

501-28 Roof Sheet Metal Repairs
Removal and Installation

2021 F-150

Procedure revision date: 10/8/2020

Roof Side Rail Section - 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
Air Body Saw
MIG/MAG Welding Equipment
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.

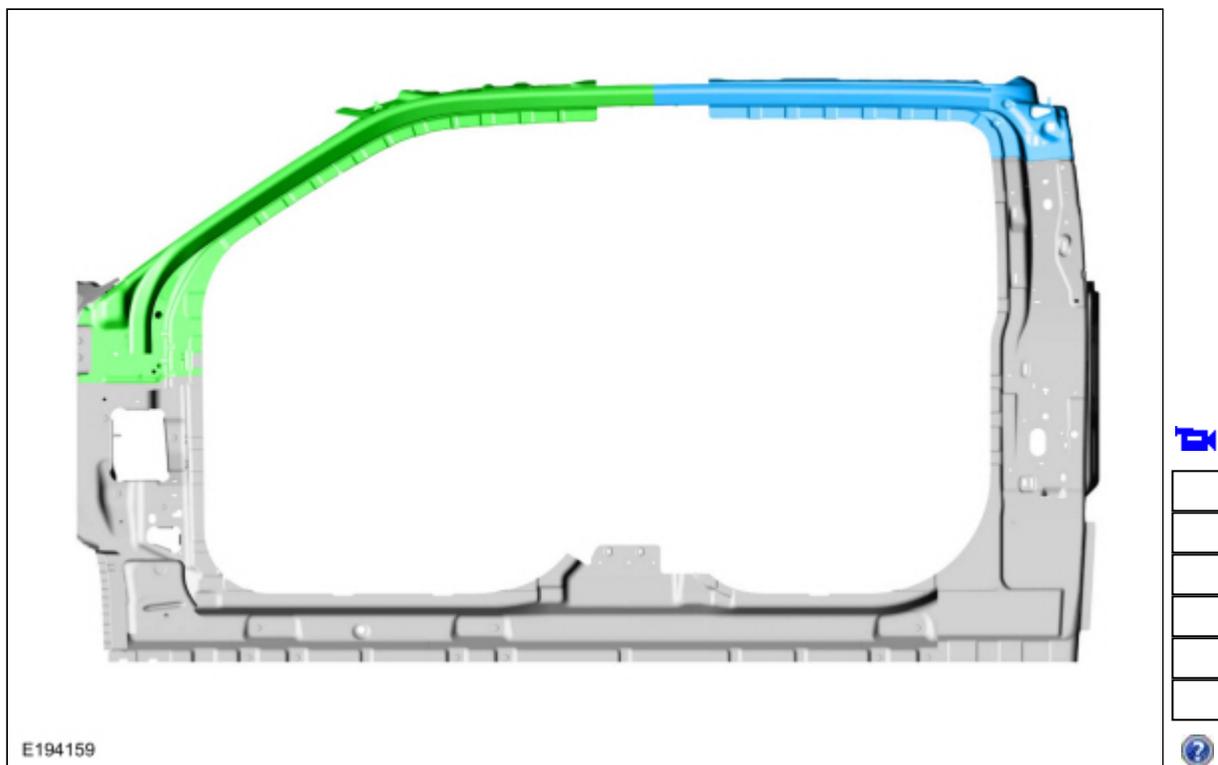
-  **WARNING:** Before beginning any service procedure in this manual, refer to health and safety warnings in section 100-00 General Information. Failure to follow this instruction may result in serious personal injury.

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: The roof side rail may be sectioned as a front or rear half **on SuperCrew cab only**. Depending on damage type, follow the appropriate steps below.

2. Sectioning point: Sectioning is possible and reasonable.



All Vehicles

3. Depower the SRS.
Refer to: [Supplemental Restraint System \(SRS\) Depowering](#) (501-20B Supplemental Restraint System, General Procedures).
4. Verify the vehicle is dimensionally correct.
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).
5. Remove the outer roof 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).

Front Section

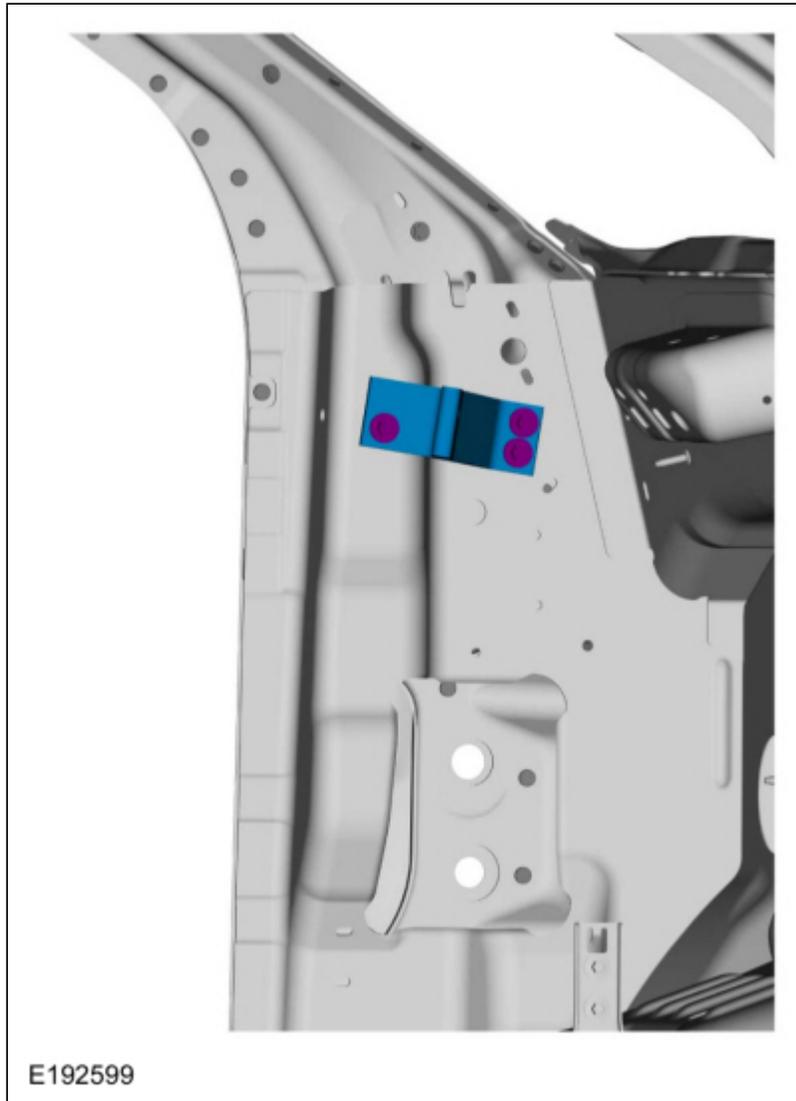
6. Remove the front fender.
Refer to: [Fender](#) (501-02 Front End Body Panels, Removal and Installation).
7. Remove the front and rear doors.
Refer to: [Front Door - Regular Cab/SuperCrew](#) (501-03 Body Closures, Removal and Installation).

Refer to: [Rear Door - SuperCrew](#) (501-03 Body Closures, Removal and Installation).

8. Remove the instrument panel.

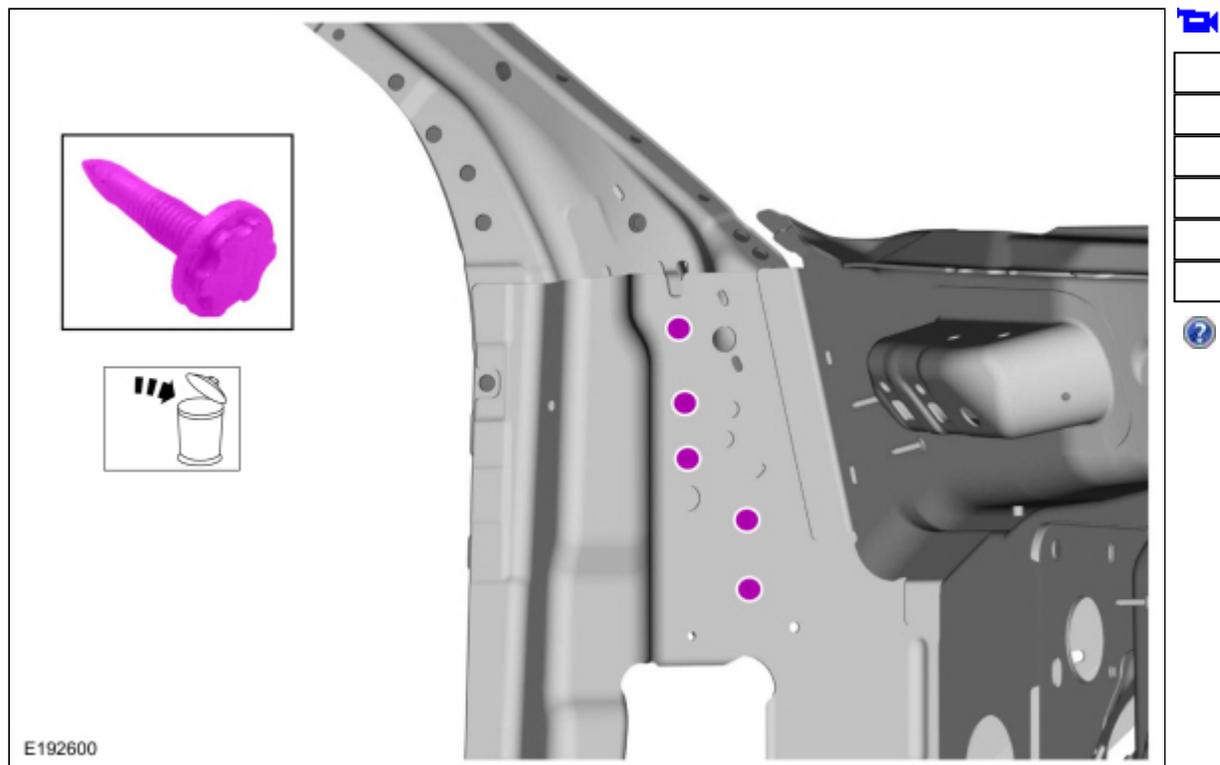
Refer to: [Instrument Panel](#) (501-12 Instrument Panel and Console, Removal and Installation).

9. Remove the 3 bolts and the cross-car beam bracket.

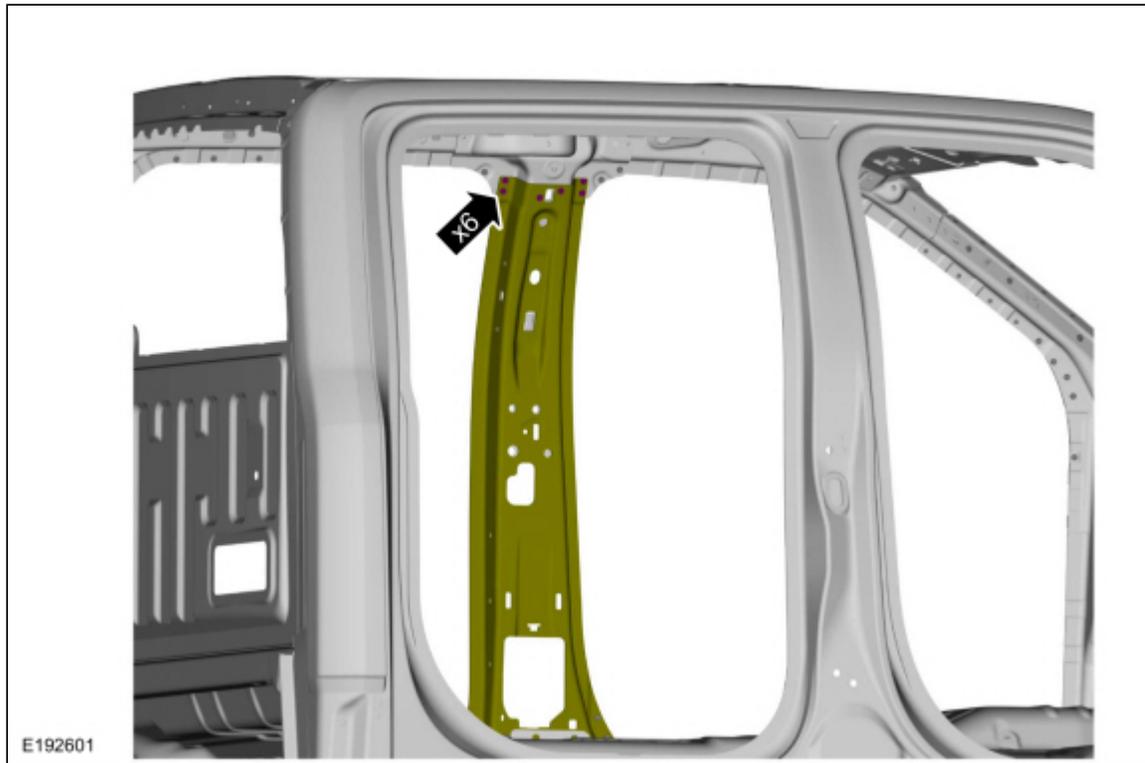


10. Remove and discard the FDS fasteners.

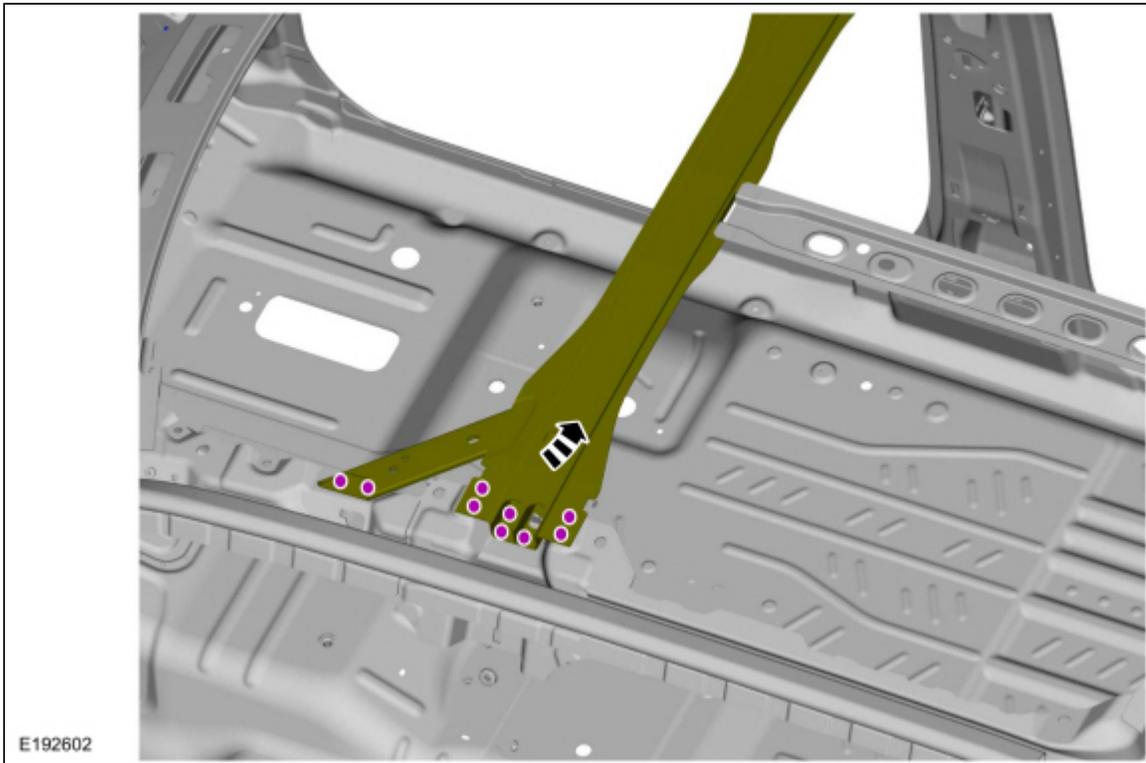
Use the General Equipment: Polydrive Bit Socket



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

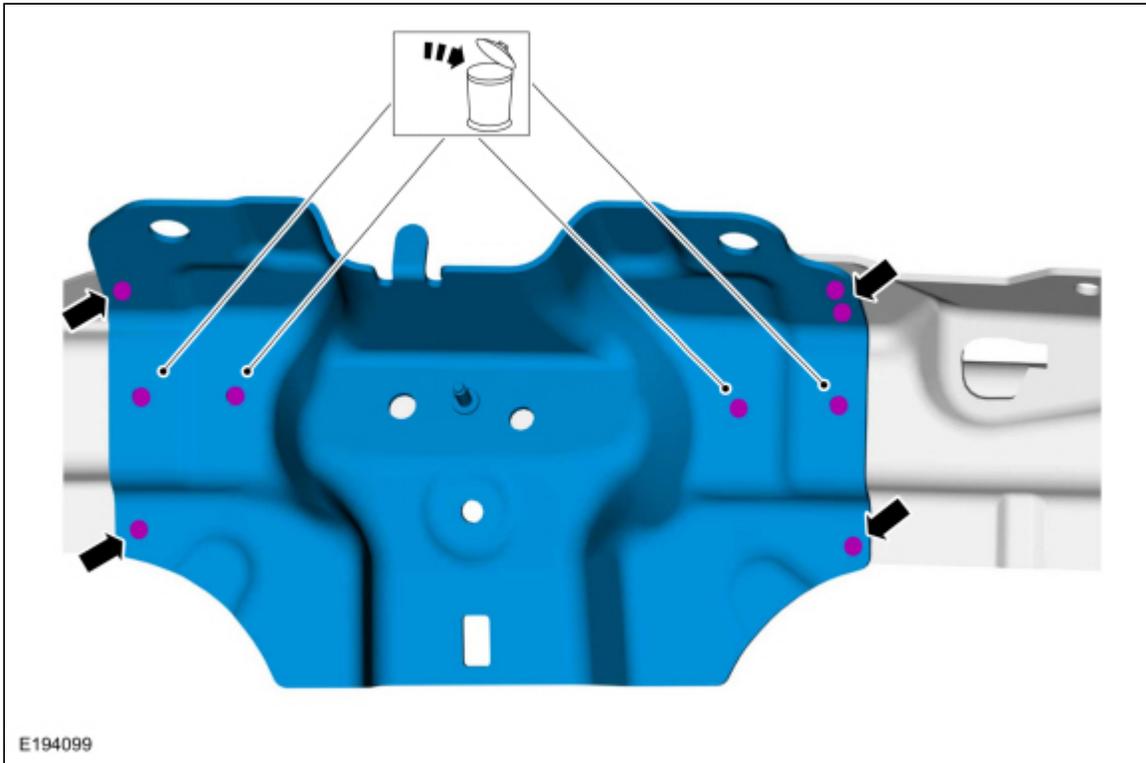


15. Remove the SPR fasteners and position aside the roof reinforcement assembly.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander



16. Remove the SPR fasteners, remove and discard the FDS fasteners and the B-pillar gusset from the roof side rail.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander
Use the General Equipment: Polydrive Bit Socket

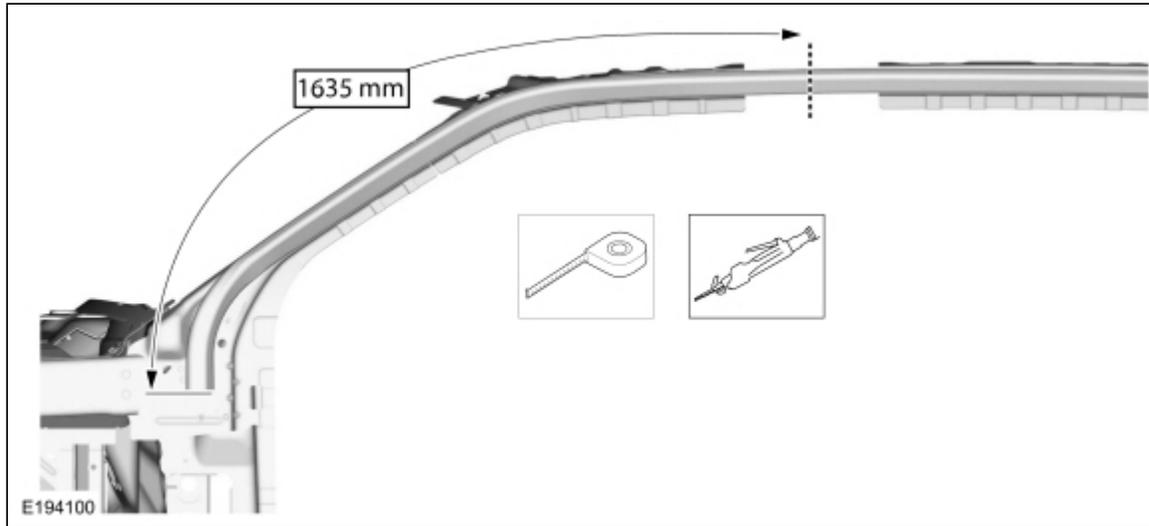




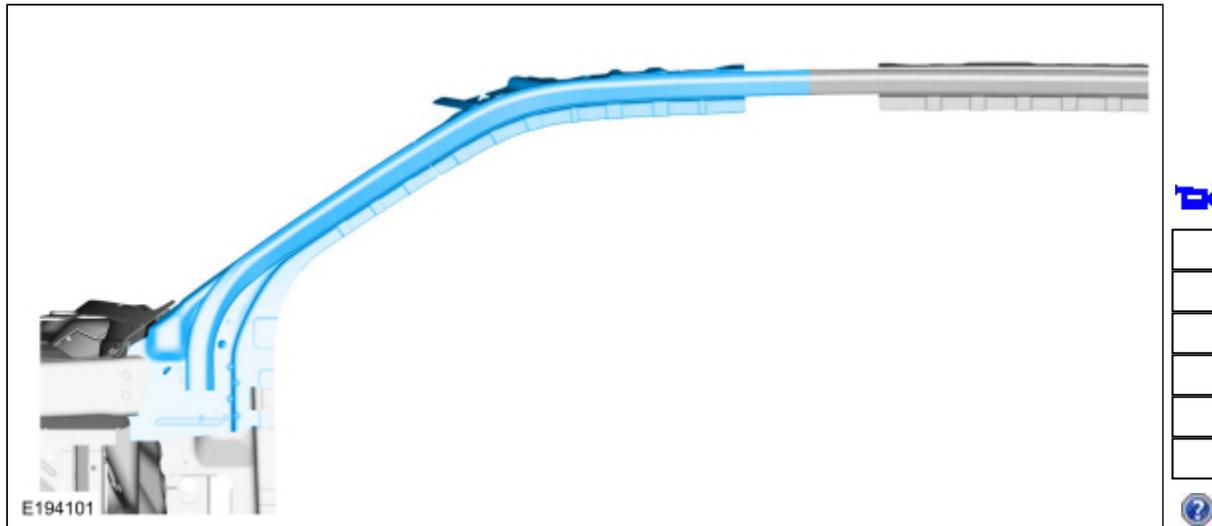
17. **NOTE:** *Measurement taken along the top of the side rail tube.*

Carefully measure and cut the tube portion only as.
Use the General Equipment: Air Body Saw



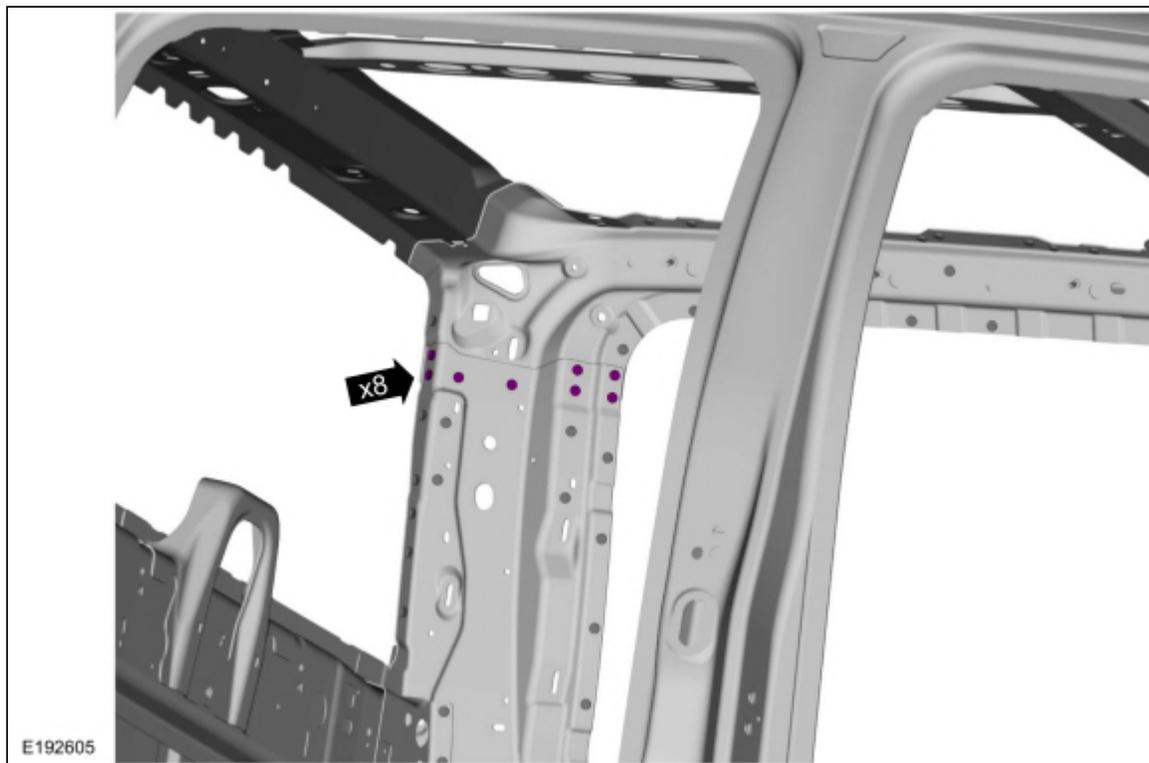


18. Remove the roof side rail section.



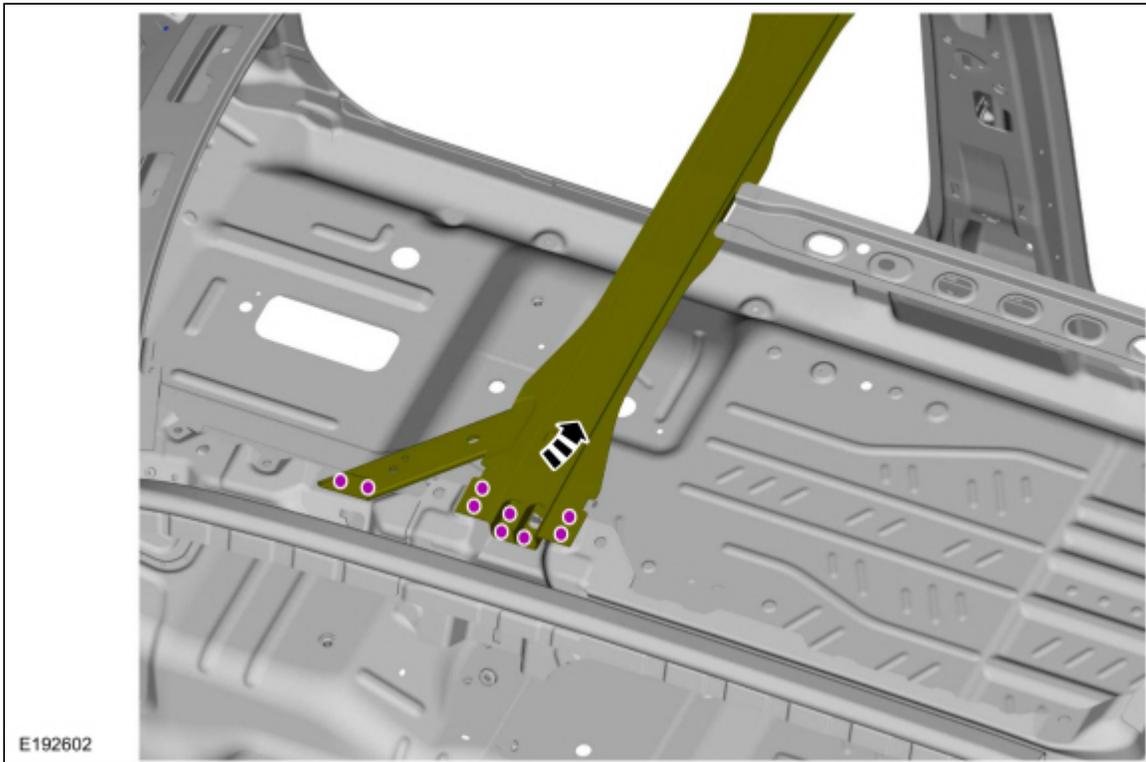
Rear Section

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

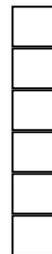


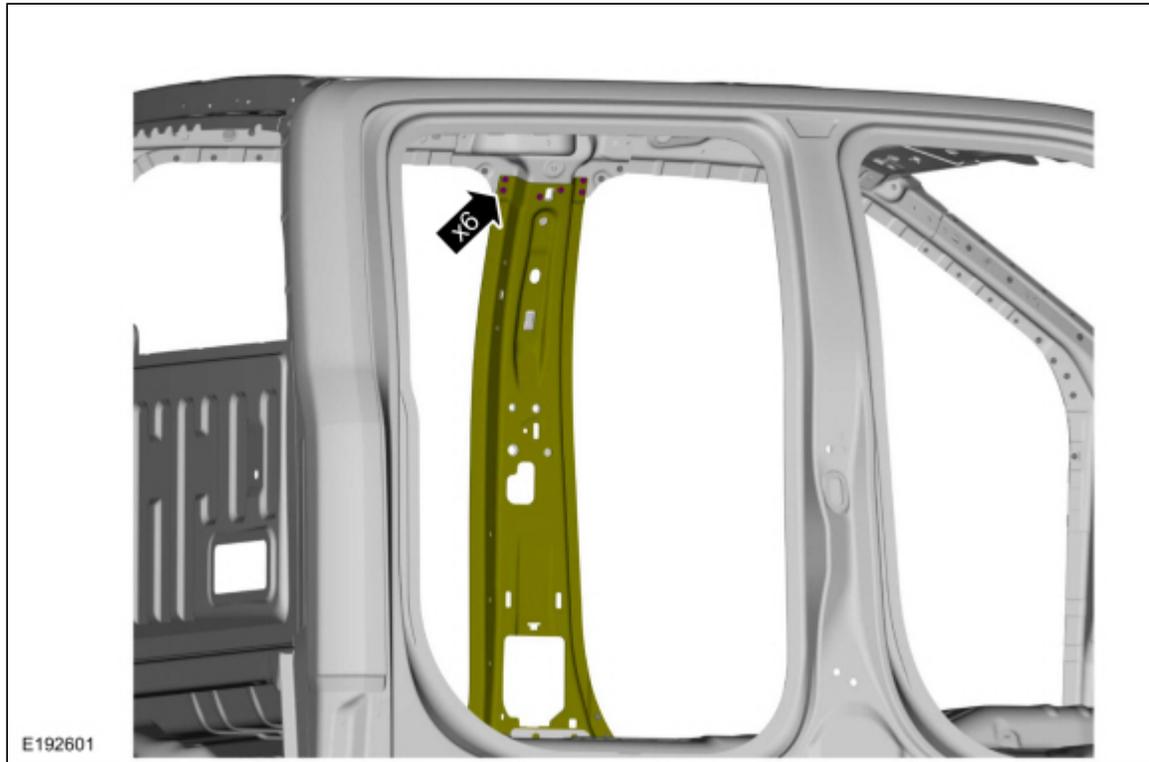
- 20. Remove the body side sheet metal in the repair area.
Refer to: [Body Panel Sectioning](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, General Procedures).
- 21. Remove the SPR fasteners and position aside the roof reinforcement assembly.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander





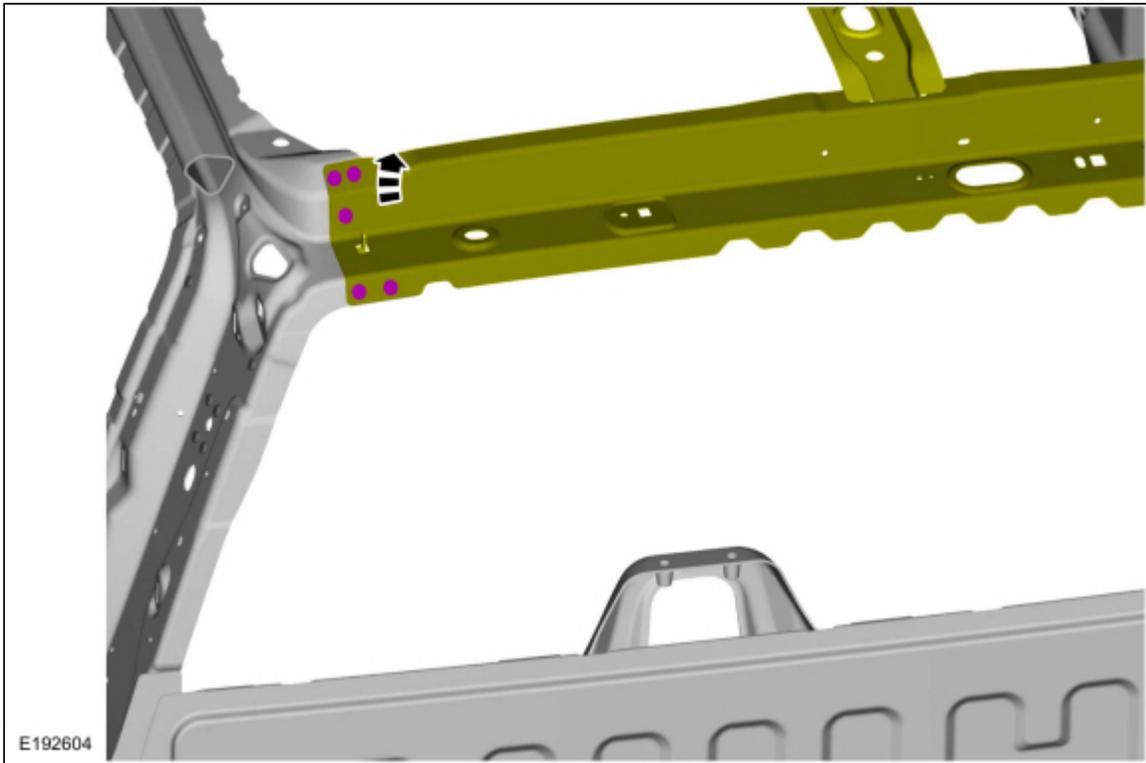
22. Remove the B-pillar reinforcement.
Refer to: [B-Pillar and Reinforcement - SuperCrew](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
23. Remove the SPR fasteners as indicated and position aside the B-pillar inner panel.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer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





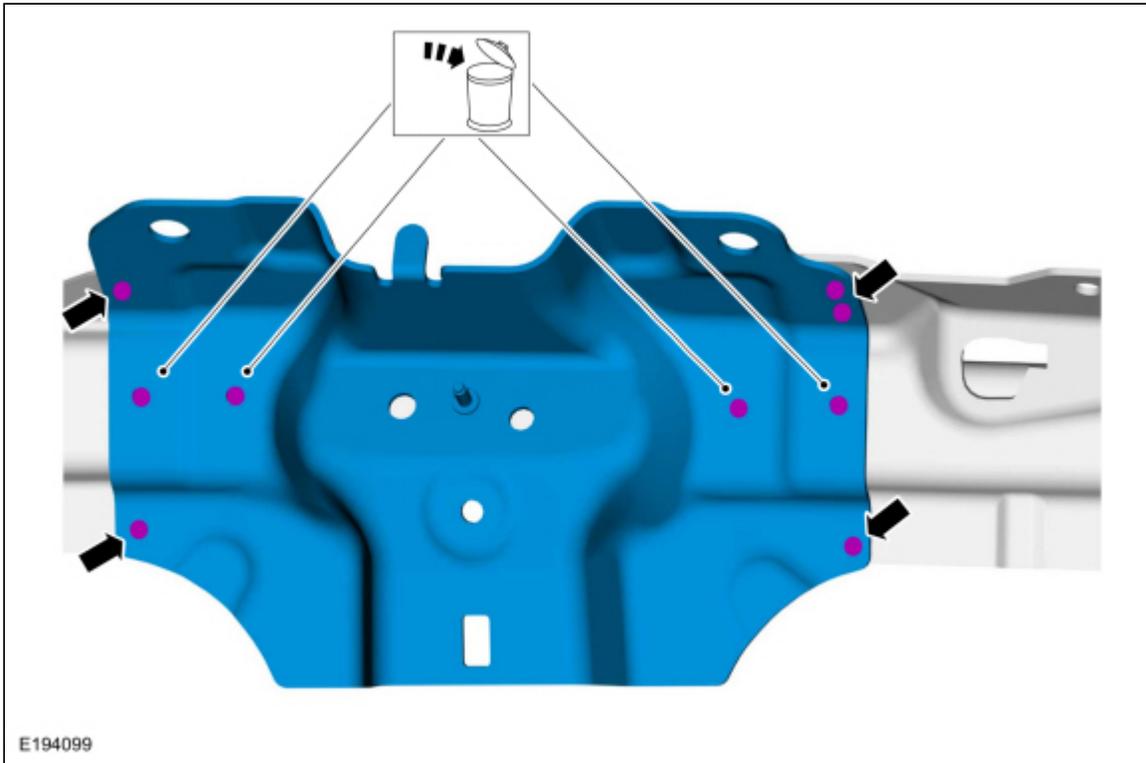
24. Remove the SPR fasteners as indicated and position aside the rear header panel.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander





- 25. Remove the SPR fasteners, remove and discard the FDS fasteners and the B-pillar gusset from the roof side rail.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander
Use the General Equipment: Polydrive Bit Socket

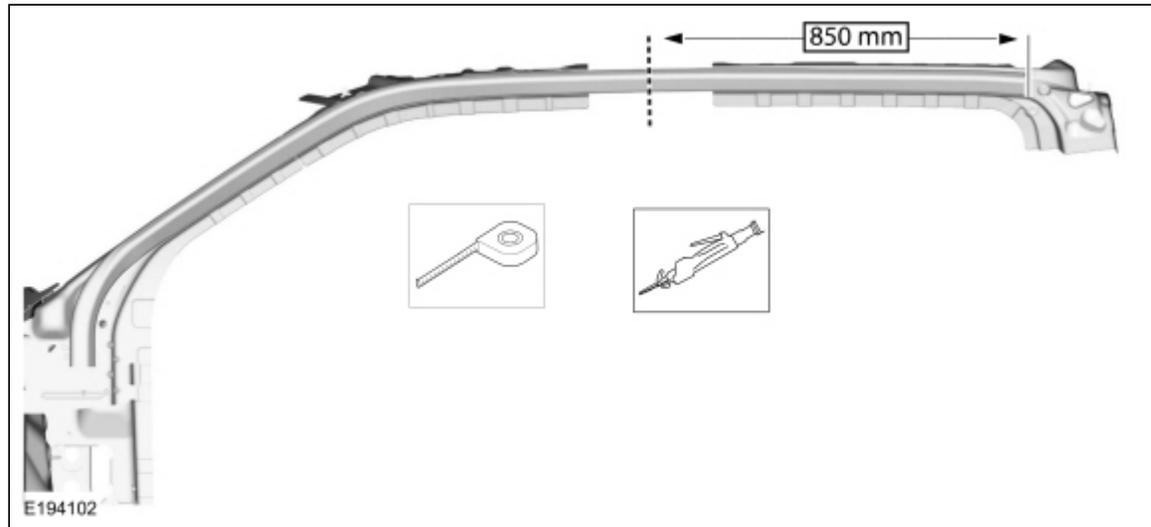




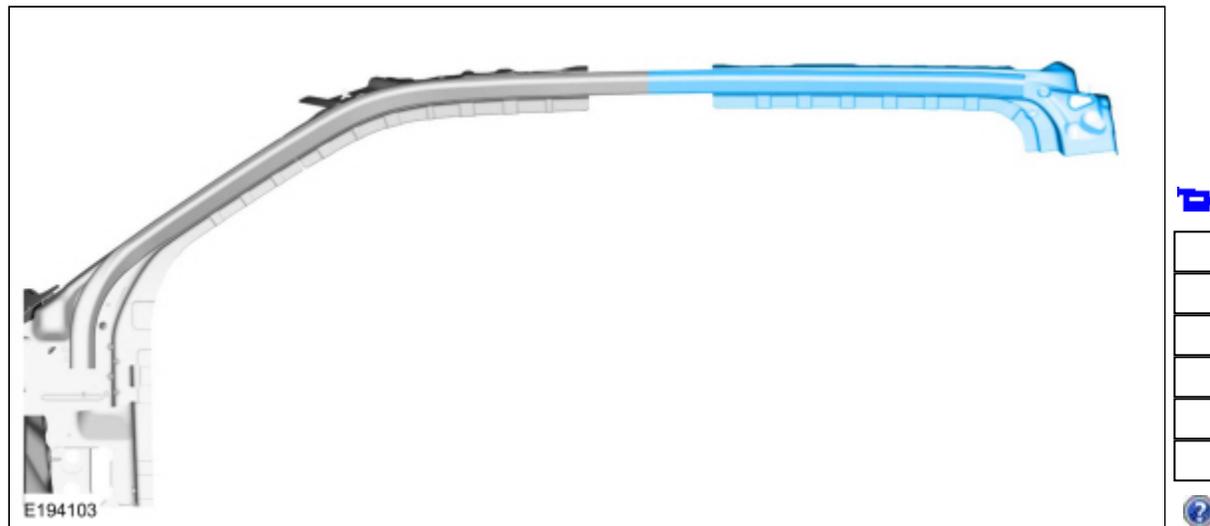
26. **NOTE:** *Measurement taken along the top of the side rail tube.*

Carefully measure and cut the tube portion only as indicated.
Use the General Equipment: Air Body Saw





27. Remove the roof side rail section.



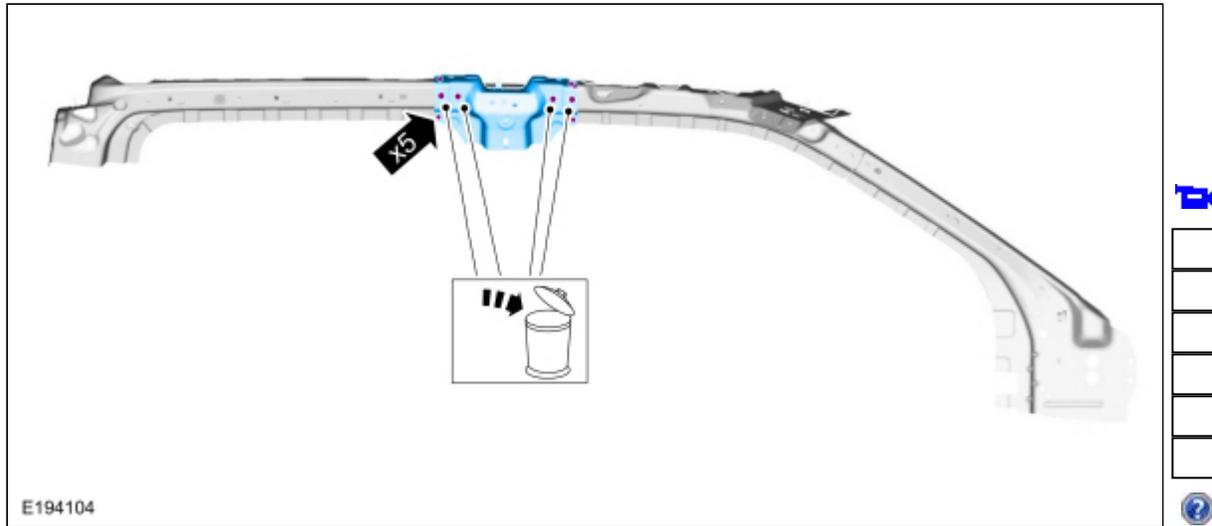
Installation

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 position after enlarging hole to 6.5mm

All Vehicles

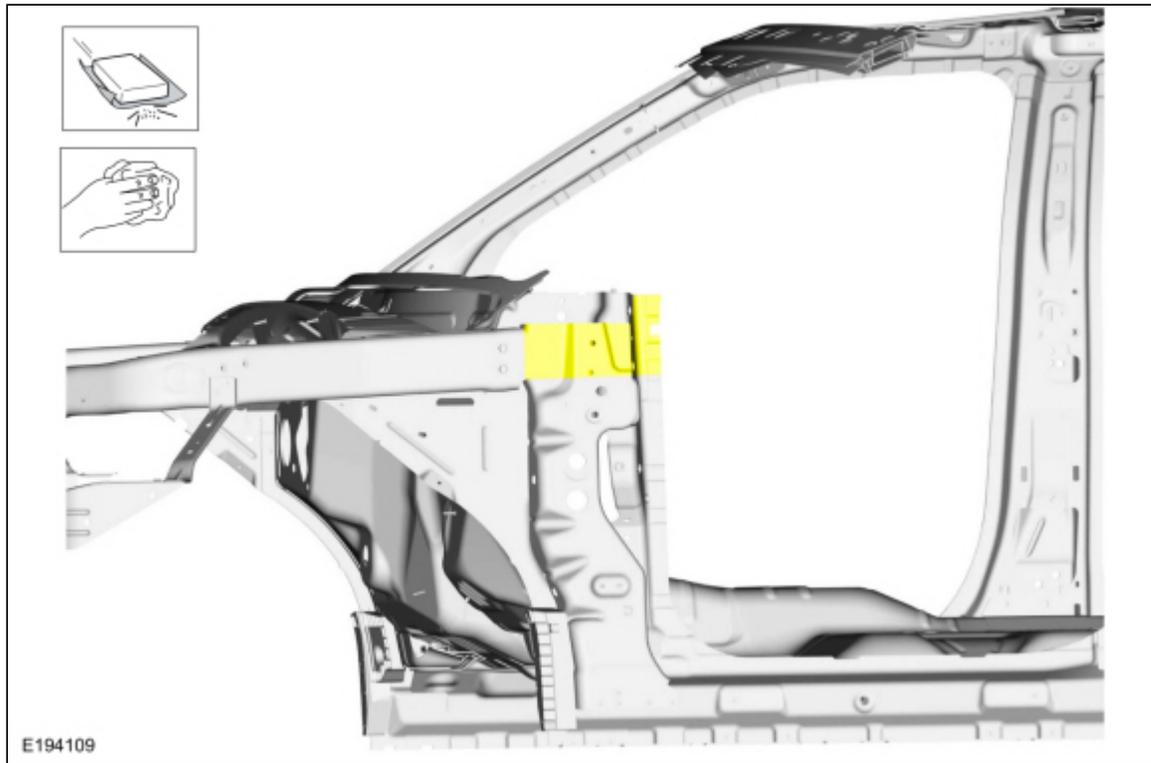
1. Remove the SPR fasteners, remove and discard the FDS fasteners and the B-pillar gusset from the roof side rail service part.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander
Use the General Equipment: Polydrive Bit Socket



Front Section

2. Sand to remove old adhesive using 80 grit sand paper and clean as indicated.

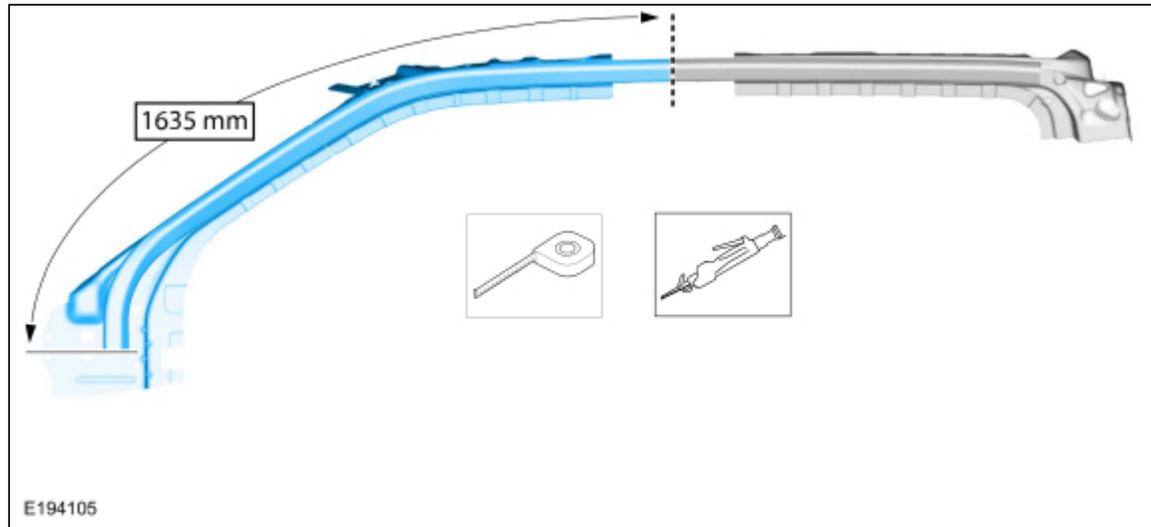




3. **NOTE:** *Measurement taken along the top of the side rail tube.*

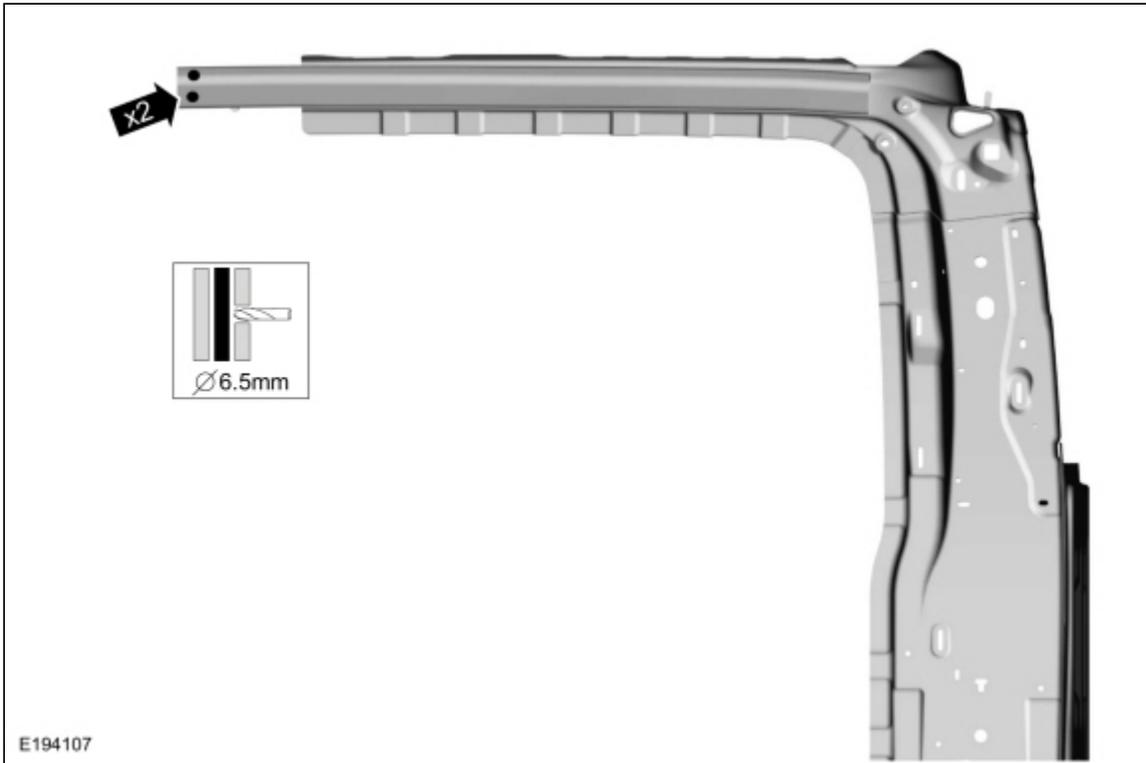
Carefully measure and cut the roof side rail tube service part as indicated.
Use the General Equipment: Air Body Saw



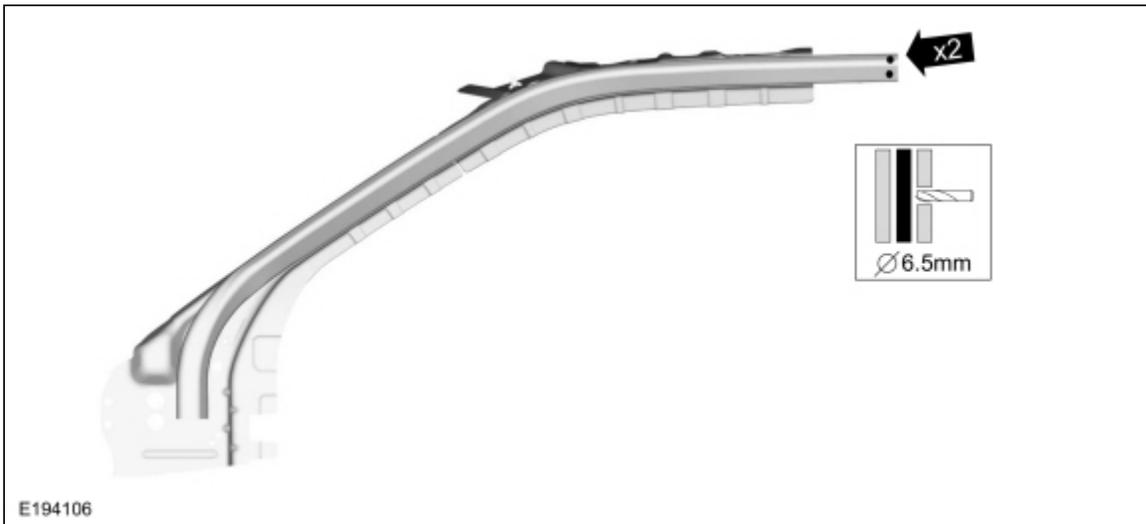


4. Create a 100mm insert from an **unused portion** of the old component or new service part.
5. Drill two 6.5mm plug weld holes in existing frame rail as indicated.
Use the General Equipment: 6.5 mm Drill Bit





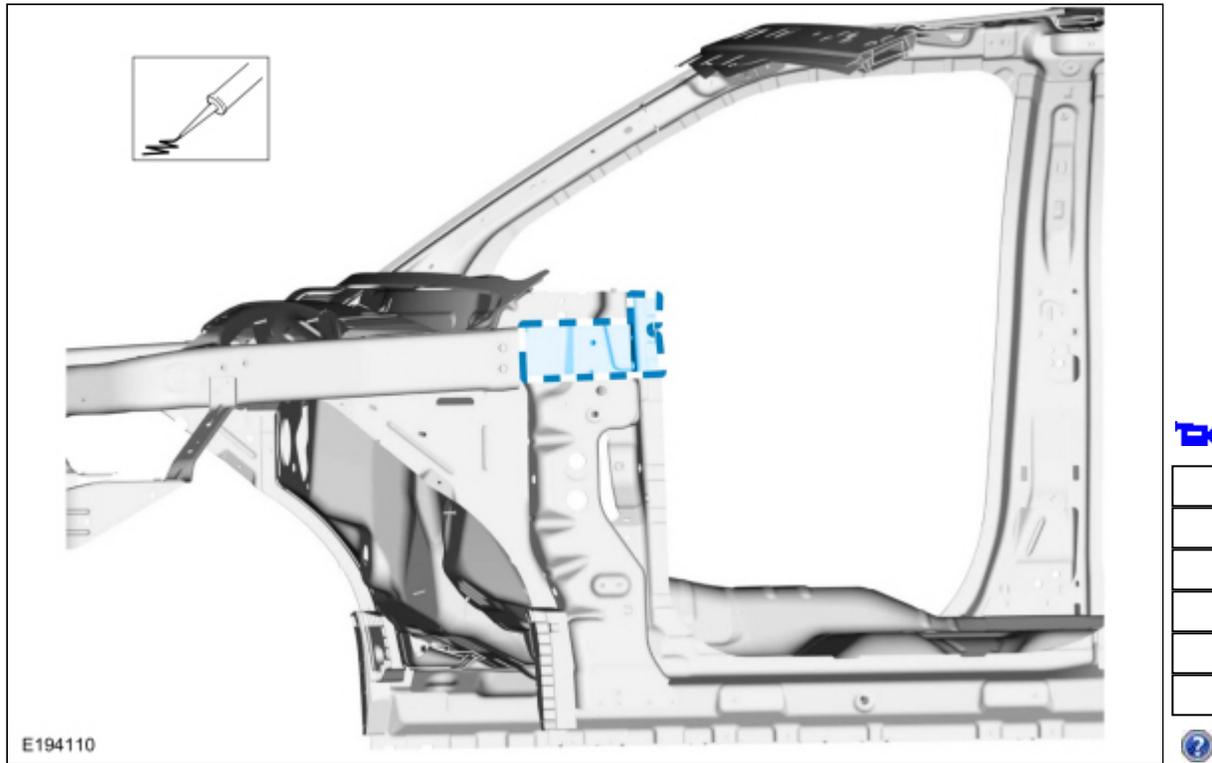
- 6. Drill two 6.5mm plug weld holes in replacement rail as indicated.
Use the General Equipment: 6.5 mm Drill Bit



Navigation icons: a blue square icon, a vertical stack of five empty square boxes, and a blue circular icon with a question mark.

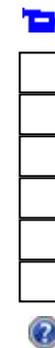
7. Apply adhesive.

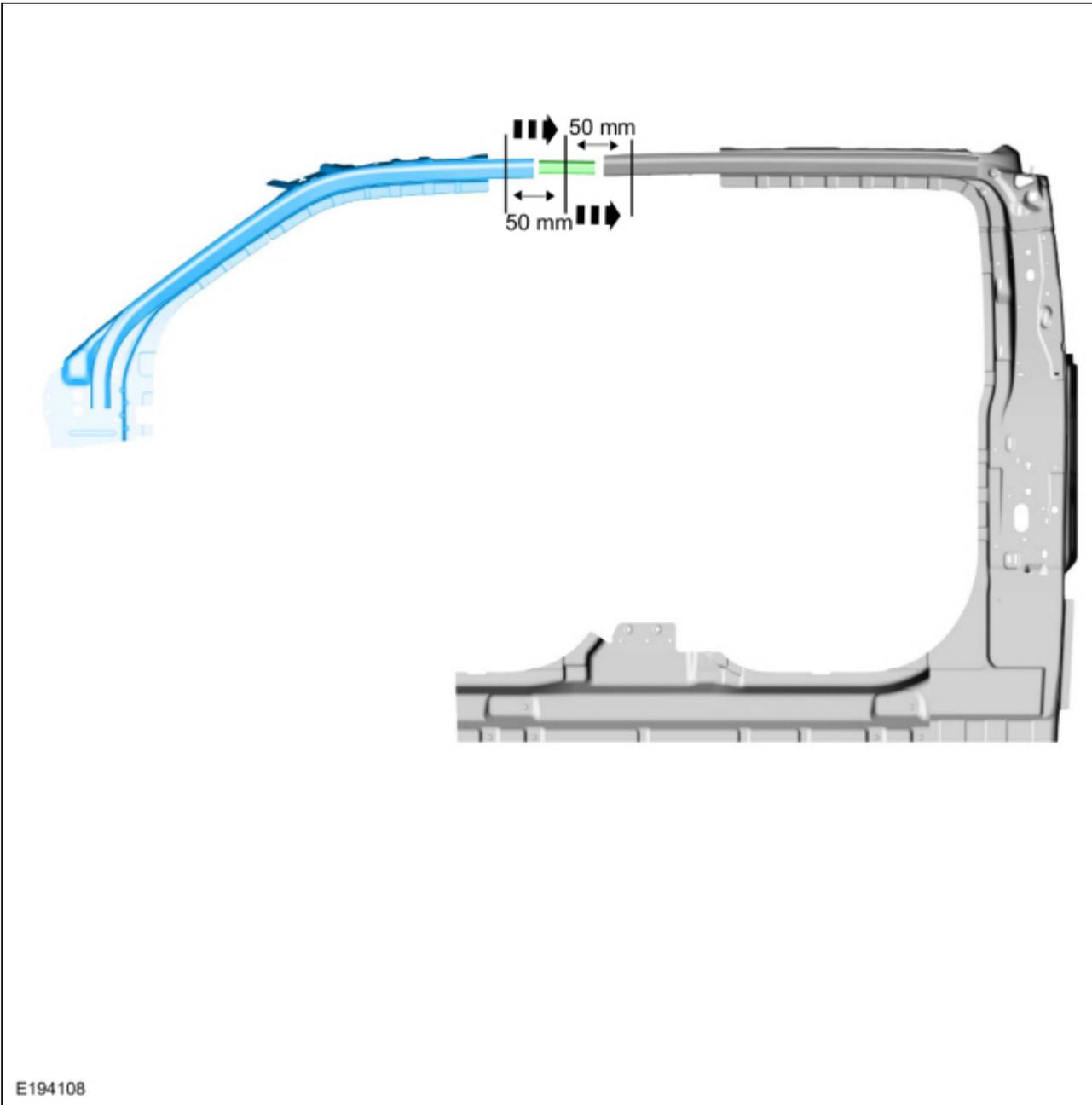
Material: Metal Bonding Adhesive / TA-1, TA-1-B, 3M™ 08115, LORD Fusor® 108B



8. **NOTE:** 100mm insert should extend 50mm in to service part section and original component.

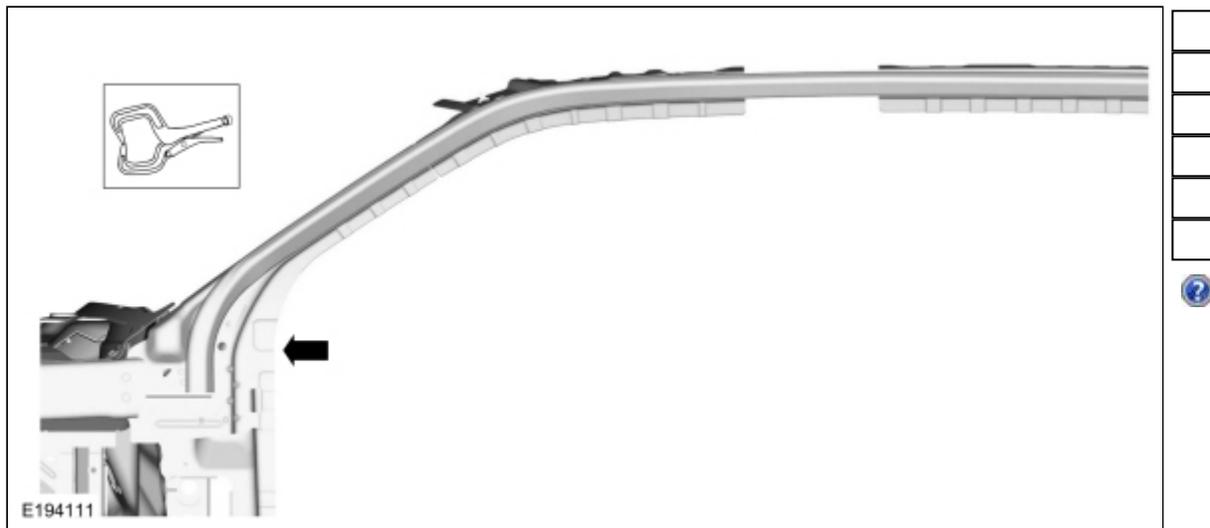
Install insert and service part section as indicated.





- 9. Clamp in place.
Use the General Equipment: Locking Pliers

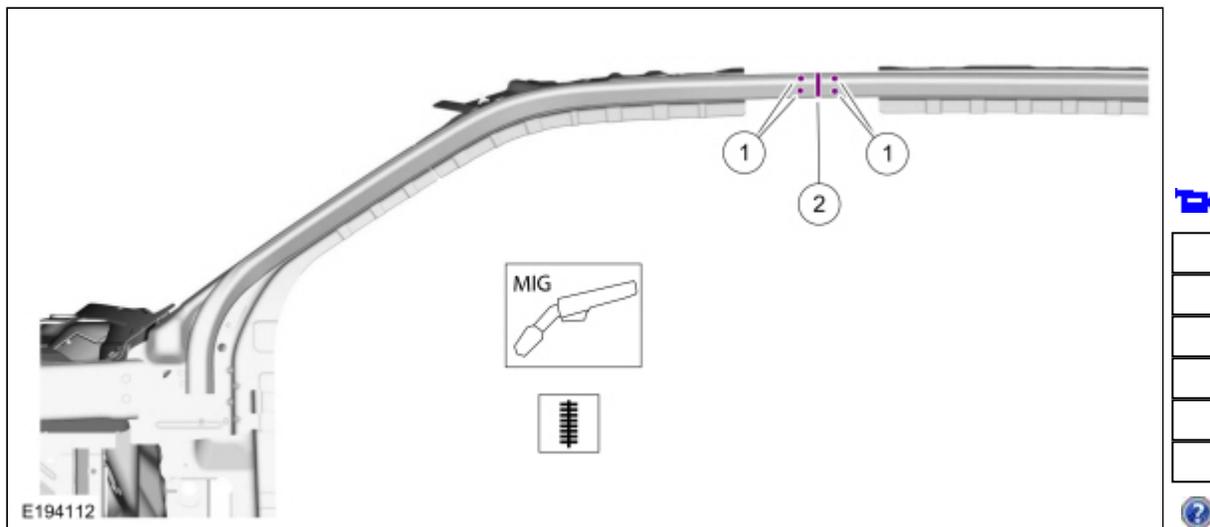




10.

Weld as indicated.

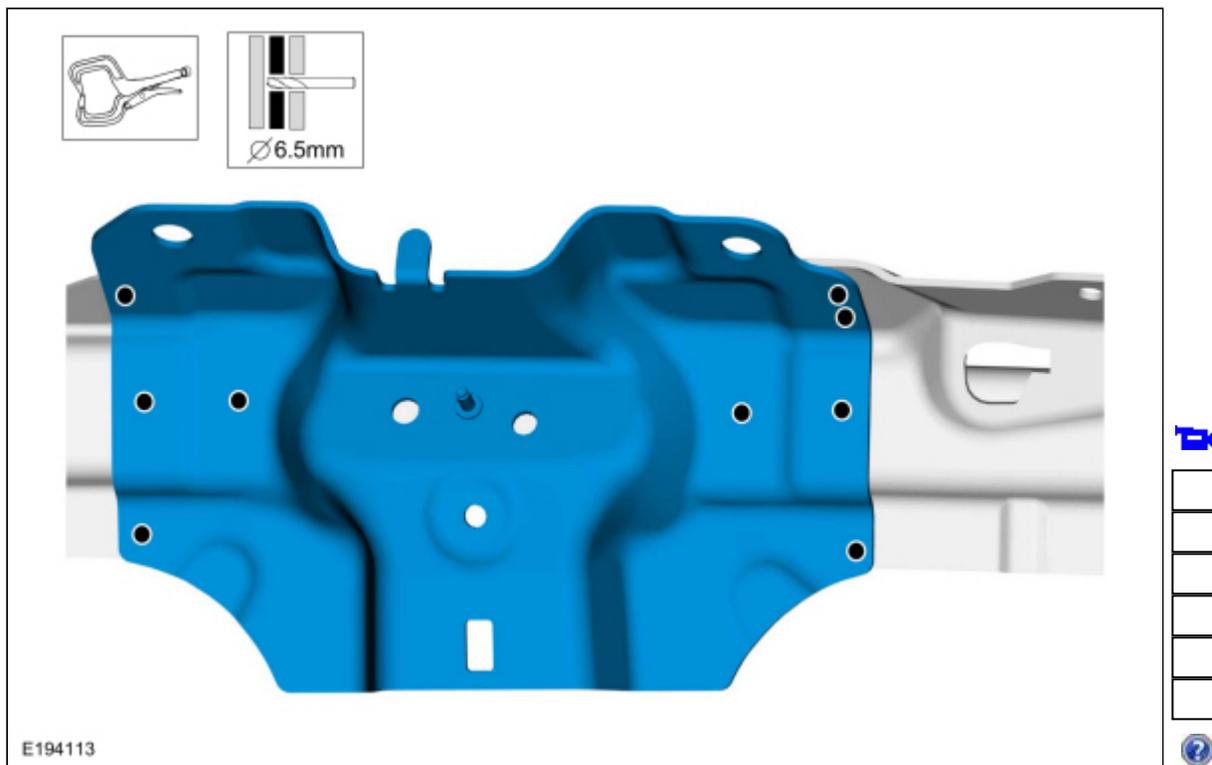
- Install MIG plug welds.
Use the General Equipment: MIG/MAG Welding Equipment
- Entirely seam weld as indicated.
Use the General Equipment: MIG/MAG Welding Equipment



11. Metal finish as required using typical metal finishing techniques.

12. Install, clamp and drill side rail to B-pillar gusset as indicated.
Use the General Equipment: Locking Pliers

Use the General Equipment: 6.5 mm Drill Bit



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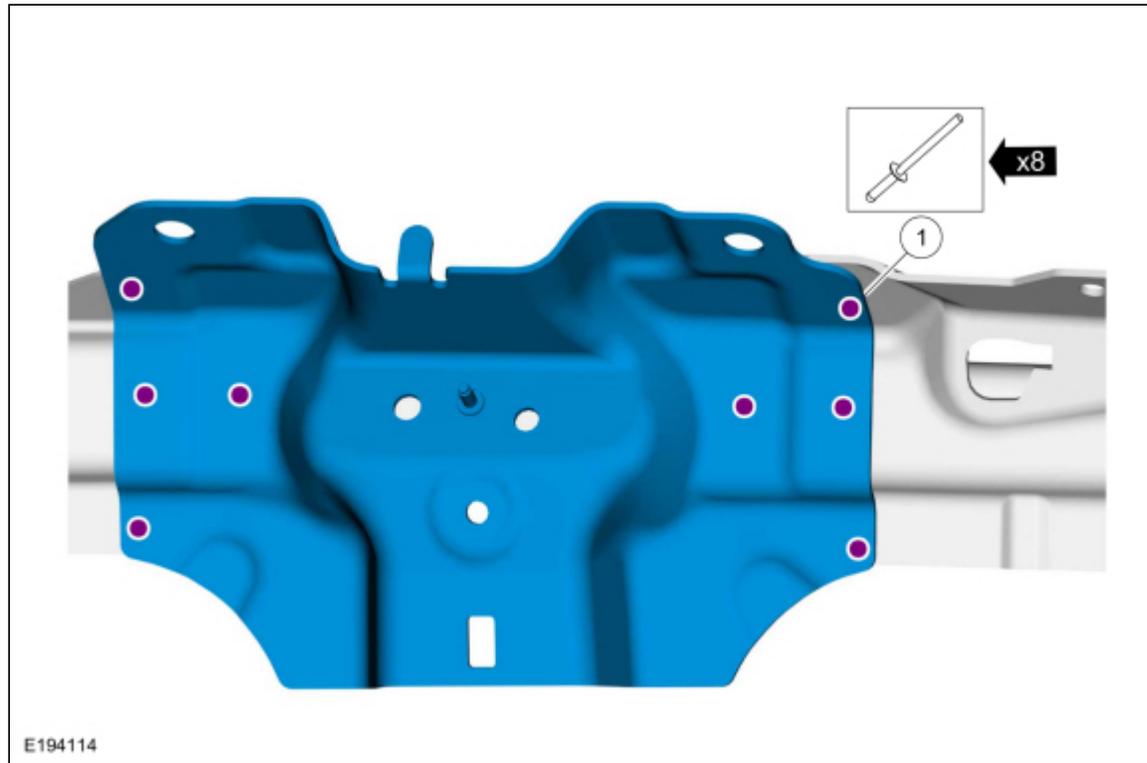
13. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

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

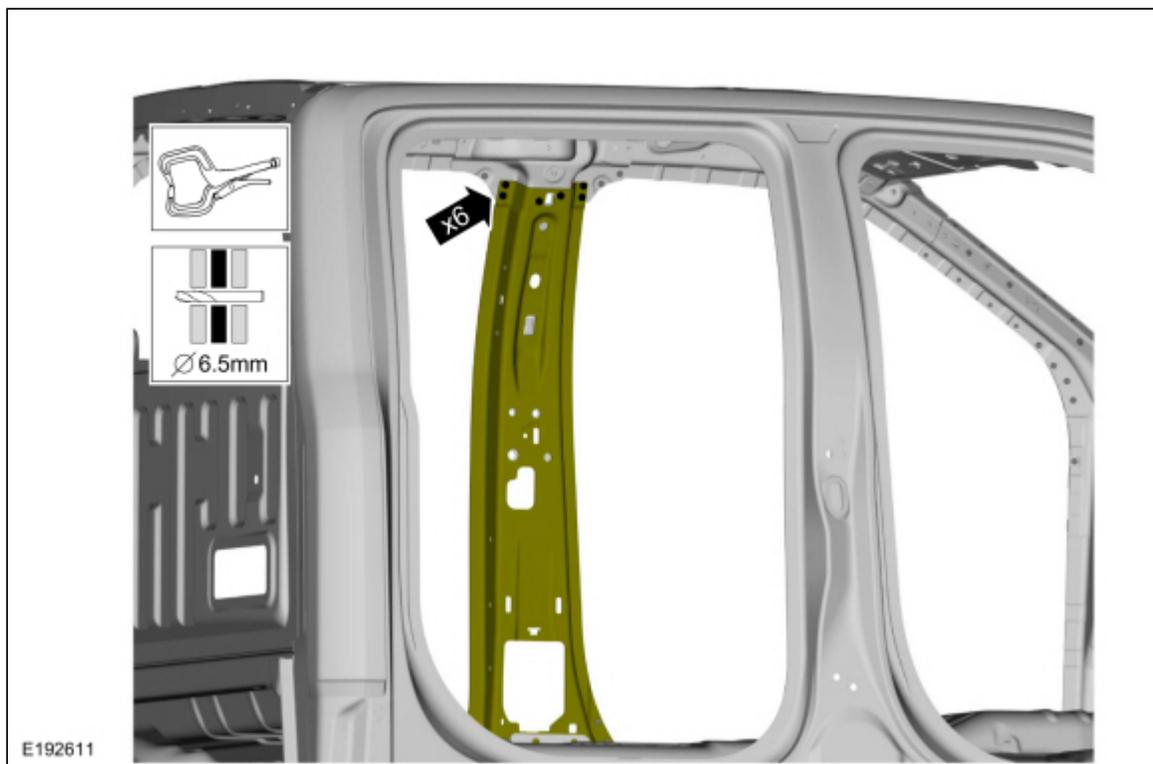
Install fasteners.

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



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



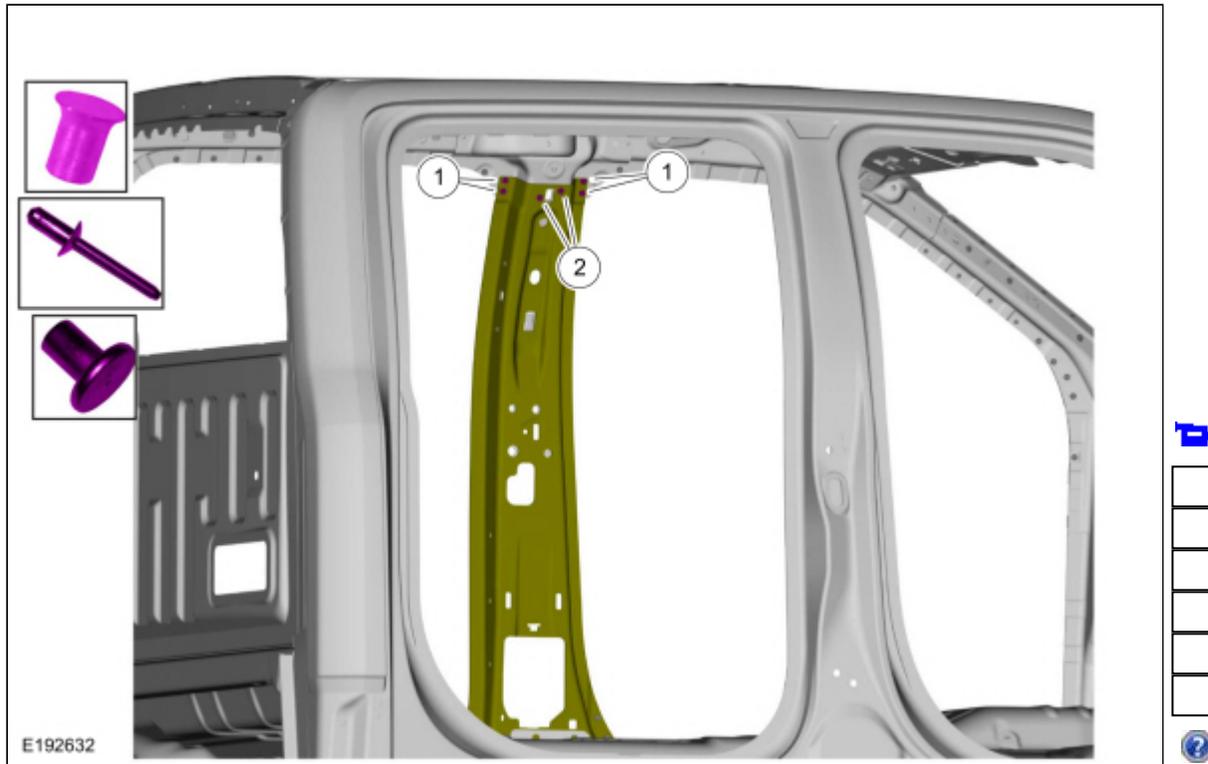
15. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

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

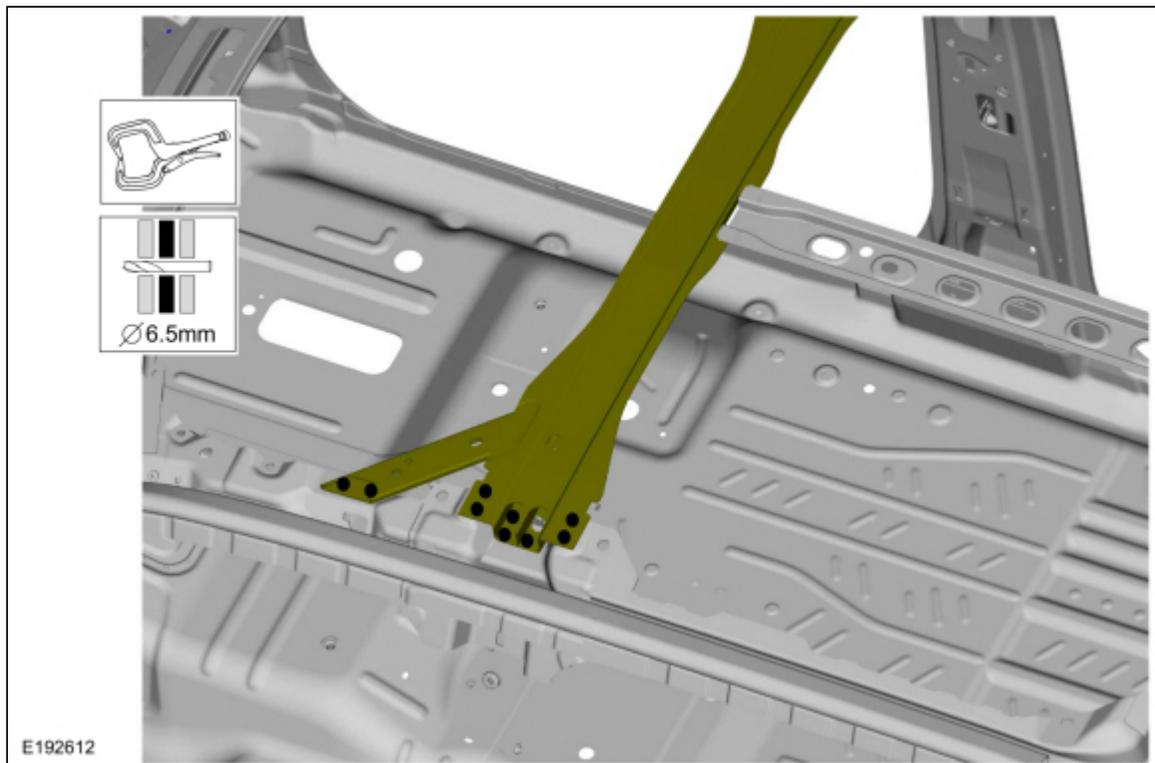
Install fasteners.

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



16. Install the body side panel. Metal finish using typical metal finishing techniques.
 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).
17. Position the roof reinforcement assembly, clamp and drill 6.5mm holes as indicated.
 Use the General Equipment: Locking Pliers
 Use the General Equipment: 6.5 mm Drill Bit



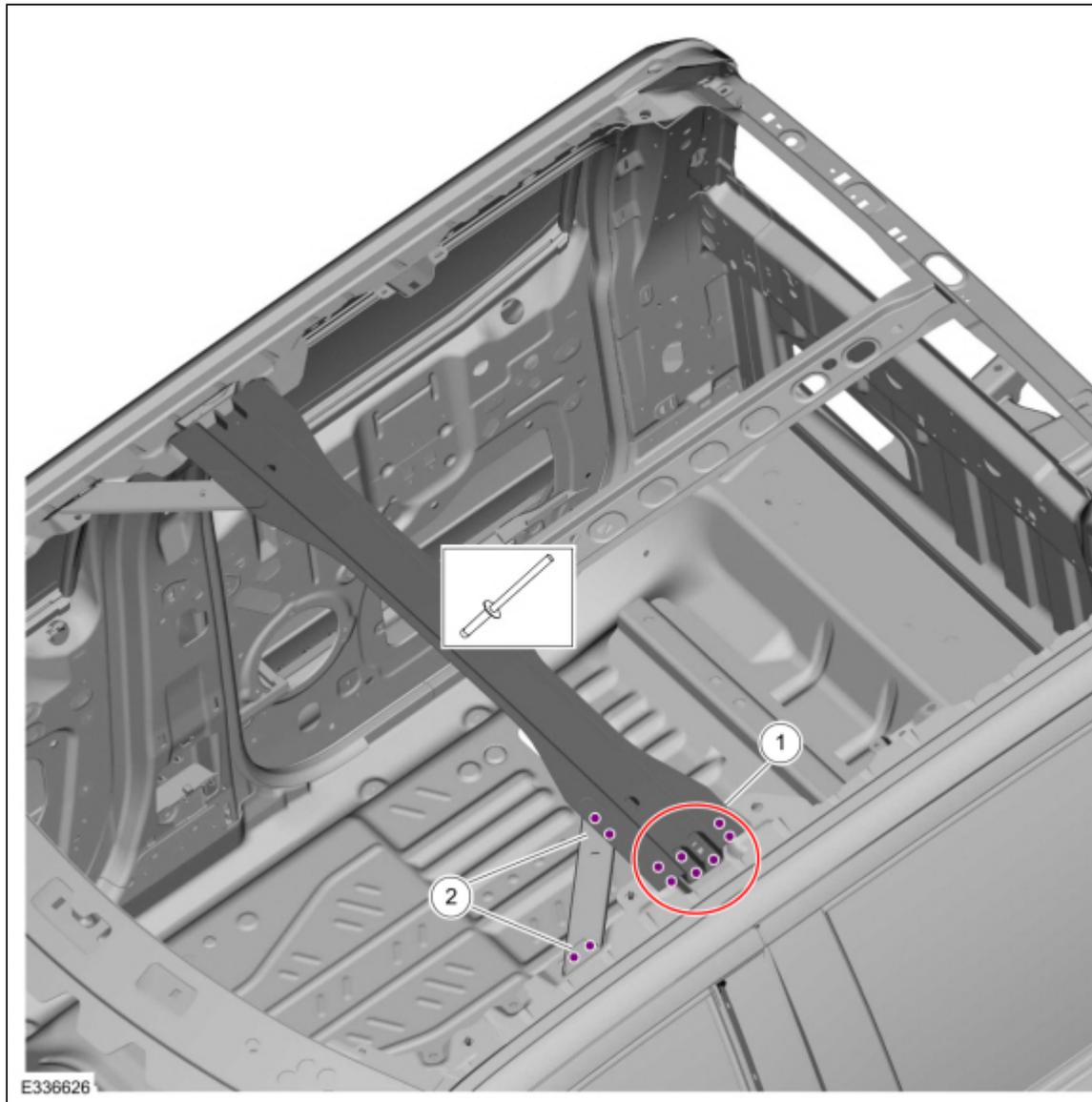
18. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

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

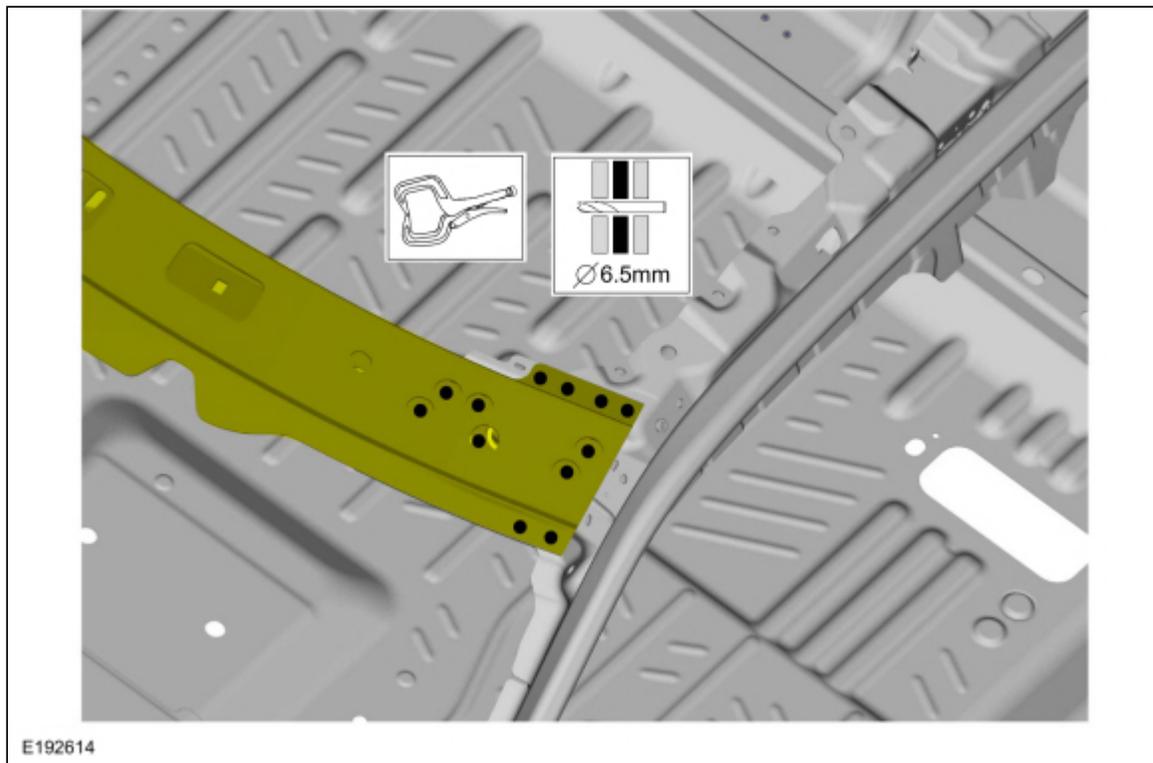
Install fasteners.

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	EM	DP11- 225/H	-	-	-	-

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



19. Position the windshield header panel, clamp and drill 6.5mm holes as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit



20. **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 position after enlarging hole to 6.5mm

Install the fasteners.

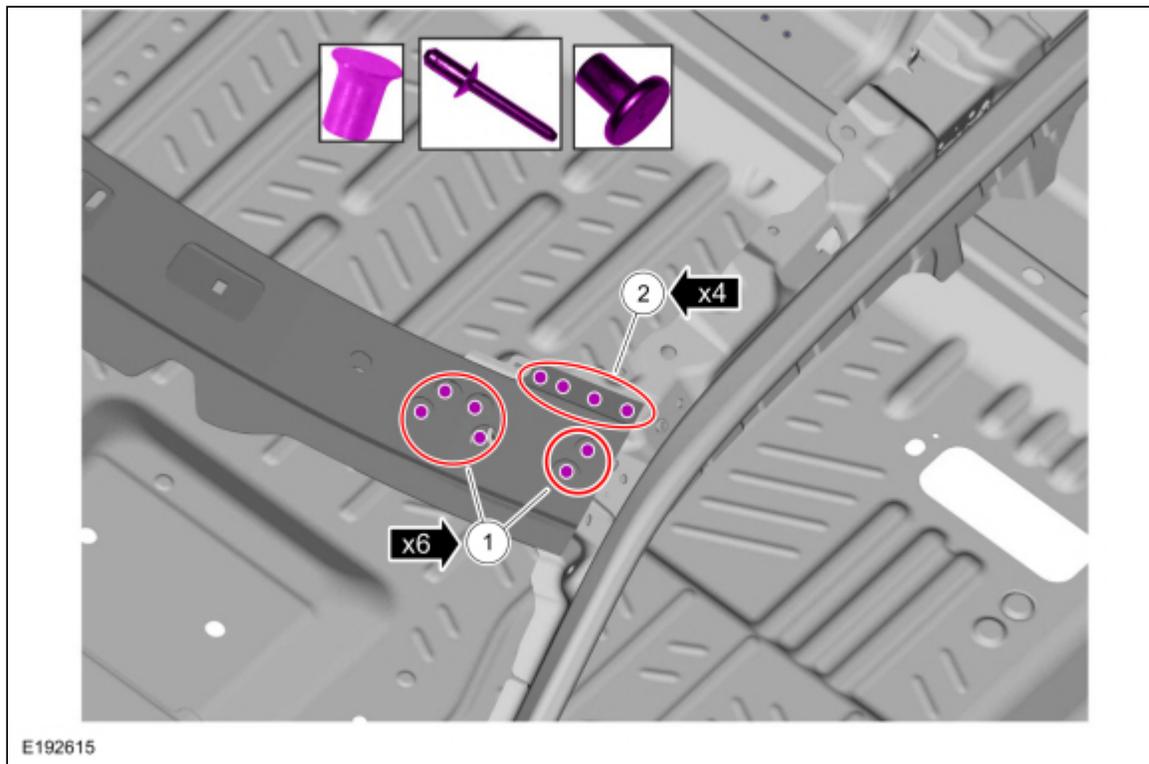
Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W708777-S900C	-	-
2	W710246-S900	BN	DP10-200/H	SA-0400/SA-0402	-	W790377-S900	-

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

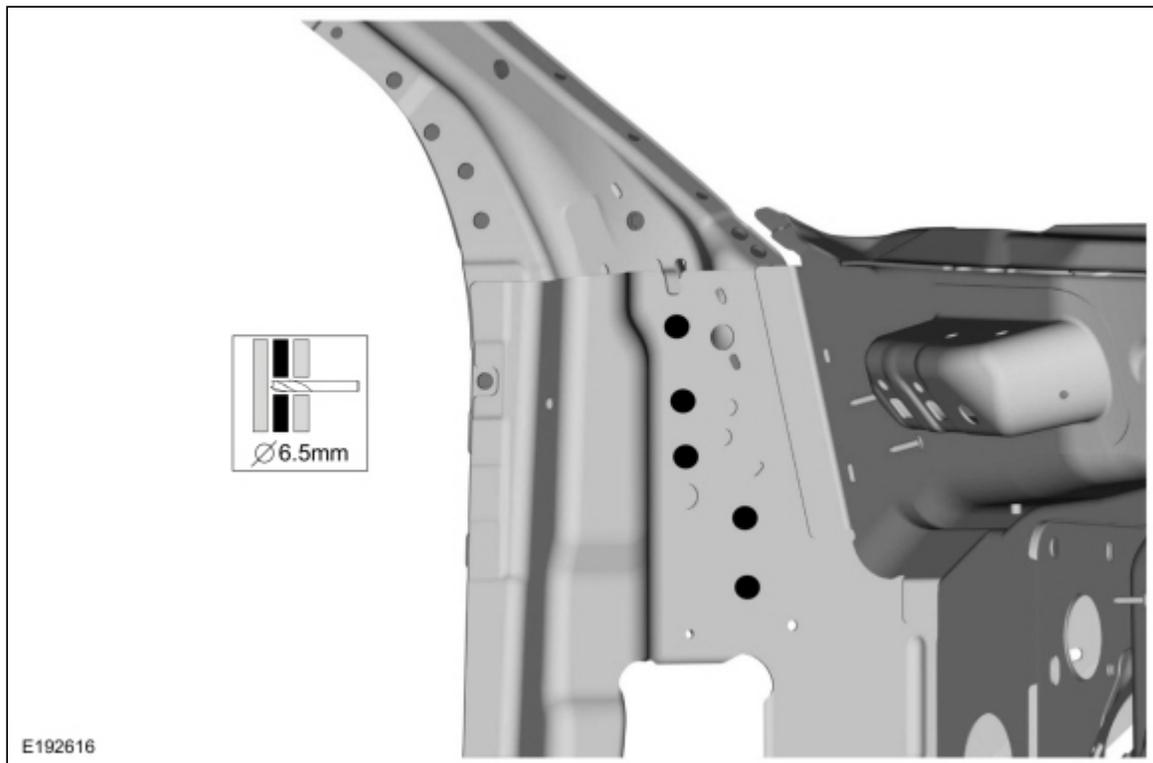
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer

Use the General Equipment: Blind Rivet Gun

Use the General Equipment: Blind Rivet Gun



- 21. Drill the five 6.5mm holes as indicated.
Use the General Equipment: 6.5 mm Drill Bit



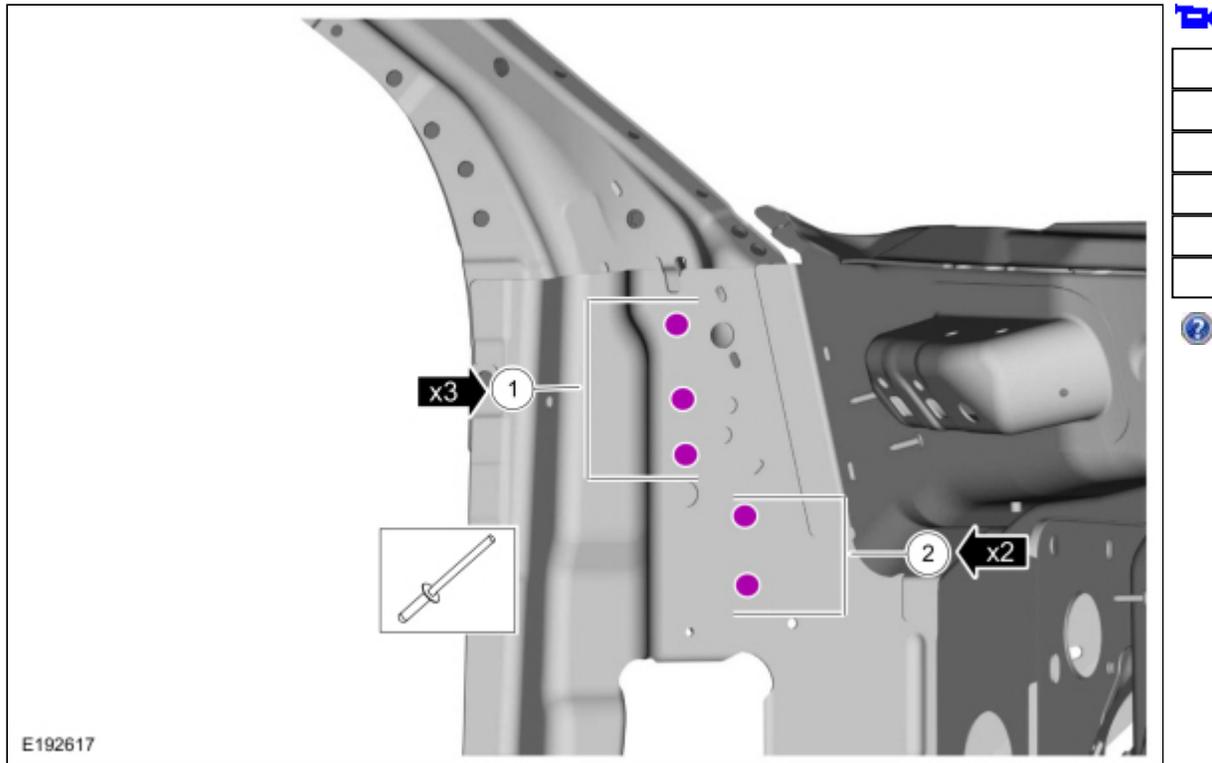
22. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

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

Install the fasteners.

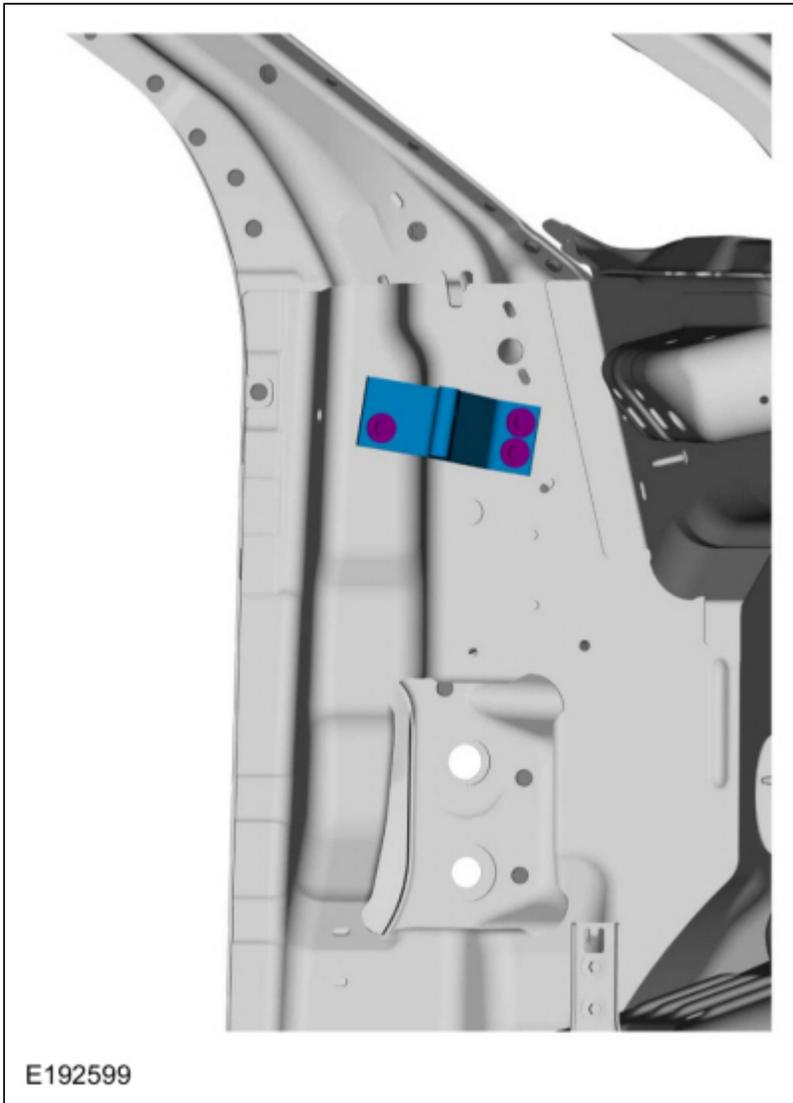
Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	-	-	-	-	W702512-S900C	-	-
2	-	-	-	-	W708777-S900C	-	-

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



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

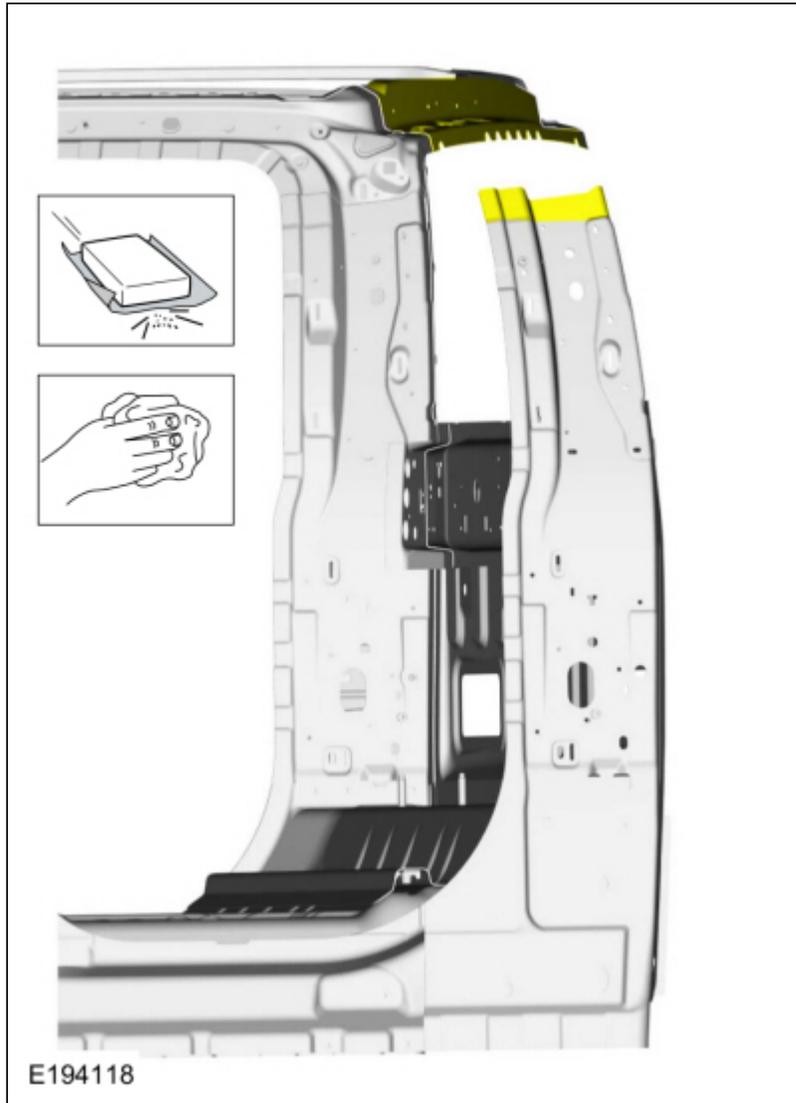




24. Install the B-pillar reinforcement.
Refer to: [B-Pillar and Reinforcement - SuperCrew](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
25. Install the A-pillar reinforcement.
Refer to: [A-Pillar Outer Panel Section and Reinforcement](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
26. Install the instrument panel.
Refer to: [Instrument Panel](#) (501-12 Instrument Panel and Console, Removal and Installation).

Rear Section

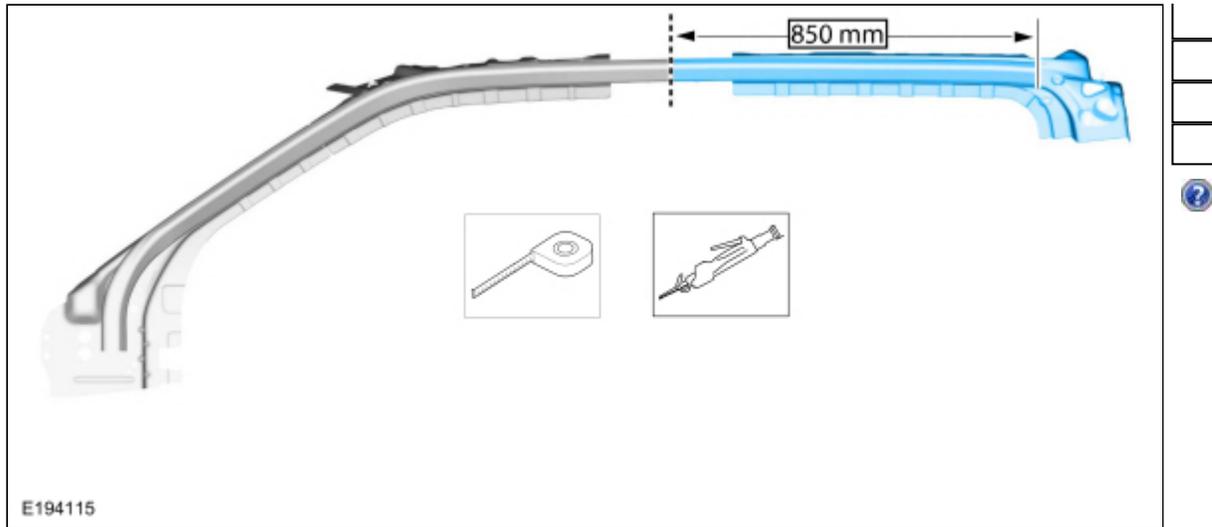
27. Sand to remove old adhesive using 80 grit sand paper and clean as indicated.



28. **NOTE:** Measurement taken along the top of the side rail tube.

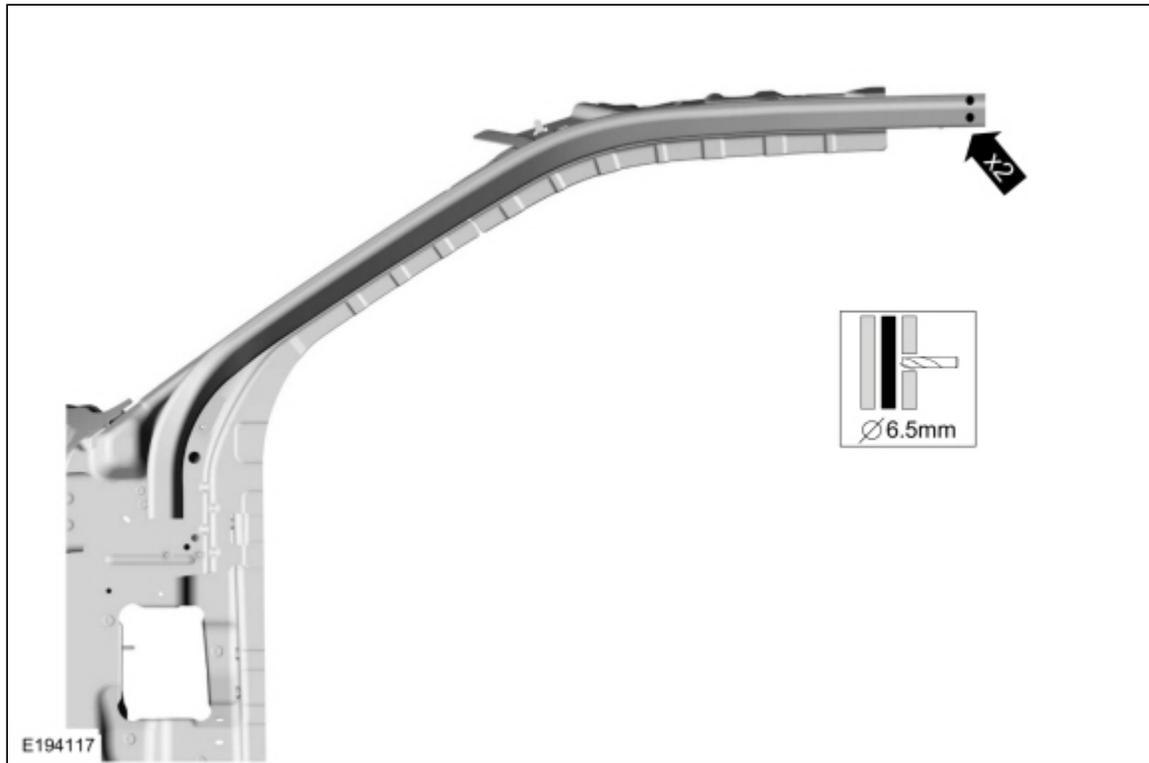
Carefully measure and cut the **tube portion only** as indicated.



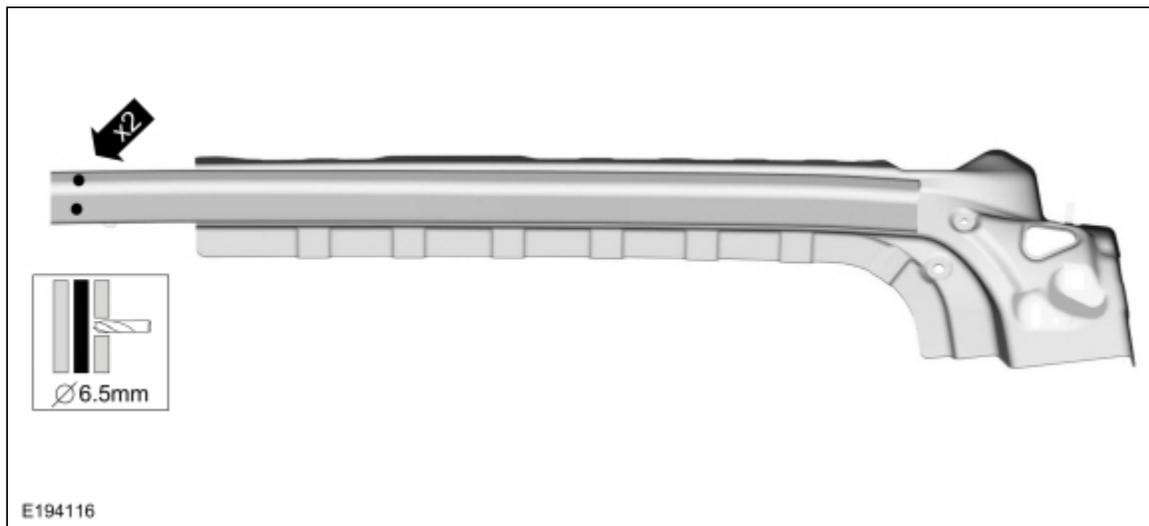


- 29. Create a 100mm insert from an **unused portion** of the old component or new service part.
- 30. Drill two 6.5mm plug weld holes in existing frame rail as indicated.
Use the General Equipment: 6.5 mm Drill Bit



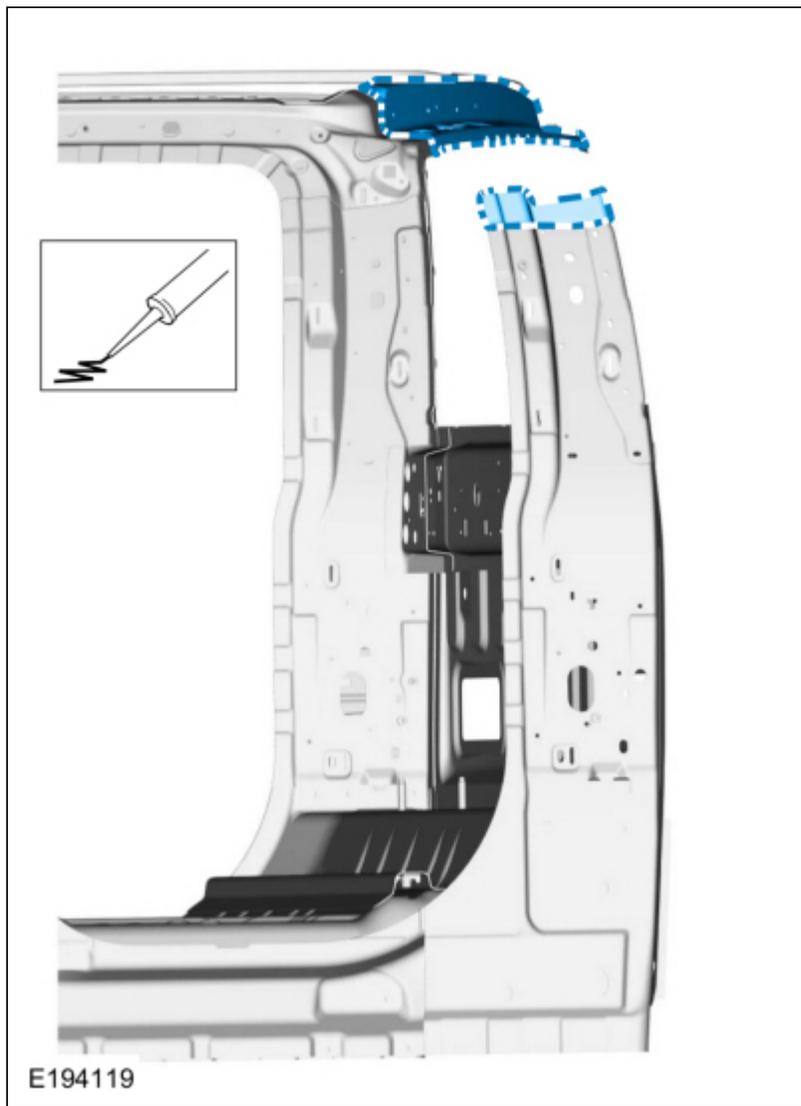


31. Drill two 6.5mm plug weld holes in service part as indicated.
Use the General Equipment: 6.5 mm Drill Bit



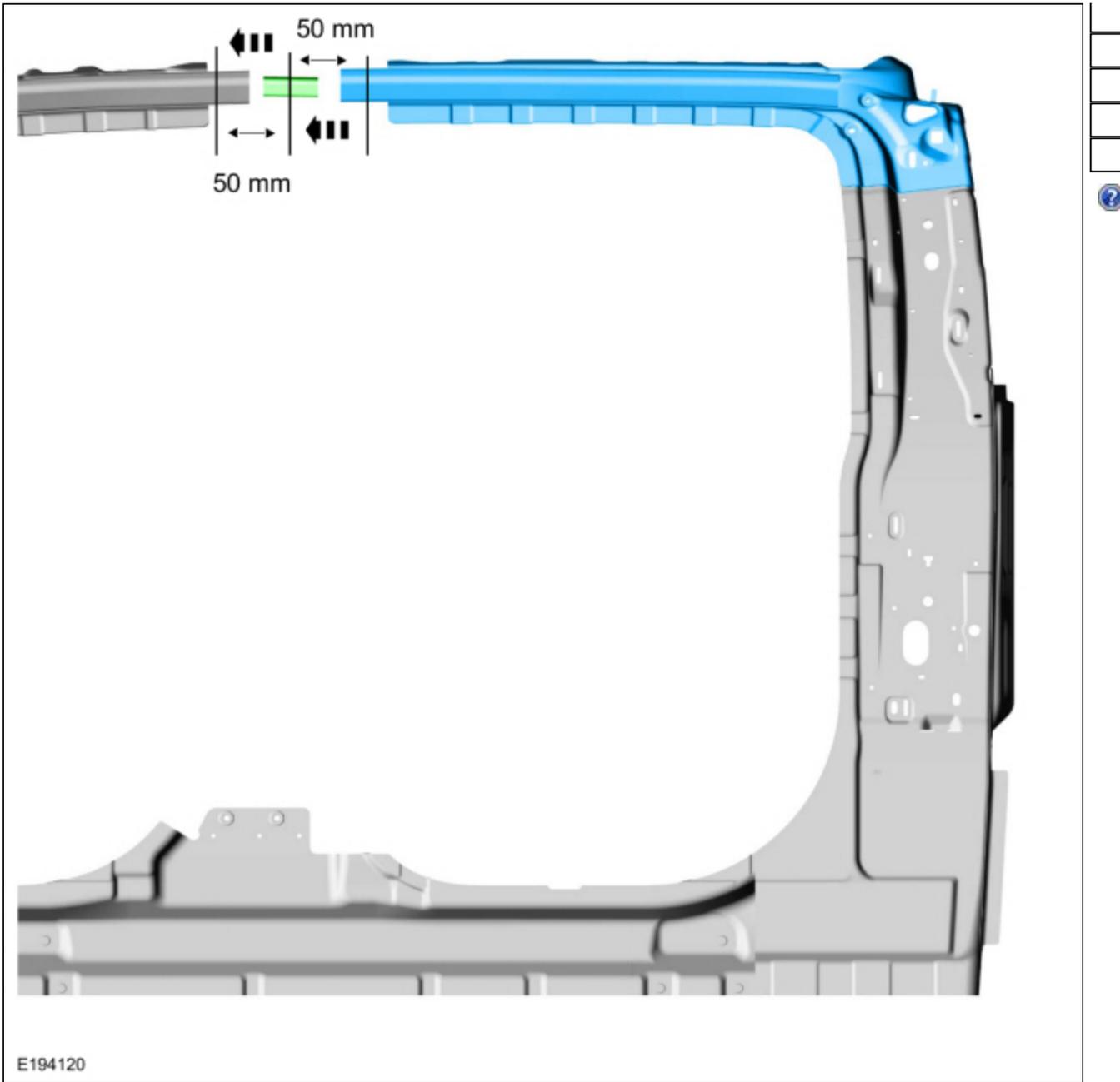
32. Apply adhesive.

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



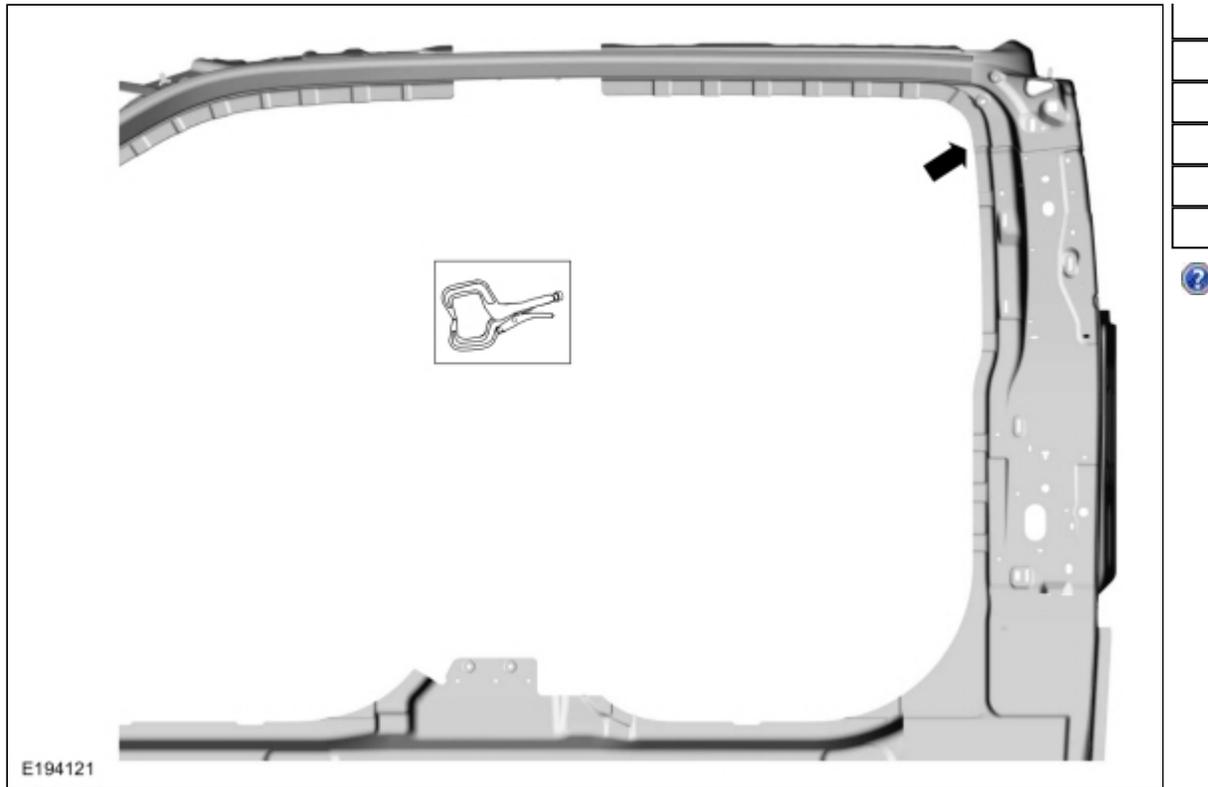
33. **NOTE:** 100mm insert should extend 50mm in to service part section and original component.

Install insert and service part section as indicated.



34. Clamp service part to C-pillar reinforcement as indicated.



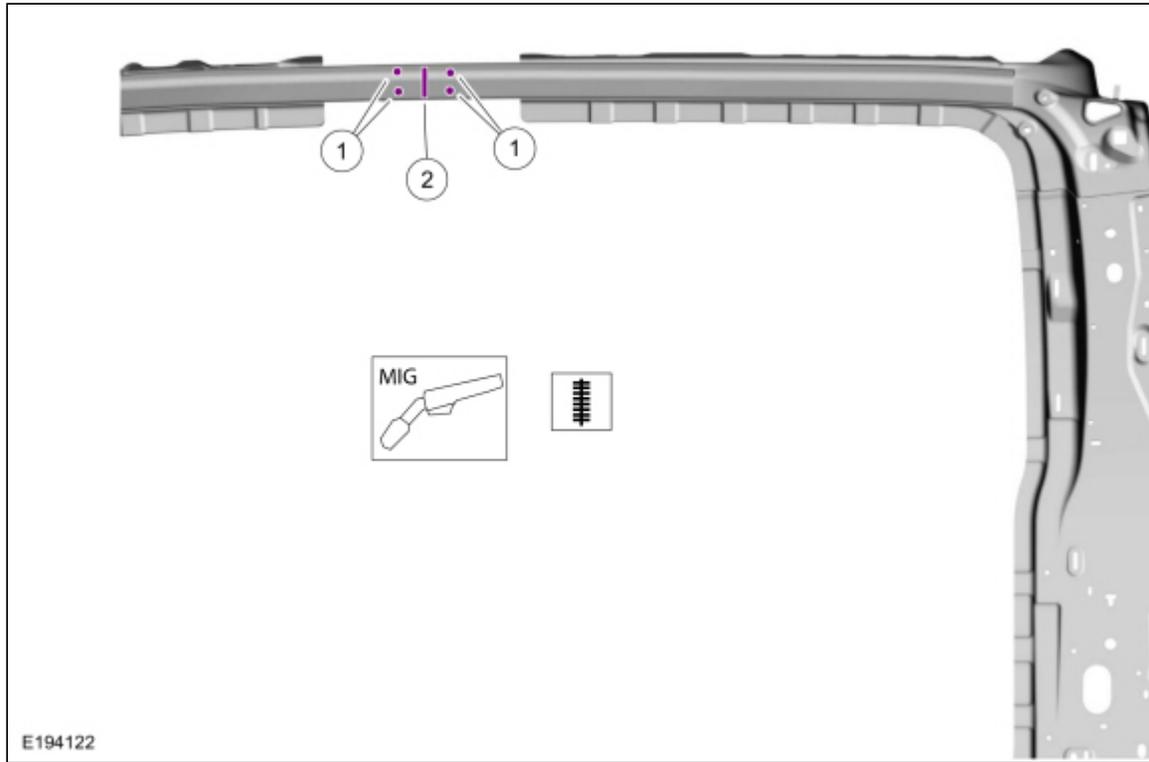


35.

Weld as indicated.

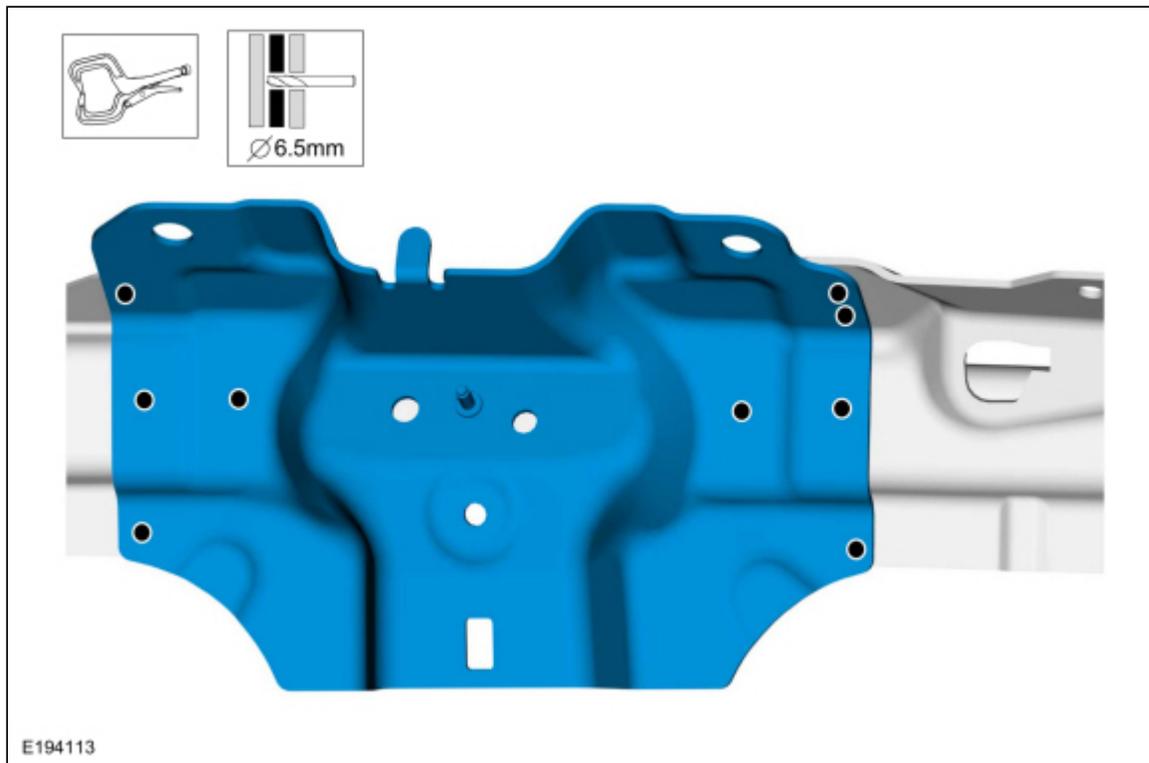
- Install MIG plug welds.
Use the General Equipment: MIG/MAG Welding Equipment
- Entirely seam weld as indicated.
Use the General Equipment: MIG/MAG Welding Equipment





- 36. Install, clamp and drill roof rail to B-pillar gusset as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit





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37. **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 position after enlarging hole to 6.5mm

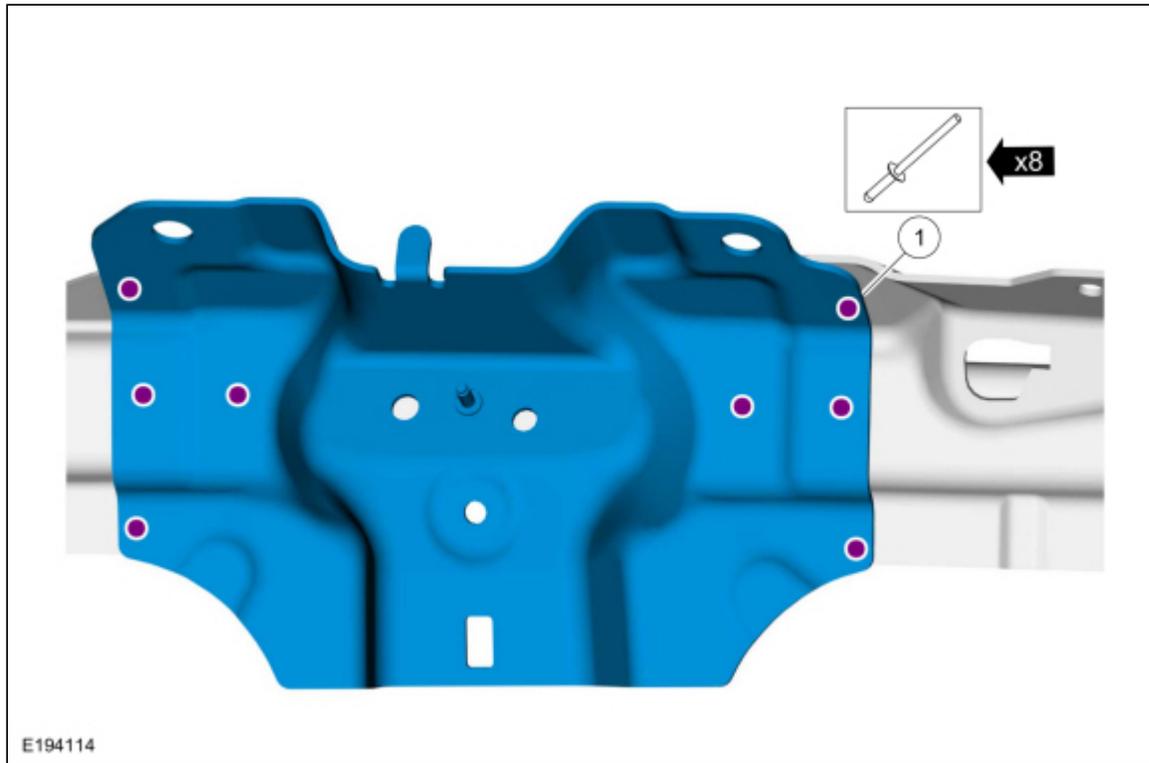
Install the fasteners.

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

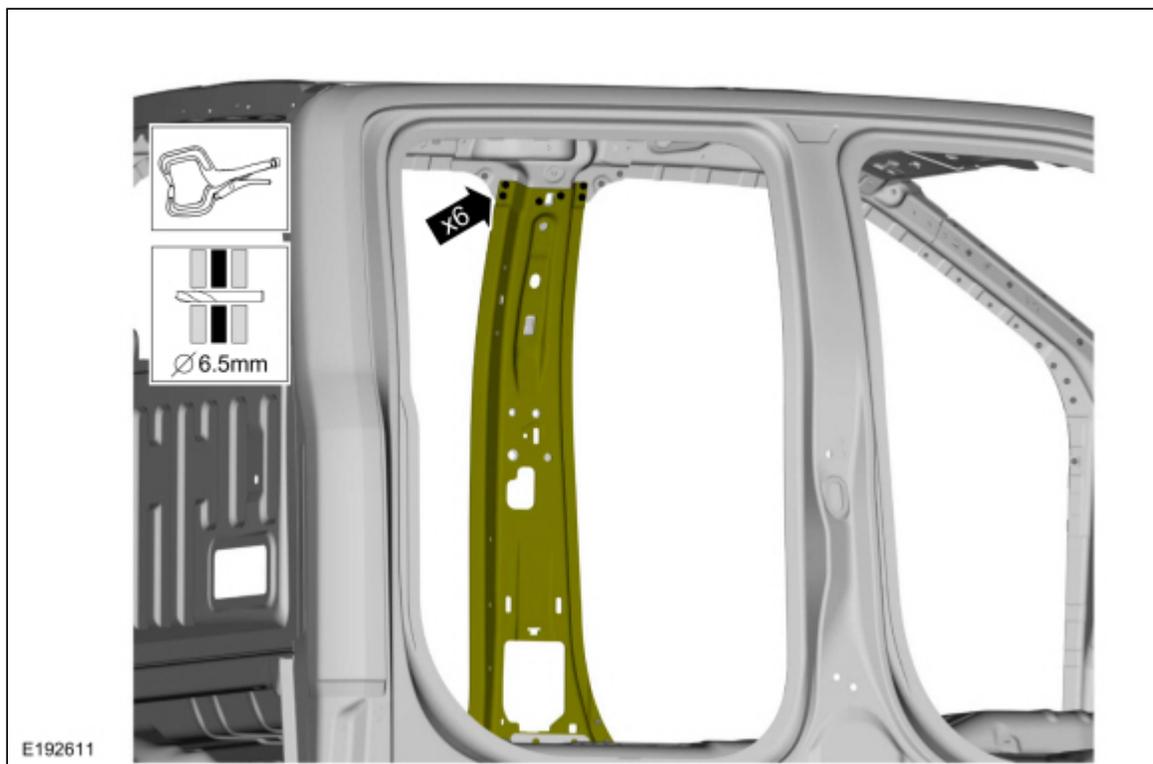




E194114

- 38. Position the B-pillar inner panel clamp and drill 6.5mm holes as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit





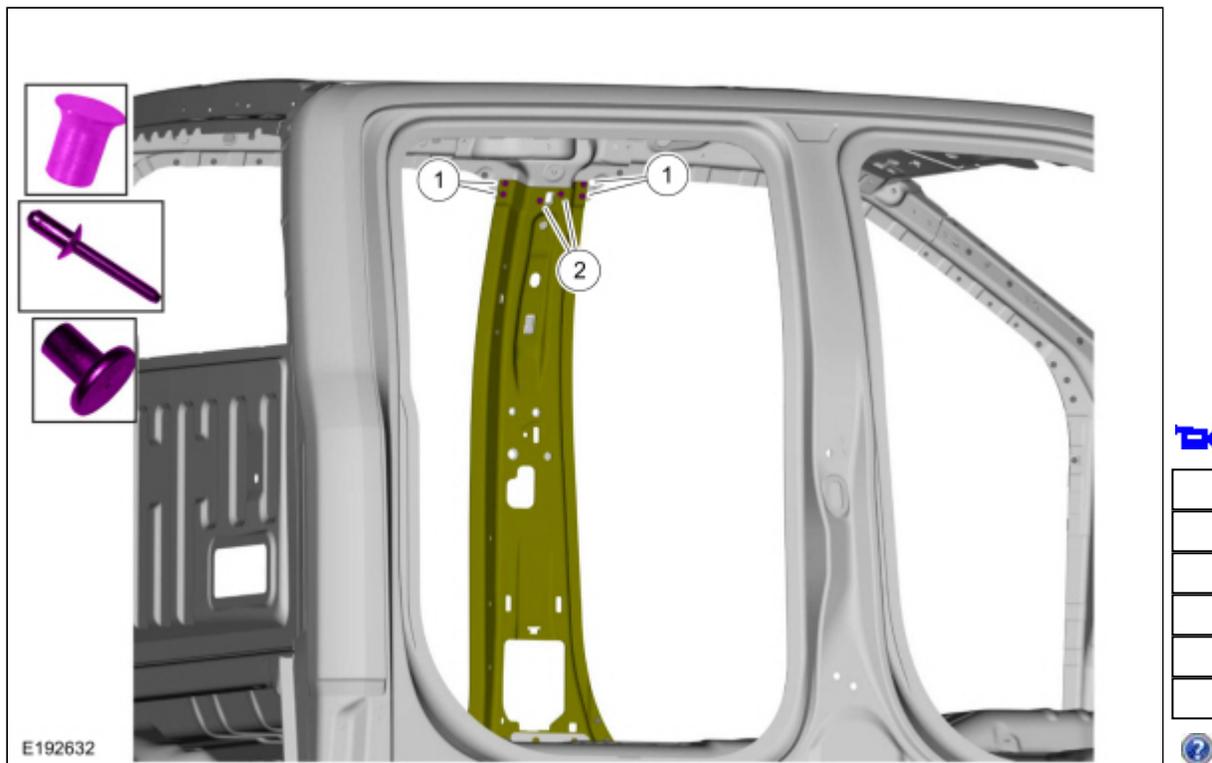
39. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

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

Install the fasteners.

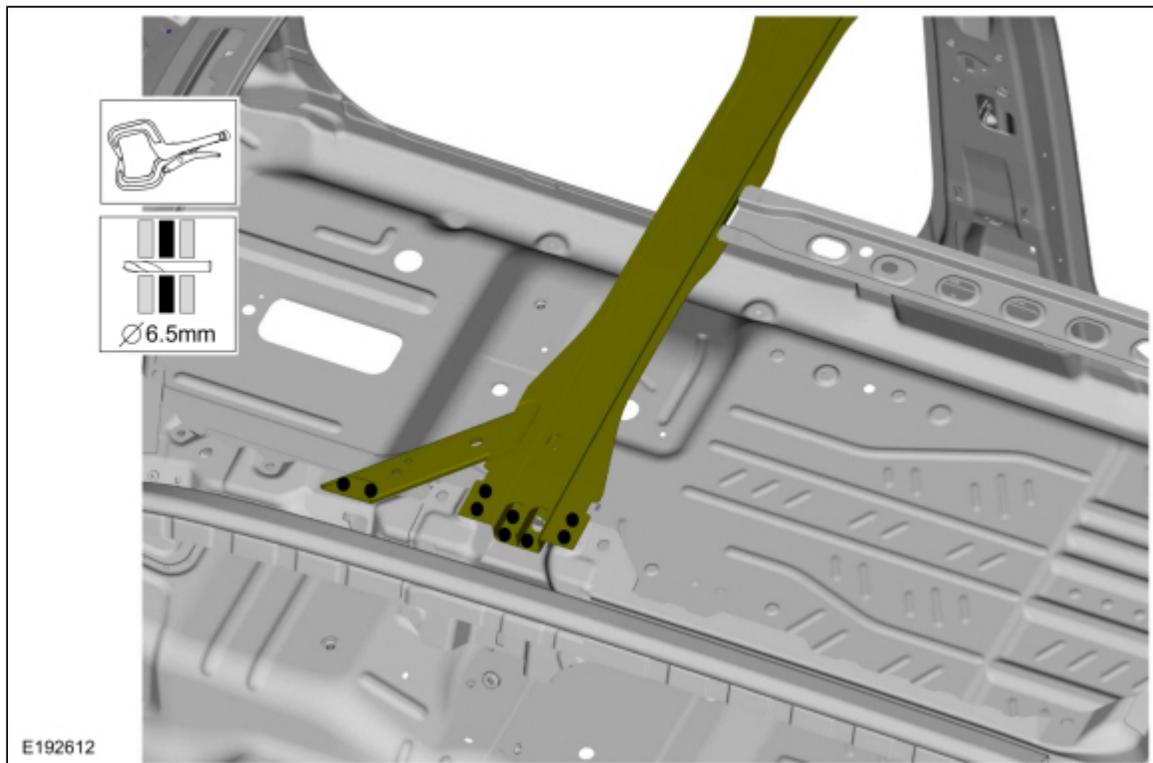
Item	SPR Number	SPR Code	Henrob®, Car-OLiner®, CMO®, Chief®, Spanesi®, Wielander and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	W717186-S900	EN	DG11-200/H	SA-0400/SA-0401	-	W790376-S900	-
2	-	-	-	-	W708777-S900C	-	-

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



- 40. Install the body side panel. Metal finish using typical metal finishing techniques.
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).

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



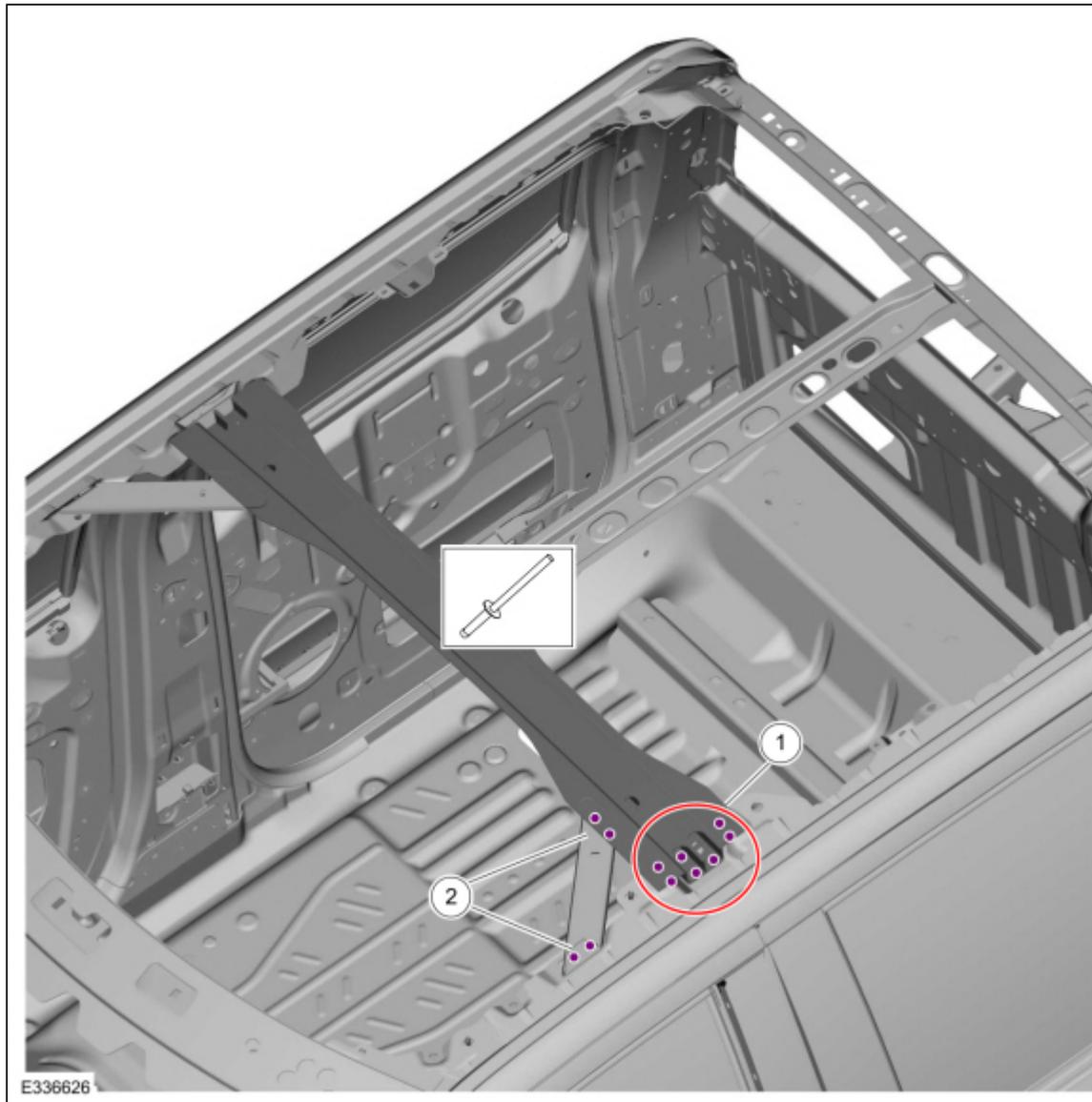
42. **NOTE:** SPR fasteners may not be placed directly over original SPR location. They must be placed adjacent to original location matching original quantity.

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

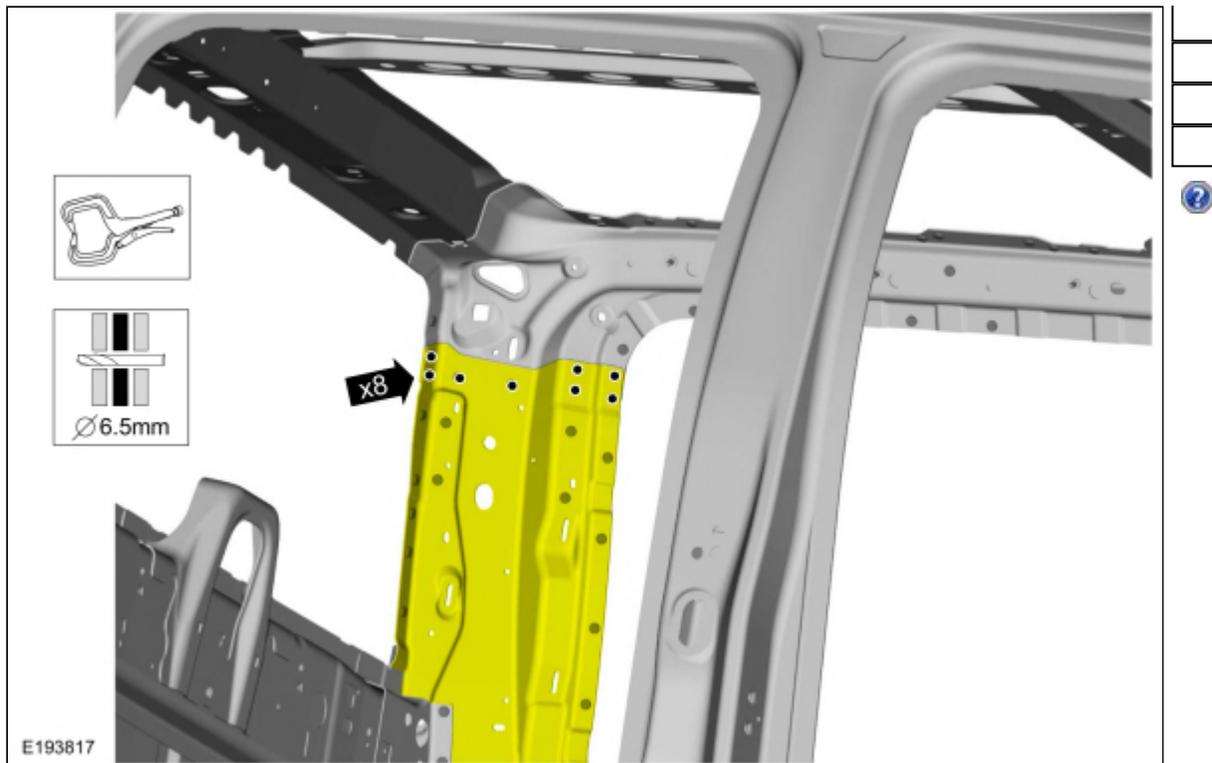
Install the fasteners.

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	W717338-S900	EM	DP11- 225/H	-	-	-	-

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



43. Position, clamp and drill as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit



44. **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 position after enlarging hole to 6.5mm

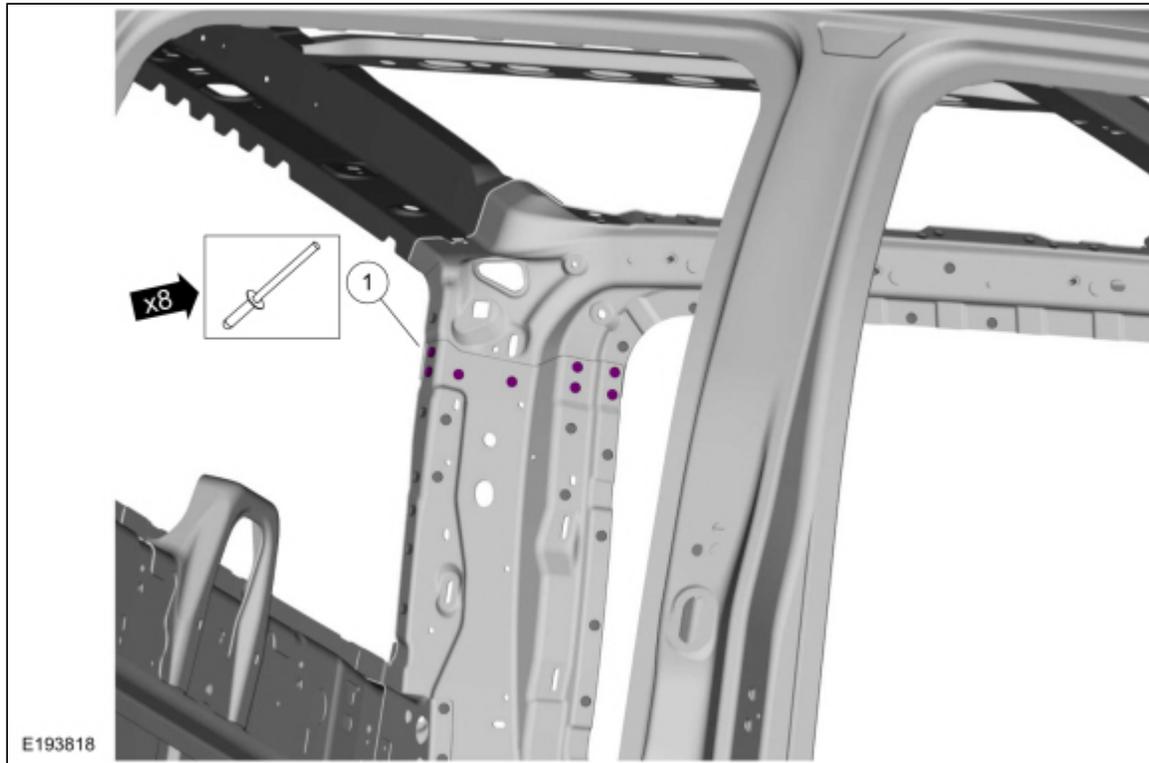
Install the fasteners.

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).

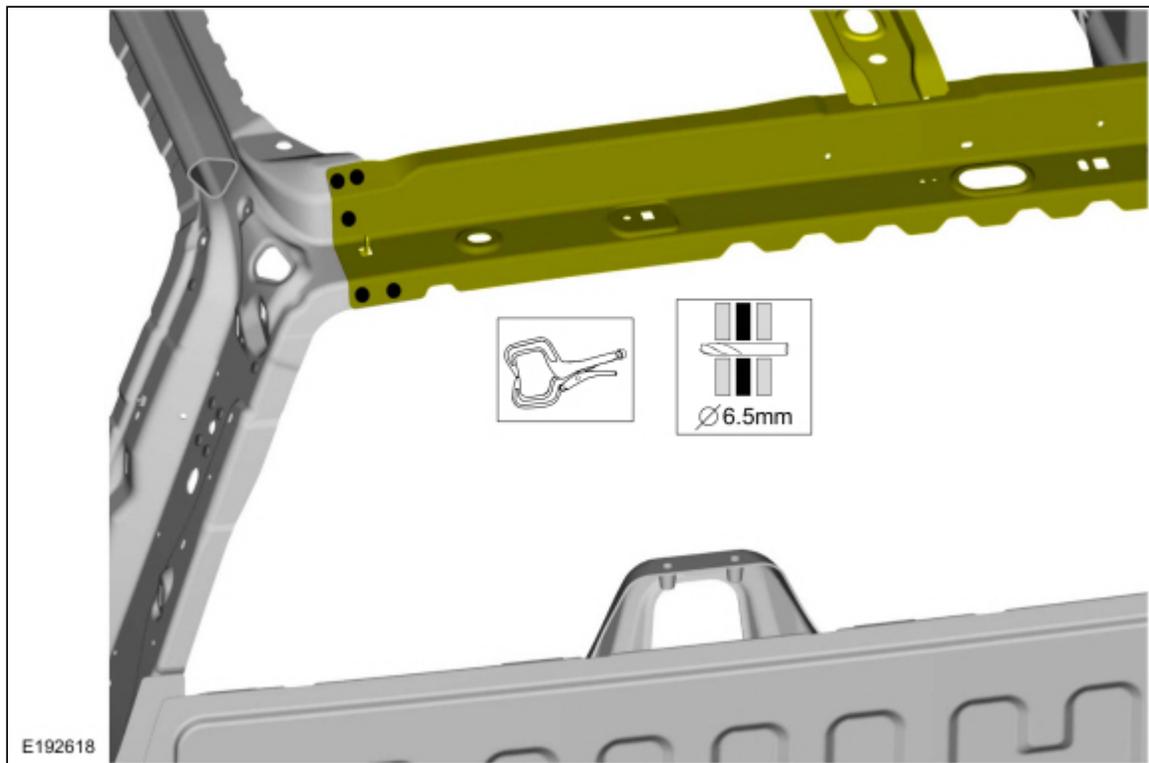
Use the General Equipment: Blind Rivet Gun





45. Position the rear header panel to the roof side rail, clamp and drill five 6.5mm holes as indicated.
Use the General Equipment: Locking Pliers
Use the General Equipment: 6.5 mm Drill Bit





46. **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 position after enlarging hole to 6.5mm

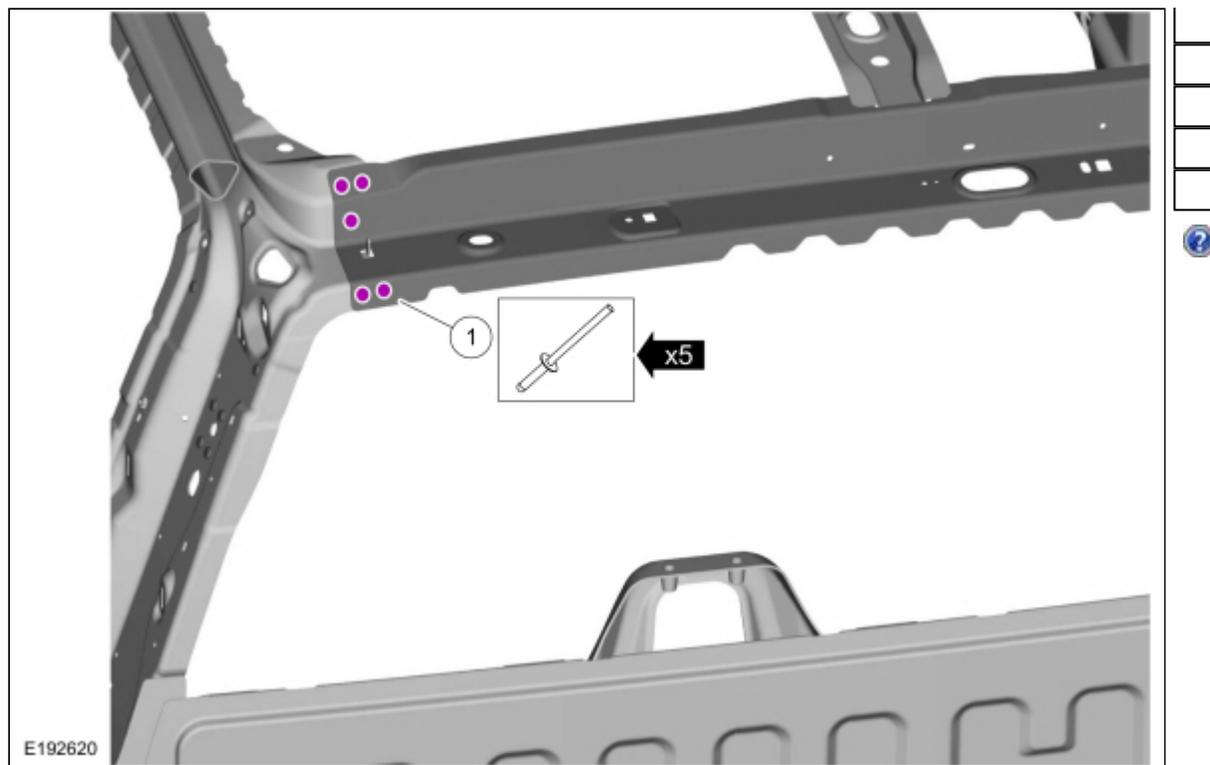
Install the fasteners.

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	-	-

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

Use the General Equipment: Blind Rivet Gun





All Vehicles

47. Install the roof.
 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).
48. Sand and prime the entire repair area using a Ford approved paint system.
49. Seam Sealing: All seams must be sealed to production level.
Material: Seam Sealer / TA-2-B, 3M™ 08308, LORD Fusor® 803DTM
50. Refinish the entire repair area using a Ford approved paint system.
51. 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).
52. Install the front fender.
 Refer to: [Fender](#) (501-02 Front End Body Panels, Removal and Installation).
53. Align 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).

54. Repower the SRS.

Refer to: [Supplemental Restraint System \(SRS\) Repowering](#) (501-20B Supplemental Restraint System, General Procedures).

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