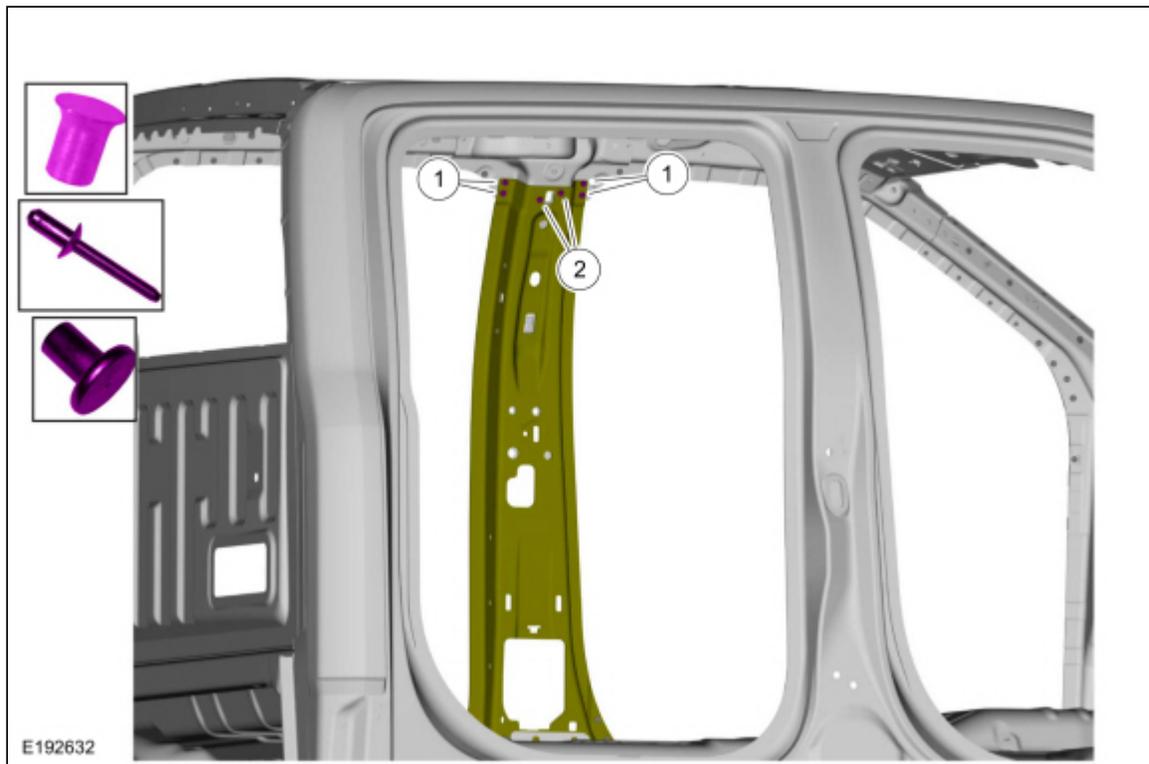
6. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

**NOTE:** Solid rivets or blind fastener rivets may be used in place of SPR fasteners providing the existing rivet hole is enlarged to 6.5 mm.

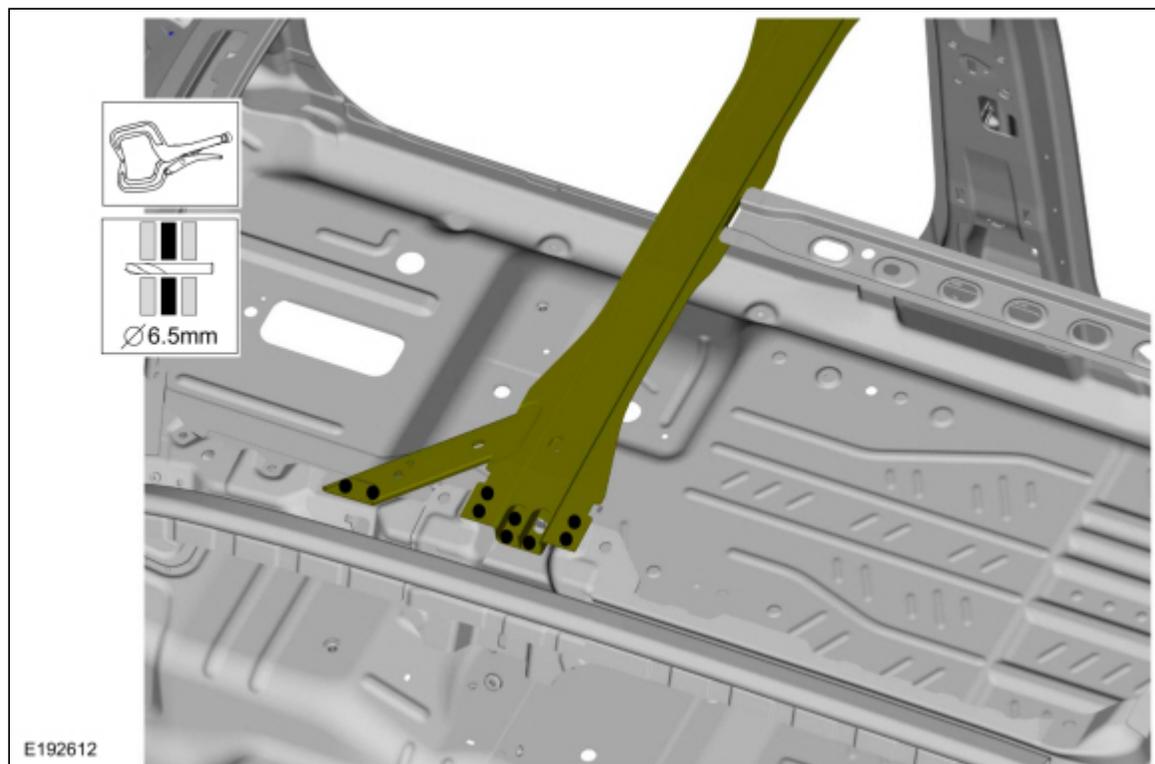
From the outside.  
Install fasteners.

Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	W717186-S900	EN	DG11-200/H	SA-0400/SA-0401	-	W790376-S900	-
2	-	-	-	-	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



- 7. Position, clamp and drill the roof reinforcement assembly.  
Use the General Equipment: Locking Pliers  
Use the General Equipment: 6.5 mm Drill Bit



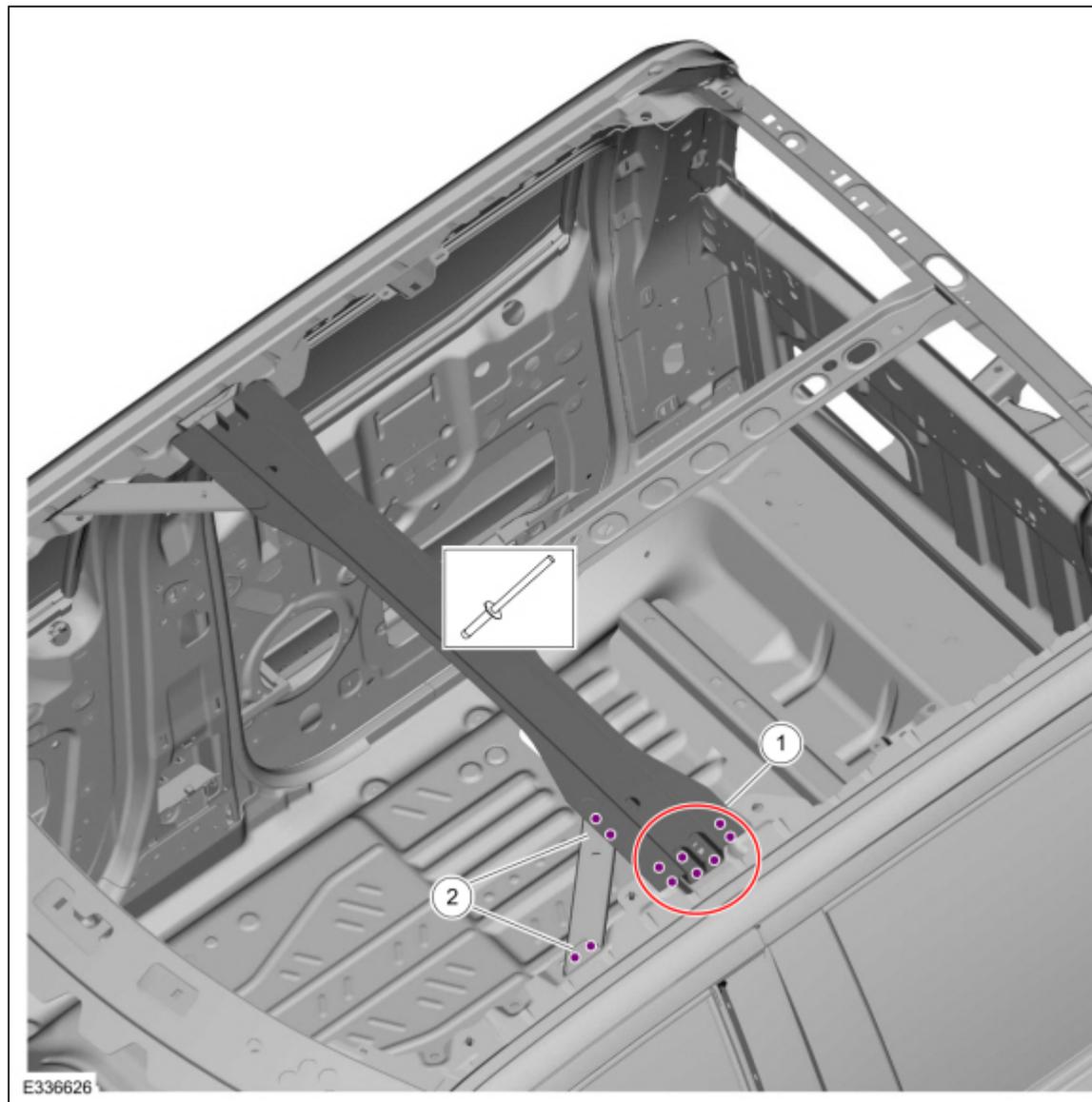
8. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

**NOTE:** Solid rivets or blind fastener rivets may be used in place of SPR fasteners providing the existing rivet hole is enlarged to 6.5 mm.

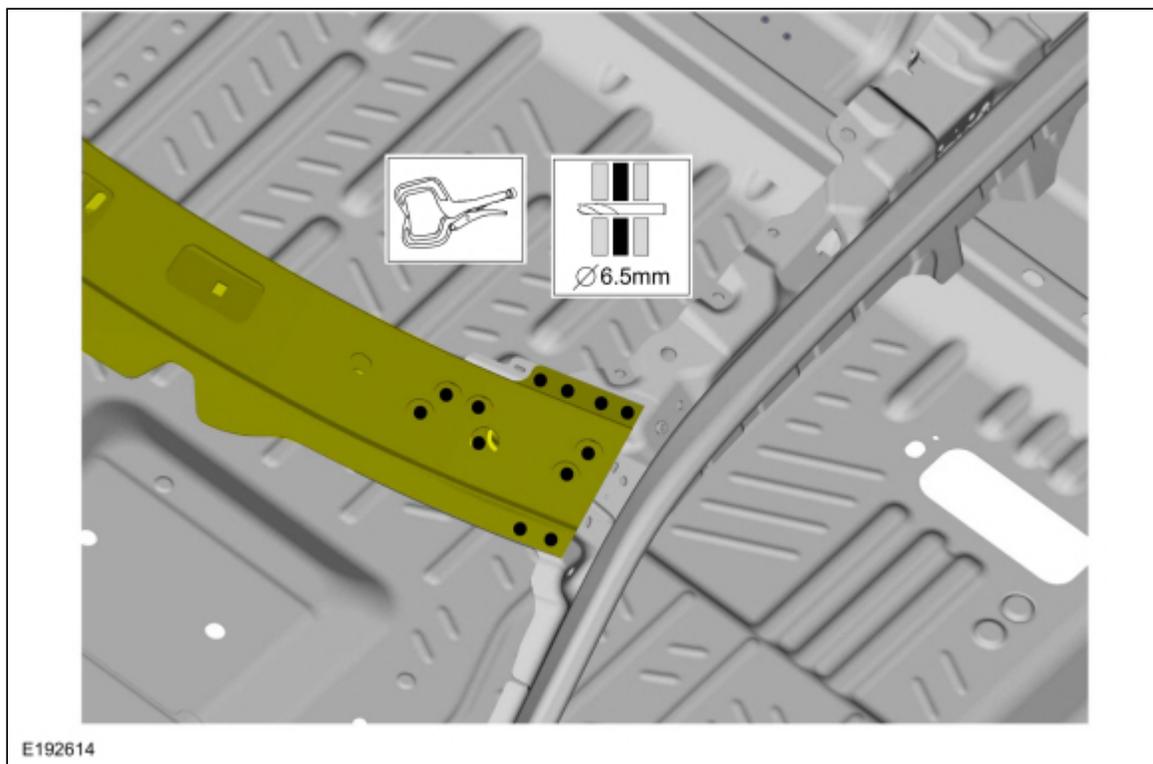
Install fasteners.

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	W717338-S900						

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



9. Position the windshield header panel, clamp 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 fastener rivets may be used in place of SPR fasteners providing the existing rivet hole is enlarged to 6.5 mm.

Install fasteners.

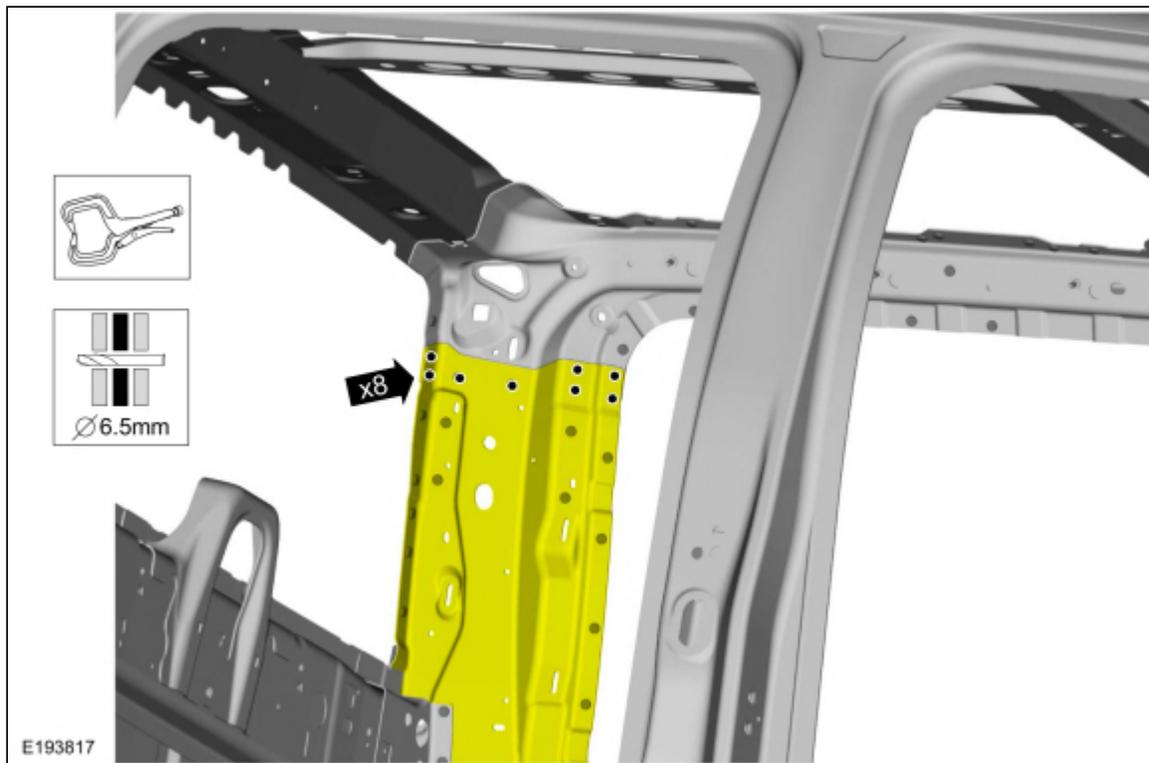
Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W708777-S900C	-	-
2	W710246-S900	BN	DP10-200/H	SA-0400/SA-0402	-	W790377-S900	-

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



- 11. 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





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 fastener rivets may be used in place of SPR fasteners providing the existing rivet hole is enlarged to 6.5 mm.

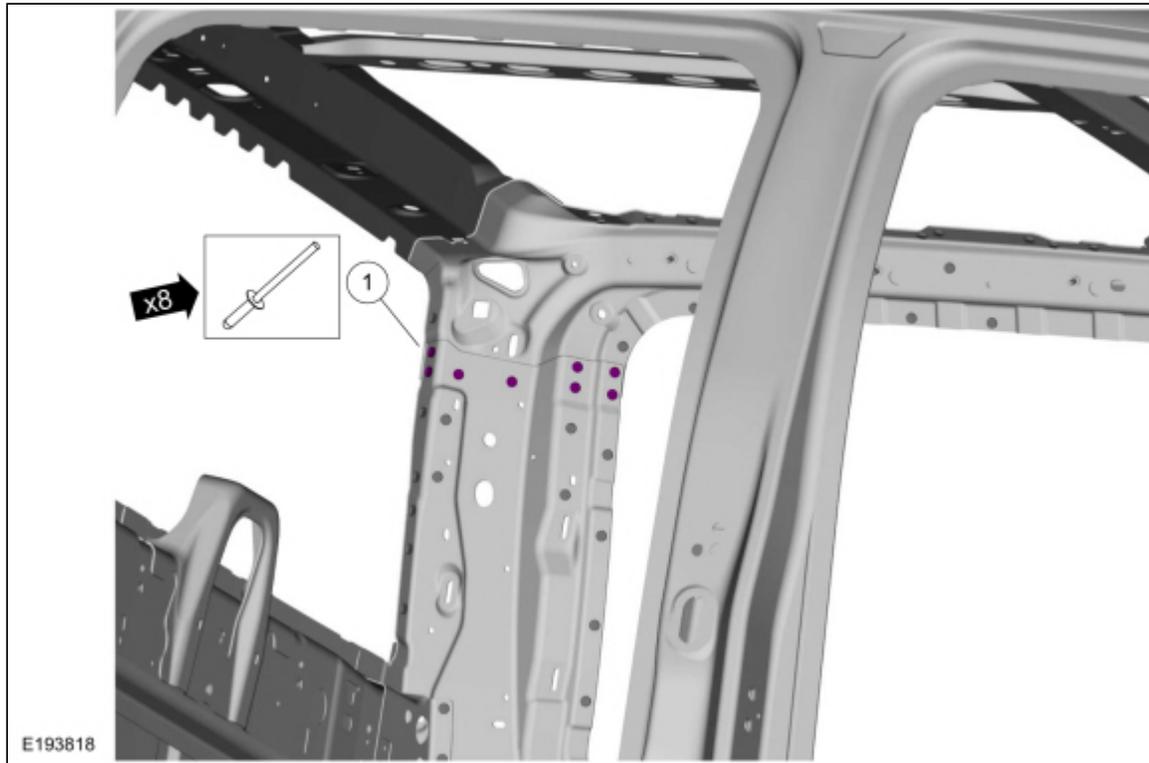
Install fasteners.

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).

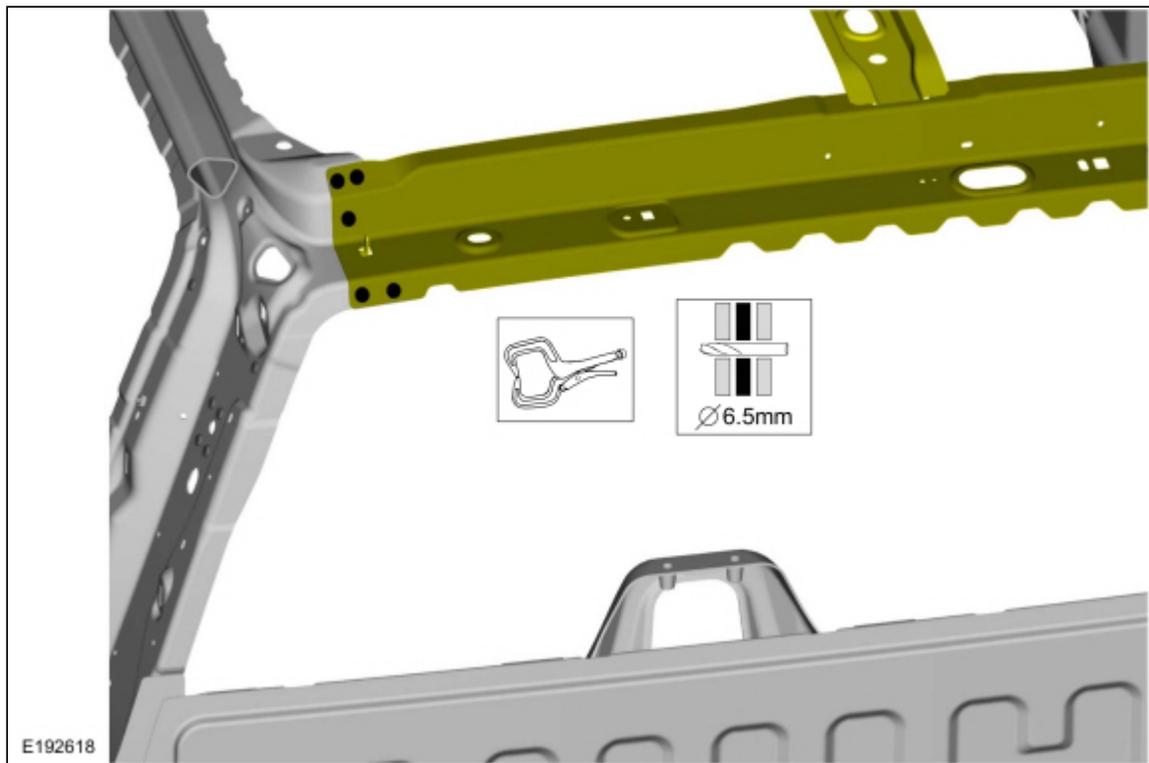
Use the General Equipment: Blind Rivet Gun





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





14. **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 fastener rivets may be used in place of SPR fasteners providing the existing rivet hole is enlarged to 6.5 mm.

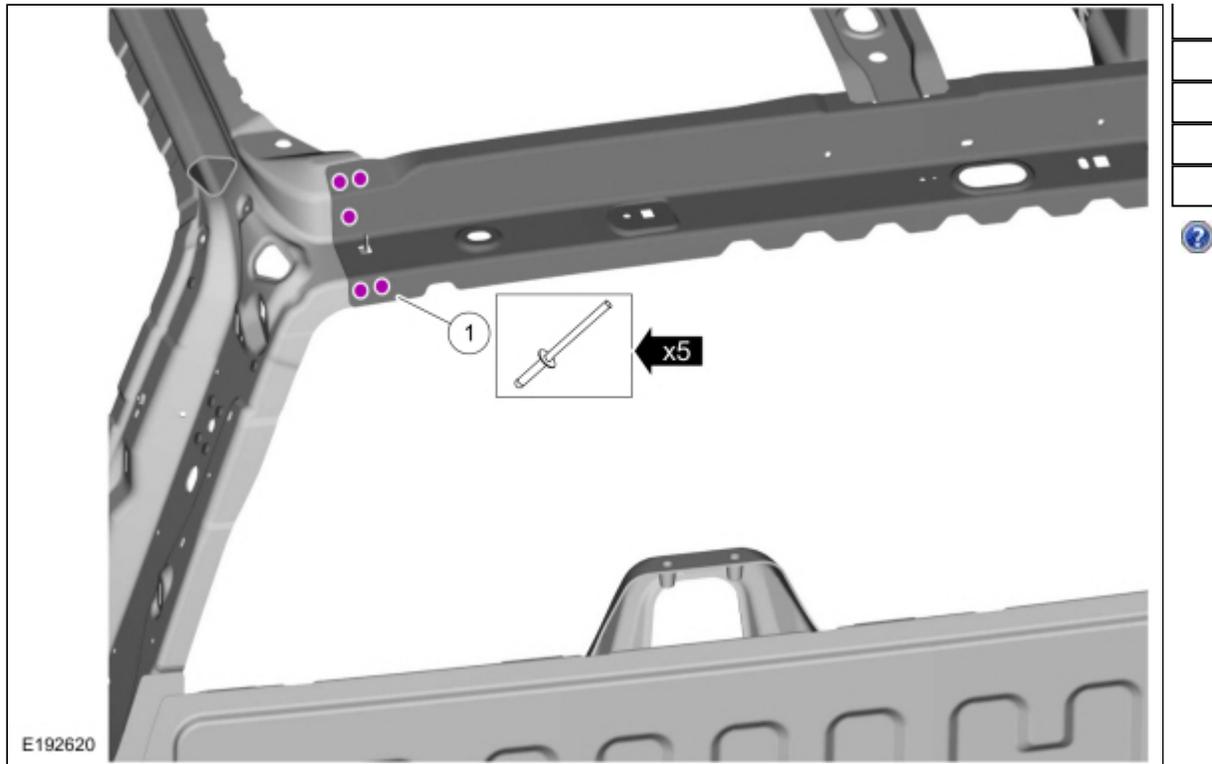
Install fasteners.

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		

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

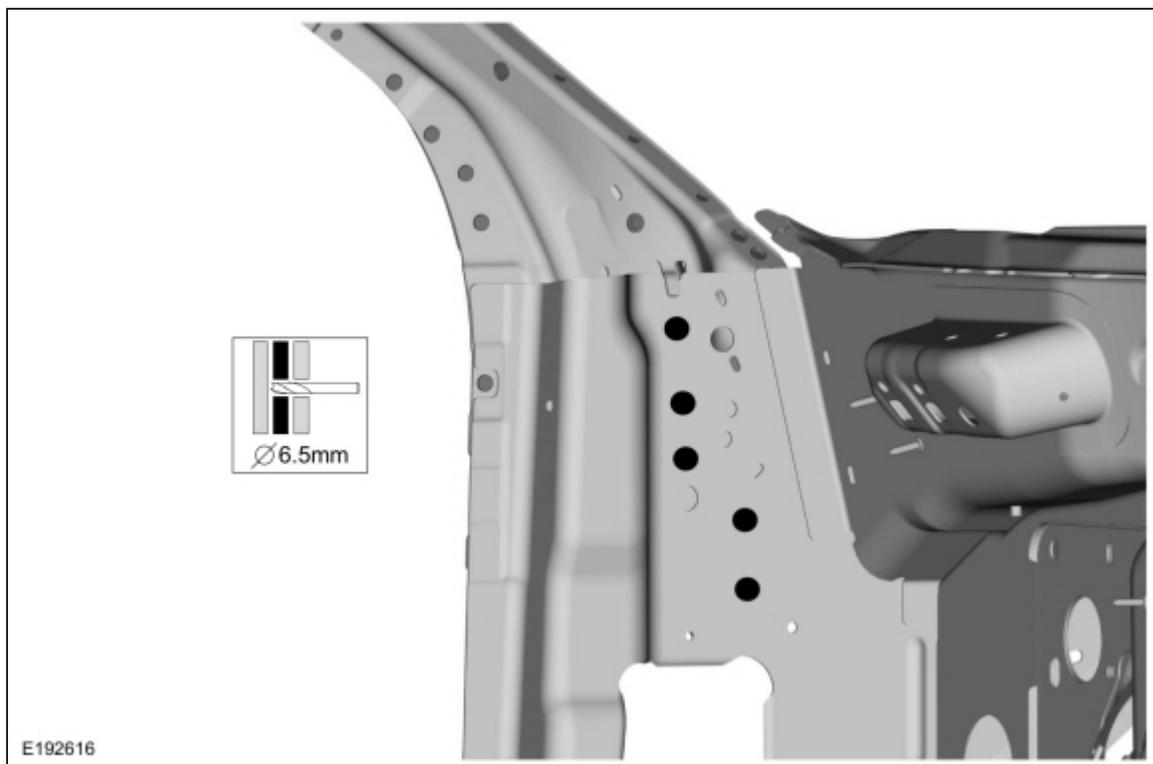
Use the General Equipment: Blind Rivet Gun





- 15. Enlarge FDS holes as indicated.  
Use the General Equipment: 6.5 mm Drill Bit





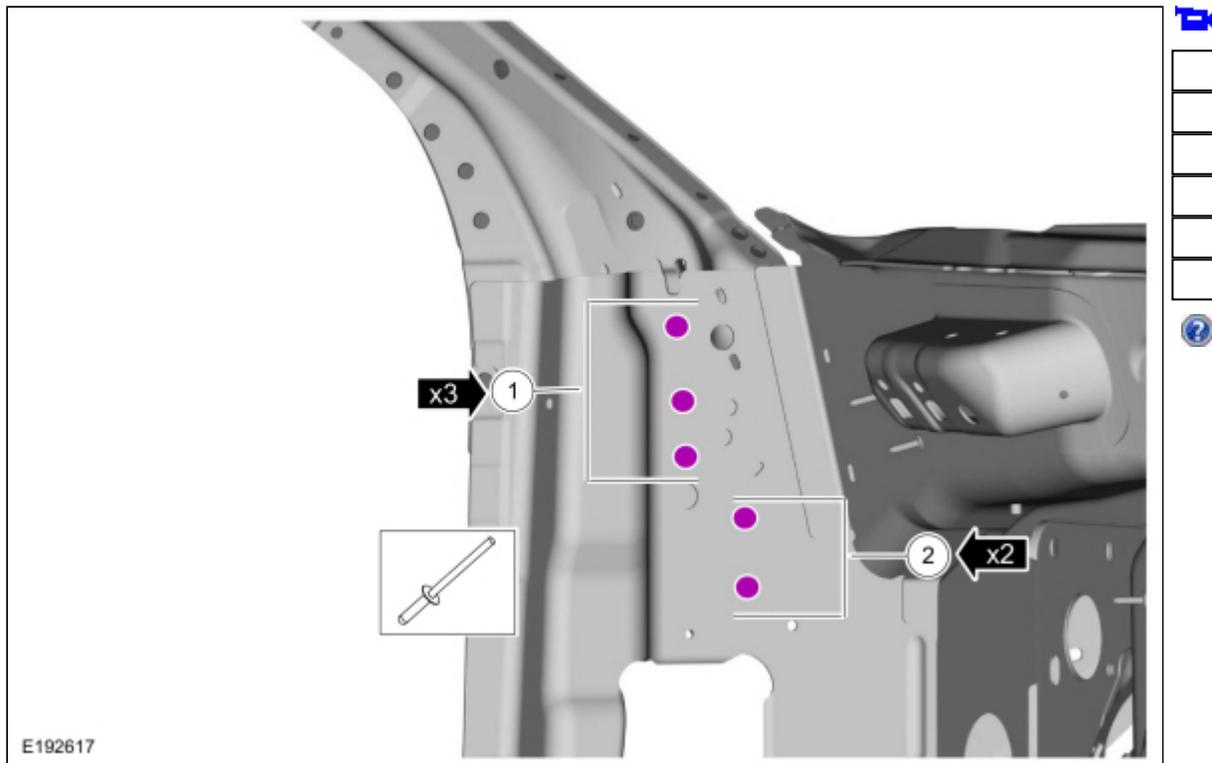
16. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

**NOTE:** Solid rivets or blind fastener rivets may be used in place of SPR fasteners providing the existing rivet hole is enlarged to 6.5 mm.

Install fasteners.

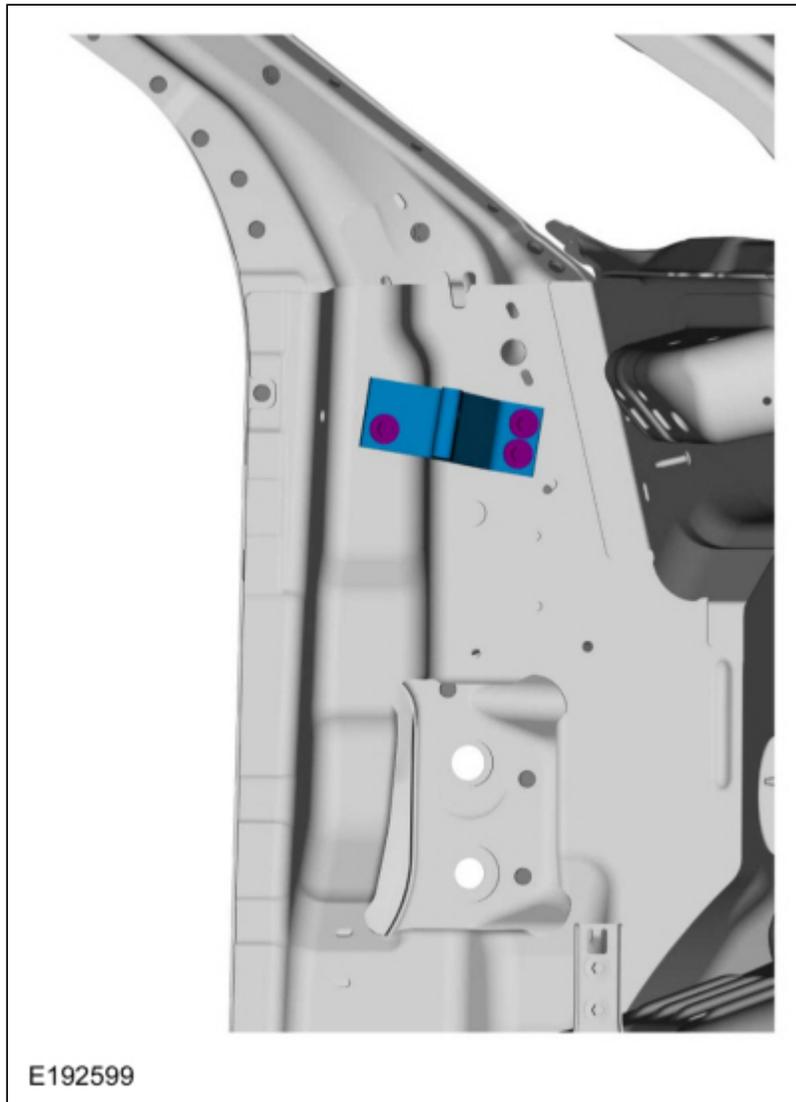
Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W702512-S900C	-	-
2	-	-	-	-	W708777-S900C	-	-

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



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





18. Install the B-pillar reinforcement.  
Refer to: [B-Pillar and Reinforcement - SuperCrew](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
19. Install the A-pillar reinforcement.  
Refer to: [A-Pillar Outer Panel Section and Reinforcement](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
20. 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).

21. Install the roof outer panel.  
Refer to: [Roof Panel - SuperCrew](#) (501-28 Roof Sheet Metal Repairs, Removal and Installation).  
Refer to: [Roof Panel - SuperCrew, Vehicles With: Roof Opening Panel](#) (501-28 Roof Sheet Metal Repairs, Removal and Installation).
22. Metal finish using typical repair techniques.
23. Seam Sealing: All seams must be sealed to production level.  
*Material:* Seam Sealer / TA-2-B, 3M™ 08308, LORD Fusor® 803DTM
24. Refinish the repair area using a Ford approved paint system.
25. Install the instrument panel.  
Refer to: [Instrument Panel](#) (501-12 Instrument Panel and Console, Removal and Installation).
26. Install the front and rear doors.  
Refer to: [Front Door - Regular Cab/SuperCrew](#) (501-03 Body Closures, Removal and Installation).  
Refer to: [Rear Door - SuperCrew](#) (501-03 Body Closures, Removal and Installation).
27. Install the fender.  
Refer to: [Fender](#) (501-02 Front End Body Panels, Removal and Installation).
28. Adjust the doors.  
Refer to: [Front Door Alignment - Regular Cab/SuperCrew](#) (501-03 Body Closures, General Procedures).  
Refer to: [Rear Door Alignment - SuperCrew](#) (501-03 Body Closures, General Procedures).
29. Repower the **SRS**.  
Refer to: [Supplemental Restraint System \(SRS\) Repowering](#) (501-20B Supplemental Restraint System, General Procedures).

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