

501-29 Side Panel Sheet Metal Repairs
Removal and Installation

2021 F-150

Procedure revision date: 10/23/2020

A-Pillar Outer Panel Section and Reinforcement

Special Tool(s) / General Equipment

6.5 mm Drill Bit
Scraper for Straight Edges
Spherical Cutter
Polydrive Bit Socket
Self-Piercing Rivet (SPR) Remover/Installer
Belt Sander
Blind Rivet Gun
Hot Air 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	-
Sika Tack ASAP Urethane Adhesive	-
Flexible Foam Repair 3M™ 08463, LORD Fusor® 121	-
Betaprime™ 5404A	-

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.

1.  **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).

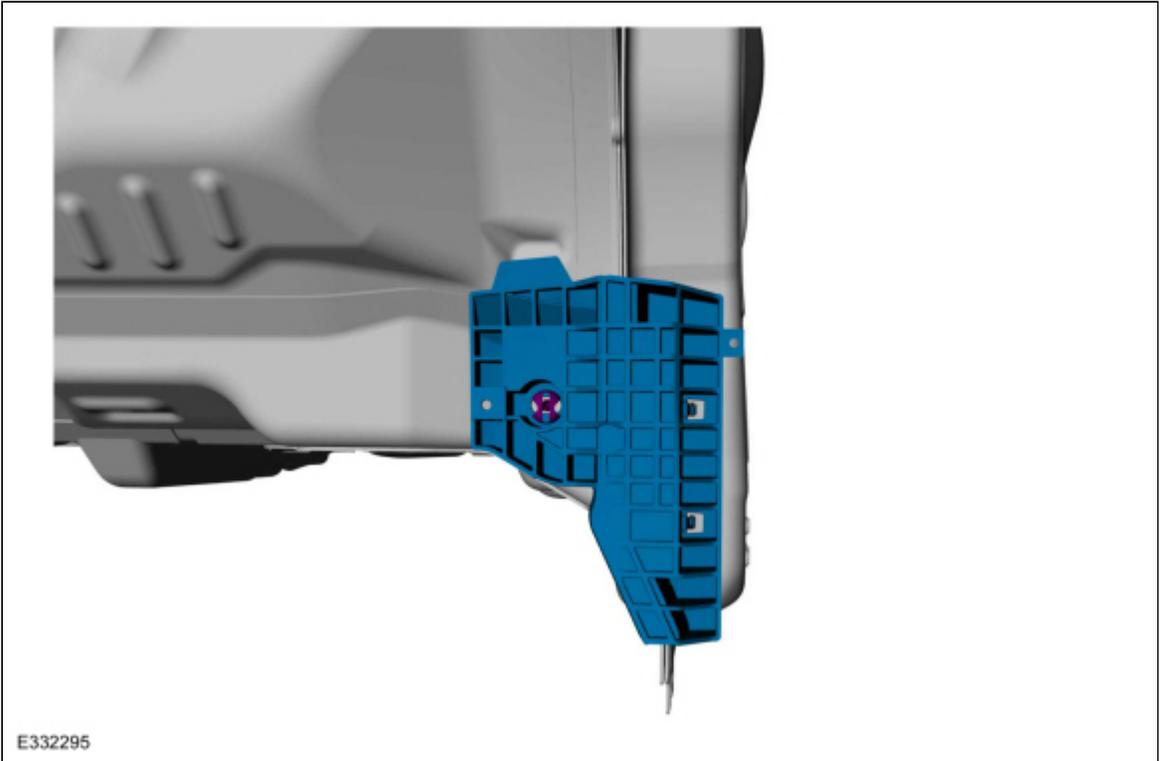
NOTE: Aluminum body panels are highly receptive to heat transfer. With the extensive use of structural adhesives and non-structural sealers used in vehicle construction, the potential of heat transfer could impact adhesives and sealers in non-associated panels during the repair process. Many repairs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

NOTE: The A-pillar panel reinforcement must be replaced at the factory seams. No sectioning procedure is approved or permitted.

NOTE: Left hand (LH) side shown, right hand (RH) side similar.

2. Verify the vehicle is dimensionally correct.
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).
3. Remove A-pillar outer panel.
Refer to: [A-Pillar Outer Panel](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).
4. Remove the fender apron panel.
Refer to: [Fender Apron Panel Reinforcement](#) (501-27 Front End Sheet Metal Repairs, Removal and Installation).
5. Remove the reinforcement pad.

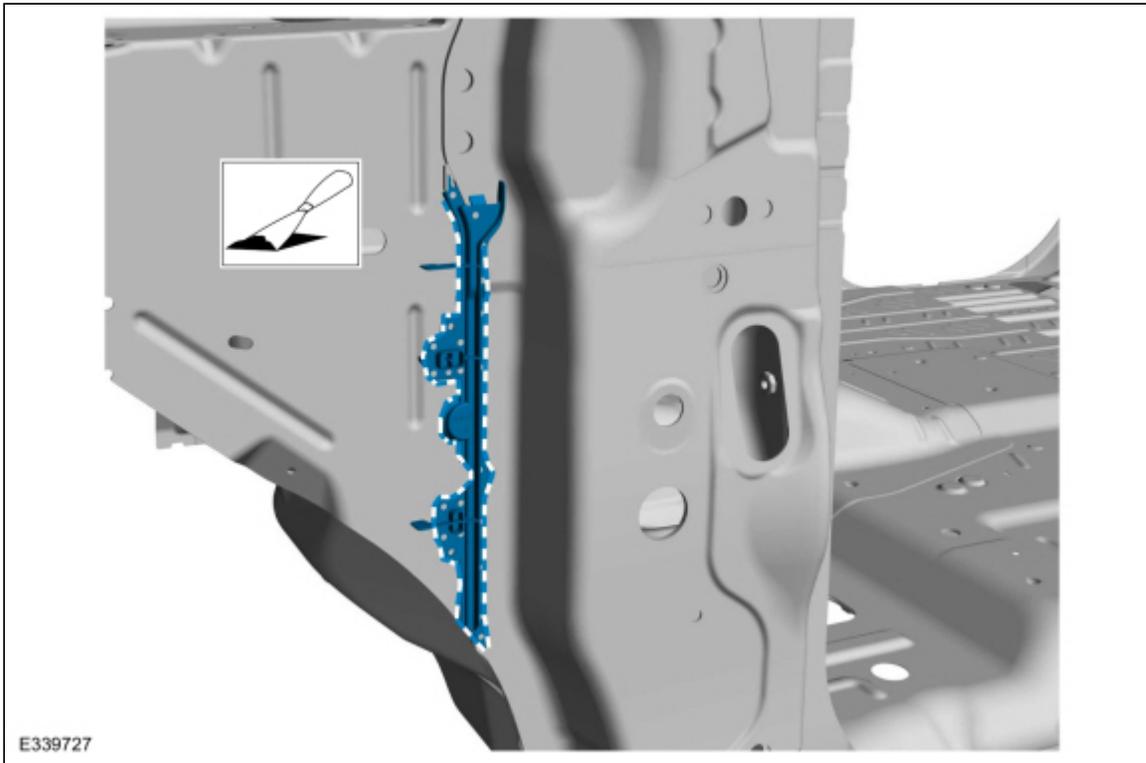




- 6. Remove the NVH carrier.
Use the General Equipment: Scraper for Straight Edges

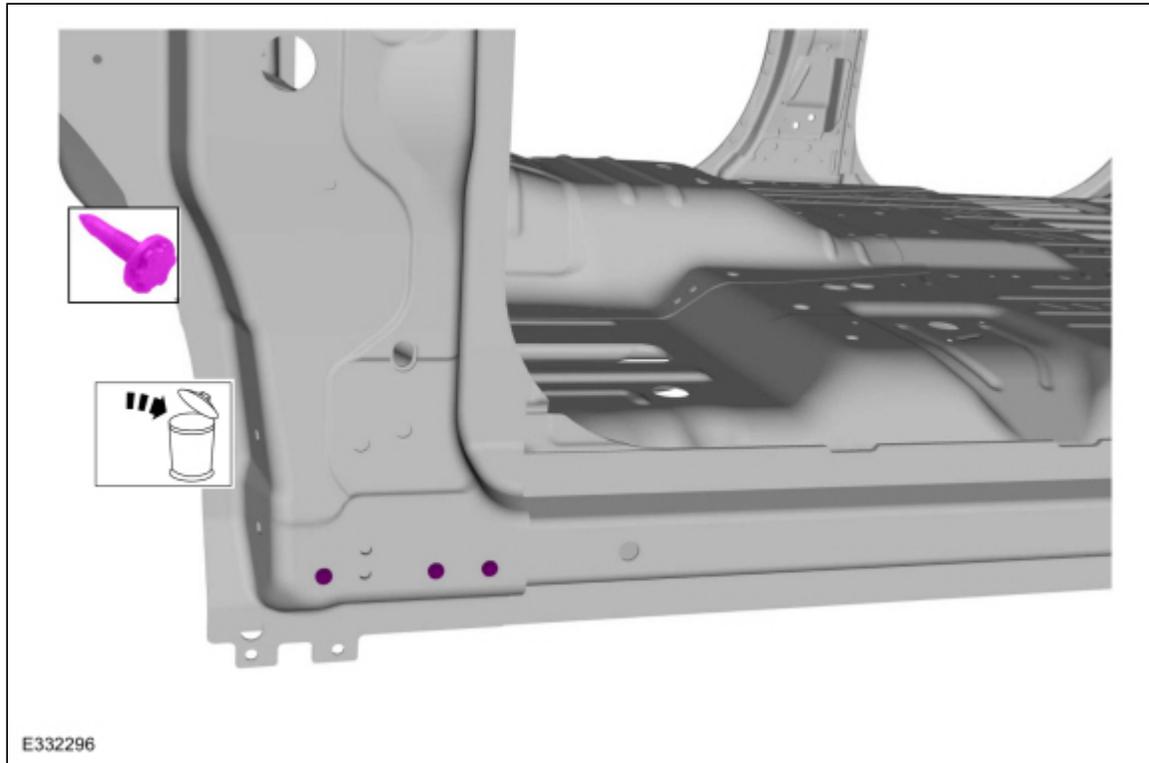
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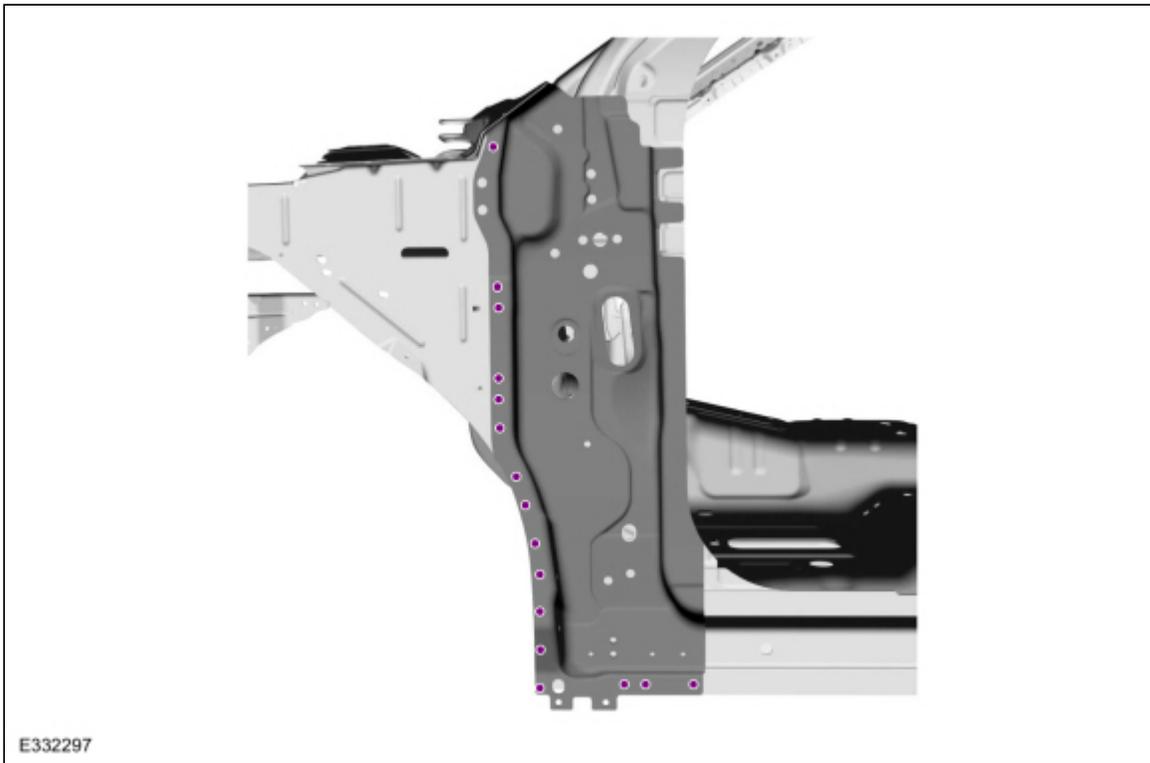
- 7. Remove and discard the FDS fasteners.
Use the General Equipment: Polydrive Bit Socket





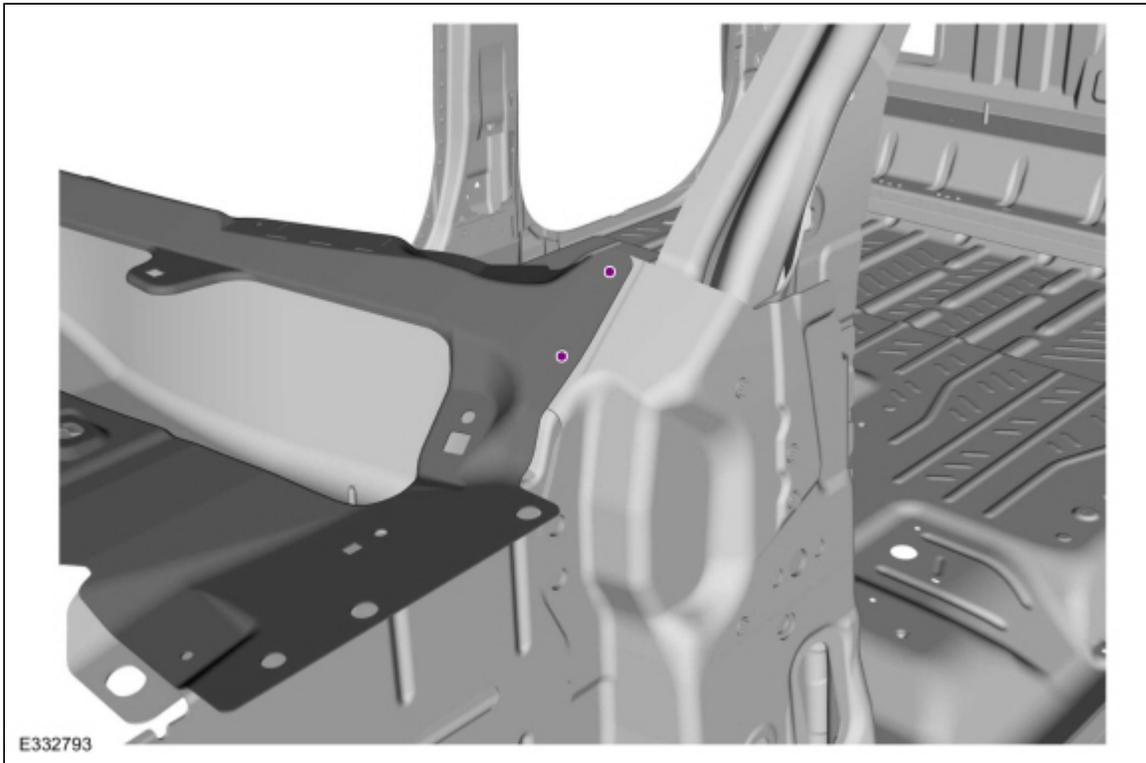
- 8. Remove the SPR fasteners from the side of the reinforcement.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander





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

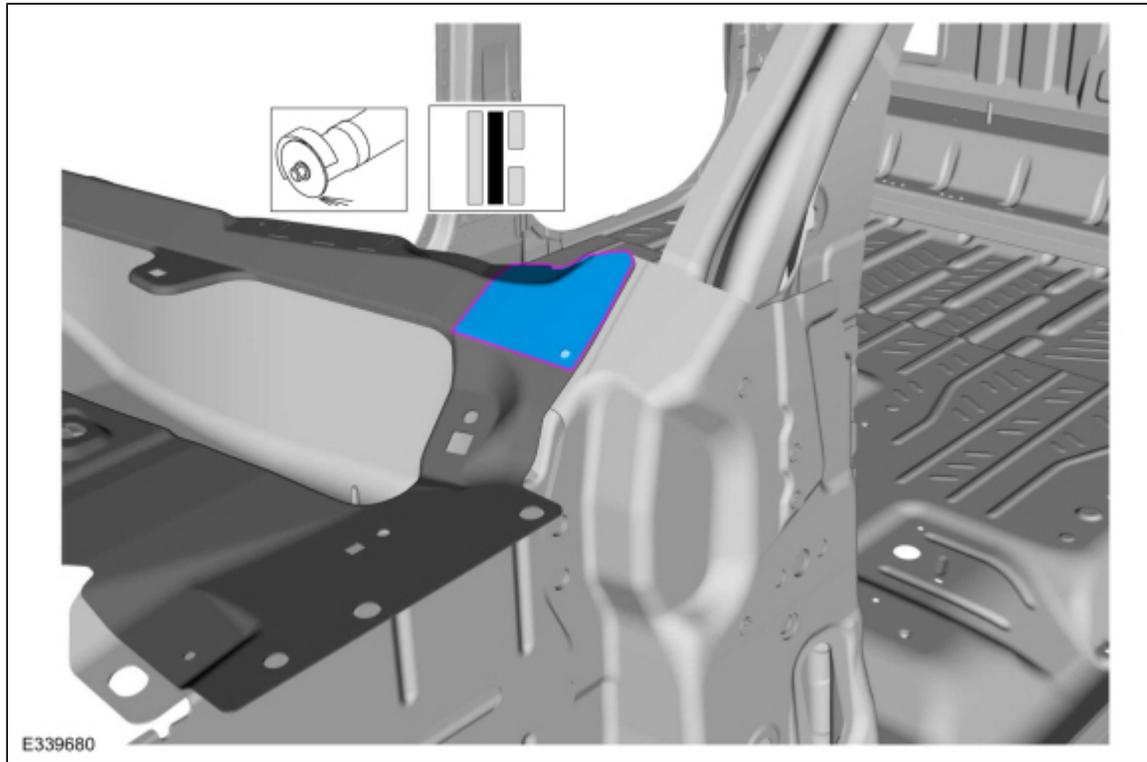




10. **NOTE:** Save cowl panel section for reuse if suitable.

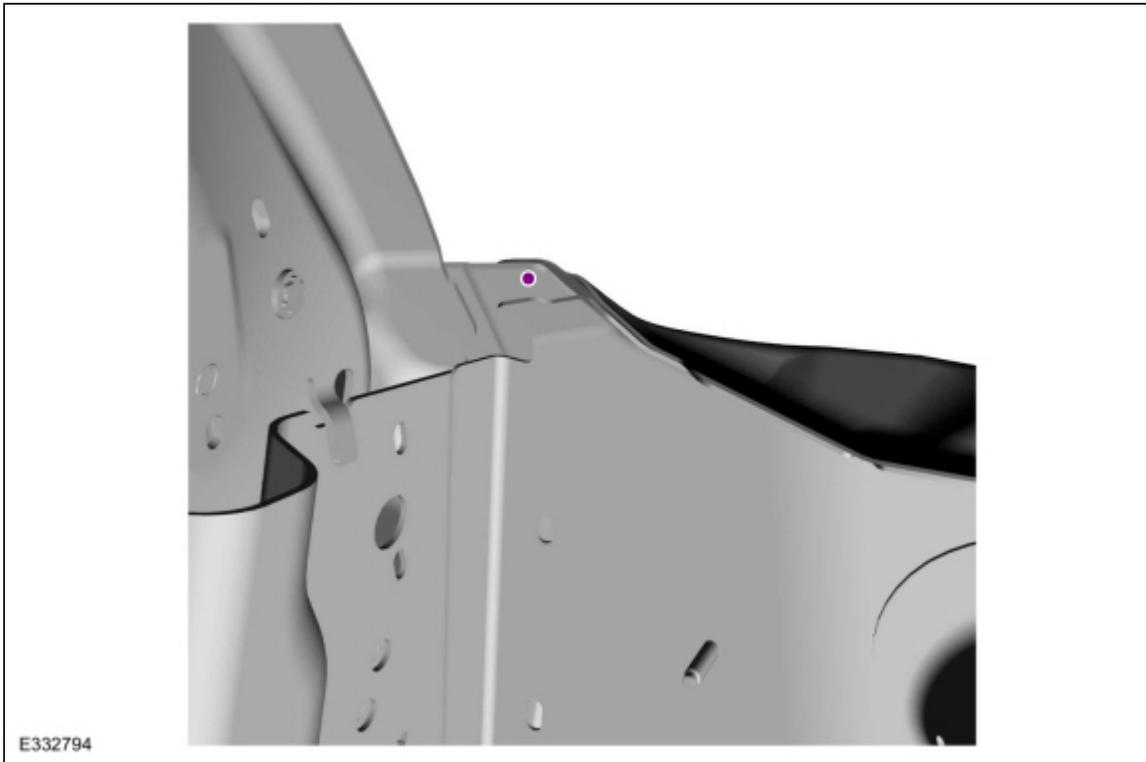
Cut section of upper cowl panel to access A-pillar reinforcement fastener.
Use the General Equipment: Spherical Cutter
Use the General Equipment: Air Body Saw





11. Remove the SPR fastener located on the underside of the A-pillar reinforcement.
Use the General Equipment: Self-Piercing Rivet (SPR) Remover/Installer
Use the General Equipment: Belt Sander

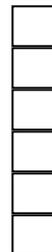


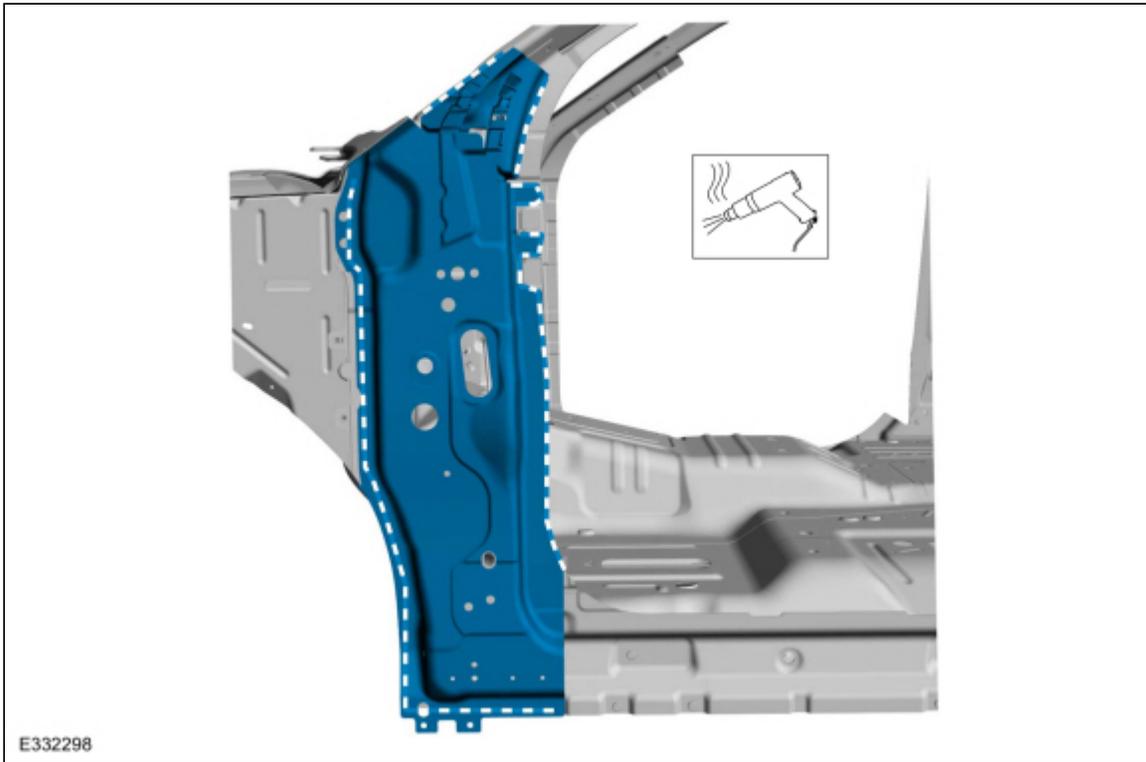


12. **NOTE:** Aluminum body panels are highly receptive to heat transfer. With the extensive use of structural adhesives and non-structural sealers used in vehicle construction, the potential of heat transfer could impact adhesives and sealers in non-associated panels during the repair process. Many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

NOTE: Pay particular attention to NVH baffle and foam locations to aid in assembly.

Break the adhesive bond and remove the A-pillar reinforcement.
Use the General Equipment: Hot Air Gun





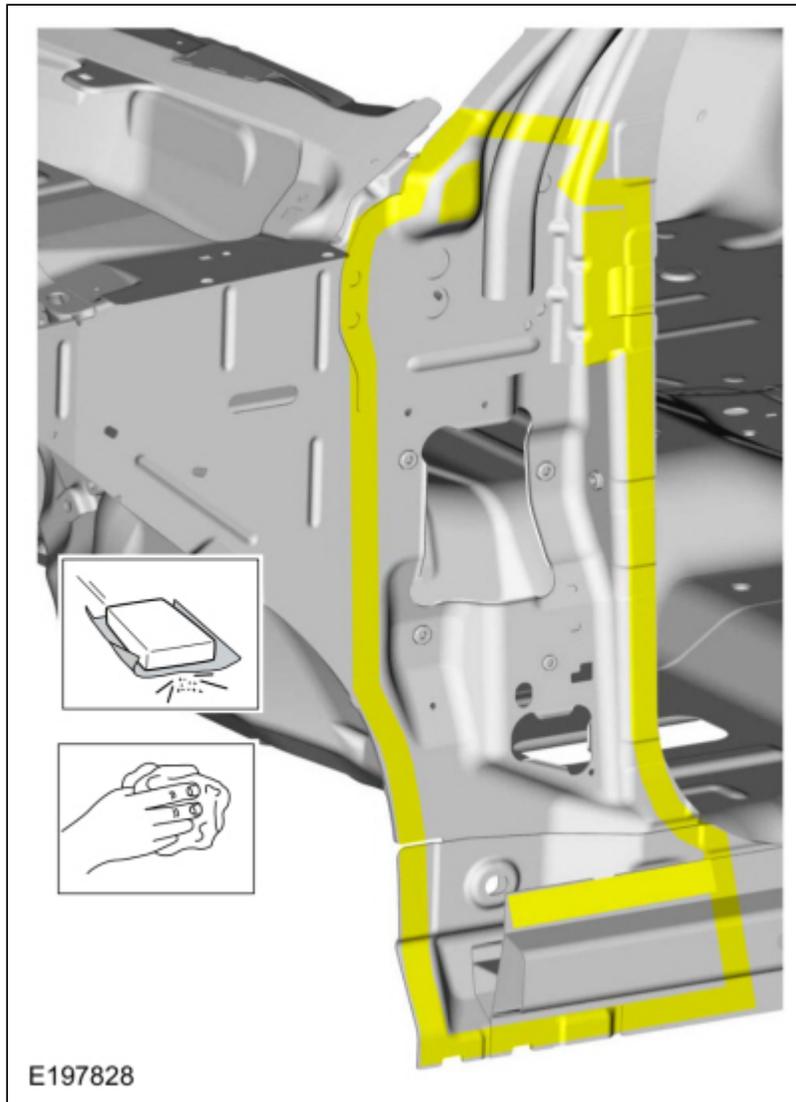
Installation

NOTE: Do not install SPR fasteners directly in old SPR fastener location. SPR fasteners must be installed adjacent to the original location matching original quantity.

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

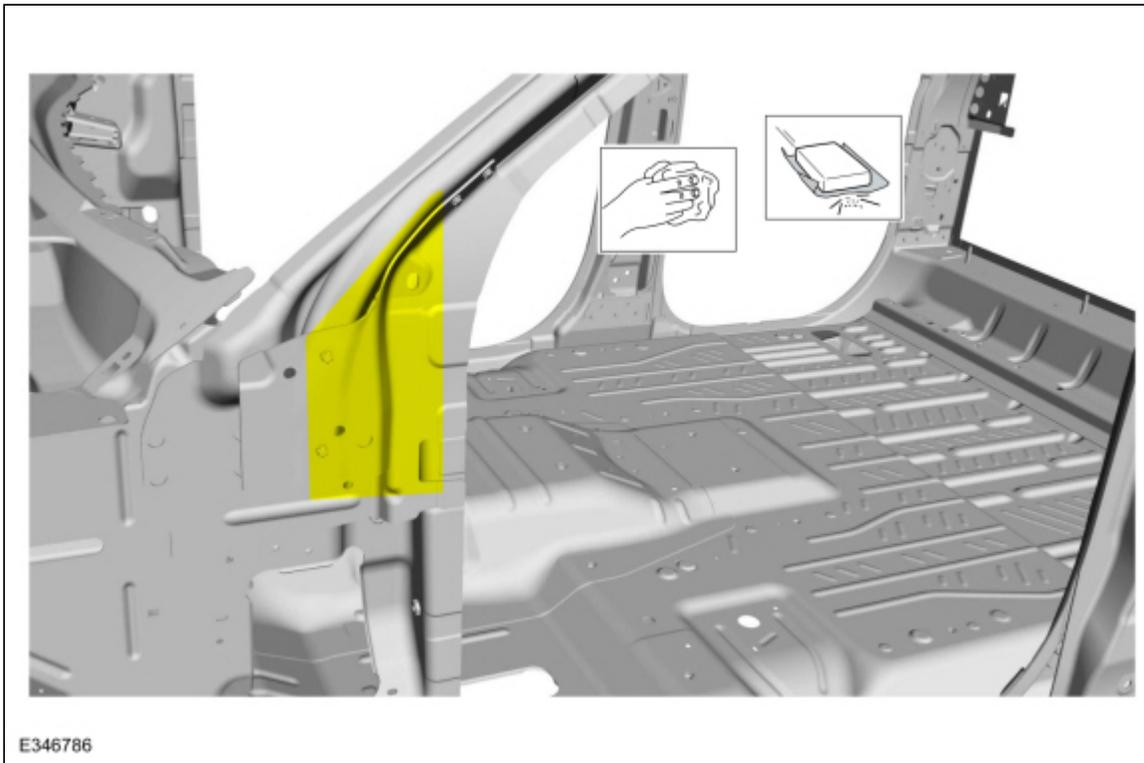
1. Sand with 80 grit sand paper to remove the old adhesive from the body side and clean.





2. Sand with 80 grit sand paper to remove the old adhesive from the A-pillar and clean.

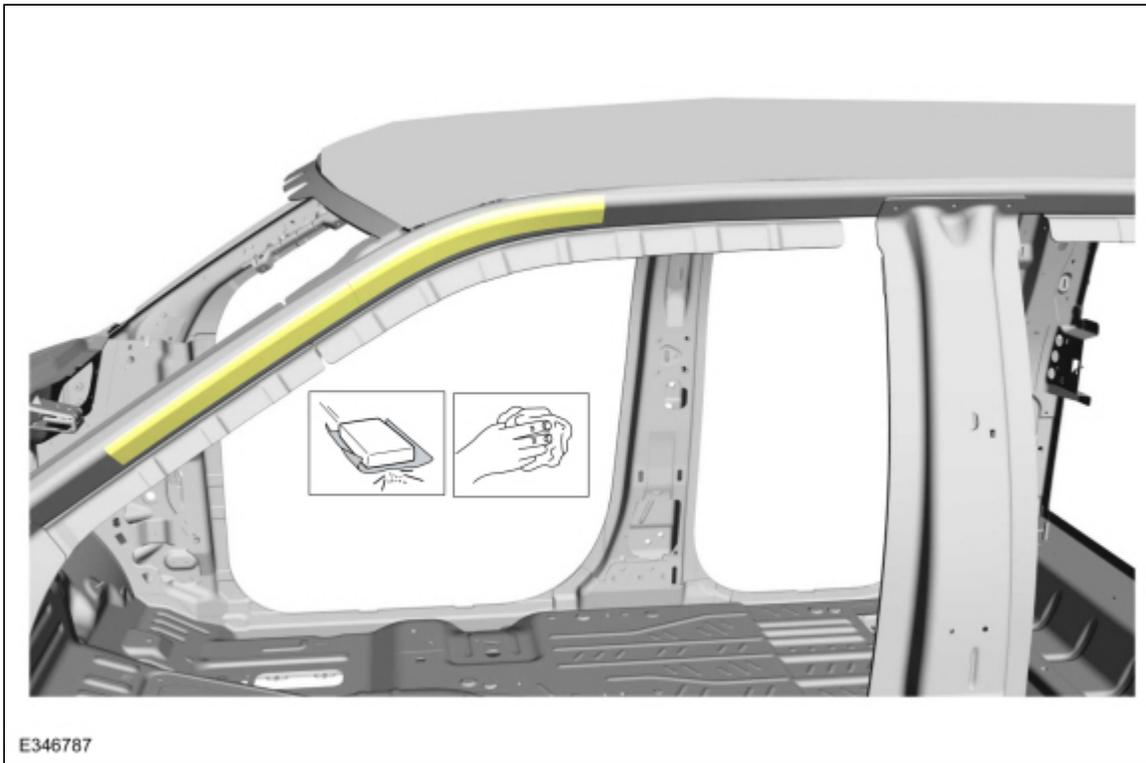




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3. Sand with 80 grit sand paper to remove the old adhesive from the upper A-pillar and clean.

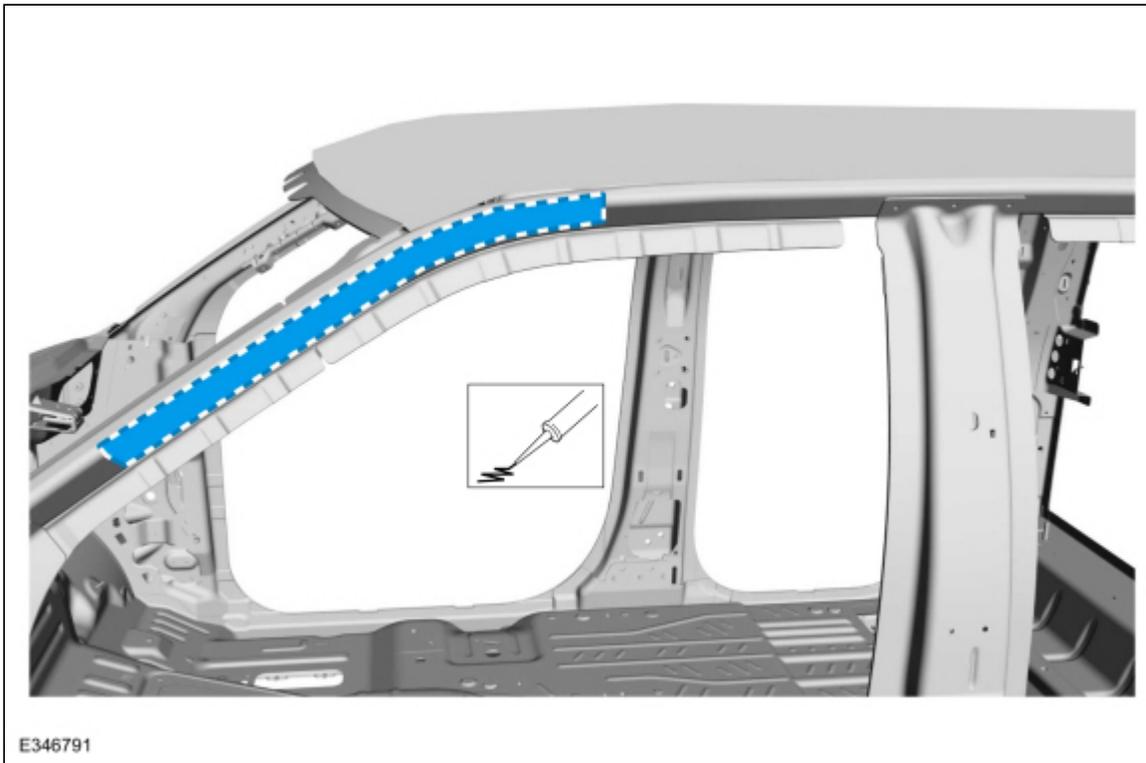




4. Apply adhesive to the A-pillar rail as indicated.

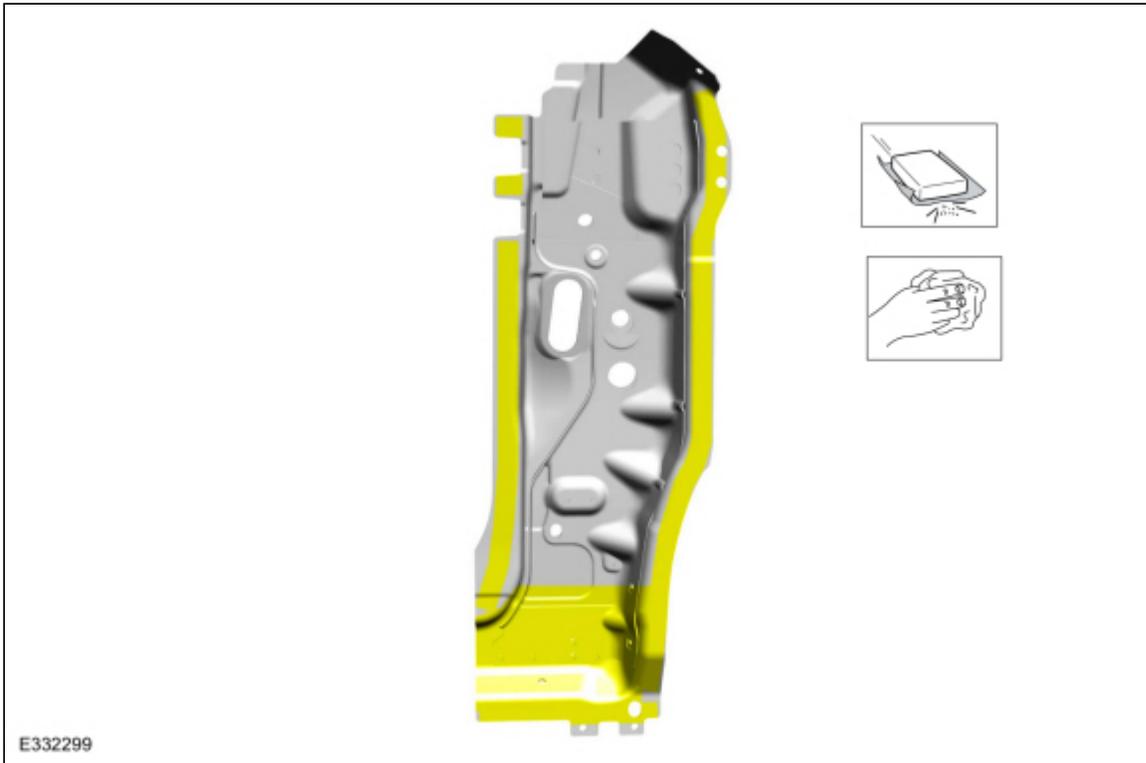
Material: Metal Bonding Adhesive / TA-1, TA-1-B, 3M™ 08115, LORD Fusor® 108B





5. Sand with 80 grit sand paper to remove the e-coat from the reinforcement and clean.

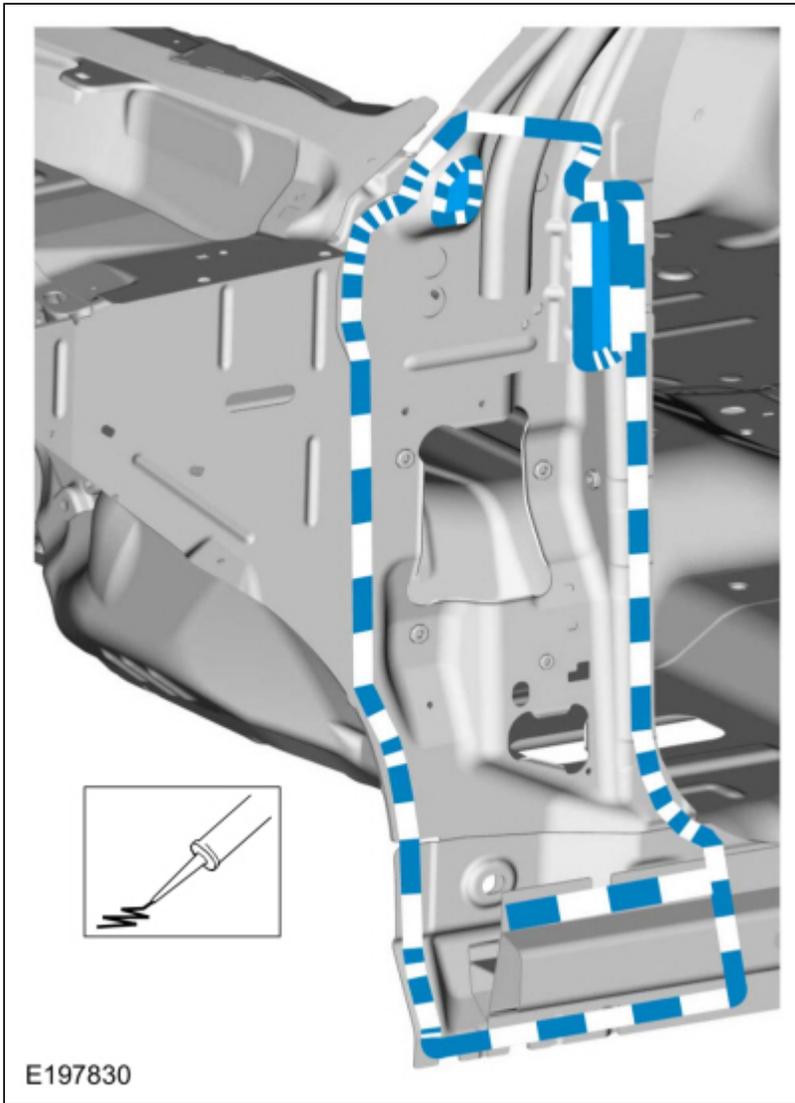




6. Apply adhesive.

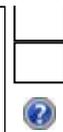
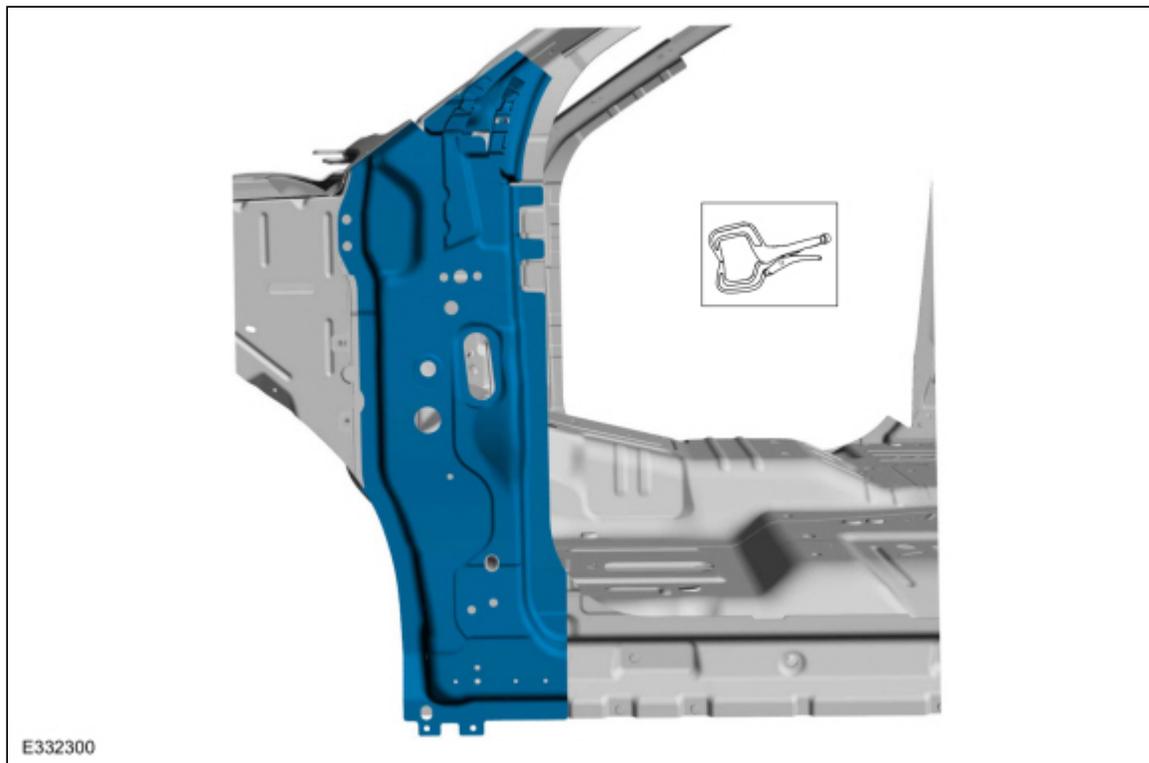
Material: Metal Bonding Adhesive / TA-1, TA-1-B, 3M™ 08115, LORD Fusor® 108B





- 7. Install and clamp the reinforcement.
Use the General Equipment: Locking Pliers



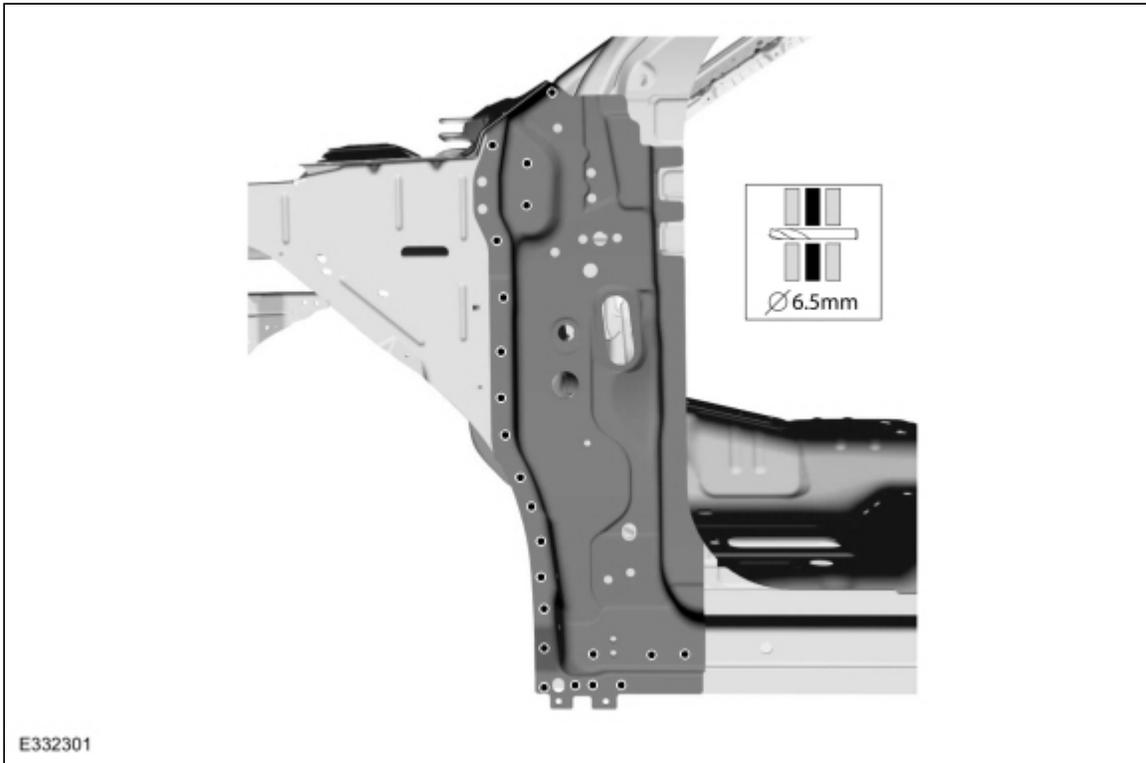


8. **NOTE:** Solid rivets or blind rivet fasteners may be used in place of SPR fasteners after enlarging existing holes to 6.5 mm.

NOTE: Do not install SPR fasteners directly in old SPR fastener location. SPR fasteners must be installed adjacent to the original location matching original quantity.

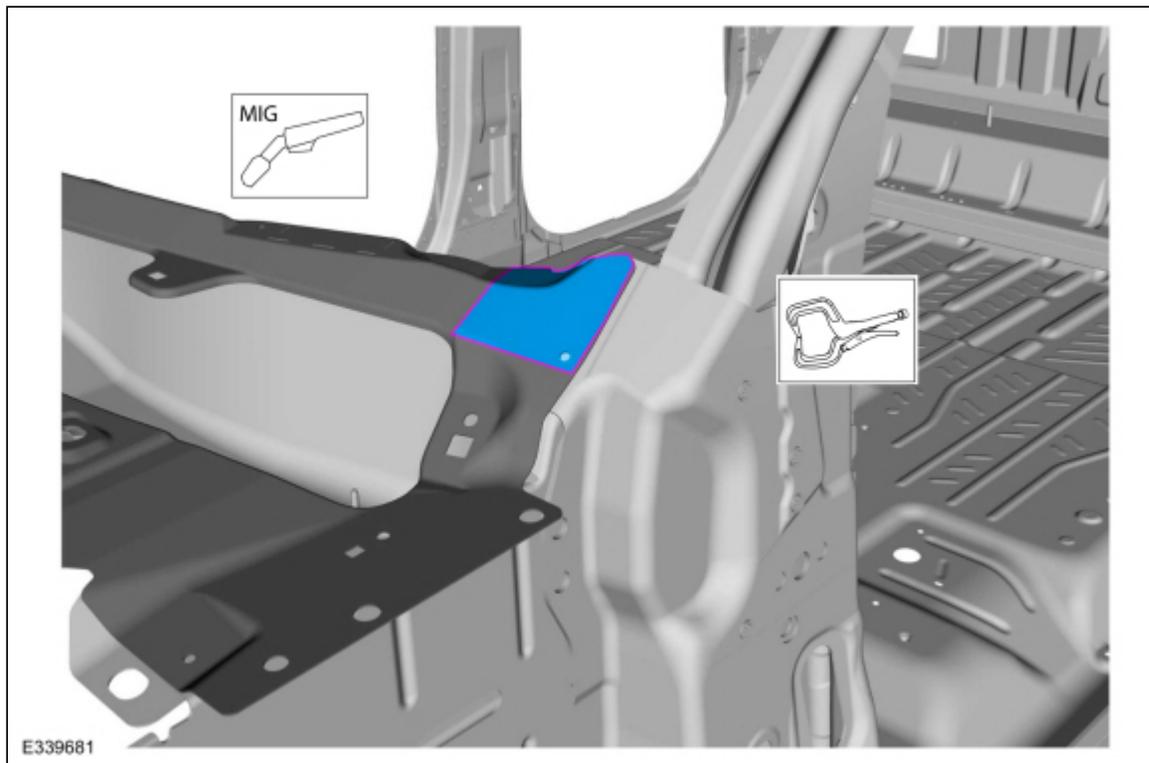
Drill 6.5 mm holes in the reinforcement for blind rivet fasteners.
Use the General Equipment: 6.5 mm Drill Bit





- 9. Install, position and weld the cowl panel section piece in original position.
Use the General Equipment: Locking Pliers
Use the General Equipment: MIG/MAG Welding Equipment



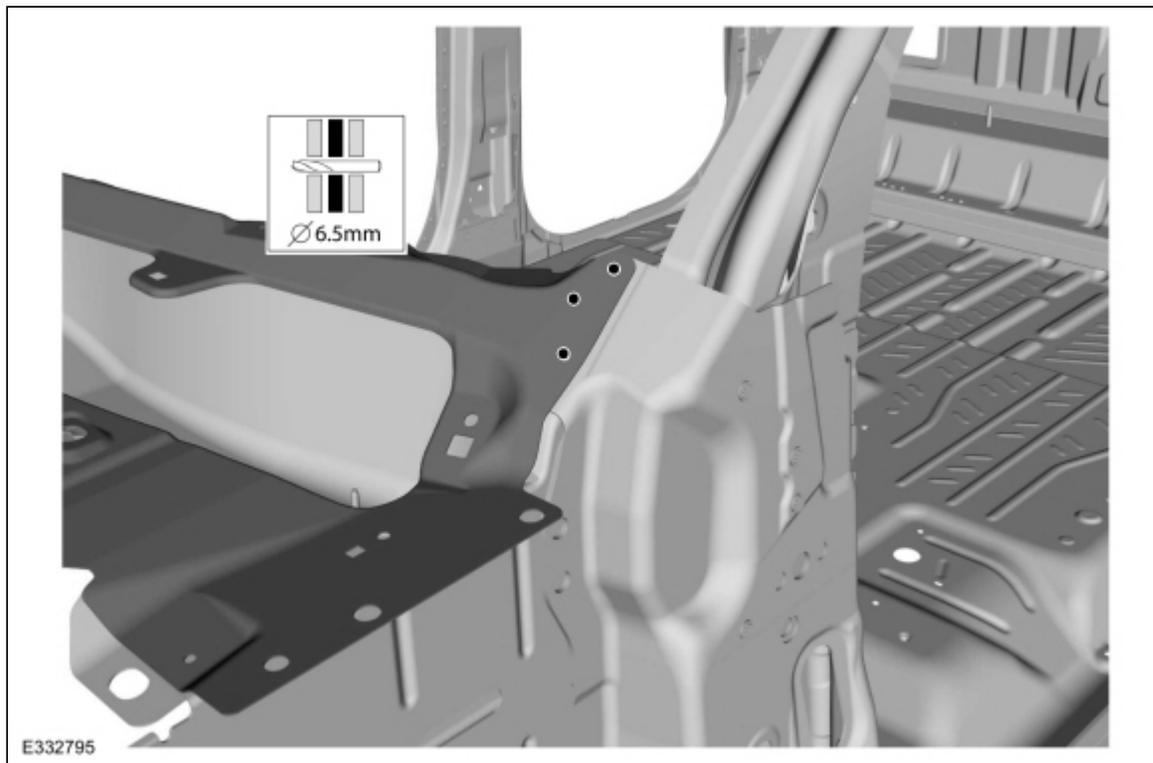


10. **NOTE:** Solid rivets or blind rivet fasteners may be used in place of SPR fasteners after enlarging existing holes to 6.5 mm.

NOTE: Do not install SPR fasteners directly in old SPR fastener location. SPR fasteners must be installed adjacent to the original location matching original quantity.

Drill 6.5 mm holes in the reinforcement for blind rivet fasteners.
Use the General Equipment: 6.5 mm Drill Bit





11. **NOTE:** Do not install SPR fasteners directly in old SPR fastener location. SPR fasteners must be installed adjacent to the original location matching original quantity.

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

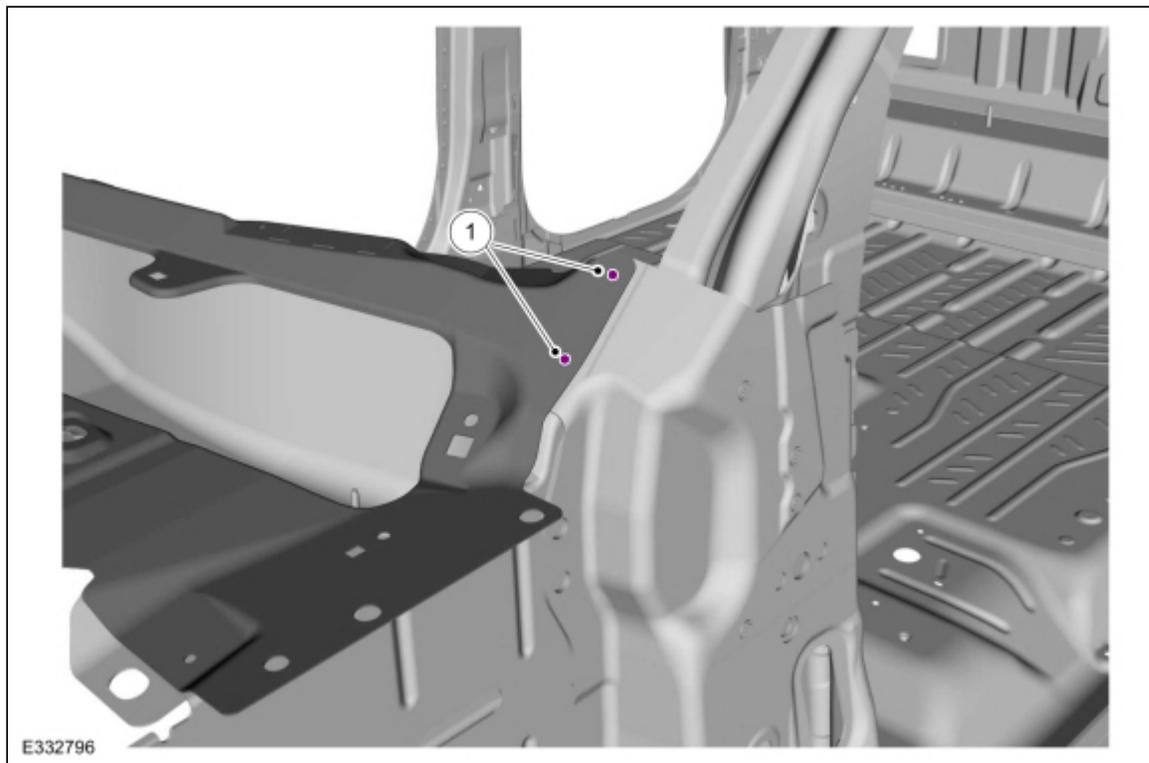
Install fasteners.

Item	SPR Number	SPR Code	Henrob® Car-O- Liner®, CMO®, Chief®, Spanesi® Wielande and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	W710246-S900	QC	DP10-200/H	SA-0400/SA-0402	-	-	-

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

Use the General Equipment: Blind Rivet Gun





12. **NOTE:** Do not install SPR fasteners directly in old SPR fastener location. SPR fasteners must be installed adjacent to the original location matching original quantity.

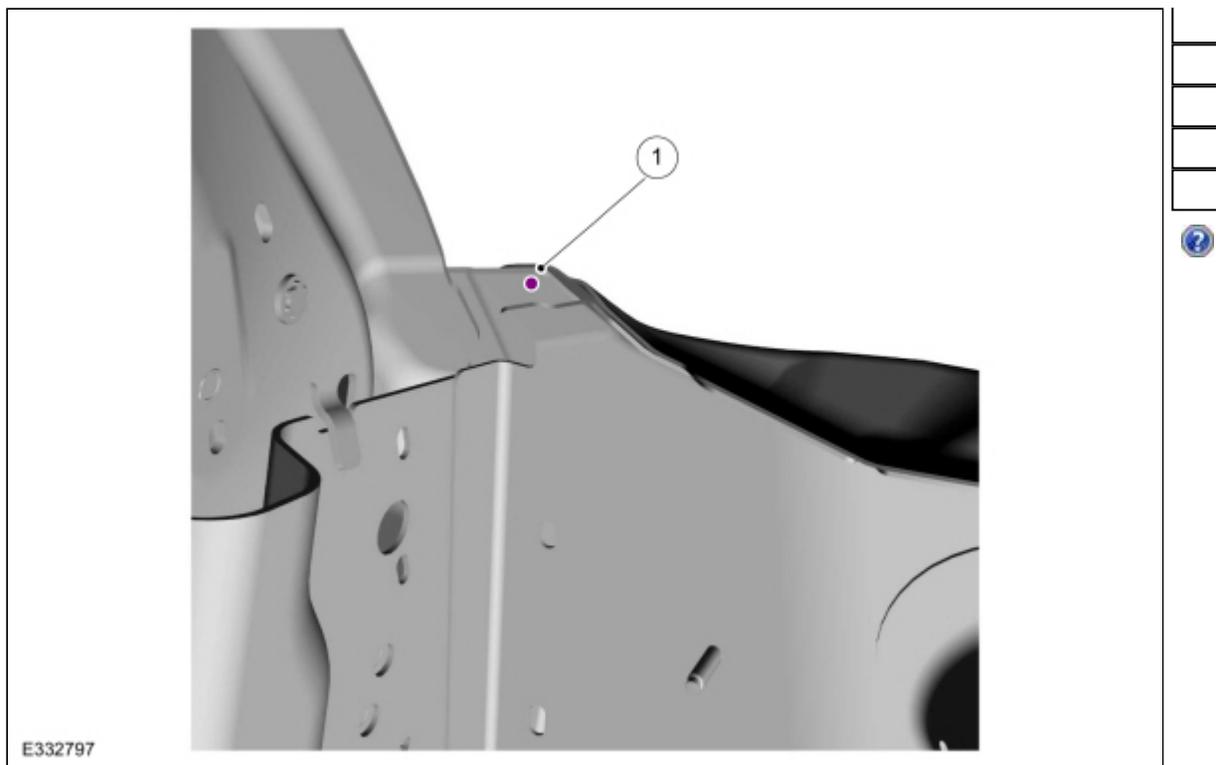
NOTE: Solid rivets or blind rivet fasteners may be used in place of SPR fasteners after enlarging existing holes to 6.5 mm.

Install fasteners.

Item	SPR Number	SPR Code	Henrob® Car-O- Liner®, CMO®, Chief®, Spanesi® Wielande and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	W717337-S900	QC	DP10-200/H	SA-0400/SA-0402	-	-	-

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





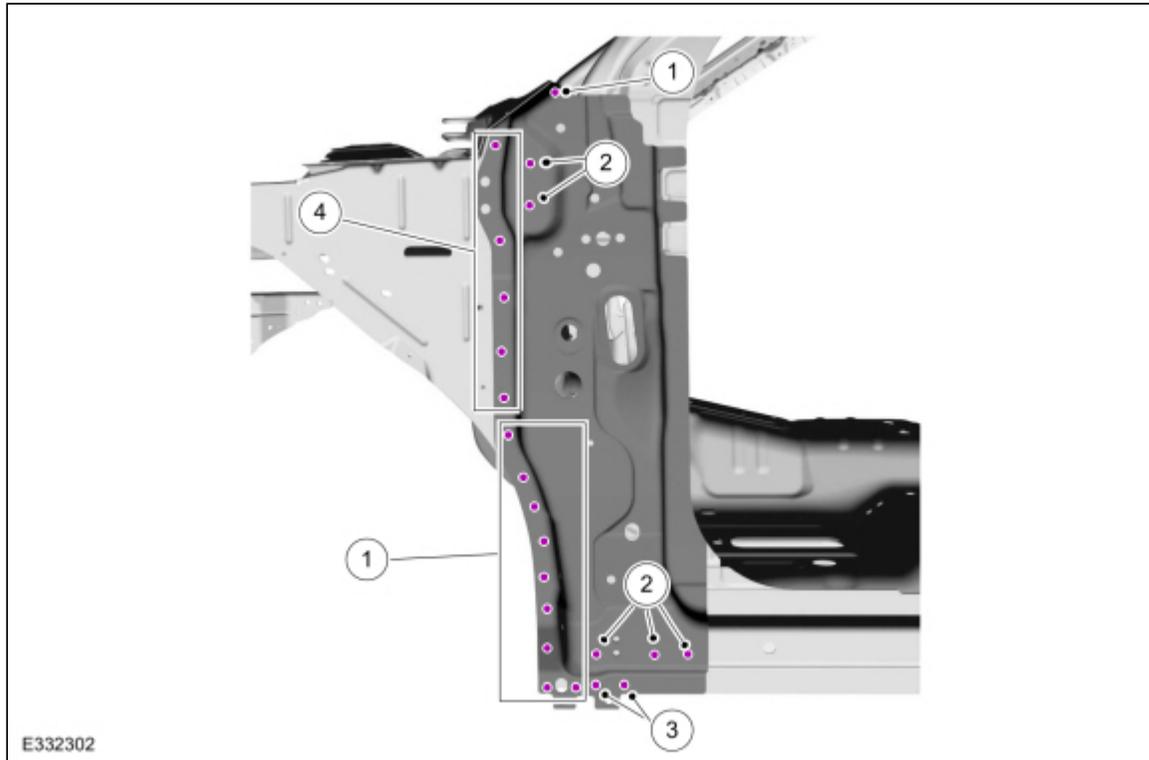
13. **NOTE:** Do not install SPR fasteners directly in old SPR fastener location. SPR fasteners must be installed adjacent to the original location matching original quantity.

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

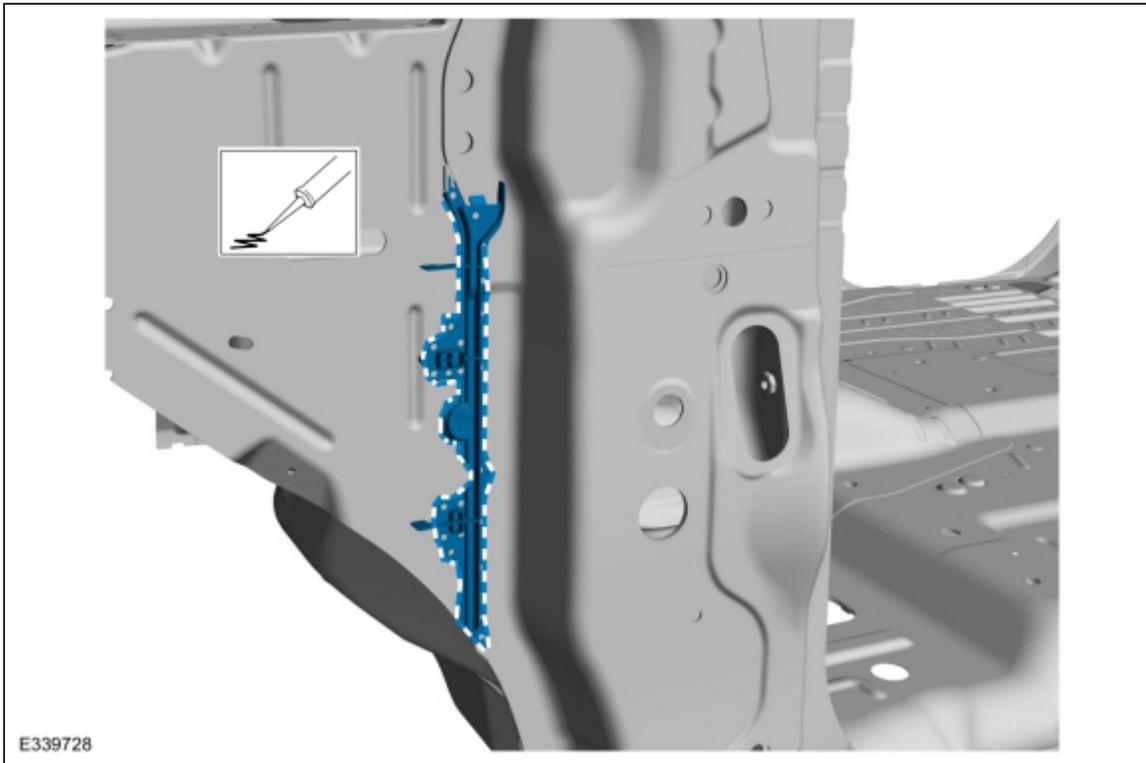
Install fasteners.

Item	SPR Number	SPR Code	Henrob® Car-O- Liner®, CMO®, Chief®, Spanesi® Wielande and Schill® Mandrel	Pro-Spot® Mandrel	Blind Rivet	Solid Rivet	Rivnut®
1	W717182-S900	QC	DP10-200/H	SA-0400/SA-0402	W708777-S900C	-	-
2	-	-	-	-	W708777-S900C	-	-
3	W717185-S900	EL	DP11-200/H	SA-0400/SA-0402	W708777-S900C	-	-
4	-	-	-	-	W70251-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



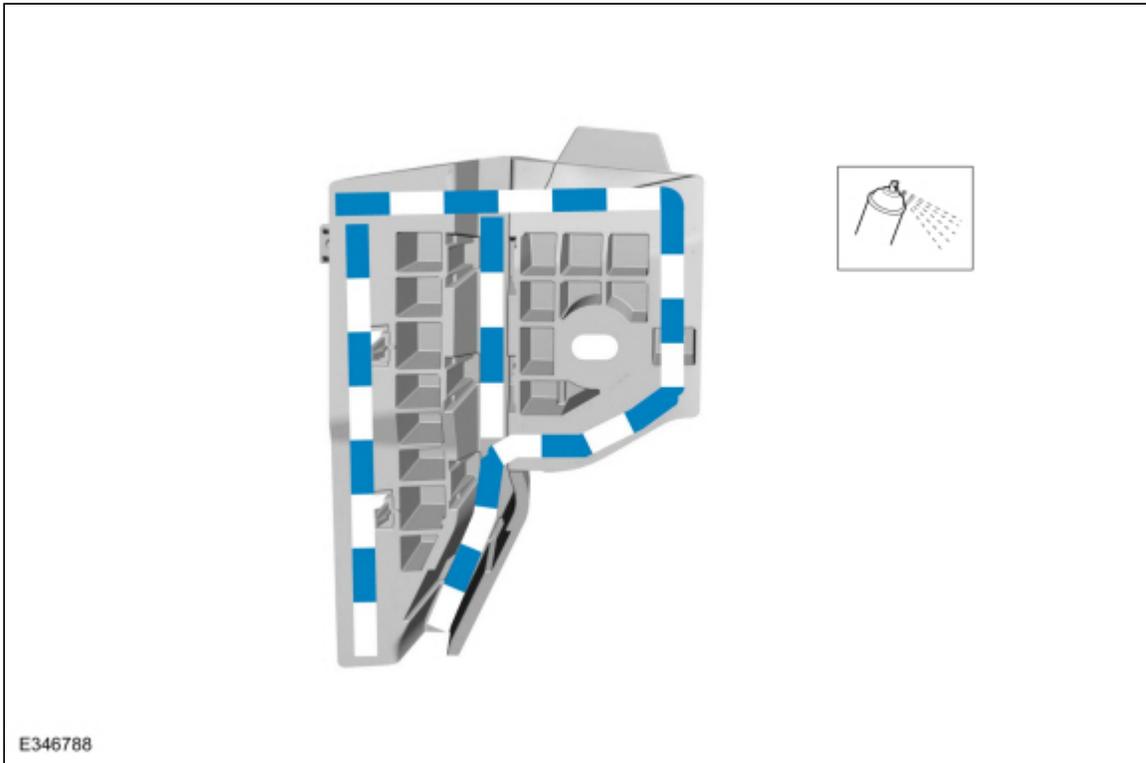
- 14. Install the NVH carrier.
Material: Flexible Foam Repair / 3M™ 08463, LORD Fusor® 121



- 15. Prime the reinforcement following manufacturer's label directions.
Material: Betaprime™ 5404A





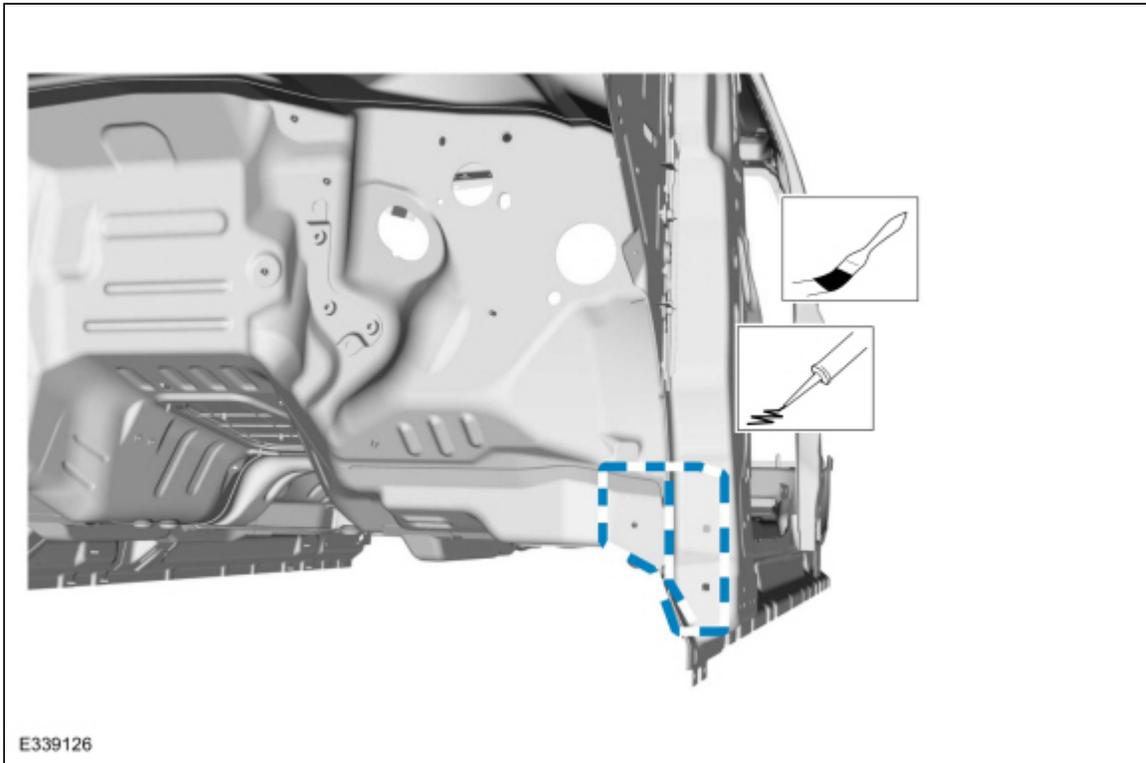


16. Apply primer to the body as indicated following manufacturer's label directions using replacement reinforcement as a template, both sides of flange must also be primed.

Material: Sika Tack ASAP Urethane Adhesive

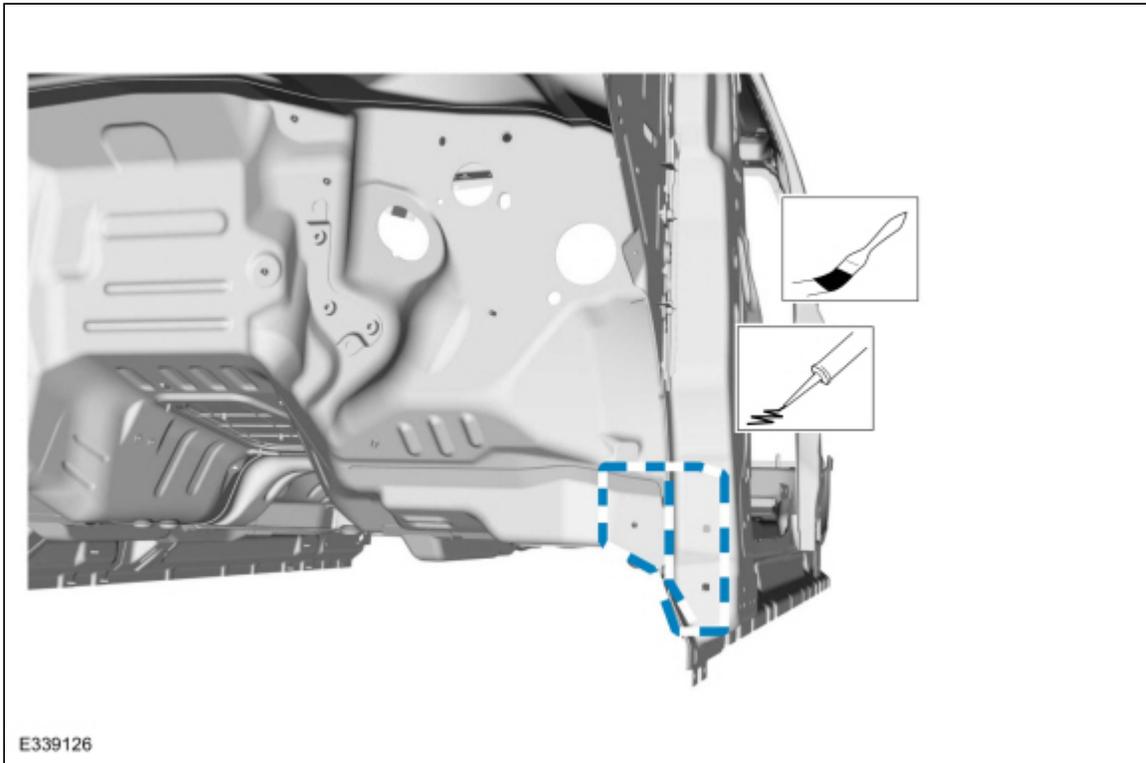
Material: Betaprime™ 5404A





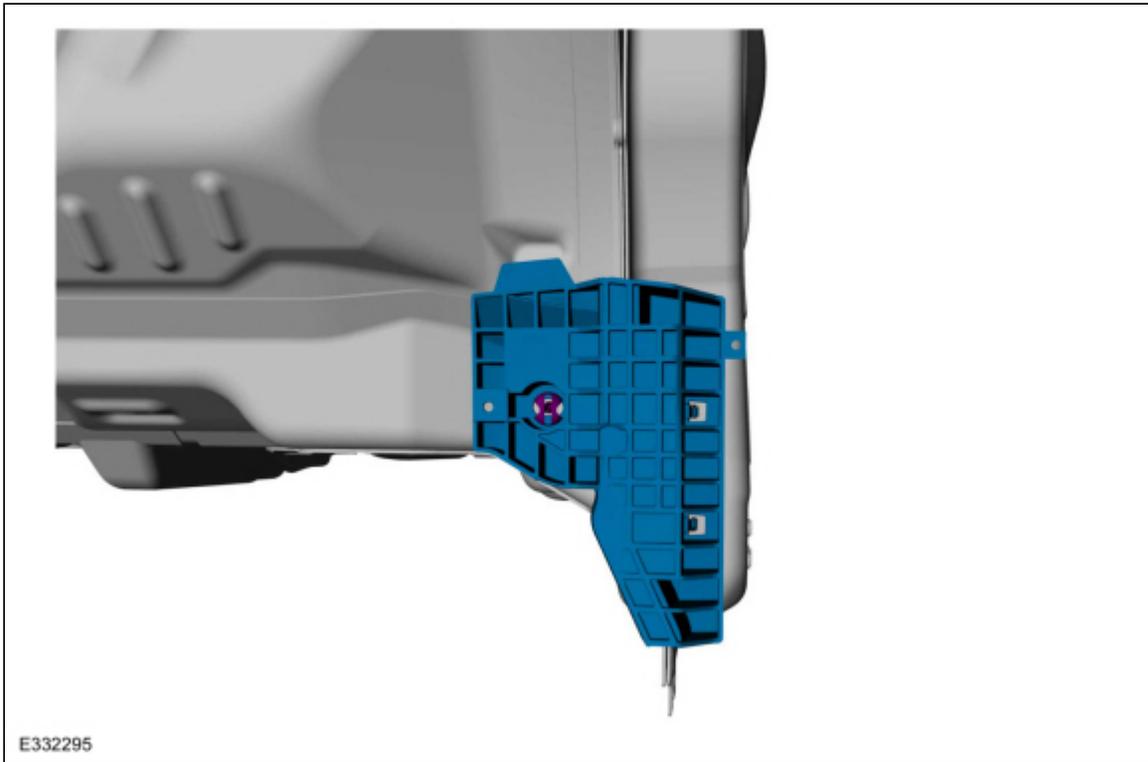
- 17. Apply adhesive once primer has dried, following manufacturer's label directions.
Material: Sika Tack ASAP Urethane Adhesive





18. Install the reinforcement.





19. Install the fender apron panel.
Refer to: [Fender Apron Panel Reinforcement](#) (501-27 Front End Sheet Metal Repairs, Removal and Installation).
20. Install the A-pillar outer panel.
Refer to: [A-Pillar Outer Panel](#) (501-29 Side Panel Sheet Metal Repairs, Removal and Installation).

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