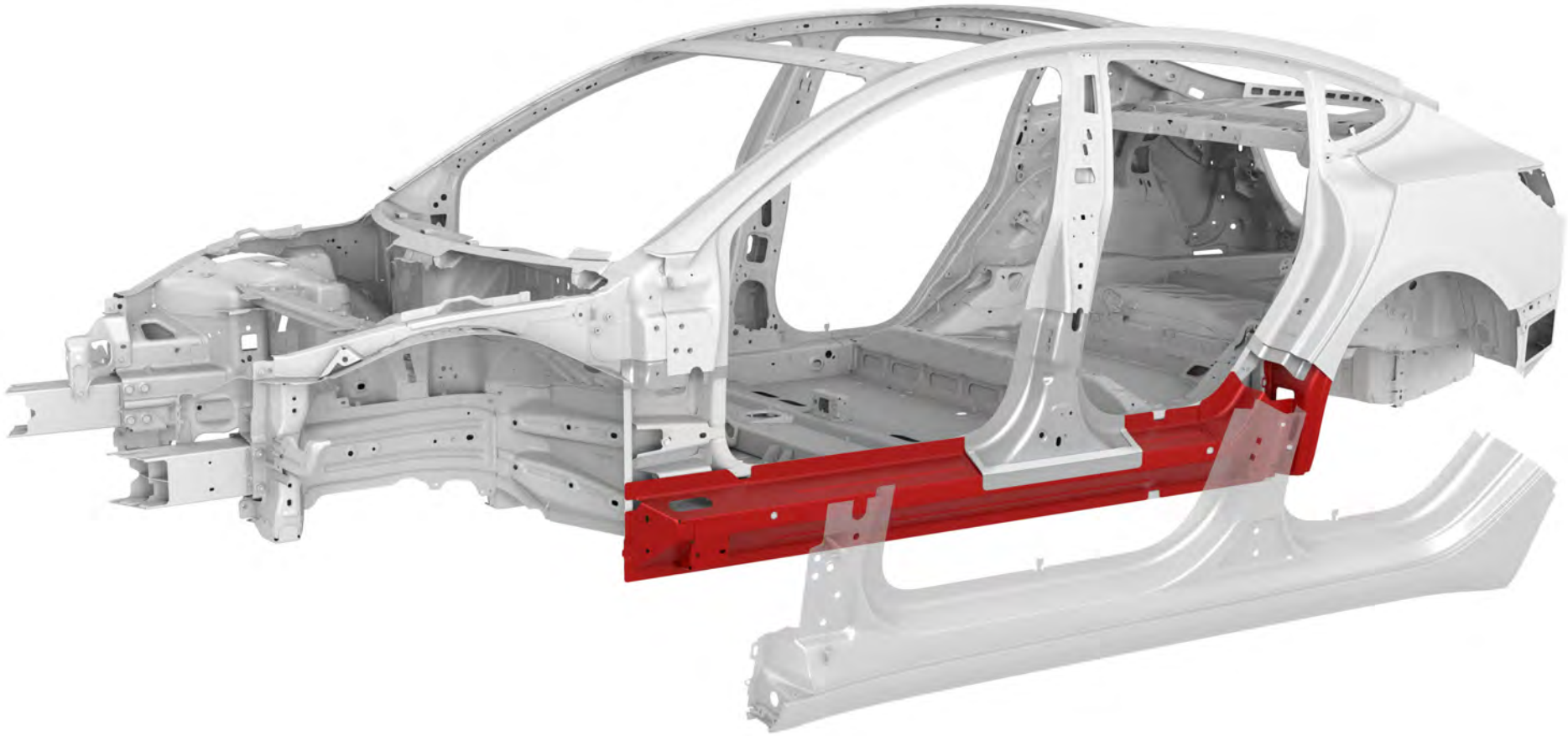
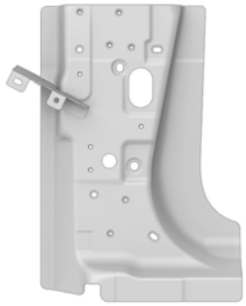
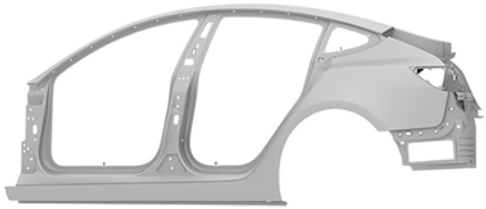
Sill Outer (Complete)



Parts List

Quantity	Part Number	Description	Image / Notes
1	1082281-S0-B (LH) 1082282-S0-B (RH)	Sill Outer Assembly	
1	1115819-S0-D (LH), 1115820-S0-D (RH)	Sill Insert	
2	1082361-S0-C	Sill Insert Mounting Bracket	
1	1095027-S0-B (LH) 1095028-S0-B (RH)	C-Pillar Reinforcement	 The C-Pillar Reinforcement is listed in the Parts Manual as the "C-Pillar Extension".

Parts List

Quantity	Part Number	Description	Image / Notes
2	1080021-S0-A (LH) 1080022-S0-A (RH)	Hinge Pillar Assembly	 One Hinge Pillar Assembly is needed for replacement and one is needed to make a backing plate.
1	1073673-00-A (LH) 1073674-00-A (RH)	Body Side Outer (Complete)	
39 rivets needed; order 40 rivets	1454538-00-A	● High Strength Structural Rivet, 6.5 mm	All rivets come in packages of 10; order all rivets in multiples of 10.
9 rivets needed; order 10 rivets	1069327-00-A	○ Structural Countersunk Rivet, 6.5 mm	All rivets come in packages of 10; order all rivets in multiples of 10.

Parts List

Quantity	Part Number	Description	Image / Notes
17 or 95 rivets needed; order 20 or 100 rivets	1028408-00-A	Structural Rivet, 6.5 mm Short	All rivets come in packages of 10; order all rivets in multiples of 10. 17 rivets are needed if the lower flange of the Sill Outer can be attached to the Sill Inner with resistance spot welds. 95 rivets are needed if the lower flange of the Sill Outer cannot be attached to the Sill Inner with resistance spot welds.
14 rivets needed; order 20 rivets	1028719-00-A	Structural Rivet, 4.8 mm	All rivets come in packages of 10; order all rivets in multiples of 10.
6 rivets needed; order 10 rivets	1069308-00-A	Countersunk Rivet, 4.8 mm Short	All rivets come in packages of 10; order all rivets in multiples of 10.
6 rivets needed; order 10 rivets	1069331-00-A	Flow Form Rivet S38	All rivets come in packages of 10; order all rivets in multiples of 10.
3	—	Structural Adhesive	**WARNING**: Use only Tesla-approved structural adhesive; refer to BR-15-92-008, "Approved Structural Adhesive and Urethane Sealants" for a list of current approved structural adhesives. Refer to BR-17-92-002, "Obtaining Adhesives, Coolant, and Other Chemicals" for information on how to obtain approved structural adhesive.
1	—	Urethane Sealant	Refer to BR-17-92-002, "Obtaining Adhesives, Coolant, and Other Chemicals" for information on how to obtain approved urethane sealant.
1	—	Corrosion-Resistant Epoxy Primer	Source locally; not available from Tesla.
1	—	Corrosion-Inhibiting Compound	Source locally; not available from Tesla.
1	—	Seam Sealer	Source locally; not available from Tesla.

Parts List

These part numbers were current at the time of publication. Use the revisions listed or later, unless otherwise specified in the Parts Manual.

Repair Information

Repair Information	Warnings and Cautions	Special Tools
This procedure is for the left-hand component; the procedure is identical for the right-hand component. Installation fasteners that replace factory spot welds in steel-to-steel panel interfaces are specified in this procedure where an approved squeeze-type resistance spot welder with the base welding accessories might not be able to reach. If your approved welder can access a factory spot weld location where this procedure specifies a fastener, an installation spot weld is recommended in place of the specified fastener.	**WARNING**: Wear the appropriate personal protective equipment (PPE) when performing this procedure. **CAUTION**: This procedure involves both steel and aluminum components. Use the appropriate tools at each step to avoid cross-contamination.	The special tools listed below are required to perform this procedure: • Flow form rivet installation tool Use only approved fastener installation tools for structural repairs. Refer to BR-16-92-001, "Approved Fasteners and Fastener Installation Tools for Structural Repairs" for a list of current approved fastener installation tools. • Microstop Countersink kit • Resistance Spot Welder Use only an approved resistance spot welder. Refer to BR-16-92-007, "Approved Welders" for a list of current approved resistance spot welders. • GMA welder Use only an approved GMA welder. Refer to BR-16-92-007, "Approved Welders" for a list of current approved GMA welders. • Frame bench The vehicle must be properly mounted on an approved frame bench to replace this component. Refer to BR-16-92-006, "Approved Frame Bench Systems" for a list of current approved bench repair systems.

Prerequisites

1 Disconnect 12V and high voltage power (refer to the appropriate section in BR-17-17-004, "Disconnecting 12V and High Voltage Power on Model 3").

WARNING: Before disconnecting the 12V power supply, make sure that all windows are at least slightly open. Attempting to open a door with a fully-closed window when the 12V power supply is disconnected could result in door glass shatter.

NOTE: Before disconnecting the 12V power supply, make sure that the driver's door window is fully open. Failure to lower the driver's door window before disconnecting the 12V power supply could result in vehicle lockout.

Prerequisites

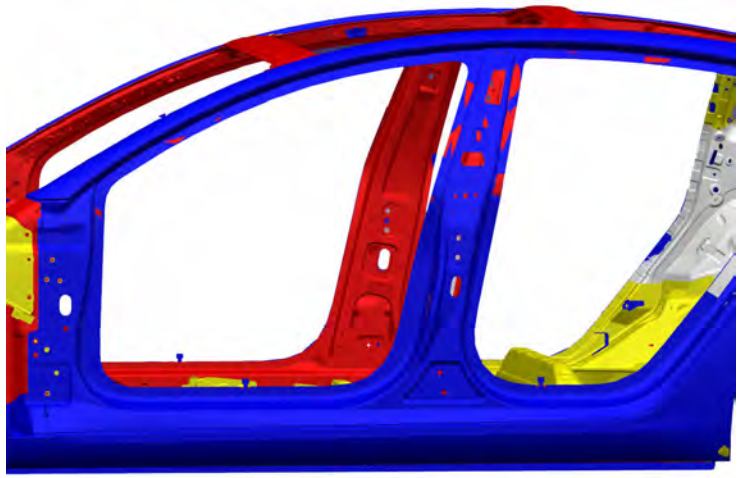
2 Remove the Shotgun Outer.

Removal

1 Identify the component materials in the repair area.

- Aluminum
- Mild Steel
- High-Strength Steel
- Ultra High-Strength Steel

NOTE: Refer to BR-17-10-005, “Model 3 Body Structure Materials and Allowed Operations”, for information about the material each structural component is made from and the operations that are allowed on each type of material.

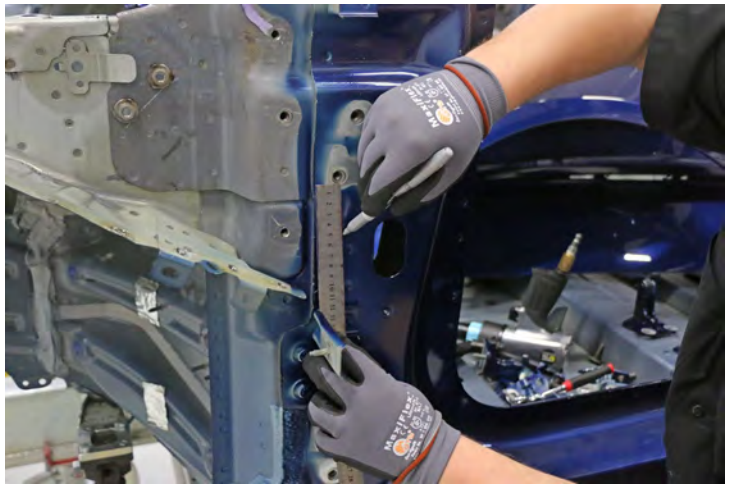


Removal

2 Remove the lower portion of the Body Side Outer.

A Mark a cut line in the A-Pillar area 50 mm (2 in) down from the lower edge of the bolt hole shown.

Cut Line

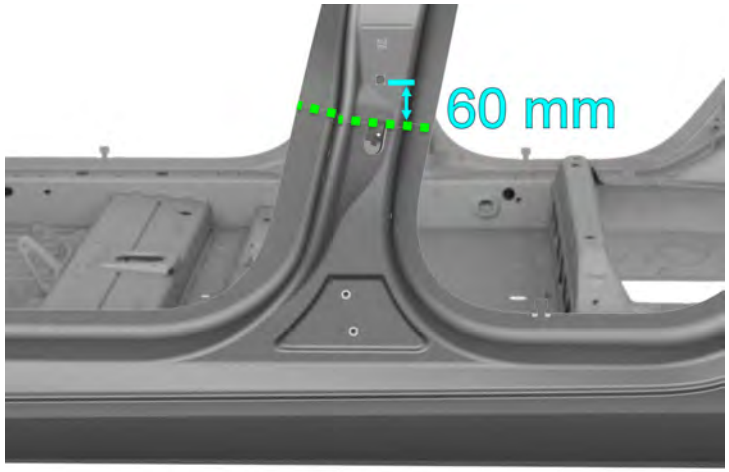


Removal

2 Remove the lower portion of the Body Side Outer (continued).

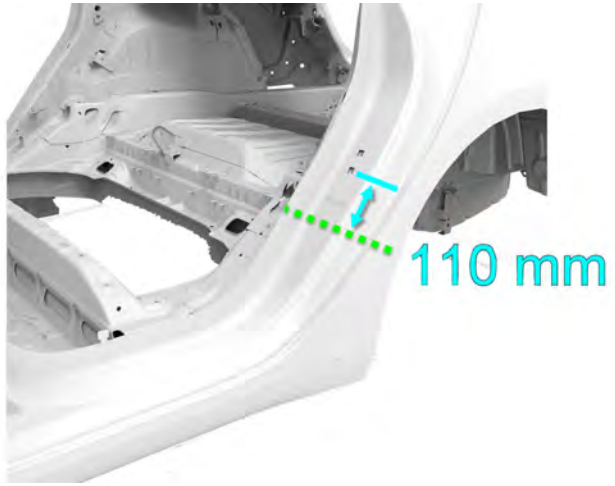
B Mark a cut line in the B-Pillar area 60 mm (2-3/8 in) down from the lower edge of the bolt hole shown.

Cut Line



C Mark a cut line in the C-Pillar area 110 mm (1-9/16 in) down from the lower edge of the bolt hole shown.

Cut Line



CAUTION: Make sure the cut line is in the area of the steel Wheelhouse Extension and not in the area of the aluminum Wheel Arch. The butt joint weld that will be performed in a later step should not be in the area of an aluminum component. Refer to the materials identification step at the beginning of this procedure for more information.

Removal

2 Remove the lower portion of the Body Side Outer (continued).

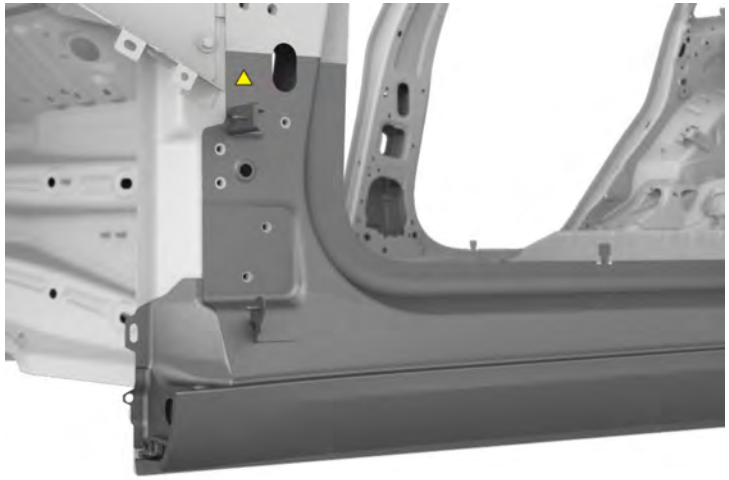
D Cut the Body Side Outer on the cut lines marked in the previous substeps.

CAUTION: Do not damage the surrounding components.

E Use a drill with a spot weld bit to drill out the spot welds that attach the lower portion of the Body Side Outer.

△ Factory Spot Weld

Factory Spot Weld Areas



NOTE: The areas highlighted in yellow indicate multiple factory spot welds.

Removal

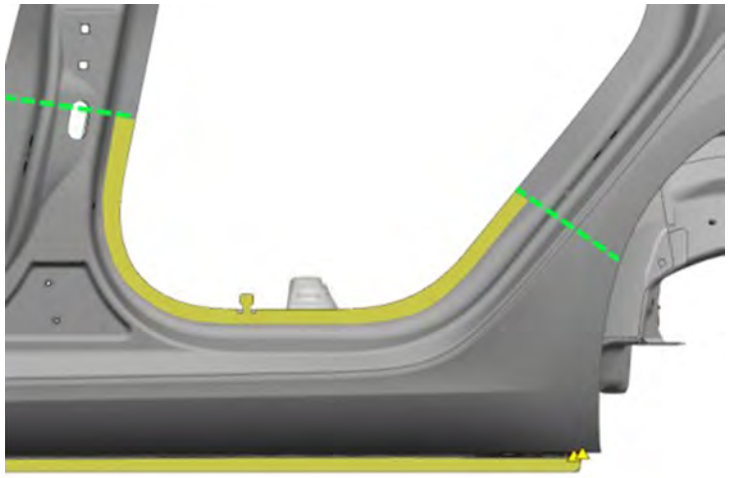
2 Remove the lower portion of the Body Side Outer (continued).

E Use a drill with a spot weld bit to drill out the spot welds that attach the lower portion of the Body Side Outer (continued).

Removal

2 Remove the lower portion of the Body Side Outer (continued).

E Use a drill with a spot weld bit to drill out the spot welds that attach the lower portion of the Body Side Outer (continued).

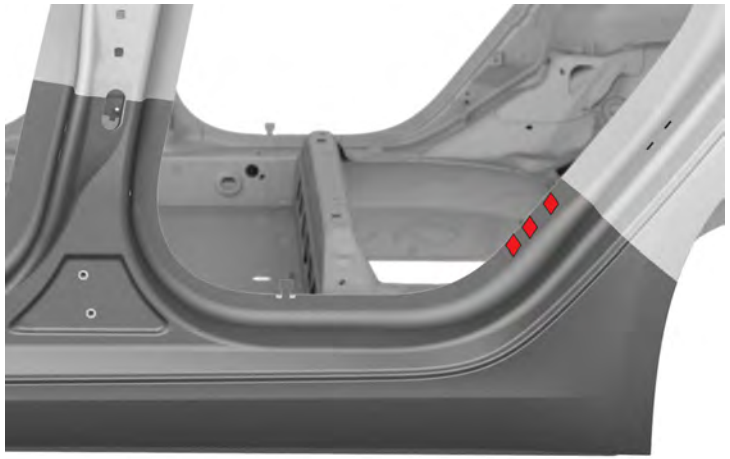


Removal

2 Remove the lower portion of the Body Side Outer (continued).

F Use an SPR removal tool or a drill with a high-strength steel bit to remove the factory self-piercing rivets. Use a belt sander for any factory self-piercing rivets that cannot be removed with an SPR removal tool or a drill.

◆ Factory SPR (x3)



Removal

2 Remove the lower portion of the Body Side Outer (continued).

G Use a grinding tool to grind through the Wheel Arch flange below the cut made in an earlier substep.

Cut Line

Removal

2 Remove the lower portion of the Body Side Outer (continued).

H Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the lower portion of the Body Side Outer. Save the lower portion to use as a template in a later step.

WARNING: Do not heat any adhesive joints of components that are not being removed. Heating adhesive joints weakens the adhesive bond and could compromise vehicle crash integrity.

WARNING: Do not heat the adhesive joints above 100°C (212°F). Heating the adhesive joints above 100°C (212°F) can weaken the aluminum and compromise vehicle crash integrity.

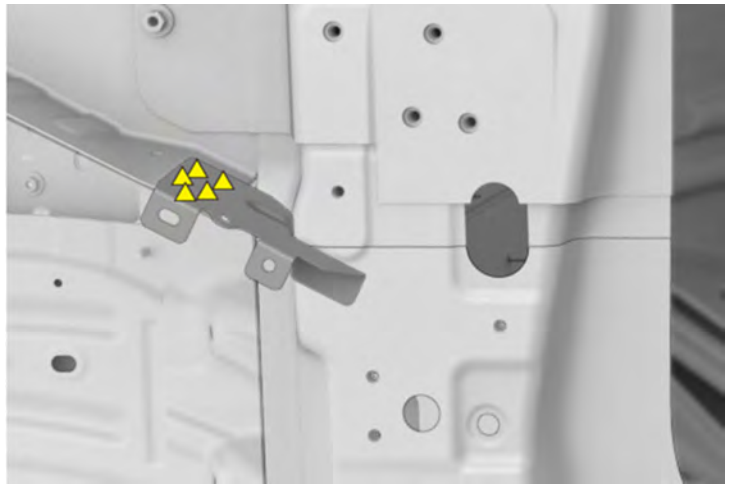
Removal

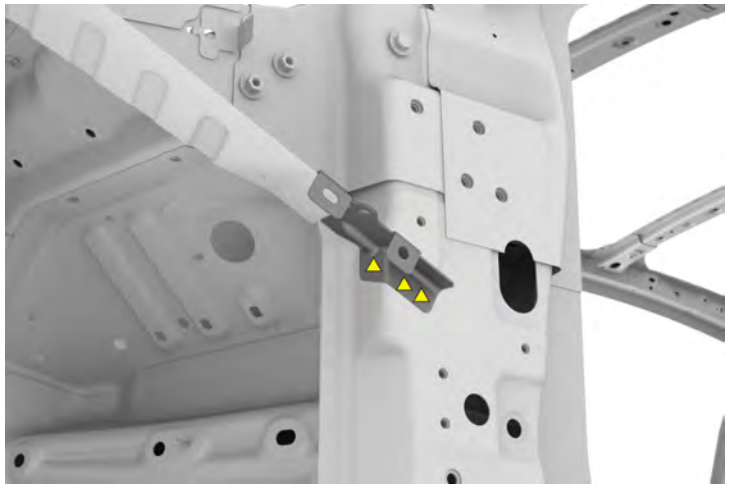
3 Remove the lower portion of the Hinge Pillar.

A Use a drill with a spot weld bit to drill out the spot welds that attach the A-Pillar to Shotgun Reinforcement.

△ Factory Spot Weld (x8)

NOTE: Factory spot weld locations shown are approximate. Exact spot weld locations and number vary from vehicle to vehicle.





Removal

3 Remove the lower portion of the Hinge Pillar (continued).

A Use a drill with a spot weld bit to drill out the spot welds that attach the A-Pillar to Shotgun Reinforcement (continued).

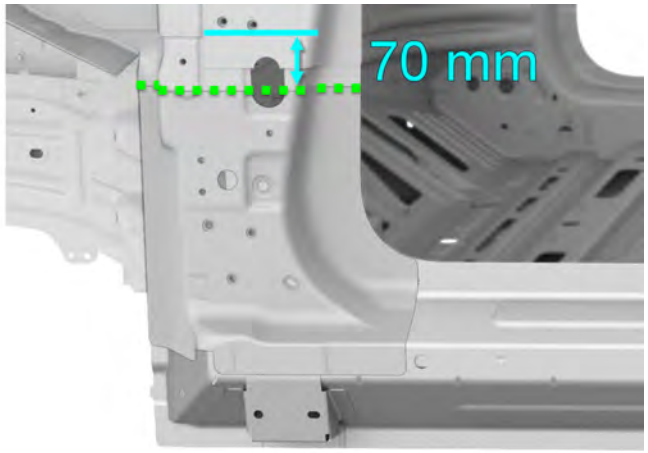
B Use a hammer and chisel to remove the A-Pillar to Shotgun Reinforcement.

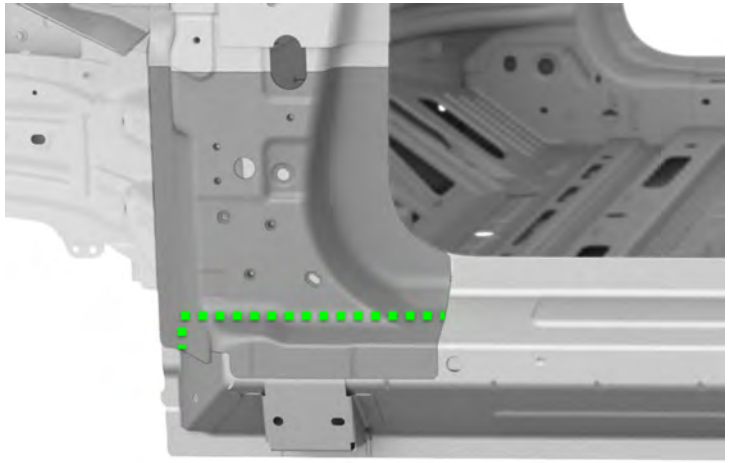
Removal

3 Remove the lower portion of the Hinge Pillar (continued).

C Mark cut lines to remove the lower portion of the Hinge Pillar.

Cut Line





Removal

3 Remove the lower portion of the Hinge Pillar (continued).

C Mark cut lines to remove the lower portion of the Hinge Pillar (continued).

D Cut the Hinge Pillar on the cut lines marked in the previous substeps.

CAUTION: Do not damage the surrounding components.

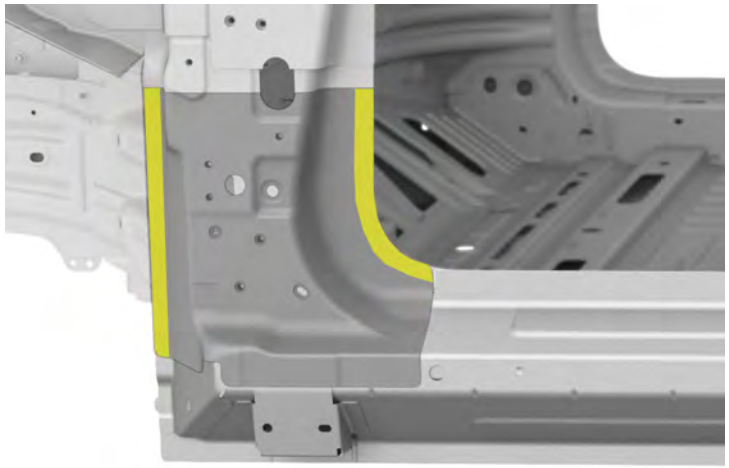
Removal

3 Remove the lower portion of the Hinge Pillar (continued).

E Use a drill with a spot weld bit to drill out the spot welds that attach the lower portion of the Hinge Pillar.

Factory Spot Weld Areas

NOTE: The areas highlighted in yellow indicate multiple factory spot welds.

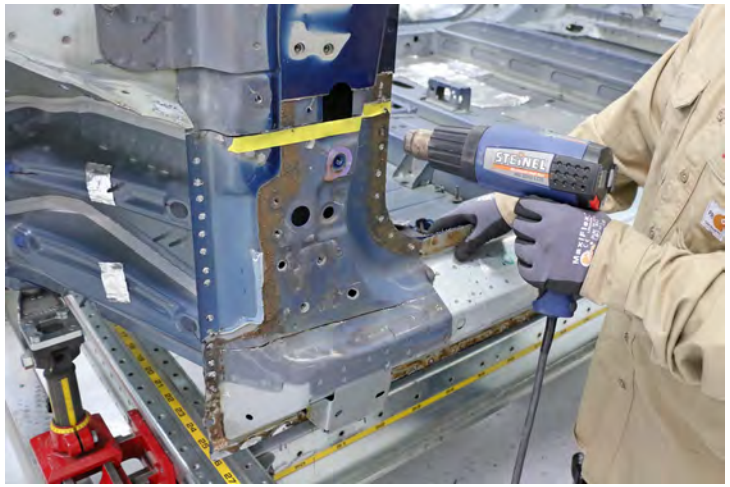


Removal

3 Remove the lower portion of the Hinge Pillar (continued).

F Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the bulk of the lower portion of the Hinge Pillar.

WARNING: Do not heat any adhesive joints of components that are not being removed. Heating adhesive joints weakens the adhesive bond and could compromise vehicle crash integrity.



Removal

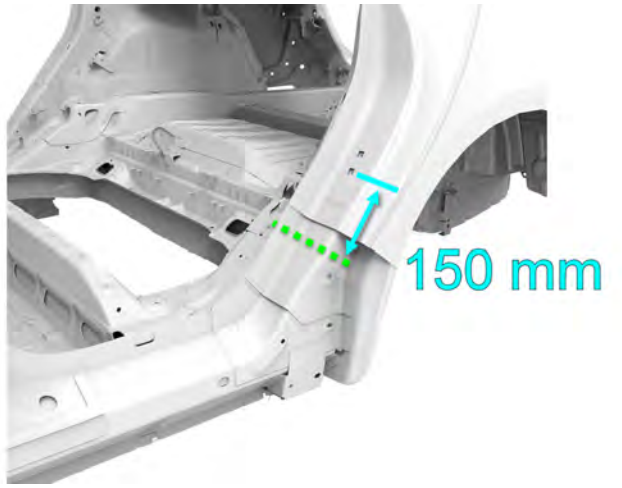
4 Remove the lower portion of the C-Pillar Extension.

A If necessary, trim any portions of the foam baffle that extend below the cut in the C-Pillar area.

NOTE: New expanding foam will be added to this area in a later step.

B Mark a cut line on the aluminum C-Pillar Extension 150 mm (5-15/16 in) down from the lower edge of the bolt hole shown.

Cut Line



Removal

4 Remove the lower portion of the C-Pillar Extension (continued).

B Mark a cut line on the aluminum C-Pillar Extension 150 mm (5-15/16 in) down from the lower edge of the bolt hole shown (continued).

C Cut the aluminum C-Pillar Extension on the cut line marked in the previous substep.

CAUTION: Take the appropriate steps to minimize the cross-contamination of steel and aluminum components during the repair.

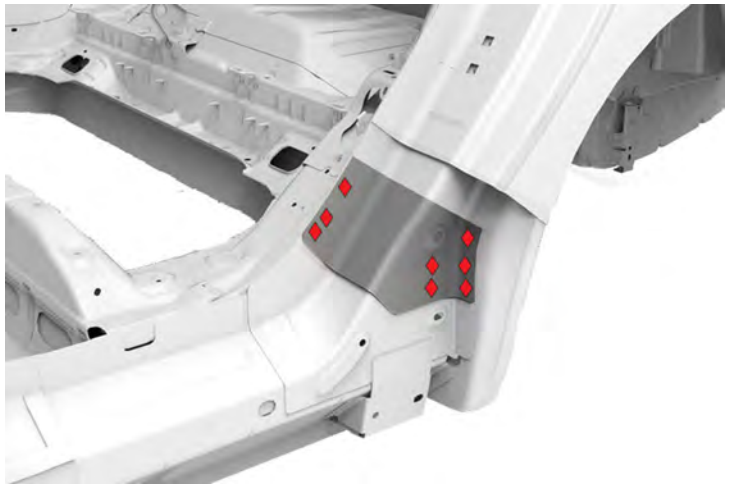
CAUTION: Do not damage the surrounding components.

Removal

4 Remove the lower portion of the C-Pillar Extension (continued).

D Use an SPR removal tool or a drill with a high-strength steel bit to remove the factory self-piercing rivets. Use a belt sander for any factory self-piercing rivets that cannot be removed with an SPR removal tool or a drill.

♦ Factory SPR (x8)



Removal

4 Remove the lower portion of the C-Pillar Extension (continued).

E Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the lower portion of the C-Pillar Extension. Save the lower portion to use as a template in a later step.

WARNING: Do not heat any adhesive joints of components that are not being removed. Heating adhesive joints weakens the adhesive bond and could compromise vehicle crash integrity.

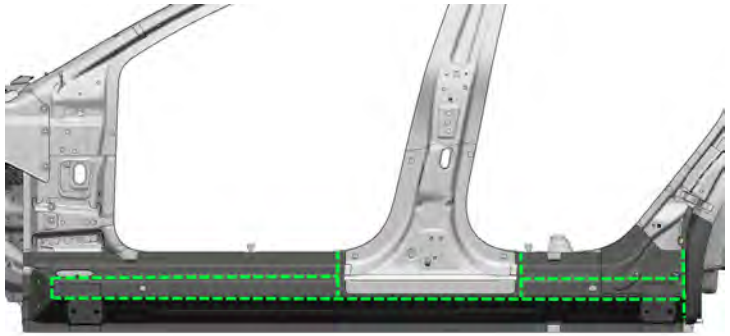
WARNING: Do not heat the adhesive joints above 100°C (212°F). Heating the adhesive joints above 100°C (212°F) can weaken the aluminum and compromise vehicle crash integrity.

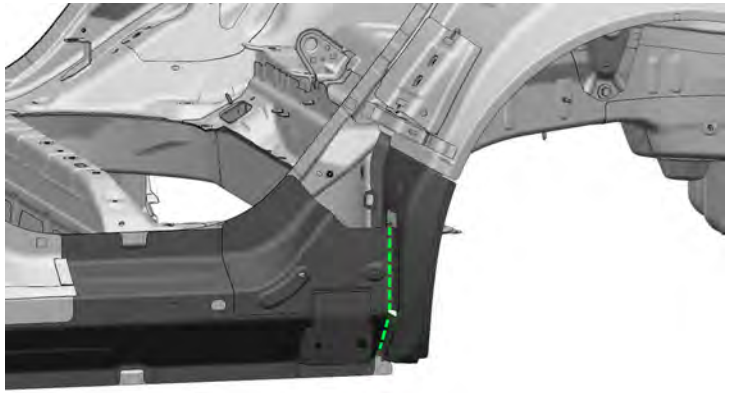
Removal

5 Remove the Sill Outer Assembly.

A Mark cut lines to prepare to cut away the bulk of the original Sill Outer Assembly.

Cut Line





Removal

5 Remove the Sill Outer Assembly (continued).

A Mark cut lines to prepare to cut away the bulk of the original Sill Outer Assembly (continued).

B Cut the Sill Outer Assembly on the cut lines marked in the previous substep.

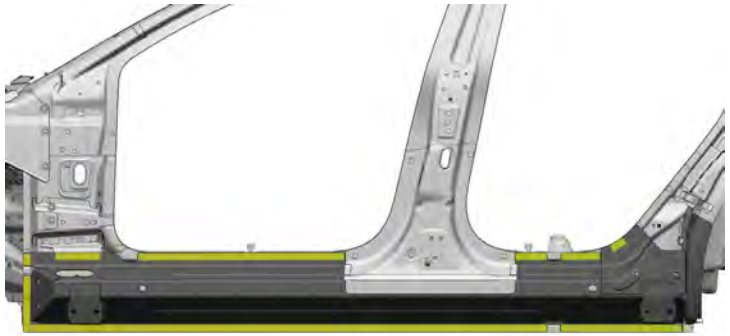
CAUTION: Do not damage the surrounding components.

Removal

5 Remove the Sill Outer Assembly (continued).

C Use a drill with a spot weld bit to drill out the spot welds that attach the bulk of the Sill Outer Assembly.

Factory Spot Weld Areas



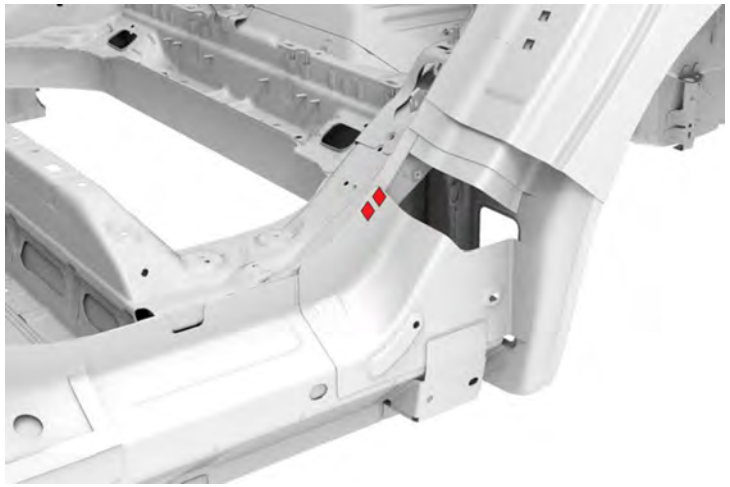
NOTE: The areas highlighted in yellow indicate multiple factory spot welds.

Removal

5 Remove the Sill Outer Assembly (continued).

D Use an SPR removal tool or a drill with a high-strength steel bit to remove any remaining pieces of factory self-piercing rivets that were not removed in an earlier step.

♦ Factory SPR (x2)



NOTE: A belt sander can be used to grind off the heads of the factory SPRs to separate the outer panels before removing the SPRs.

E Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the bulk of the Sill Outer Assembly.

WARNING: Do not heat any adhesive joints of components that are not being removed. Heating adhesive joints weakens the adhesive bond and could compromise vehicle crash integrity.

WARNING: Do not heat the adhesive joints above 100°C (212°F). Heating the adhesive joints above 100°C (212°F) can weaken the aluminum and compromise vehicle crash integrity.

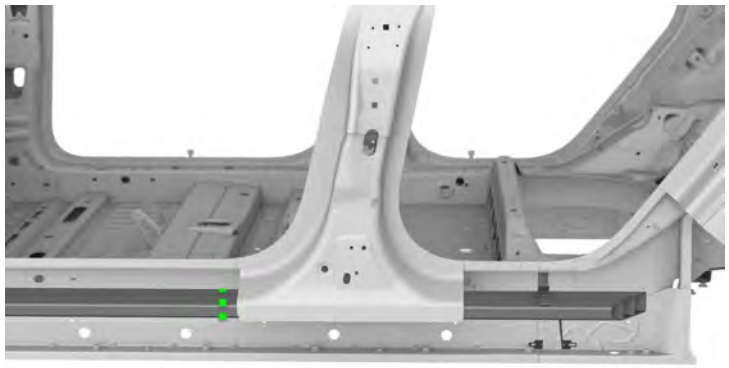
Removal

5 Remove the Sill Outer Assembly (continued).

E Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the bulk of the Sill Outer Assembly (continued).

F Mark a cut line on the original Sill Insert.

Cut Line



Removal

5 Remove the Sill Outer Assembly (continued).

G Cut the Sill Insert on the cut line marked in the previous substep.

CAUTION: Take the appropriate steps to minimize the cross-contamination of steel and aluminum components during the repair.

CAUTION: Do not damage the surrounding components.

H Use a hammer to remove the two halves of the Sill Insert.

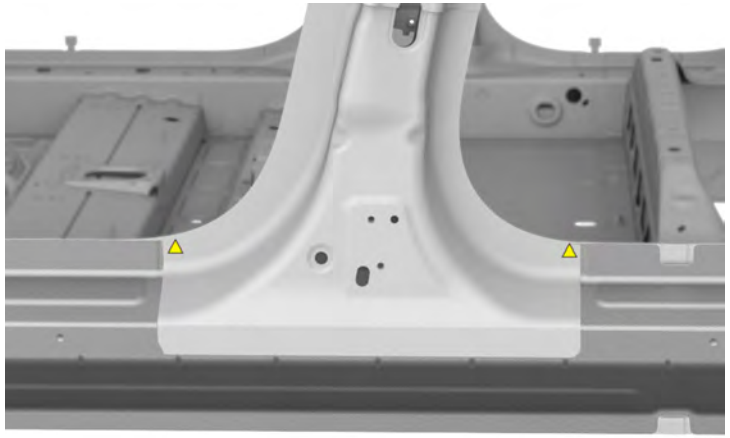
Removal

5 Remove the Sill Outer Assembly (continued).

I Remove the factory foam dams from the original Sill Insert and set them aside for use during installation at a later step.

J Use a drill with a 6.7 mm (17/64 in) bit to drill completely through the factory spot welds shown.

△ Factory Spot Weld



NOTE: Flow form rivets will be installed in these locations in a later step.

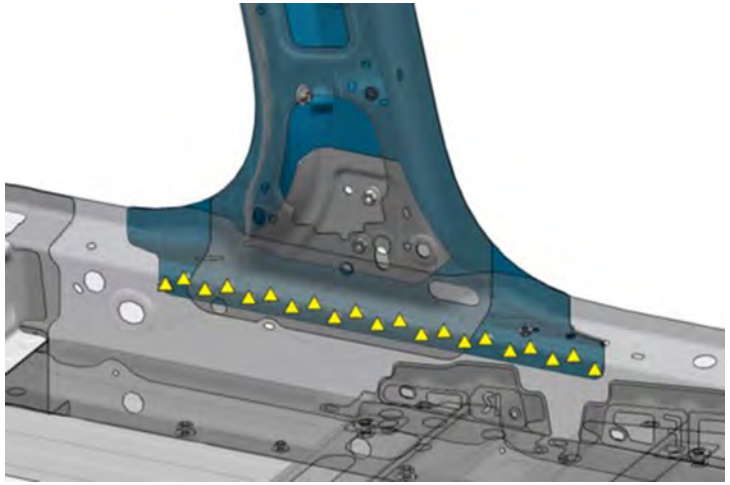
Removal

5 Remove the Sill Outer Assembly (continued).

J Use a drill with a 6.7 mm (17/64 in) bit to drill completely through the factory spot welds shown (continued).

K Use a belt sander to sand down the backside of the spot welds that attach the remaining piece of the Sill Outer Assembly to the B-Pillar Outer.

△ Factory Spot Weld (x21)



Removal

5 Remove the Sill Outer Assembly (continued).

K Use a belt sander to sand down the backside of the spot welds that attach the remaining piece of the Sill Outer Assembly to the B-Pillar Outer (continued).

L Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the remaining piece of the middle portion of the Sill Outer Assembly where it meets the B-Pillar Outer.

WARNING: Do not heat any adhesive joints of components that are not being removed. Heating adhesive joints weakens the adhesive bond and could compromise vehicle crash integrity.

Removal

5 Remove the Sill Outer Assembly (continued).

L Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the remaining piece of the middle portion of the Sill Outer Assembly where it meets the B-Pillar Outer (continued).

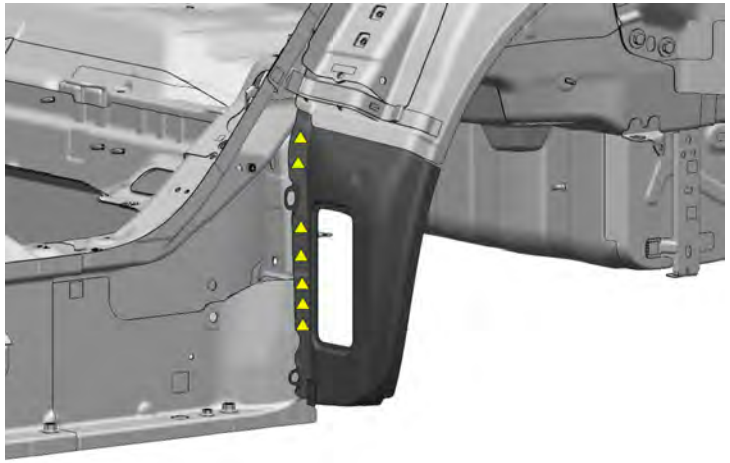
Removal

5 Remove the Sill Outer Assembly (continued).

M Cut back the foam in the C-Pillar Extension area.

N Use a drill with a spot weld bit to drill out the spot welds shown.

△ Factory Spot Weld (x7)



NOTE: Factory spot weld locations shown are approximate. Exact spot weld locations and number vary from vehicle to vehicle.

Removal

5 Remove the Sill Outer Assembly (continued).

N Use a drill with a spot weld bit to drill out the spot welds shown (continued).

O Remove the seam sealer in the area of the factory self-piercing rivets.

Removal

5 Remove the Sill Outer Assembly (continued).

P Use an SPR removal tool or a drill with a high-strength steel bit to remove the factory self-piercing rivets.

♦ Factory SPR (x4)

NOTE: A belt sander can be used to grind off the heads of the factory SPRs to separate the outer panels before removing the SPRs.

Removal

5 Remove the Sill Outer Assembly (continued).

Q Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the remaining piece of the rear portion of the Sill Outer Assembly.

WARNING: Do not heat any adhesive joints of components that are not being removed. Heating adhesive joints weakens the adhesive bond and could compromise vehicle crash integrity.

WARNING: Do not heat the adhesive joints above 100°C (212°F). Heating the adhesive joints above 100°C (212°F) can weaken the aluminum and compromise vehicle crash integrity.

Removal

6 Use a disc sander with a medium-abrasive surface conditioning disc to remove any remaining materials from the bond paths. Use a belt sander with a medium-abrasive belt for any areas that cannot be reached with a disc sander. Vacuum any adhesive dust.

WARNING: Remove the epoxy adhesive in a well-ventilated area. Wear suitable personal protective equipment.

WARNING: Use only sanding wheels and belts that are 80 grit or finer on aluminum components. Using sanding wheels or belts that are coarser than 80 grit can cause fractures in the aluminum.

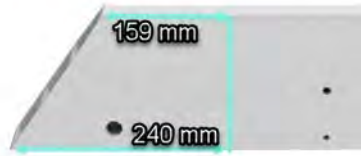
CAUTION: Beware of cross-contamination. Do not use the same equipment to remove epoxy from aluminum and steel. Cross-contamination might result in galvanic corrosion.

Replacement

1 Prepare the new Sill Insert for installation.

A Mark alignment lines for the front Sill Insert Mounting Bracket on the new Sill Insert.

NOTE: These alignment lines will be used to install the new Sill Insert Mounting Brackets in the correct position in a later substep.



B Mark alignment lines for the rear Sill Insert Mounting Bracket on the new Sill Insert.

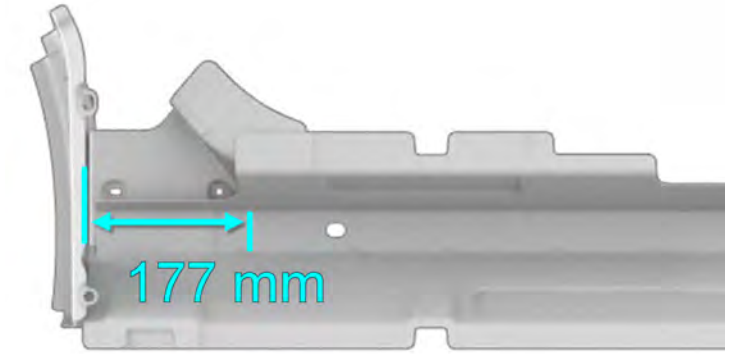
NOTE: These alignment lines will be used to install the new Sill Insert Mounting Brackets in the correct position in a later substep.

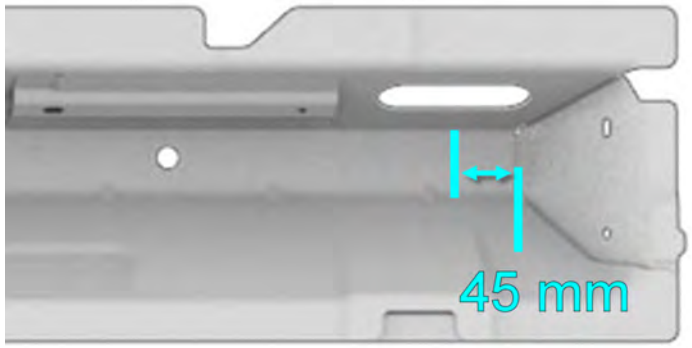
Replacement

1 Prepare the new Sill Insert for installation (continued).

C Mark alignment lines on the new Sill Outer Assembly.

NOTE: These alignment lines will be used to install the new Sill Insert in the correct position in the next substep.

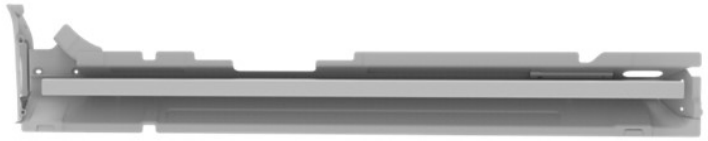




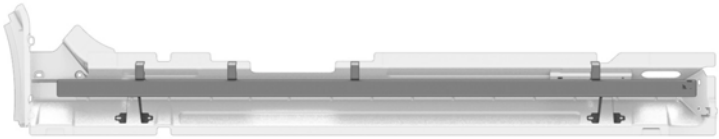
Replacement

1 Prepare the new Sill Insert for installation (continued).

D Put the new Sill Insert into the new Sill Outer Assembly, and align it to the lines marked in the previous substep, then clamp the new Sill Insert into position.



E Use the lines marked on the Sill Insert in the previous substep to position the new Sill Insert Mounting Brackets between the new Sill Insert and the Sill Outer Assembly.



CAUTION: Make sure the Sill Insert Mounting Brackets are flush to both the Sill Outer and the Sill Insert.

Replacement

1 Prepare the new Sill Insert for installation (continued).

F Clamp the new Sill Insert Mounting Brackets into position.

G Remove the Sill Insert with Sill Insert Mounting Brackets still securely clamped to it from the Sill Outer.

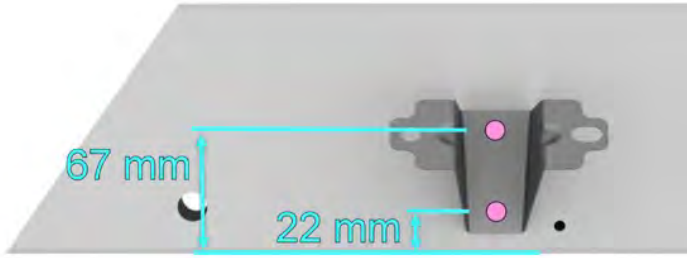
CAUTION: Do not move the Sill Insert Mounting Brackets during removal of the Sill Insert.

Replacement

1 Prepare the new Sill Insert for installation (continued).

H Mark holes for structural rivets on the front and the rear Sill Insert Mounting Brackets.

- Structural Rivet, 6.5 mm Short (x2)



WARNING: Use the indicated measurements so that rivet holes are placed to prevent the rivets from being installed through internal walls of the Sill Insert.

NOTE: Keep the Sill Insert Mounting Brackets securely clamped to the Sill Insert to ensure they will remain properly aligned to the Sill Outer during reassembly.

I With the Sill Insert Mounting Brackets still clamped in position, use a drill with a 6.7 mm (17/64 in) bit to drill holes through the Sill Insert Mounting Bracket and into the Sill Insert.

NOTE: Until all rivet holes have been drilled, keep each Sill Insert Mounting Bracket securely clamped to the Sill Insert to ensure it remains properly aligned to the Sill Outer.

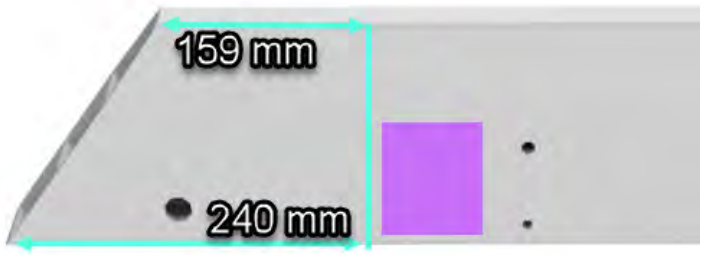
Replacement

1 Prepare the new Sill Insert for installation (continued).

J Remove the Sill Insert Mounting Brackets from the Sill Insert.

K Use a red Scotch-Brite pad or equivalent to scuff the new Sill Insert in the bond path areas.

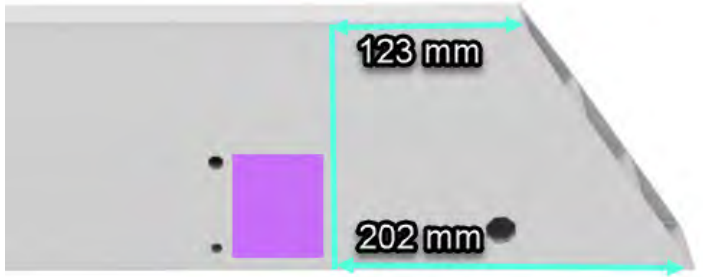
Steel-to-Aluminum Bond Path



Replacement

1 Prepare the new Sill Insert for installation (continued).

K Use a red Scotch-Brite pad or equivalent to scuff the new Sill Insert in the bond path areas (continued).



L Use a red Scotch-Brite pad or equivalent to scuff each of the new Sill Insert Mounting Brackets in the bond path area.

Steel-to-Aluminum Bond Path

Replacement

1 Prepare the new Sill Insert for installation (continued).

M Clean all the bond paths on the new Sill Insert and the new Sill Insert Mounting Bracket with isopropyl alcohol (IPA).

WARNING: Wipe off the remaining isopropyl alcohol with a clean, dry towel immediately after application. Do not let the remaining isopropyl alcohol air dry. Allowing the remaining isopropyl alcohol to air dry can compromise the adhesive bond.

N Spread a thin coating of structural adhesive as a primer layer on the bond paths on the new Sill Insert and the new Sill Insert Mounting Brackets.

NOTE: Assembly must be performed while the primer layer is still wet. The drying time of the adhesive varies depending on temperature and humidity.

Replacement

1 Prepare the new Sill Insert for installation (continued).

O While the primer layer is still wet, apply a bead of structural adhesive on top of the primer layer on the new Sill Insert.

P Position the Sill Insert Mounting Brackets.

Replacement

1 Prepare the new Sill Insert for installation (continued).

Q Insert the structural rivets.

- Structural Rivet, 6.5 mm Short (x4)

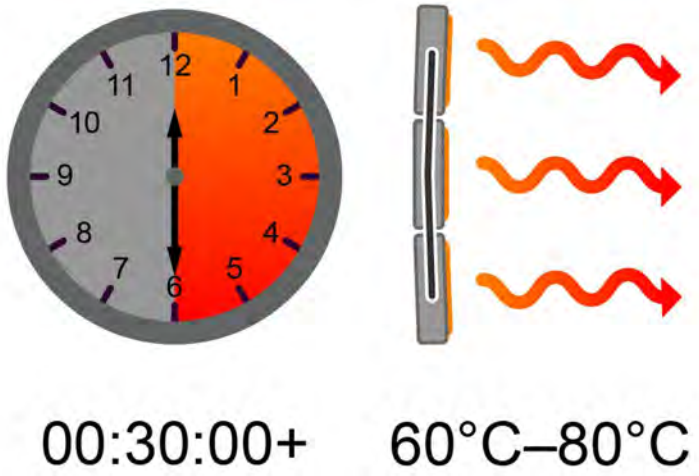
R Install the structural rivets.

Replacement

1 Prepare the new Sill Insert for installation (continued).

S Wipe off any excess adhesive.

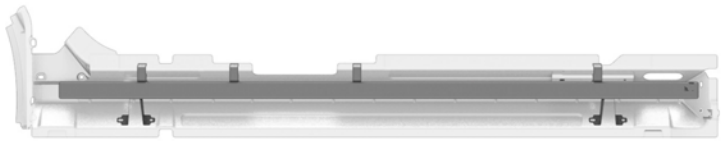
T Bake the structural adhesive so that the bonded panels reach a temperature of 60°C–80°C (140°F–176°F) for at least 30 minutes to achieve full strength.



Replacement

2 Prepare the new Sill Outer for installation.

A Put the new Sill Insert into the new Sill Outer Assembly, and align it to the lines marked in the previous substep. Clamp the new Sill Insert into position.



B Mark the outlines of the Sill Insert brackets.

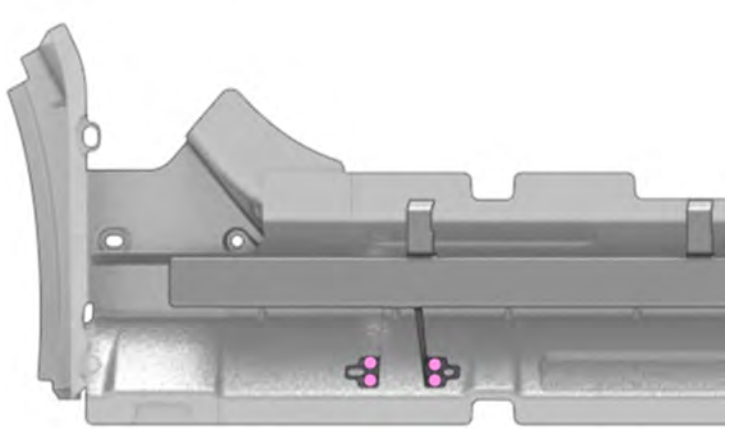
Replacement

2 Prepare the new Sill Outer for installation (continued).

C Remove the new Sill Insert from the new Sill Outer Assembly.

D Mark holes for structural rivets on the new Sill Outer Assembly.

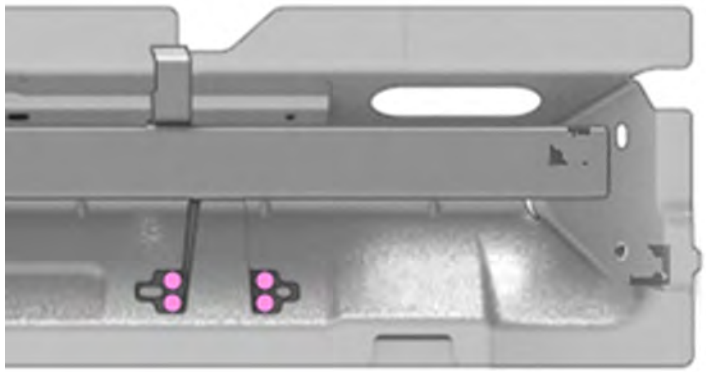
- Structural Rivet, 6.5 mm Short (x8)



Replacement

2 Prepare the new Sill Outer for installation (continued).

D Mark holes for structural rivets on the new Sill Outer Assembly (continued).



Replacement

2 Prepare the new Sill Outer for installation (continued).

E Use a drill with a 6.7 mm (17/64 in) bit to drill holes for structural rivets in the Sill Outer Assembly.

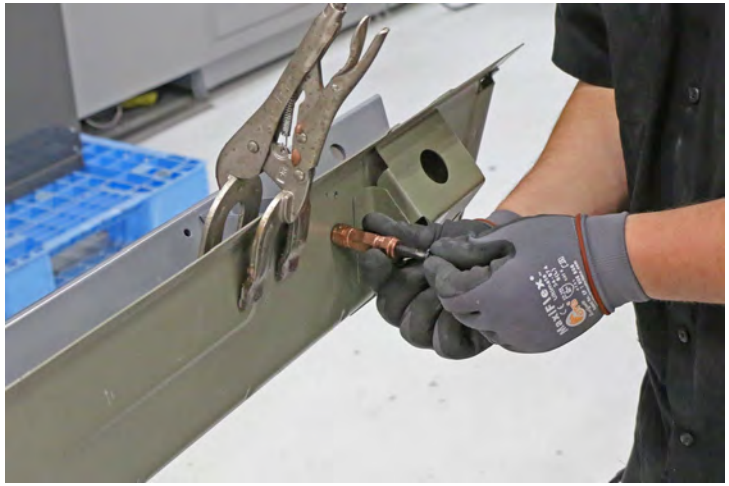
F Put the new Sill Insert into the new Sill Outer Assembly, and align it to the outlines marked in an earlier substep. Clamp the new Sill Insert into position.

Replacement

2 Prepare the new Sill Outer for installation (continued).

G Use a drill with a 6.7 mm (17/64 in) bit to drill holes in the new Sill Insert through the holes drilled through the new Sill Outer Assembly in an earlier substep.

NOTE: Install a grip screw after drilling each hole to keep the panel aligned while drilling the remaining holes.



Replacement

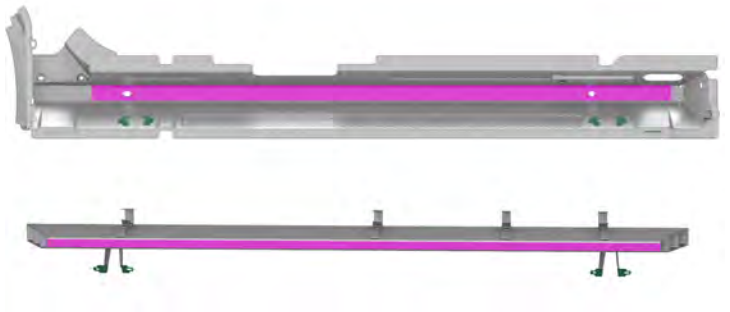
2 Prepare the new Sill Outer for installation (continued).

H Remove the new Sill Insert from the new Sill Outer Assembly.

I Use a red Scotch-Brite pad or equivalent to scuff the new Sill Insert and the new Sill Outer Assembly in the bond path areas.

Steel-to-Aluminum Bond Path

Steel-to-Steel Bond Path



Replacement

2 Prepare the new Sill Outer for installation (continued).

I Use a red Scotch-Brite pad or equivalent to scuff the new Sill Insert and the new Sill Outer Assembly in the bond path areas (continued).

J Clean all the bond paths on the new Sill Insert and the new Sill Outer Assembly with isopropyl alcohol (IPA).

WARNING: Wipe off the remaining isopropyl alcohol with a clean, dry towel immediately after application. Do not let the remaining isopropyl alcohol air dry. Allowing the remaining isopropyl alcohol to air dry can compromise the adhesive bond.

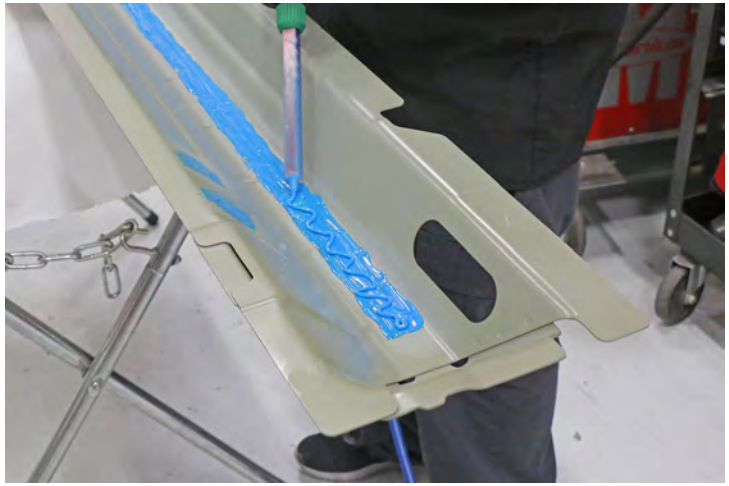
Replacement

2 Prepare the new Sill Outer for installation (continued).

K Spread a thin coating of structural adhesive as a primer layer on the bond paths on the new Sill Insert and the new Sill Outer Assembly.

NOTE: Assembly must be performed while the primer layer is still wet. The drying time of the adhesive varies depending on temperature and humidity.

L While the primer layer is still wet, apply a bead of structural adhesive on top of the primer layer on the new Sill Outer Assembly.



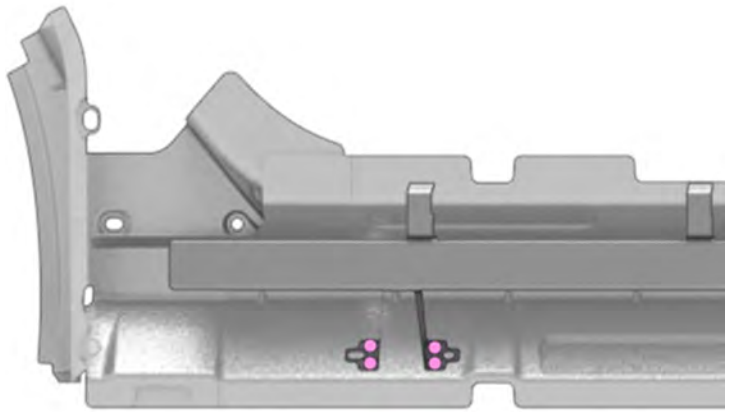
Replacement

2 Prepare the new Sill Outer for installation (continued).

M Put the new Sill Insert into the new Sill Outer Assembly.

N Insert the structural rivets.

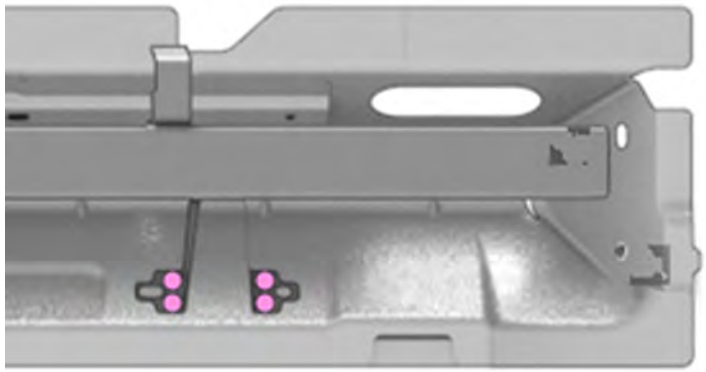
- Structural Rivet, 6.5 mm Short (x8)

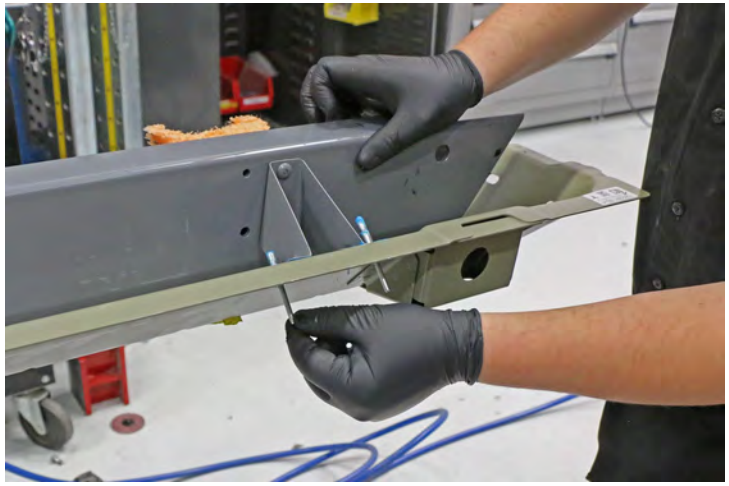


Replacement

2 Prepare the new Sill Outer for installation (continued).

N Insert the structural rivets (continued).





Replacement

2 Prepare the new Sill Outer for installation (continued).

O Install the structural rivets.

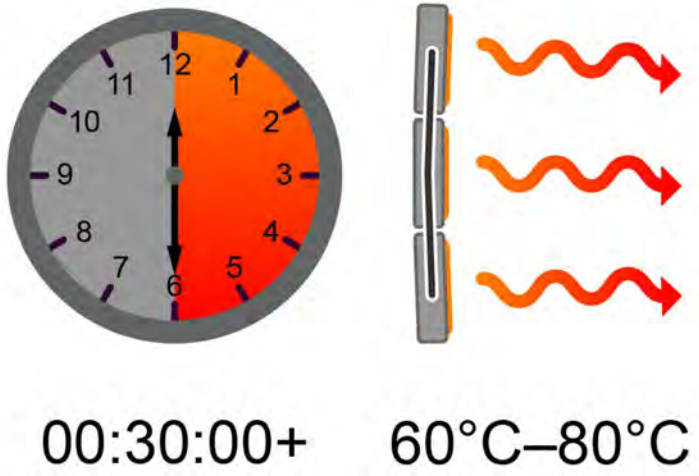
P Wipe off any excess adhesive.

Replacement

2 Prepare the new Sill Outer for installation (continued).

Q Apply urethane adhesive to the factory foam dams that were removed in an earlier step, and install them in the original locations on the new Sill Insert.

R Bake the structural adhesive so that the bonded panels reach a temperature of 60°C–80°C (140°F–176°F) for at least 30 minutes to achieve full strength.



Replacement

3 Prepare for installation of the new Sill Outer Assembly.

A Use an assistant to put the new Sill Outer Assembly into position, and clamp it into place.

NOTE: Make sure to fit the Wheelhouse Extension portion of the new Sill Outer Assembly into the Body Side Outer.

Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

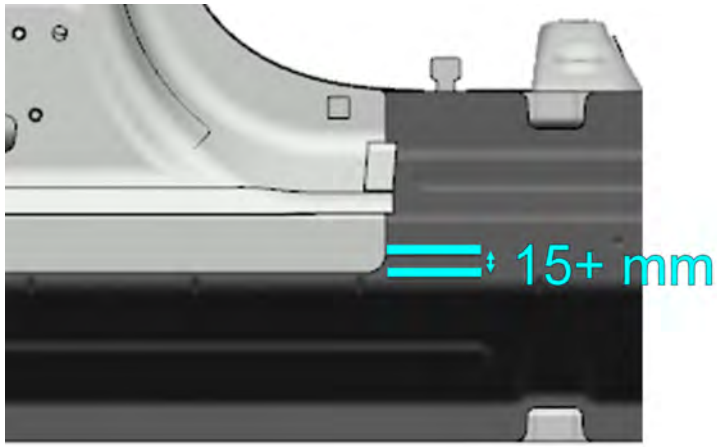
A Use an assistant to put the new Sill Outer Assembly into position, and clamp it into place (continued).

Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

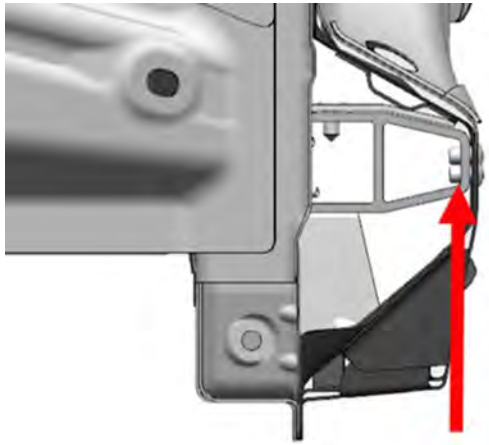
B Mark the fastener locations.

- Structural Rivet, 6.5 mm Short (x5)
- High Strength Structural Rivet, 6.5 mm (x21)
- Structural Rivet, 4.8 mm (x9)
- Installation Spot Weld



NOTE: Mark and drill the holes for the bottom row of structural rivets in the B-Pillar Outer at least 15 mm (9/16 in) up from the bottom edge of the B-Pillar Outer. This ensures that the rivets go through the flat face of the aluminum Sill Insert.

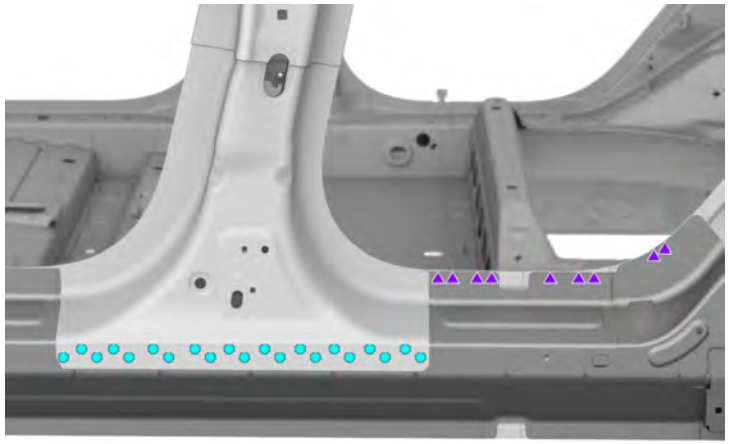
NOTE: Mark and drill the holes for the top row of structural rivets in the B-Pillar Outer so that they go through the factory spot welds that were removed in an earlier step.

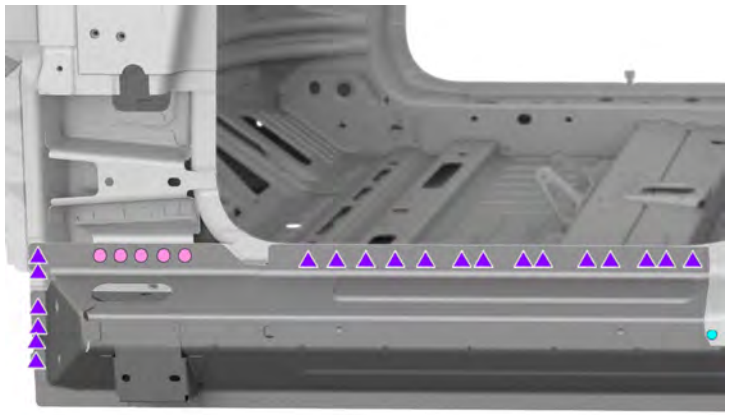


Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

B Mark the fastener locations (continued).





Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

B Mark the fastener locations (continued).

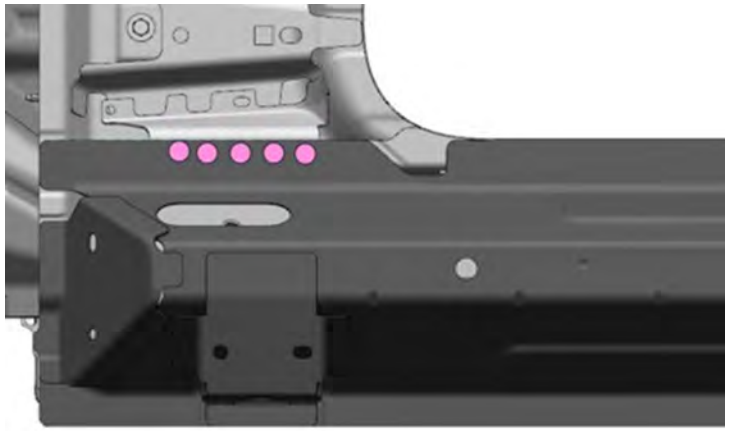
Replacement

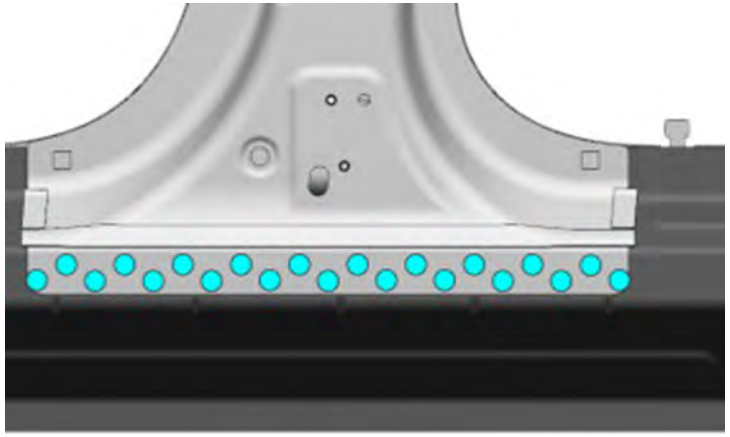
3 Prepare for installation of the new Sill Outer Assembly (continued).

C Use a drill with a 6.7 mm (17/64 in) bit to drill holes for the 6.5 mm structural rivets.

- Structural Rivet, 6.5 mm Short (x5)
- High Strength Structural Rivet, 6.5 mm (x21)

NOTE: Install a grip screw after drilling each hole to keep the panel aligned while drilling the remaining holes.





Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

C Use a drill with a 6.7 mm (17/64 in) bit to drill holes for the 6.5 mm structural rivets (continued).

Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

D Use a drill with a 4.8 mm (3/16 in) bit to drill holes for the 4.8 mm structural rivets.

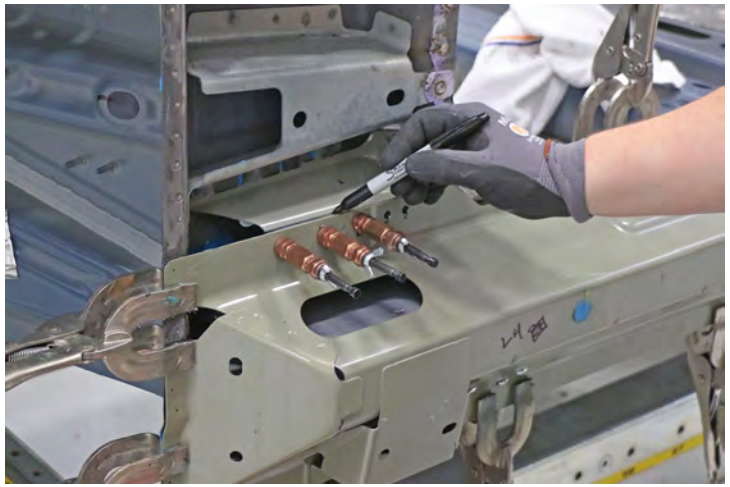
- Structural Rivet, 4.8 mm (x9)

NOTE: Install a grip screw after drilling each hole to keep the panel aligned while drilling the remaining holes.

Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

E Mark the surface preparation boundary lines on the new Sill Outer Assembly and on the vehicle.



F Remove the new Sill Outer Assembly.

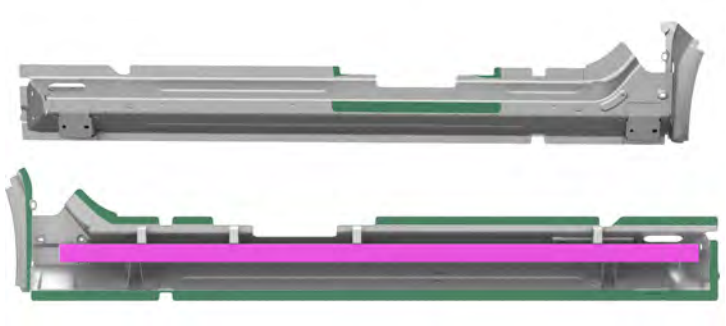
Replacement

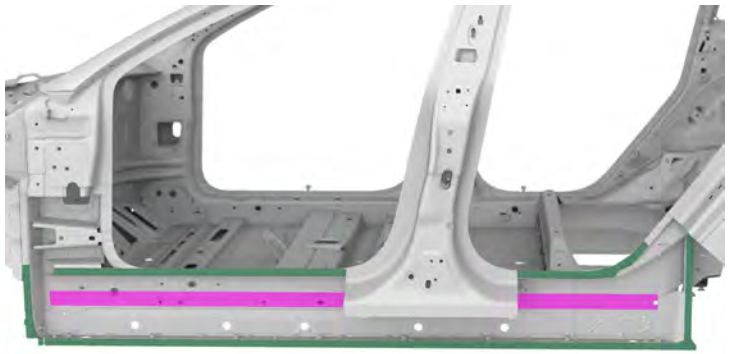
3 Prepare for installation of the new Sill Outer Assembly (continued).

G Mark the bond path areas on the new component and the vehicle. These areas will be prepared for bonding in the next step.

Steel-to-Steel Bond Path

Steel-to-Aluminum Bond Path





Replacement

3 Prepare for installation of the new Sill Outer Assembly (continued).

G Mark the bond path areas on the new component and the vehicle. These areas will be prepared for bonding in the next step (continued).

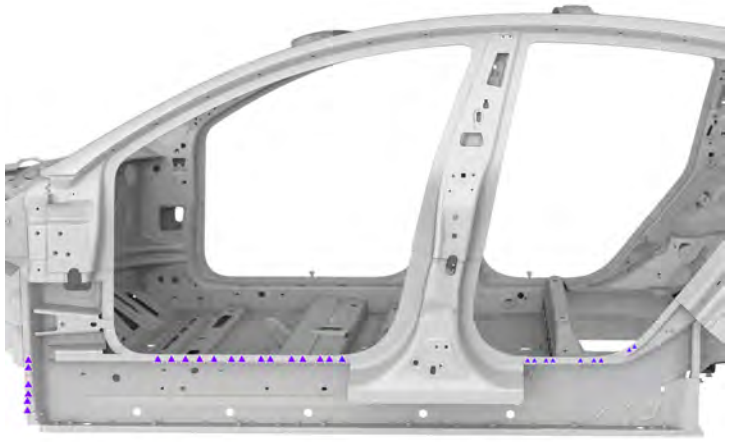
Replacement

4 Prepare the surfaces to install the new Sill Outer Assembly.

A Use a red Scotch-Brite pad to scuff the Sill Outer Assembly in the bond path areas.

B Mark the installation spot weld locations on the new Sill Outer Assembly and on the vehicle.

▲ Installation Spot Weld

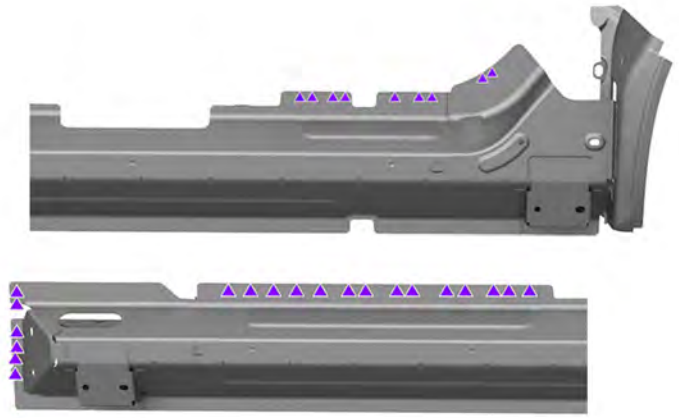


NOTE: If the HV Battery has been removed, mark installation spot weld locations on the lower flange. If the HV Battery has not been removed, these areas will be secured with adhesive only.

Replacement

4 Prepare the surfaces to install the new Sill Outer Assembly (continued).

B Mark the installation spot weld locations on the new Sill Outer Assembly and on the vehicle (continued).



Replacement

4 Prepare the surfaces to install the new Sill Outer Assembly (continued).

C Use a disc sander with a medium-abrasive surface conditioning disc to remove the e-coat on the new Sill Outer Assembly in the weld areas.

WARNING: Remove the e-coat in a well-ventilated area. Wear suitable personal protective equipment.

CAUTION: Within two hours of removing the e-coat or paint, cover the abraded aluminum areas in the bond path with a thin primer layer of structural adhesive. If the abraded aluminum areas are not primed within two hours, they must be abraded again to remove any oxidation.

NOTE: Use a belt sander with a medium-abrasive belt for any areas that cannot be reached with a disc sander.

D Clean all the bond paths and weld areas on the new component or components and on the vehicle with isopropyl alcohol (IPA).

WARNING: Wipe off the remaining isopropyl alcohol with a clean, dry towel immediately after application. Do not let the remaining isopropyl alcohol air dry. Allowing the remaining isopropyl alcohol to air dry can compromise the adhesive bond.

Replacement

5 Apply structural adhesive to install the new Sill Outer Assembly.

A Spread a thin coating of structural adhesive as a primer layer on the bond paths and weld areas on the new Sill Outer Assembly and on the vehicle.

NOTE: Assembly must be performed while the primer layer is still wet. The drying time of the adhesive varies depending on temperature and humidity.

B While the primer layer is still wet, apply a bead of structural adhesive on top of the primer layer on the new Sill Outer Assembly.

NOTE: Apply a thicker than usual bead of structural adhesive on the new Sill Insert so that structural adhesive completely fills the gap between the new Sill Insert and the Sill Inner.

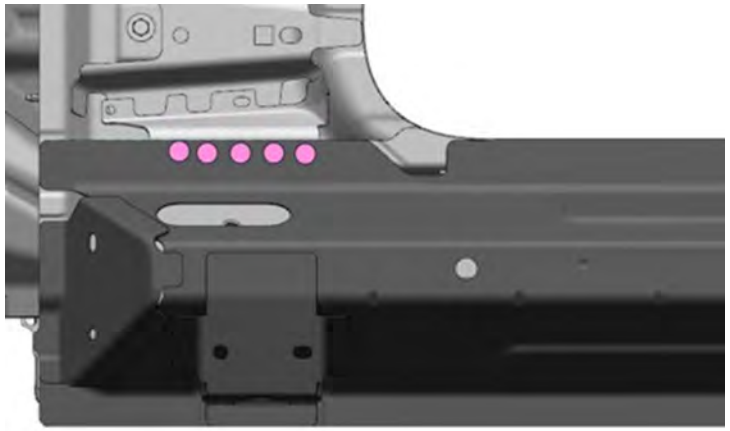
Replacement

6 Install the new Sill Outer Assembly.

A Apply urethane adhesive to the outside of the foam dams on the Sill Insert.

B Use an assistant to put the new Sill Outer Assembly into position, and then insert the structural rivets.

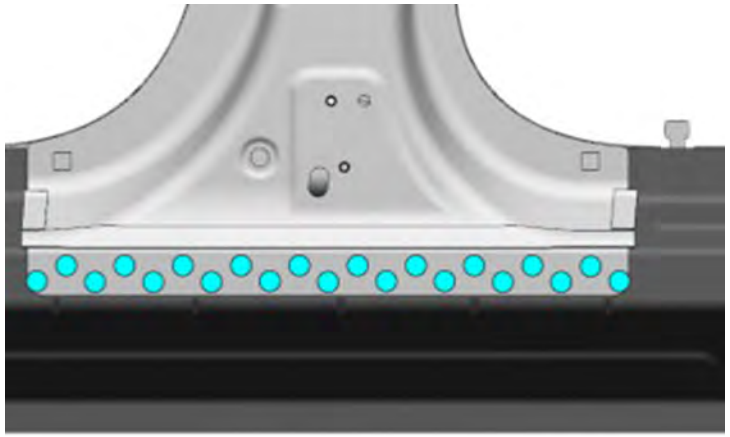
- Structural Rivet, 6.5 mm Short (x5)
- High Strength Structural Rivet, 6.5 mm (x21)
- Structural Rivet, 4.8 mm (x9)



Replacement

6 Install the new Sill Outer Assembly (continued).

B Use an assistant to put the new Sill Outer Assembly into position, and then insert the structural rivets (continued).



Replacement

6 Install the new Sill Outer Assembly (continued).

B Use an assistant to put the new Sill Outer Assembly into position, and then insert the structural rivets (continued).

C Clamp the new Sill Outer into position.

Replacement

6 Install the new Sill Outer Assembly (continued).

D Install the structural rivets.

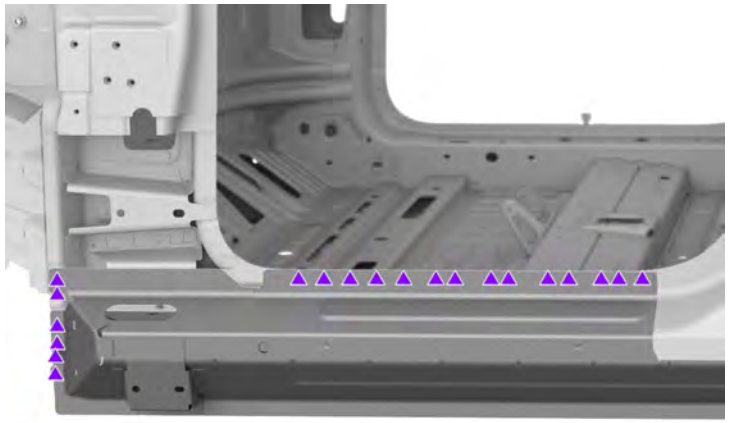
E Wipe off any excess adhesive.

Replacement

6 Install the new Sill Outer Assembly (continued).

F Perform resistance spot welding.

▲ Installation Spot Weld (x29)



WARNING: Failure to follow all welding safety precautions, including the use of personal protective equipment, could result in serious injury or property damage. Only technicians who have successfully met Tesla's requirements for welding training are authorized to weld structural components on Tesla vehicles.

CAUTION: Do not weld on a Tesla vehicle with an energized high voltage or 12V system. Welding on a Tesla vehicle with an energized high voltage or 12V system might damage vehicle components.

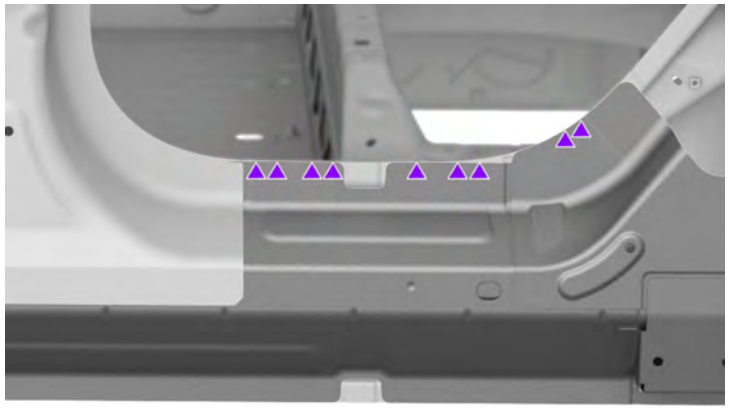
CAUTION: Use only insulated clamps within 200 mm (8 in) of resistance spot weld locations. Do not perform resistance spot welding when there is an uninsulated clamp within 200 mm (8 in) of the spot weld location.

NOTE: If the HV Battery has been removed, perform resistance spot welding on the lower flange. If the HV Battery has not been removed, these areas will be secured with adhesive only.

Replacement

6 Install the new Sill Outer Assembly (continued).

F Perform resistance spot welding (continued).



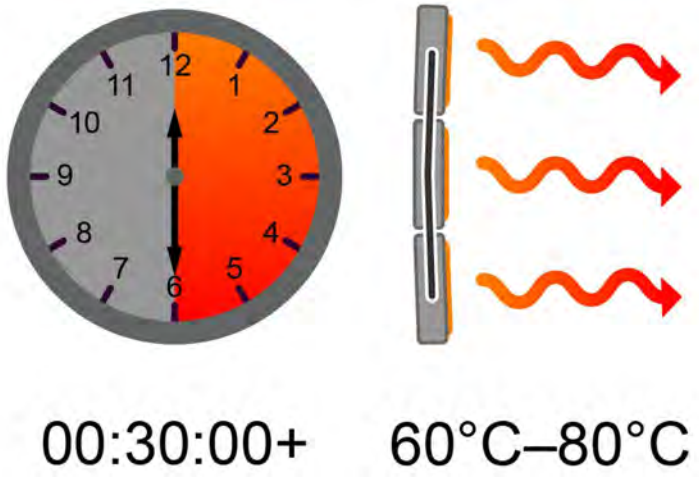
Replacement

6 Install the new Sill Outer Assembly (continued).

G Remove any discoloration from the weld areas.

H Bake the structural adhesive so that the bonded panels reach a temperature of 60°C–80°C (140°F–176°F) for at least 30 minutes to achieve full strength.

WARNING: Do not allow the High Voltage Battery to reach a temperature above 74°C (165°F). Heating the High Voltage Battery above 74°C (165°F) for an extended period could result in injury to personnel and/or damage to the battery.



Replacement

6 Install the new Sill Outer Assembly (continued).

I Prime any bare metal that will not be covered with weld-through primer or structural adhesive in a subsequent repair with a suitable corrosion-resistant epoxy primer.

7 Prepare a backing plate for the installation of the new Hinge Pillar section.

A Use a drill with a spot weld bit to drill out the factory spot welds that attach the A-Pillar to Shotgun Reinforcement to the first new Hinge Pillar Assembly.

△ Factory Spot Weld (x3)

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

A Use a drill with a spot weld bit to drill out the factory spot welds that attach the A-Pillar to Shotgun Reinforcement to the first new Hinge Pillar Assembly (continued).

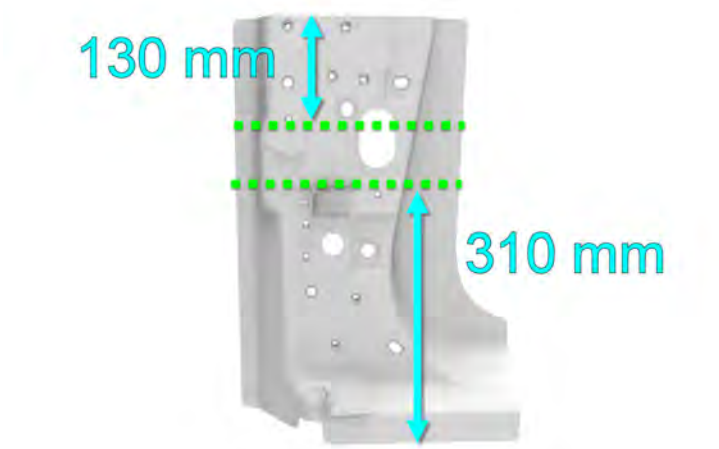
B Use a hammer and chisel to remove the A-Pillar to Shotgun Reinforcement from the new Hinge Pillar Assembly.

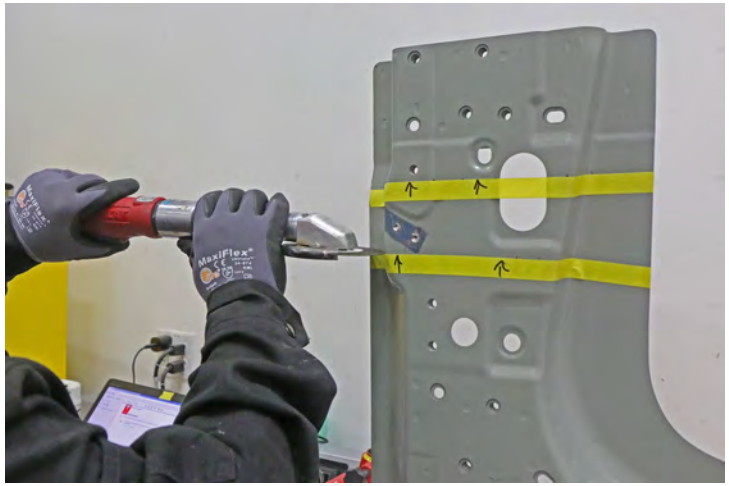
Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

C Cut the first new Hinge Pillar Assembly as shown to create a backing plate.

Cut Line



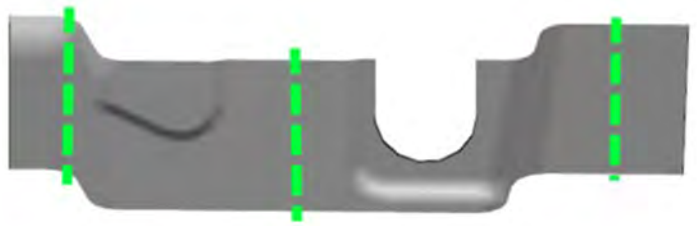


Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

D Cut off the flanges from the backing plate, and then cut the backing plate down the middle to create 2 sections.

Cut Line



NOTE: This allows the backing plate to fit inside the butt joint.

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

D Cut off the flanges from the backing plate, and then cut the backing plate down the middle to create 2 sections (continued).

E Use a disc sander with a medium-abrasive surface conditioning disc to remove the e-coat on the backing plate sections in the areas where the two sections meet.

WARNING: Remove the e-coat in a well-ventilated area. Wear suitable personal protective equipment.

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

F Clean the sections of the backing plate with isopropyl alcohol (IPA).

WARNING: Wipe off the remaining isopropyl alcohol with a clean, dry towel immediately after application. Do not let the remaining isopropyl alcohol air dry. Allowing the remaining isopropyl alcohol to air dry can compromise the adhesive bond.

G Put the backing plate sections into position and clamp them into place.

NOTE: If necessary, trim the backing plate sections to achieve the proper fit.

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

H Tack weld the 2 backing plate sections together.

WARNING: Failure to follow all welding safety precautions, including the use of personal protective equipment, could result in serious injury or property damage. Only technicians who have successfully met Tesla's requirements for welding training are authorized to weld structural components on Tesla vehicles.

CAUTION: Do not weld on a Tesla vehicle with an energized high voltage or 12V system. Welding on a Tesla vehicle with an energized high voltage or 12V system might damage vehicle components.

NOTE: Do not fully weld the backing plate sections together while the sections are on the vehicle.

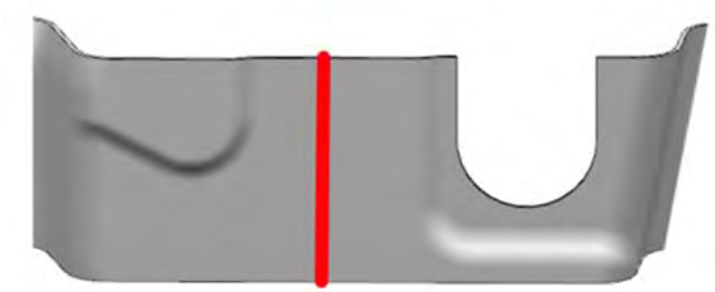
I Remove the backing plate sections from the vehicle.

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

J Weld the backing plate sections together to create 1 backing plate.

GMA Weld



WARNING: Failure to follow all welding safety precautions, including the use of personal protective equipment, could result in serious injury or property damage. Only technicians who have successfully met Tesla's requirements for welding training are authorized to weld structural components on Tesla vehicles.

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

K Use a grinding tool to grind down the weld on the backing plate.

L Put the backing plate into position and clamp it into place.

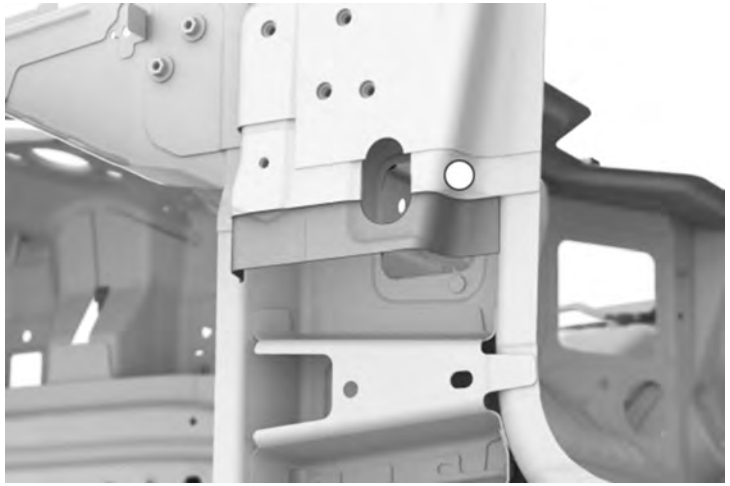
Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

M Mark the locations for the structural countersunk rivets that will attach the backing plate to the upper portion of the original Hinge Pillar Assembly.

- ◯ Structural Countersunk Rivet, 6.5 mm (x3)

CAUTION: Make sure to locate the forward-most hole inboard enough so that it does not conflict with the fasteners used to install the A-Pillar to Shotgun Reinforcement in a later step (reinforcement added to the image for clarity).



Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

M Mark the locations for the structural countersunk rivets that will attach the backing plate to the upper portion of the original Hinge Pillar Assembly (continued).

N Use a drill with a 6.7 mm (17/64 in) bit to drill holes for structural countersunk rivets.

NOTE: Install a grip screw after drilling each hole to keep the panel aligned while drilling the remaining holes.

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

- Use a drill with the Microstop countersink cage assembly and the appropriate-sized countersink bit to countersink the holes for countersunk rivets (Microstop Countersink Kit, Tesla p/n 1133101-00-A).

NOTE: If the depth adjustment for the Microstop countersink cage assembly has not already been set, do the procedure in the Microstop Countersink Kit tool instructions to adjust the tool.

NOTE: For the forward-most hole, the plastic foot of the Microstop countersink cage assembly must be removed to provide clearance for the tool.

Replacement

7 Prepare a backing plate for the installation of the new Hinge Pillar section (continued).

- Use a drill with the Microstop countersink cage assembly and the appropriate-sized countersink bit to countersink the holes for countersunk rivets (Microstop Countersink Kit, Tesla p/n 1133101-00-A) (continued).

Replacement

8 Prepare for installation of the new Hinge Pillar section.

A On the second new Hinge Pillar Assembly, use a drill with a 6.7 mm (17/64 in) bit to drill completely through the factory spot welds that attach the A-Pillar to Shotgun Reinforcement.

△ Factory Spot Weld (x3)

Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

B Use a hammer and chisel to remove the A-Pillar to Shotgun Reinforcement from the second new Hinge Pillar Assembly.

NOTE: Save the A-Pillar to Shotgun Reinforcement for installation in a later step.

C Cut the second new Hinge Pillar Assembly on the green dashed line shown.

Cut Line

NOTE: Leave 2 - 3 mm (3/32 - 1/8 in) of extra material to be trimmed at a later step.

Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

C Cut the second new Hinge Pillar Assembly on the green dashed line shown (continued).

D Put the new Hinge Pillar Assembly section into position and align it to the frame bench jig points.

NOTE: If necessary, use a 1 mm (1/16 in) shim to account for the thickness of the Body Side Outer.

NOTE: If necessary, trim the new section to achieve suitable gaps.

Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

D Put the new Hinge Pillar Assembly section into position and align it to the frame bench jig points (continued).

E Put the new A-Pillar to Shotgun Reinforcement into position and insert grip screws into the holes that were drilled when the reinforcement was removed in an earlier substep.

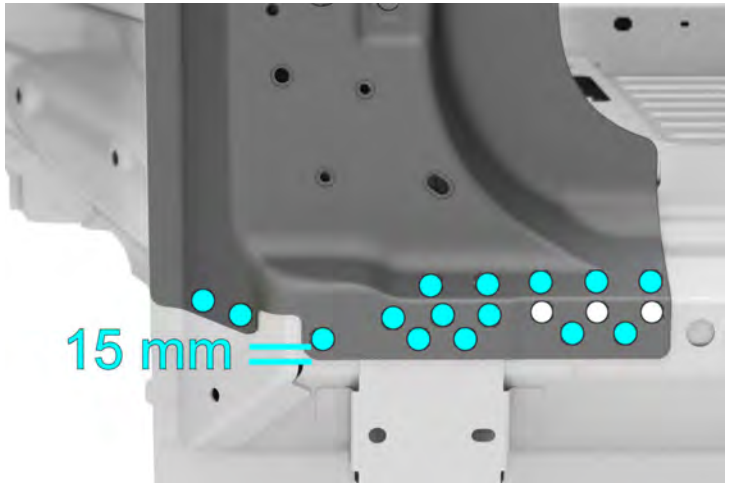
Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

F Clamp the new A-Pillar to Shotgun Reinforcement to the Shotgun Inner.

G Mark the remaining fastener locations on the new Hinge Pillar Assembly section.

- High Strength Structural Rivet, 6.5 mm (x18)
- Structural Countersunk Rivet, 6.5 mm (x4)
- Installation Spot Weld



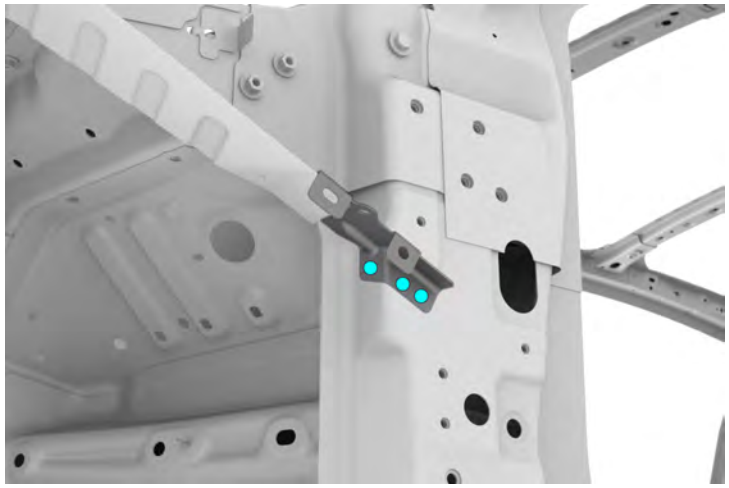
NOTE: Mark and drill the holes for the bottom row of structural countersunk rivets at least 15 mm (9/16 in) up from the bottom edge of the new section. This ensures that the rivets go through the flat face of the aluminum Sill Insert.

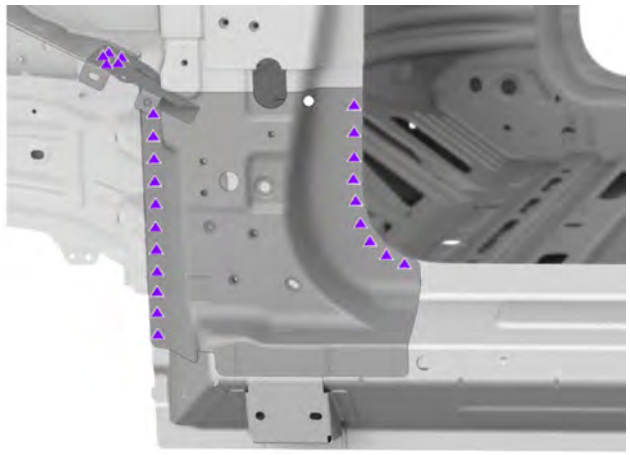
NOTE: Use the existing holes in the A-Pillar to Shotgun Reinforcement and Hinge Pillar section to drill holes in the backing plate.

Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

G Mark the remaining fastener locations on the new Hinge Pillar Assembly section (continued).

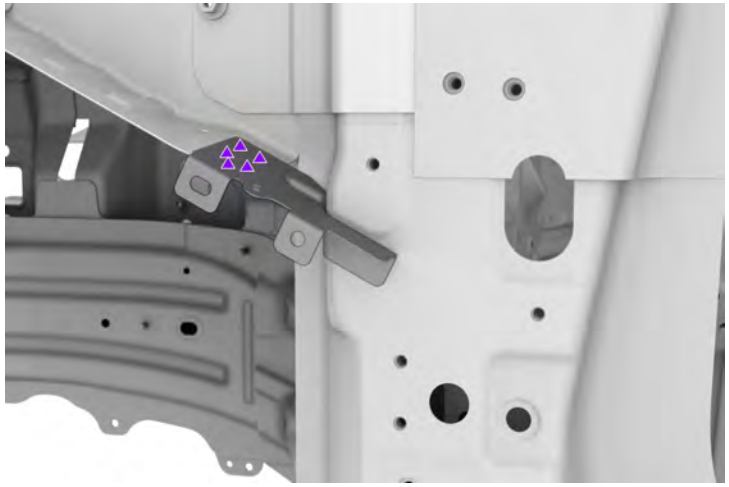




Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

G Mark the remaining fastener locations on the new Hinge Pillar Assembly section (continued).



Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

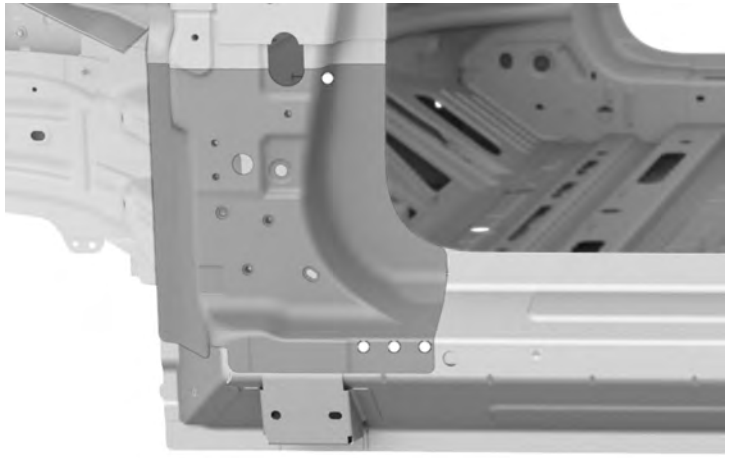
H Use a drill with a 6.7 mm (17/64 in) bit to drill holes for structural rivets and countersunk structural rivets.

CAUTION: Drill holes for countersunk rivets far enough away from the corners and any other obstructions to provide enough clearance (approximately 18 mm or 11/16 in) for the Microstop countersink cage assembly.

NOTE: Install a grip screw after drilling each hole to keep the panel aligned while drilling the remaining holes.

I Use a drill with the Microstop countersink cage assembly and the appropriate-sized countersink bit to countersink the holes for countersunk rivets (Microstop Countersink Kit, Tesla p/n 1133101-00-A).

- ○ Structural Countersunk Rivet, 6.5 mm (x4)



NOTE: If the depth adjustment for the Microstop countersink cage assembly has not already been set, do the procedure in the Microstop Countersink Kit tool instructions to adjust the tool.

Replacement

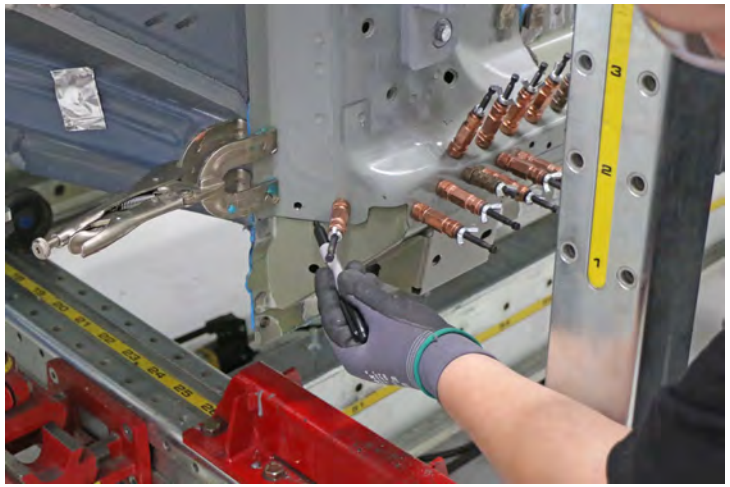
8 Prepare for installation of the new Hinge Pillar section (continued).

I Use a drill with the Microstop countersink cage assembly and the appropriate-sized countersink bit to countersink the holes for countersunk rivets (Microstop Countersink Kit, Tesla p/n 1133101-00-A) (continued).

Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

J Mark the surface preparation boundary lines on the new Hinge Pillar section and the vehicle.



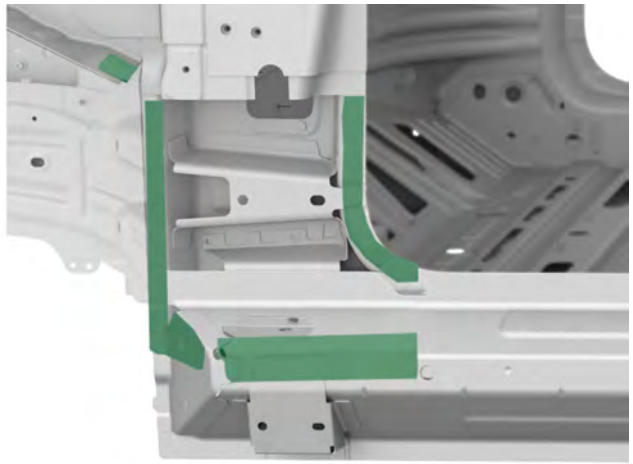
K Remove the new A-Pillar to Shotgun Reinforcement, the new Hinge Pillar section, and the backing plate.

Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

L Mark the bond path areas on the new Hinge Pillar Assembly section, the new A-Pillar to Shotgun Reinforcement, the backing plate, and the vehicle.

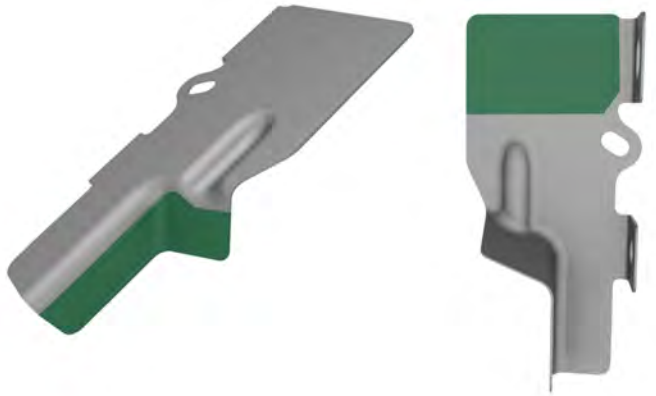
Steel-to-Steel Bond Path



Replacement

8 Prepare for installation of the new Hinge Pillar section (continued).

L Mark the bond path areas on the new Hinge Pillar Assembly section, the new A-Pillar to Shotgun Reinforcement, the backing plate, and the vehicle (continued).

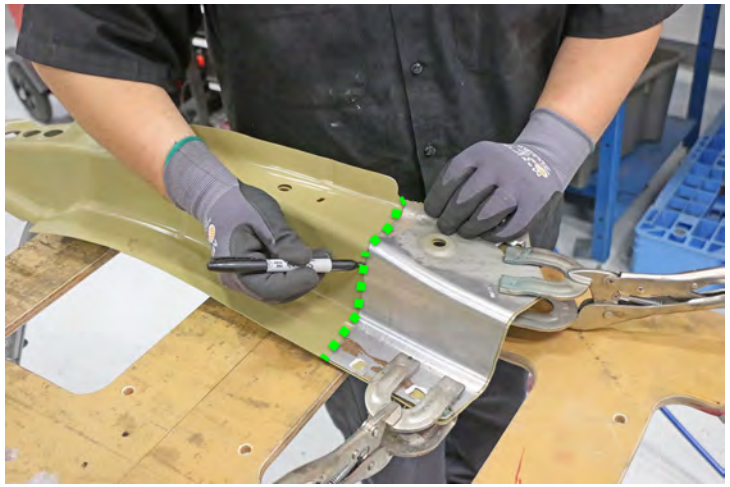


Replacement

9 Prepare for installation of the new C-Pillar Extension section.

A Use the section of the original C-Pillar Extension as a template to mark a cut line on the new C-Pillar Extension.

Cut Line



NOTE: The section of the original C-Pillar Extension was removed in an earlier step.

B Cut the new C-Pillar Extension on the cut line marked in the previous substep.

NOTE: Leave 2 - 3 mm (3/32 - 1/8 in) of extra material to be trimmed at a later step.

NOTE: Save the remaining piece of the new C-Pillar Extension to use to create a backing plate in the next substep.

Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

C Cut a 40 mm (1-9/16 in) section from the unused portion of the remaining piece of the new C-Pillar Extension to create a backing plate.

D Cut off the flanges from the backing plate.

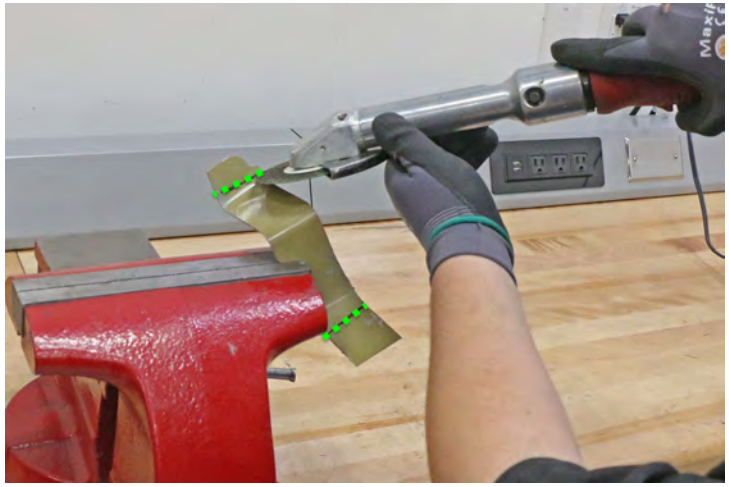
Cut Line

NOTE: This allows the backing plates to fit inside the butt joint.

Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

D Cut off the flanges from the backing plate (continued).



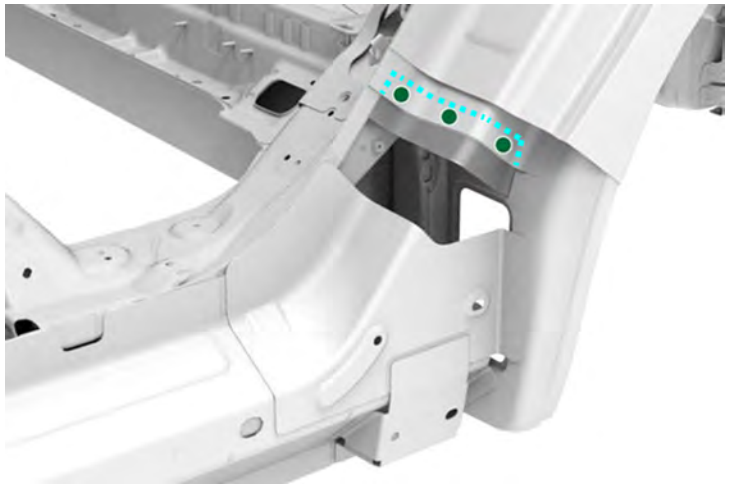
E Put the backing plate into position and clamp it into place.

Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

F Use a drill with a 4.8 mm (3/16 in) bit to drill holes for countersunk rivets.

- Countersunk Rivet, 4.8 mm Short (x3)
- Reference Line/Point



CAUTION: Drill holes for countersunk rivets far enough away from the corners and any other obstructions to provide enough clearance (approximately 18 mm or 11/16 in) for the Microstop countersink cage assembly.

NOTE: Install a grip screw after drilling each hole to keep the panel aligned while drilling the remaining holes.

Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

G Put the new C-Pillar Extension section into position and clamp it into place.

NOTE: If necessary, trim the new section to achieve suitable gaps.

H Mark the fastener locations on the new C-Pillar Extension section.

- Structural Rivet, 4.8 mm (x5)
- Countersunk Rivet, 4.8 mm Short (x3)

Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

H Mark the fastener locations on the new C-Pillar Extension section (continued).

I Use a drill with a 4.8 mm (3/16 in) bit to drill holes for structural rivets and countersunk structural rivets.

NOTE: Install a grip screw after drilling each hole to keep the panel aligned while drilling the remaining holes.

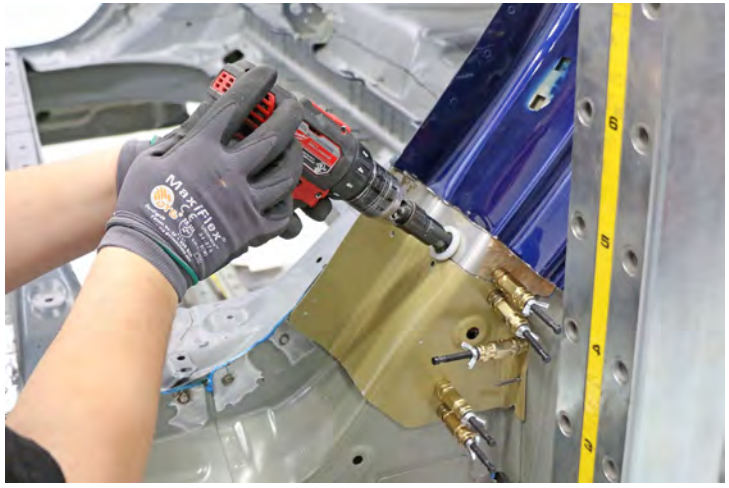
Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

J Use a drill with the Microstop countersink cage assembly and the appropriate-sized countersink bit to countersink the holes for countersunk rivets (Microstop Countersink Kit, Tesla p/n 1133101-00-A).

- Countersunk Rivet, 4.8 mm Short (x6)

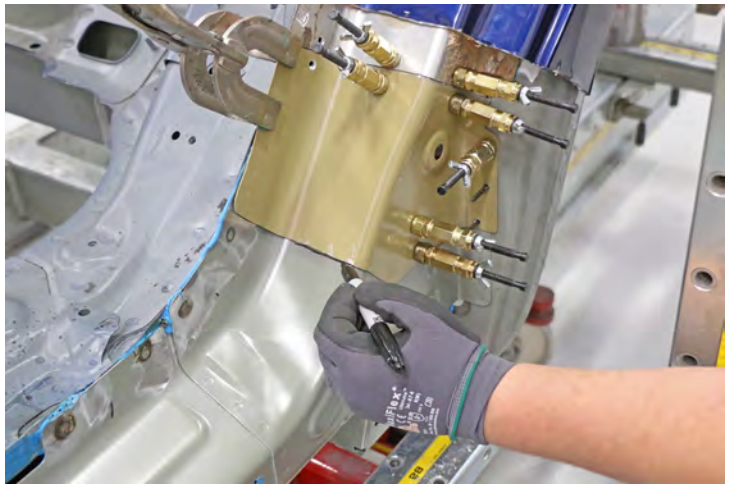
NOTE: If the depth adjustment for the Microstop countersink cage assembly has not already been set, do the procedure in the Microstop Countersink Kit tool instructions to adjust the tool.



Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

K Mark the surface preparation boundary lines on the new C-Pillar Extension section and on the vehicle.



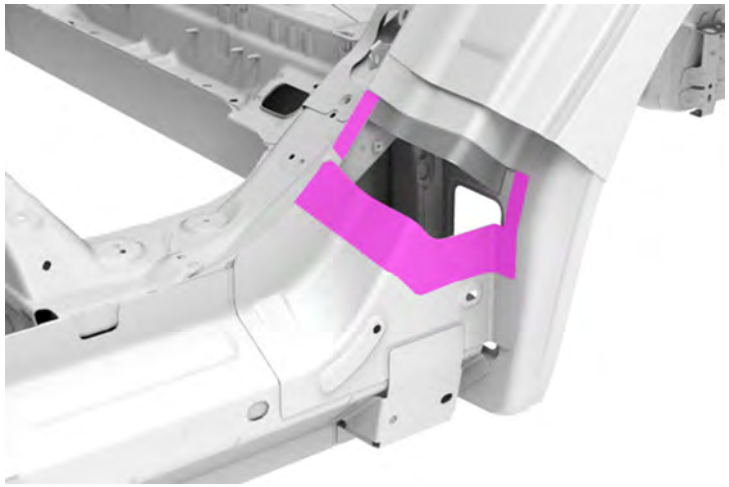
L Remove the new C-Pillar extension section and the backing plate.

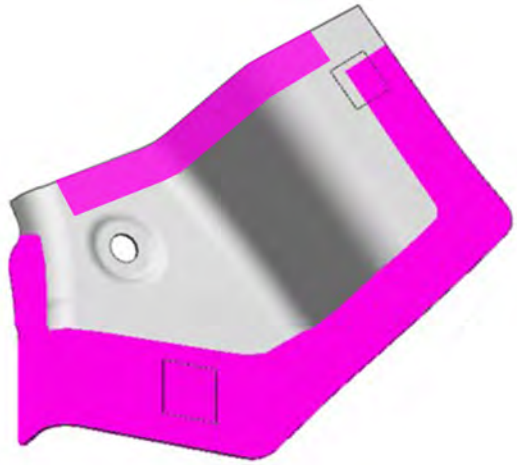
Replacement

9 Prepare for installation of the new C-Pillar Extension section (continued).

M Mark the bond path areas on the new C-Pillar Extension and the vehicle.

Steel-to-Aluminum Bond Path





Replacement

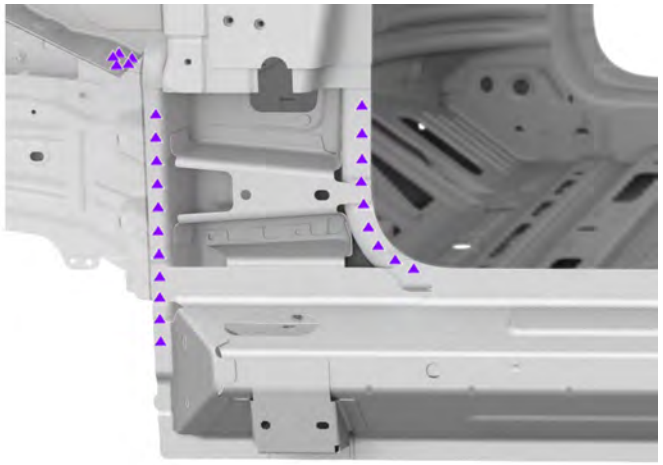
10 Prepare the surfaces to install the new Hinge Pillar Assembly section and C-Pillar Extension section.

A Use a red Scotch-Brite pad to scuff the new Hinge Pillar Assembly section, the C-Pillar Extension section, and the outside of the backing plates in the bond path areas.

NOTE: Make sure to scuff the inside surfaces of the original Hinge Pillar Assembly and the original C-Pillar Extension in the areas that will contact the backing plates.

B Mark the installation spot weld locations on the new Hinge Pillar Assembly section, the A-Pillar to Shotgun Reinforcement, and the vehicle.

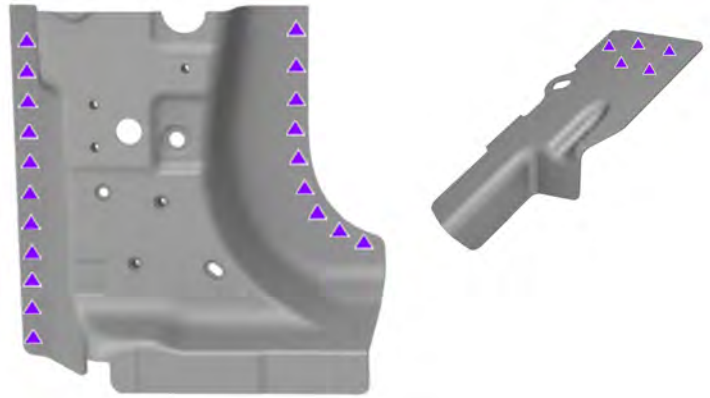
▲ Installation Spot Weld



Replacement

10 Prepare the surfaces to install the new Hinge Pillar Assembly section and C-Pillar Extension section (continued).

B Mark the installation spot weld locations on the new Hinge Pillar Assembly section, the A-Pillar to Shotgun Reinforcement, and the vehicle (continued).



Replacement

10 Prepare the surfaces to install the new Hinge Pillar Assembly section and C-Pillar Extension section (continued).

C Use a disc sander with a medium-abrasive surface conditioning disc to remove the e-coat in the weld areas.

WARNING: Remove the e-coat in a well-ventilated area. Wear suitable personal protective equipment.

CAUTION: Take the appropriate steps to minimize the cross-contamination of steel and aluminum components during the repair.

NOTE: Use a belt sander with a medium-abrasive belt for any areas that cannot be reached with a disc sander.

D Clean all the bond paths and weld areas on the new sections, the backing plates, and the vehicle with isopropyl alcohol (IPA).

WARNING: Wipe off the remaining isopropyl alcohol with a clean, dry towel immediately after application. Do not let the remaining isopropyl alcohol air dry. Allowing the remaining isopropyl alcohol to air dry can compromise the adhesive bond.

Replacement

10 Prepare the surfaces to install the new Hinge Pillar Assembly section and C-Pillar Extension section (continued).

E Apply a suitable corrosion-resistant epoxy primer to any bare metal on the backsides of the backing plates (the sides of the backing plates that will be facing the inside of the vehicle when installed).

11 Apply structural adhesive to install the new Hinge Pillar Assembly section and C-Pillar Extension section.

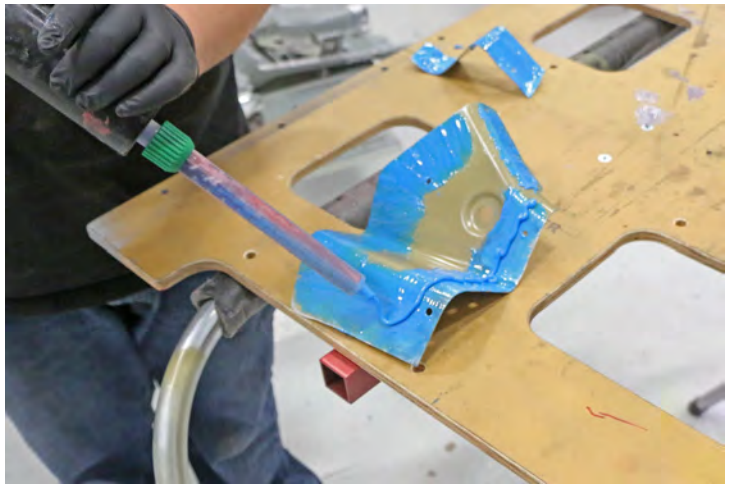
A Spread a thin coating of structural adhesive as a primer layer on the bond paths on the new Hinge Pillar Assembly section, the new C-Pillar Extension section, the backing plates, and the vehicle.

NOTE: Assembly must be performed while the primer layer is still wet. The drying time of the adhesive varies depending on temperature and humidity.

Replacement

11 Apply structural adhesive to install the new Hinge Pillar Assembly section and C-Pillar Extension section (continued).

B While the primer layer is still wet, apply a bead of structural adhesive on top of the primer layer of the bond path areas on the new Hinge Pillar Assembly section, the new C-Pillar Extension section, and the backing plates.



12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section.

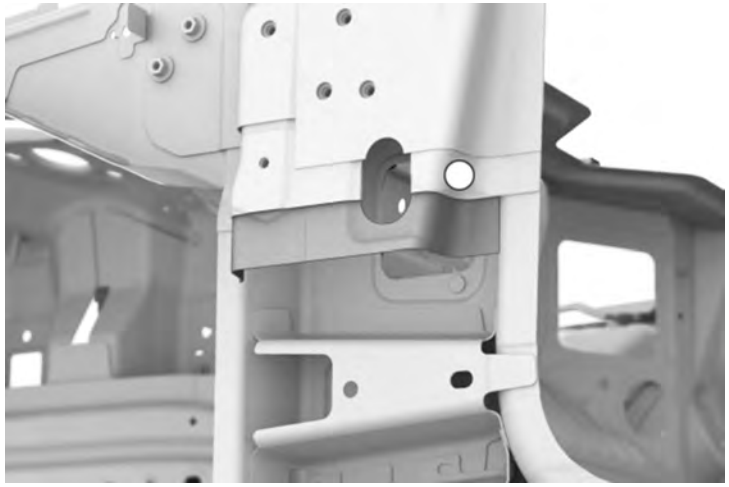
A Put the backing plate for the Hinge Pillar into position and insert the countersunk structural rivets to hold it in place.

- ◯ Structural Countersunk Rivet, 6.5 mm (x3)

Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

A Put the backing plate for the Hinge Pillar into position and insert the countersunk structural rivets to hold it in place (continued).

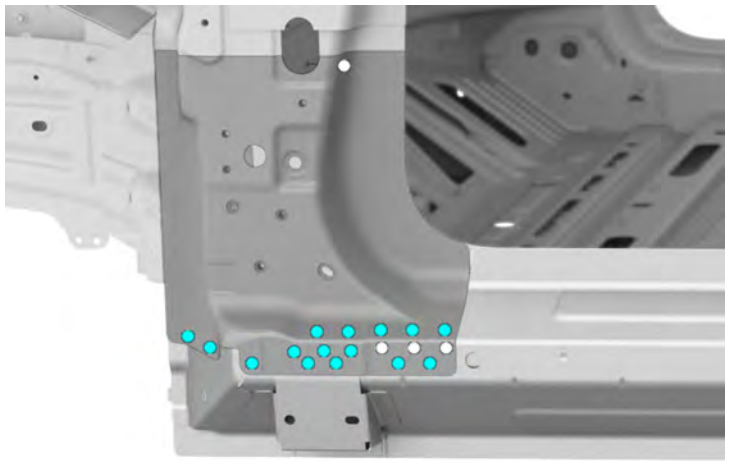


Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

B Put the new Hinge Pillar Assembly section into position, and insert the structural rivets and countersunk structural rivets shown.

- High Strength Structural Rivet, 6.5 mm (x15)
- Structural Countersunk Rivet, 6.5 mm (x4)



Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

B Put the new Hinge Pillar Assembly section into position, and insert the structural rivets and countersunk structural rivets shown (continued).

C Install the structural countersunk rivet shown.

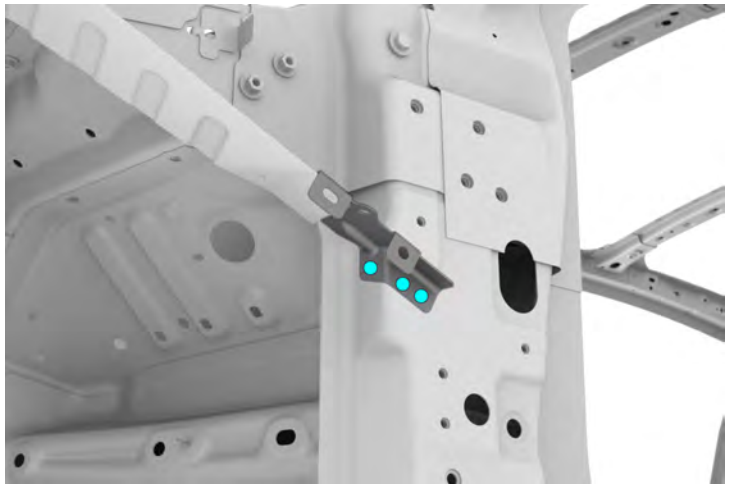
- ◯ Structural Countersunk Rivet, 6.5 mm (x1)

Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

D Put the new A-Pillar to Shotgun Reinforcement into position and insert the structural rivets.

- High Strength Structural Rivet, 6.5 mm (x3)



Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

E Align and temporarily secure the new Hinge Pillar section to the frame bench jig points.

NOTE: If necessary, use a 1 mm (1/16 in) shim to account for the thickness of the Body Side Outer.

F Clamp the new Hinge Pillar section in the areas that do not have fasteners.

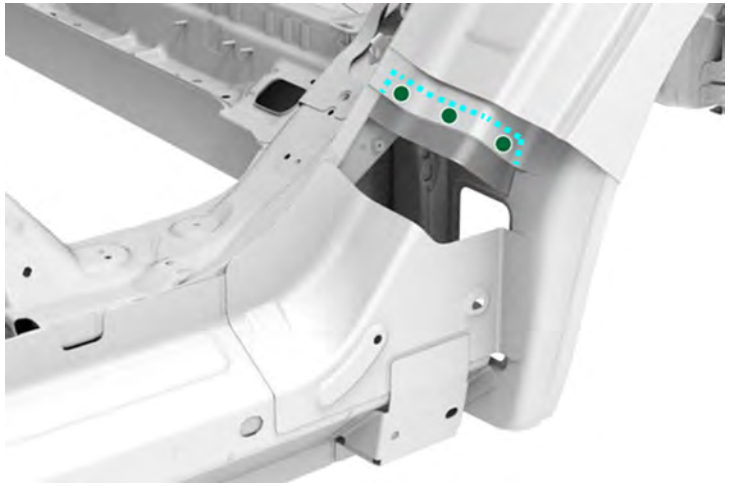
Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

G Install the structural rivets and structural countersunk rivets to install the new Hinge Pillar section and the new A-Pillar to Shotgun Reinforcement.

H Put the backing plate for the C-Pillar Extension into position and insert the countersunk rivets to hold it in place.

- Countersunk Rivet, 4.8 mm Short (x3)



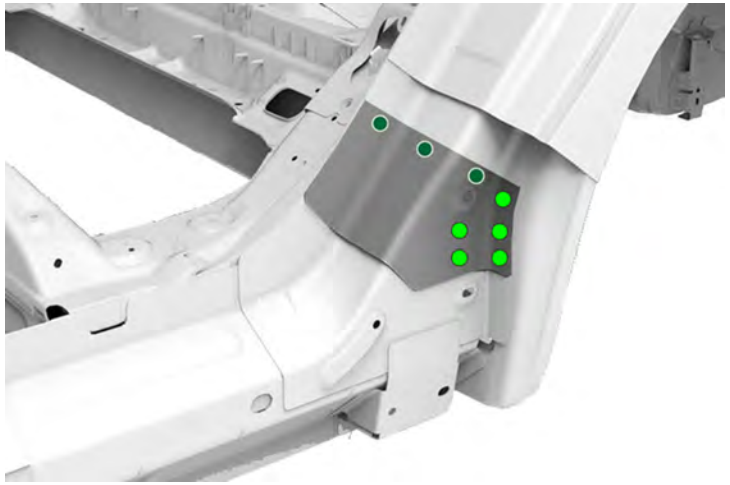
Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

H Put the backing plate for the C-Pillar Extension into position and insert the countersunk rivets to hold it in place (continued).

I Put the new C-Pillar Extension section into position and insert the structural rivets and countersunk rivets to hold it in place.

- Structural Rivet, 4.8 mm (x5)
- Countersunk Rivet, 4.8 mm Short (x3)



Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

I Put the new C-Pillar Extension section into position and insert the structural rivets and countersunk rivets to hold it in place (continued).

J Install the structural rivets and countersunk rivets to install the new C-Pillar Reinforcement section.

Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

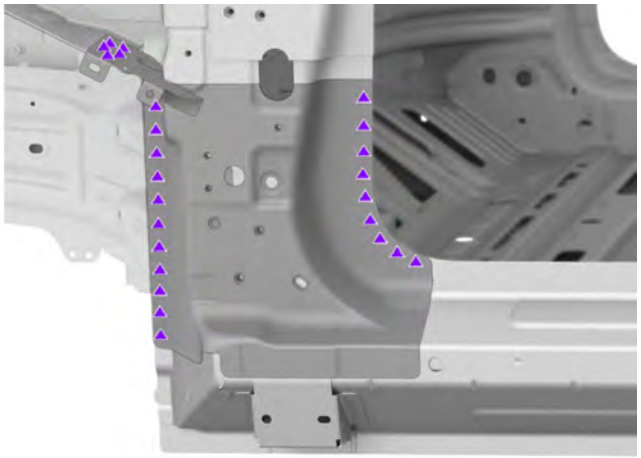
K Wipe off any excess adhesive.

Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

L Perform resistance spot welding.

▲ Installation Spot Weld



WARNING: Failure to follow all welding safety precautions, including the use of personal protective equipment, could result in serious injury or property damage. Only technicians who have successfully met Tesla's requirements for welding training are authorized to weld structural components on Tesla vehicles.

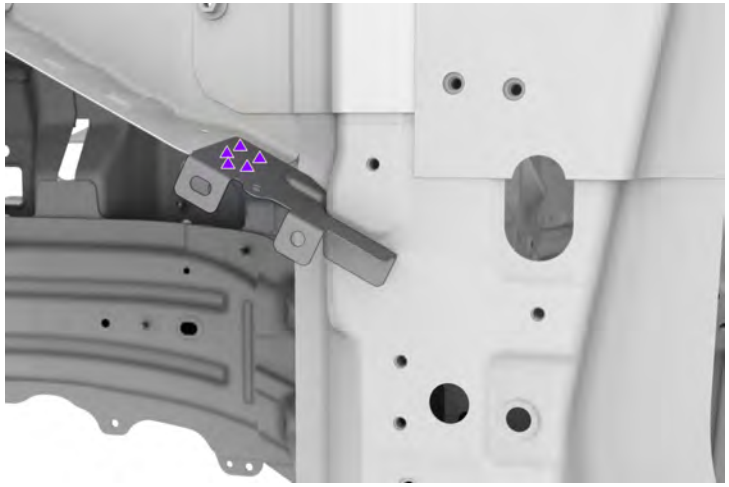
CAUTION: Do not weld on a Tesla vehicle with an energized high voltage or 12V system. Welding on a Tesla vehicle with an energized high voltage or 12V system might damage vehicle components.

CAUTION: Use only insulated clamps within 200 mm (8 in) of resistance spot weld locations. Do not perform resistance spot welding when there is an uninsulated clamp within 200 mm (8 in) of the spot weld location.

Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

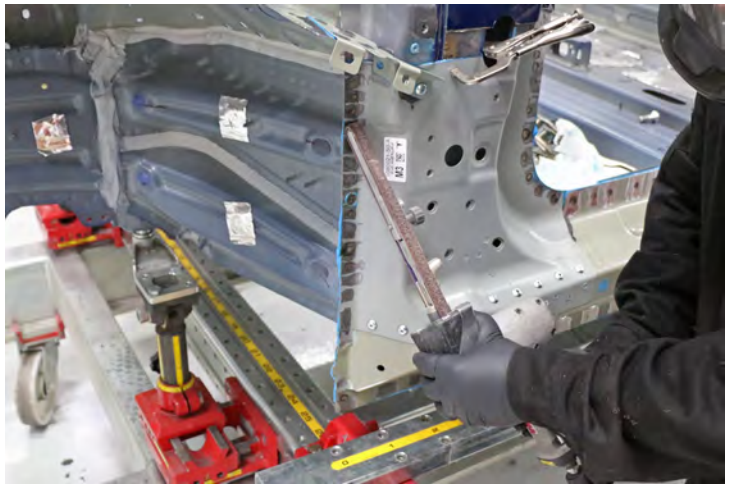
L Perform resistance spot welding (continued).



Replacement

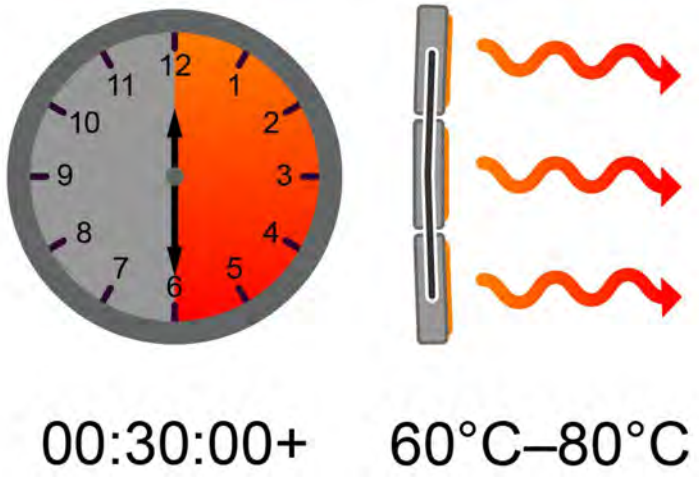
12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

M Remove any discoloration from the weld areas.



N Bake the structural adhesive so that the bonded panels reach a temperature of 60°C–80°C (140°F–176°F) for at least 30 minutes to achieve full strength.

WARNING: Do not allow the High Voltage Battery to reach a temperature above 74°C (165°F). Heating the High Voltage Battery above 74°C (165°F) for an extended period could result in injury to personnel and/or damage to the battery.



Replacement

12 Install the new Hinge Pillar Assembly section and the new C-Pillar Extension section (continued).

O Prime any bare metal that will not be covered with weld-through primer or structural adhesive in a subsequent repair with a suitable corrosion-resistant epoxy primer.

13 Prepare the new Body Side Outer section for installation.

A Cut the new Body Side Outer on the cut lines used for the removal of the lower section of the original Body Side Outer in an earlier step.

NOTE: Leave 2 - 3 mm (3/32 - 1/8 in) of extra material to be trimmed at a later step.

Replacement

13 Prepare the new Body Side Outer section for installation (continued).

B Put the new Body Side Outer section into position and clamp it into place.

NOTE: If necessary, trim the new Body Side Outer section to achieve suitable gaps.

Replacement

13 Prepare the new Body Side Outer section for installation (continued).

C Remove the new Body Side Outer section.

14 Create and install backing plates for the Body Side Outer butt joints.

A Cut 40 mm (1-916 in) sections from the remaining pieces of the new Body Side Outer to create backing plates for the 3 butt joints.

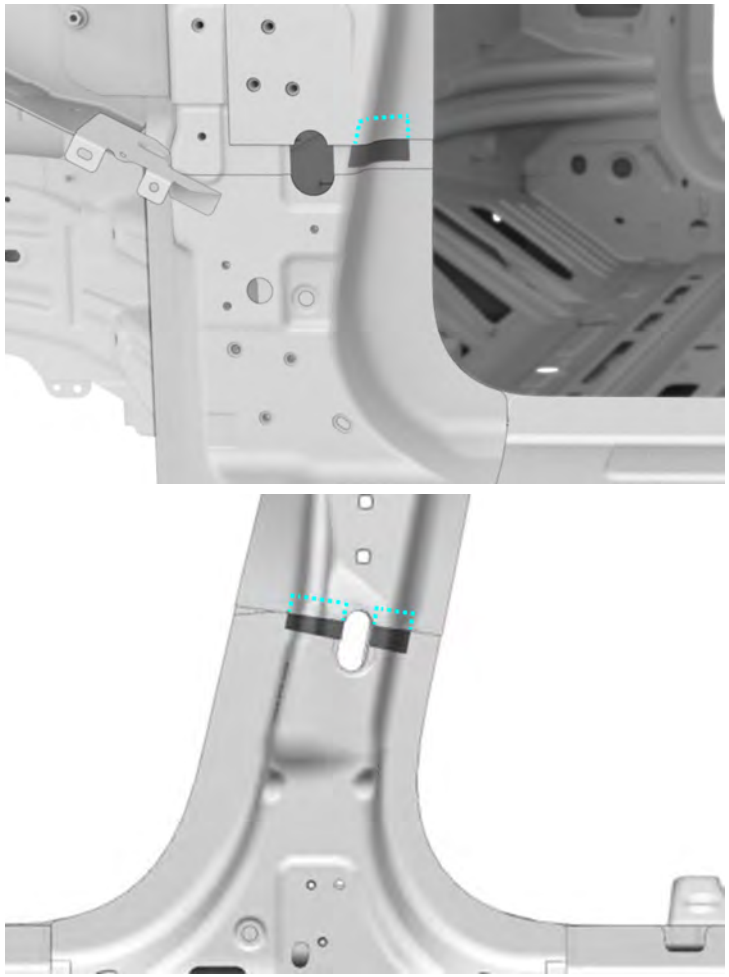
NOTE: These pieces were cut off of the new Body Side Outer in the previous step.

Replacement

14 Create and install backing plates for the Body Side Outer butt joints (continued).

B Put each section into position and mark cut lines to remove the unneeded material to create the backing plates shown.

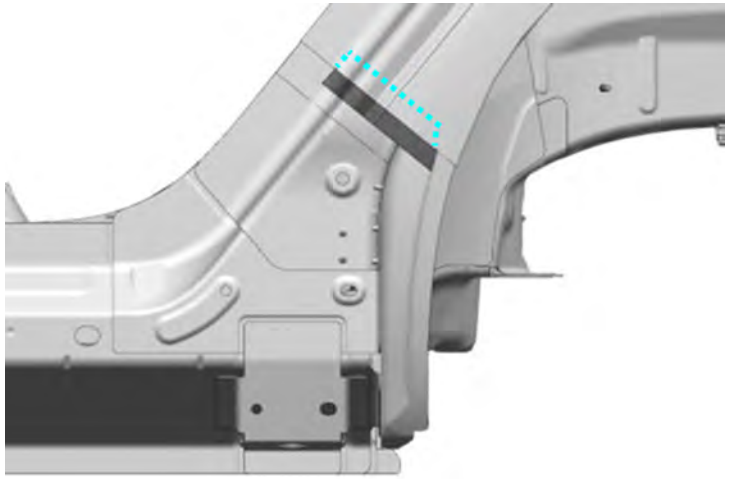
Reference Line/Point



Replacement

14 Create and install backing plates for the Body Side Outer butt joints (continued).

B Put each section into position and mark cut lines to remove the unneeded material to create the backing plates shown (continued).

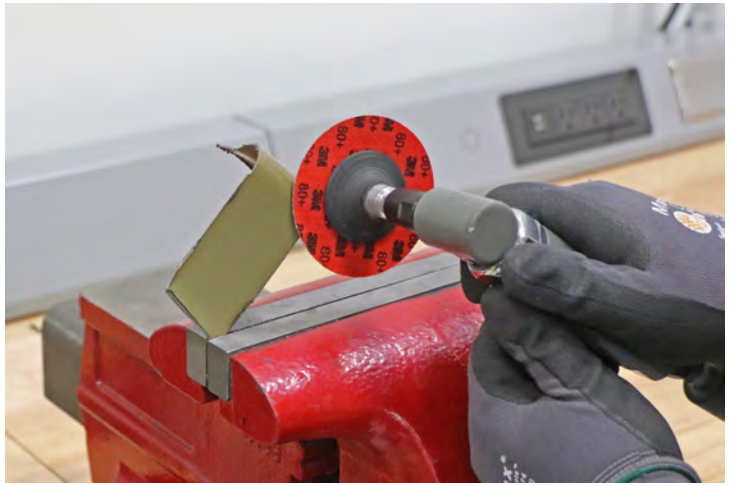


Replacement

14 Create and install backing plates for the Body Side Outer butt joints (continued).

C Cut the sections on the cut lines marked in the previous substep.

D Use a disc sander with a medium-abrasive surface conditioning disc to remove the e-coat on the outward surface of the backing plates (the sides of the backing plates that will be facing the outside of the vehicle when installed).



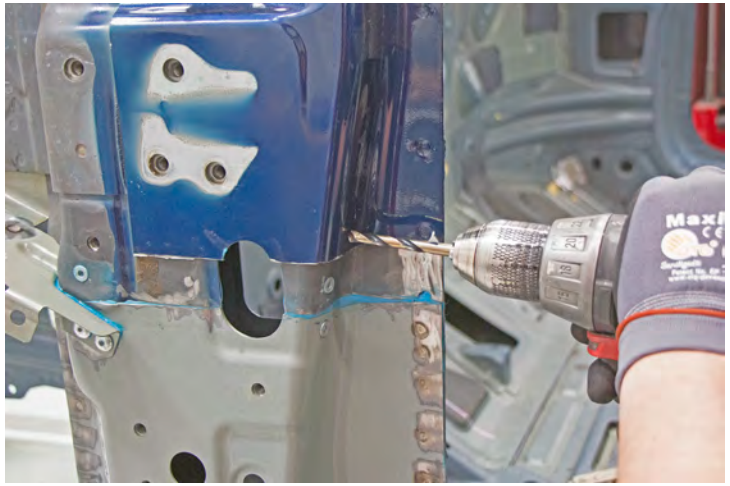
WARNING: Remove the e-coat in a well-ventilated area. Wear suitable personal protective equipment.

Replacement

14 Create and install backing plates for the Body Side Outer butt joints (continued).

E Wipe the insides of the flanges with isopropyl alcohol (IPA) to remove any cavity wax.

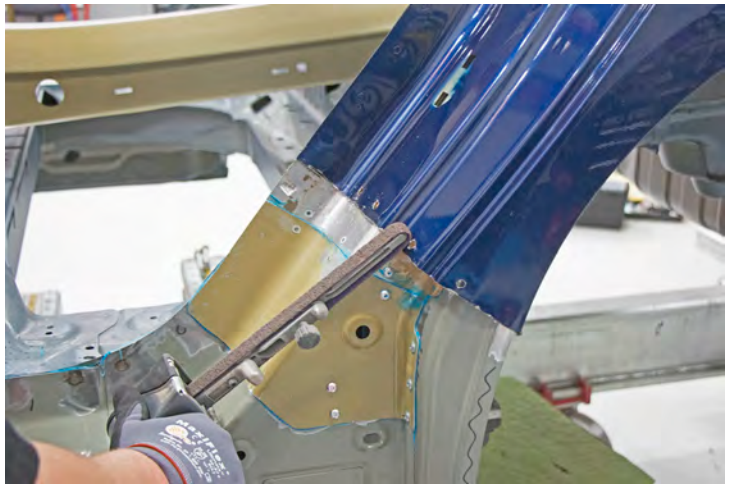
F Use a drill with an 8 mm (5/16 in) bit to drill holes for plug welds.



Replacement

14 Create and install backing plates for the Body Side Outer butt joints (continued).

G Use a belt sander with a medium-abrasive belt to remove the paint from the butt joint areas on the vehicle.



WARNING: Remove the paint in a well-ventilated area. Wear suitable personal protective equipment.

H Use sandpaper or a disc sander with a medium-abrasive surface conditioning disc to remove any remaining epoxy adhesive from the inside surfaces of the flanges.

WARNING: Remove the epoxy adhesive in a well-ventilated area. Wear suitable personal protective equipment.

NOTE: Pry up the flanges where necessary to gain access to the adhesive.

Replacement

14 Create and install backing plates for the Body Side Outer butt joints (continued).

I Apply a suitable corrosion-resistant epoxy primer to any bare metal on the backsides of the backing plates (the sides of the backing plates that will be facing the inside of the vehicle when installed).

J Put the backing plates into position and clamp them into place. If necessary, trim them to fit.

Replacement

14 Create and install backing plates for the Body Side Outer butt joints (continued).

K Plug weld the backing plates.

WARNING: Failure to follow all welding safety precautions, including the use of personal protective equipment, could result in serious injury or property damage. Only technicians who have successfully met Tesla's requirements for welding training are authorized to weld structural components on Tesla vehicles.

CAUTION: Do not weld on a Tesla vehicle with an energized high voltage or 12V system. Welding on a Tesla vehicle with an energized high voltage or 12V system might damage vehicle components.

L Use a grinding tool to grind down the plug welds until they are flush with the panel.

Replacement

15 Prepare for the installation of the new Body Side Outer section.

A Put the new Body Side Outer section into position and clamp it into place.

Replacement

15 Prepare for the installation of the new Body Side Outer section (continued).

B Temporarily install the door hinge bolts.

- Bolt, hex-head (x5)

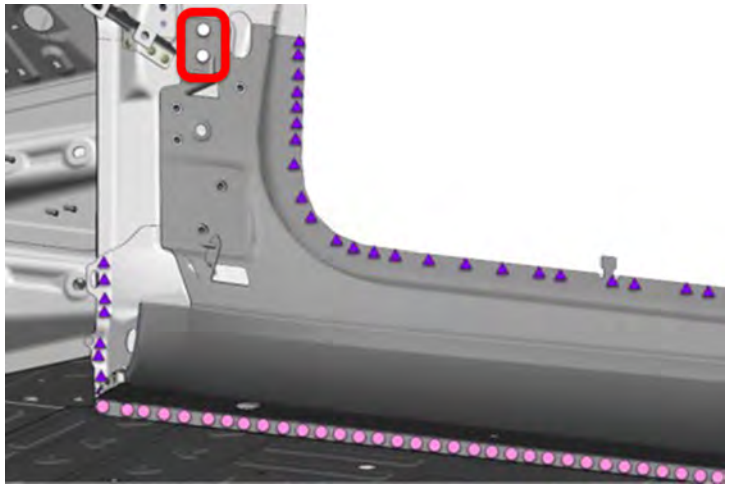
Replacement

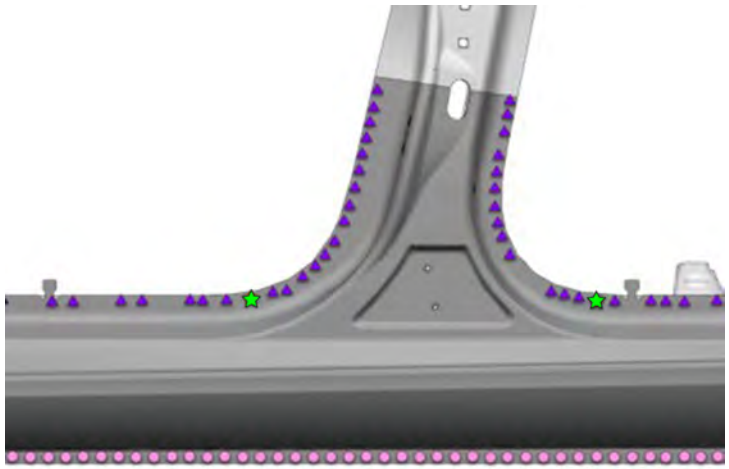
15 Prepare for the installation of the new Body Side Outer section (continued).

C Mark the fastener locations on the new component.

- ○ Structural Countersunk Rivet, 6.5 mm (x2, circled in red)
- ● Structural Rivet, 6.5 mm Short (x78)
- ★ Flow Form Rivet S38 (x6)
- ▲ Installation Spot Weld

NOTE: If the Sill Outer was resistance spot welded to the Sill Inner, do not install structural rivets on the lower flange. This area will be secured with structural adhesive and clamps during installation.

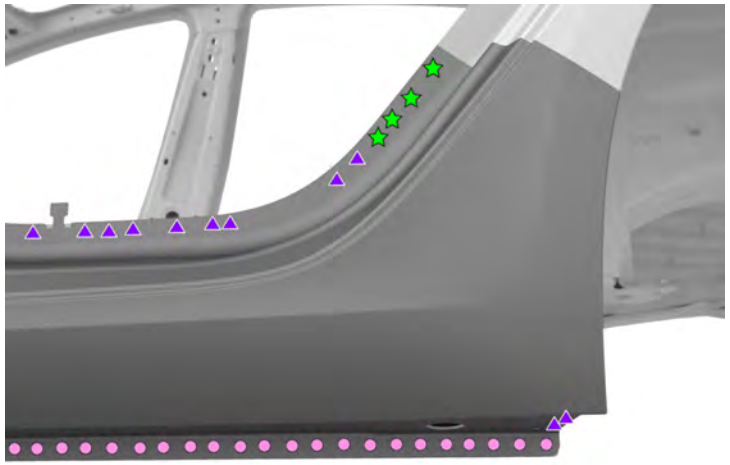




Replacement

15 Prepare for the installation of the new Body Side Outer section (continued).

C Mark the fastener locations on the new component (continued).



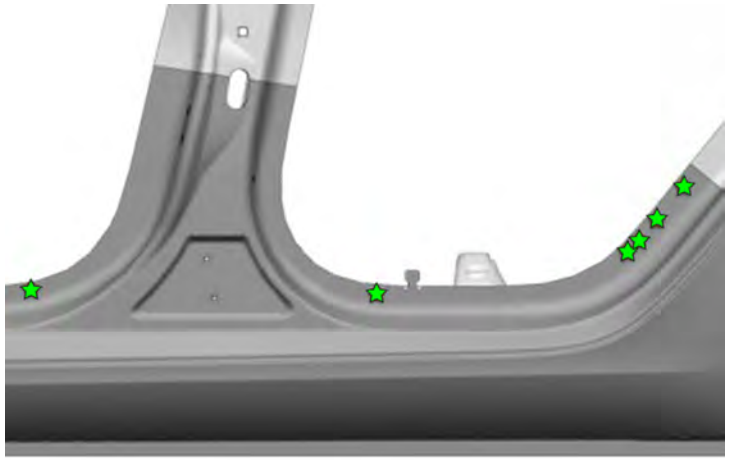
Replacement

15 Prepare for the installation of the new Body Side Outer section (continued).

D Create holes for flow form rivets.

★ Flow Form Rivet S38 (x6)

For more information on installing flow form rivets, refer to BR-18-92-001, "Using Flow Form Rivets".

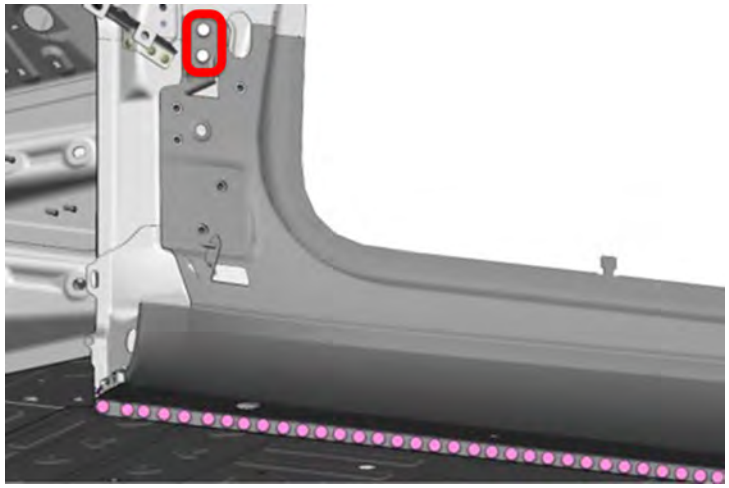


Replacement

15 Prepare for the installation of the new Body Side Outer section (continued).

E Use a drill with a 6.7 mm (17/64 in) bit to drill holes for structural rivets.

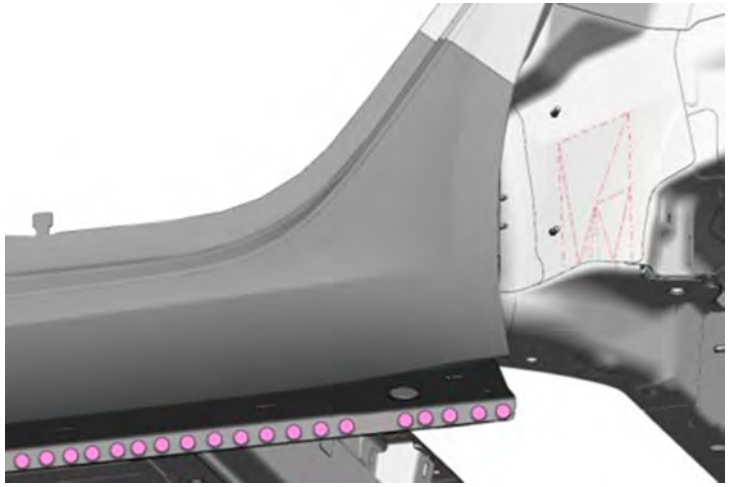
- ○ Structural Countersunk Rivet, 6.5 mm (x2, circled in red)
- ● Structural Rivet, 6.5 mm Short (x78)



Replacement

15 Prepare for the installation of the new Body Side Outer section (continued).

E Use a drill with a 6.7 mm (17/64 in) bit to drill holes for structural rivets (continued).



Replacement

15 Prepare for the installation of the new Body Side Outer section (continued).

F Use a drill with the Microstop countersink cage assembly and the appropriate-sized countersink bit to countersink the holes for countersunk rivets (Microstop Countersink Kit, Tesla p/n 1133101-00-A).

NOTE: If the depth adjustment for the Microstop countersink cage assembly has not already been set, do the procedure in the Microstop Countersink Kit tool instructions to adjust the tool.

G Mark the surface preparation boundary lines on the new Body Side Outer section and on the vehicle.

Replacement

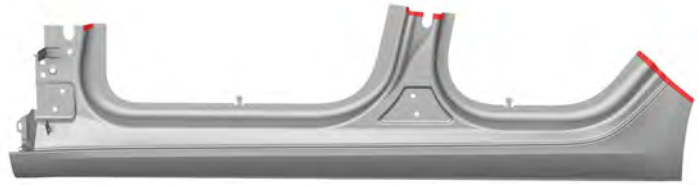
15 Prepare for the installation of the new Body Side Outer section (continued).

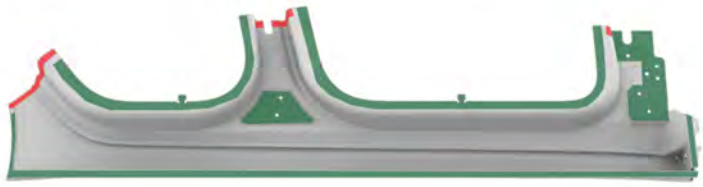
H Remove the new Body Side Outer section.

I Mark the bond path and weld areas on the new component and the vehicle. These areas will be prepared for bonding and welding in the next step.

Steel-to-Steel Bond Path

GMA Weld





Replacement

15 Prepare for the installation of the new Body Side Outer section (continued).

I Mark the bond path and weld areas on the new component and the vehicle. These areas will be prepared for bonding and welding in the next step (continued).

Replacement

16 Prepare the surfaces to install the new Body Side Outer Section.

A Use a red Scotch-Brite pad to scuff the new Body Side Outer section and the vehicle in the bond path areas.

B Mark the installation spot weld locations.

Replacement

16 Prepare the surfaces to install the new Body Side Outer Section (continued).

C Use a disc sander with a medium-abrasive surface conditioning disc to remove the e-coat in the weld areas.

WARNING: Remove the e-coat in a well-ventilated area. Wear suitable personal protective equipment.

WARNING: Use only sanding wheels and belts that are 80 grit or finer on aluminum components. Using sanding wheels or belts that are coarser than 80 grit can cause fractures in the aluminum.

CAUTION: Within two hours of removing the e-coat or paint, cover the abraded aluminum areas in the bond path with a thin primer layer of structural adhesive. If the abraded aluminum areas are not primed within two hours, they must be abraded again to remove any oxidation.

NOTE: Use a belt sander with a medium-abrasive belt for any areas that cannot be reached with a disc sander.

Replacement

16 Prepare the surfaces to install the new Body Side Outer Section (continued).

D Clean all the bond paths and weld areas on the new component or components and on the vehicle with isopropyl alcohol (IPA).

WARNING: Wipe off the remaining isopropyl alcohol with a clean, dry towel immediately after application. Do not let the remaining isopropyl alcohol air dry. Allowing the remaining isopropyl alcohol to air dry can compromise the adhesive bond.

17 Apply structural adhesive to install the new Body Side Outer section.

A Spread a thin coating of structural adhesive as a primer layer on the bond paths on the new Body Side Outer section and the vehicle.

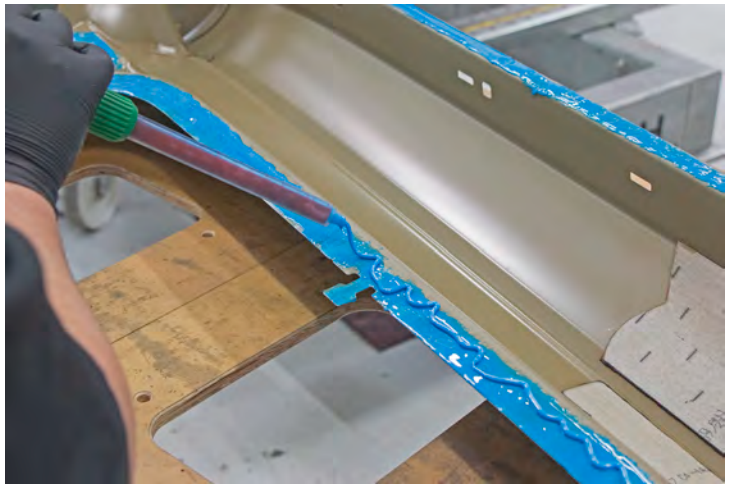
WARNING: Do not apply structural adhesive within 25 mm (1 in) of the GMA weld locations. Applying structural adhesive within 25 mm (1 in) of the GMA weld locations can cause weld failure.

NOTE: Assembly must be performed while the primer layer is still wet. The drying time of the adhesive varies depending on temperature and humidity.

Replacement

17 Apply structural adhesive to install the new Body Side Outer section (continued).

B While the primer layer is still wet, apply a bead of structural adhesive on top of the primer layer of the bond path areas on the vehicle.



C Apply urethane sealant to the foam dam edges.

Replacement

18 Install the new Body Side Outer section.

A Put the new Body Side Outer section into position and clamp it into place.

B Temporarily install the door hinge bolts.

- Bolt, hex-head (x5)

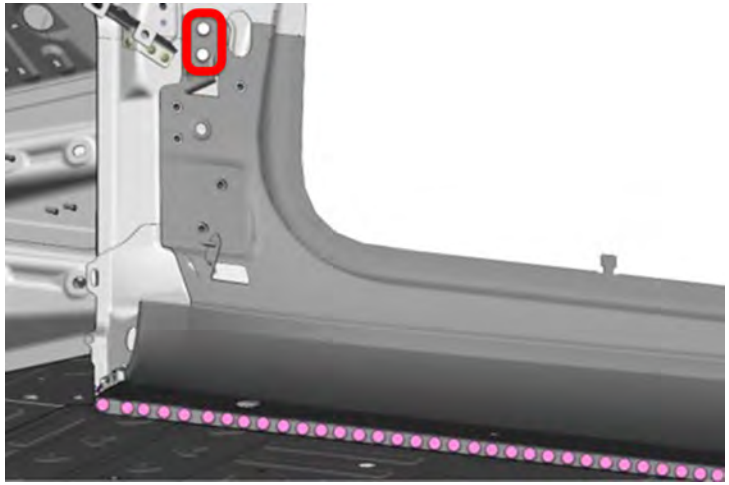
Replacement

18 Install the new Body Side Outer section (continued).

B Temporarily install the door hinge bolts (continued).

C Insert the structural rivets and the structural countersunk rivets.

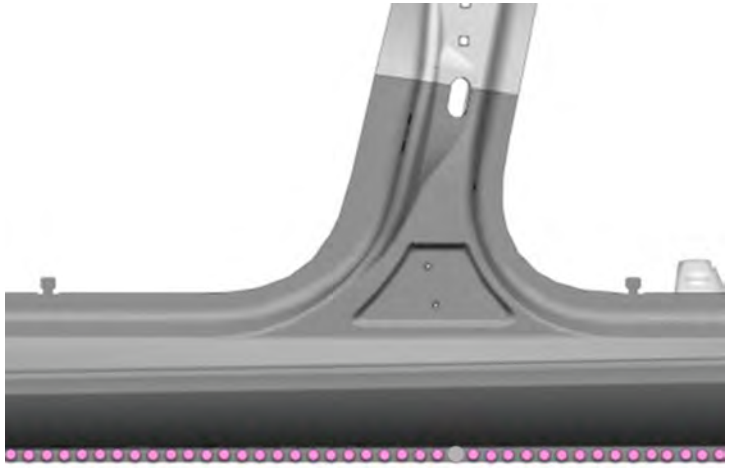
- ○ Structural Countersunk Rivet, 6.5 mm (x2, circled in red)
- ● Structural Rivet, 6.5 mm Short (x78)

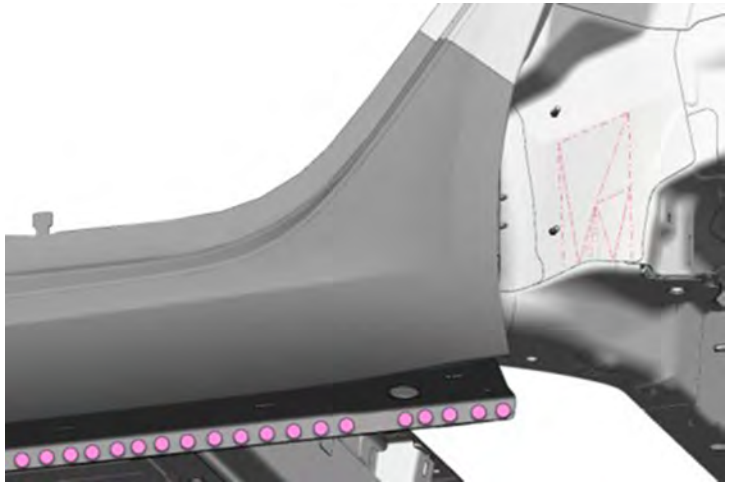


Replacement

18 Install the new Body Side Outer section (continued).

C Insert the structural rivets and the structural countersunk rivets (continued).





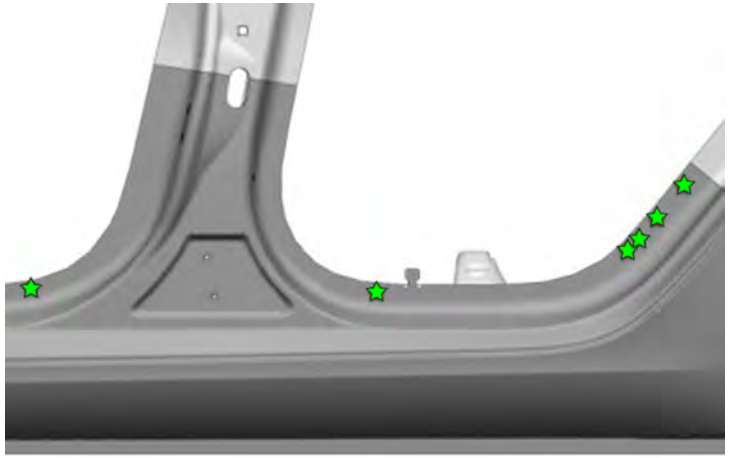
Replacement

18 Install the new Body Side Outer section (continued).

C Insert the structural rivets and the structural countersunk rivets (continued).

D Insert the flow form rivets.

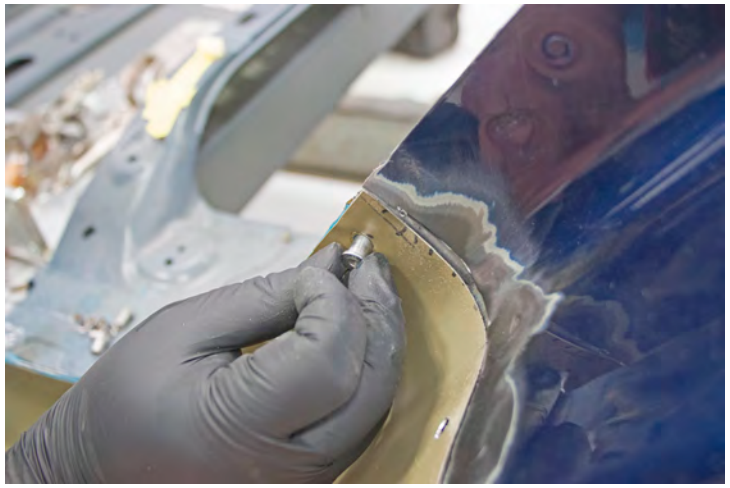
★ Flow Form Rivet S38 (x6)



Replacement

18 Install the new Body Side Outer section (continued).

D Insert the flow form rivets (continued).



E Install the structural rivets and the structural countersunk rivets.

Replacement

18 Install the new Body Side Outer section (continued).

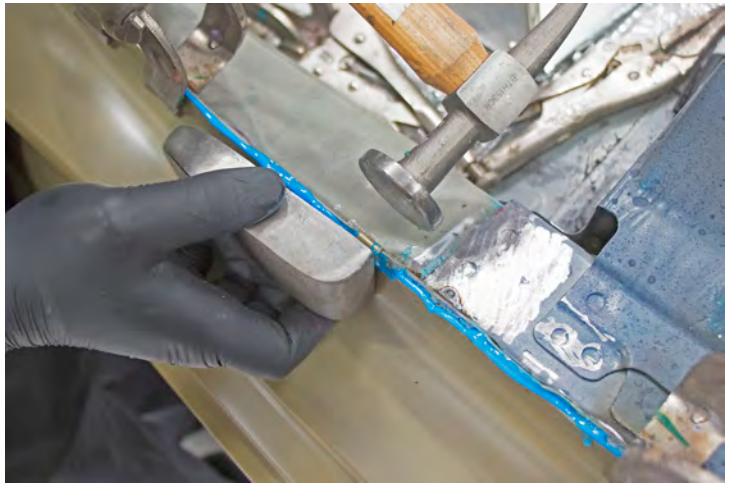
F Install the flow form rivets.

G **If the Sill Outer was attached to the Sill Inner with resistance spot welds:** Clamp the lower flange area until the structural adhesive cures.

Replacement

18 Install the new Body Side Outer section (continued).

H Use a hammer and dolly to fold over the tabs in the door opening flanges (circled in red in the first image).

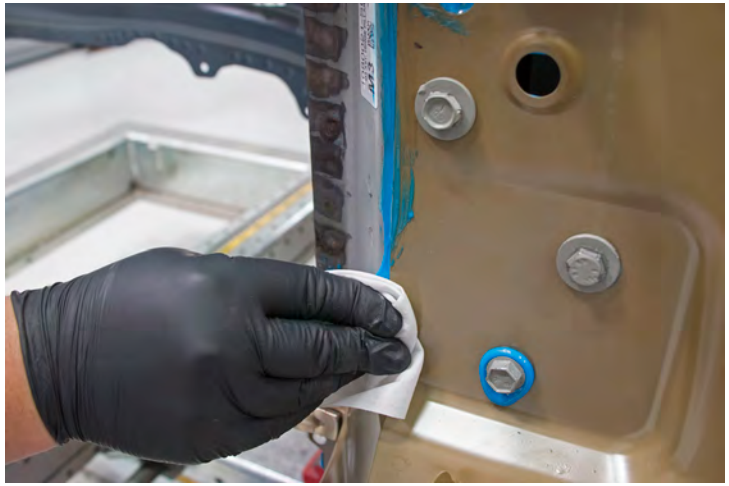


Replacement

18 Install the new Body Side Outer section (continued).

I Use a hammer and dolly to fold over the wheel arch flange.

J Wipe off any excess adhesive.

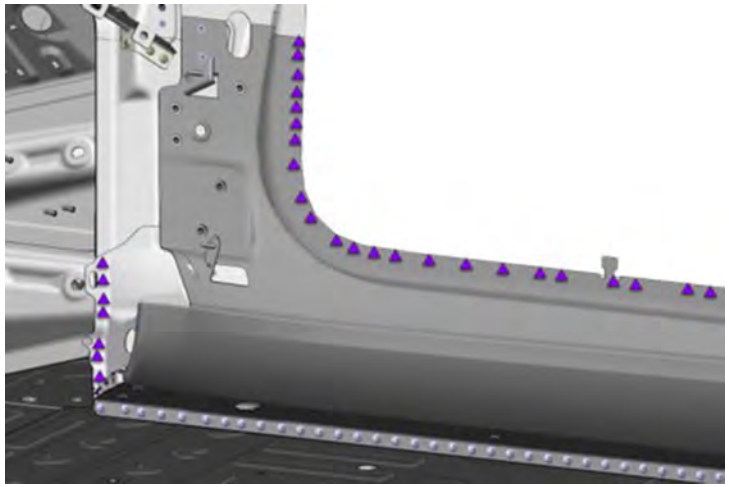


Replacement

18 Install the new Body Side Outer section (continued).

K Perform resistance spot welding.

▲ Installation Spot Weld



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CAUTION: Do not weld on a Tesla vehicle with an energized high voltage or 12V system. Welding on a Tesla vehicle with an energized high voltage or 12V system might damage vehicle components.

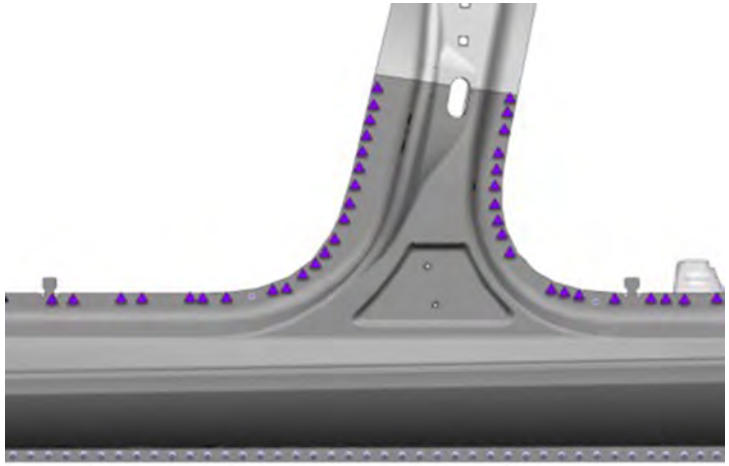
CAUTION: Use only insulated clamps within 200 mm (8 in) of resistance spot weld locations. Do not perform resistance spot welding when there is an uninsulated clamp within 200 mm (8 in) of the spot weld location.

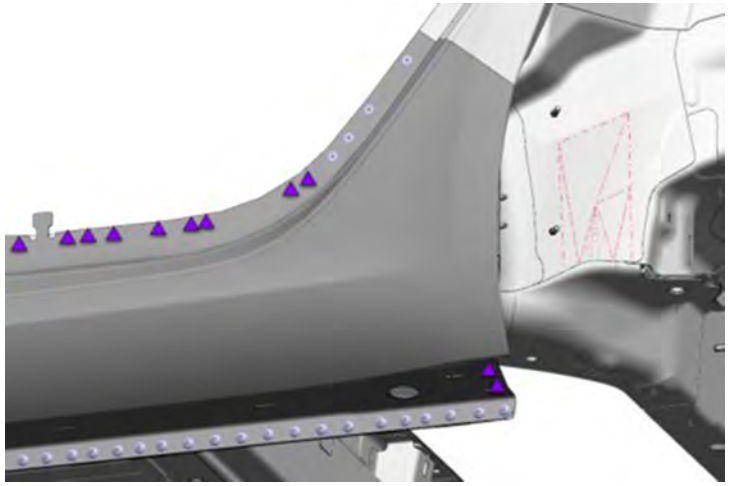
NOTE: Weld panel at preexisting spot weld locations to avoid contamination issues with cured adhesive.

Replacement

18 Install the new Body Side Outer section (continued).

K Perform resistance spot welding (continued).





Replacement

18 Install the new Body Side Outer section (continued).

K Perform resistance spot welding (continued).

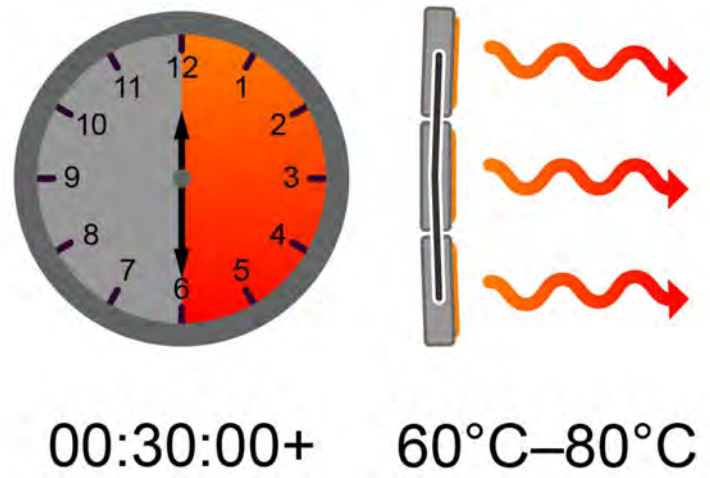
L Remove any discoloration from the weld areas.

Replacement

18 Install the new Body Side Outer section (continued).

M Bake the structural adhesive so that the bonded panels reach a temperature of 60°C–80°C (140°F–176°F) for at least 30 minutes to achieve full strength.

WARNING: Do not allow the High Voltage Battery to reach a temperature above 74°C (165°F). Heating the High Voltage Battery above 74°C (165°F) for an extended period could result in injury to personnel and/or damage to the battery.



19 GMA weld the Body Side Outer butt joints.

A Temporarily place a thin copper plate behind the C-pillar butt joint weld area to avoid cross contamination with the underlying aluminum when welding.

Replacement

19 GMA weld the Body Side Outer butt joints (continued).

B Perform GMA welding in the butt joint areas directly above the backing plates.

GMA Weld

WARNING: Failure to follow all welding safety precautions, including the use of personal protective equipment, could result in serious injury or property damage. Only technicians who have successfully met Tesla's requirements for welding training are authorized to weld structural components on Tesla vehicles.

WARNING: To maintain vehicle crash integrity, use only ER70S-6 or Bohler Union X96 welding wire and an approved GMA welder to perform steel GMA welding on mild steel components.

WARNING: Before GMA welding, make sure that the structural adhesive is dry to the touch. If the structural adhesive is not dry to the touch before GMA welding, the strength of the adhesive bond might be compromised.

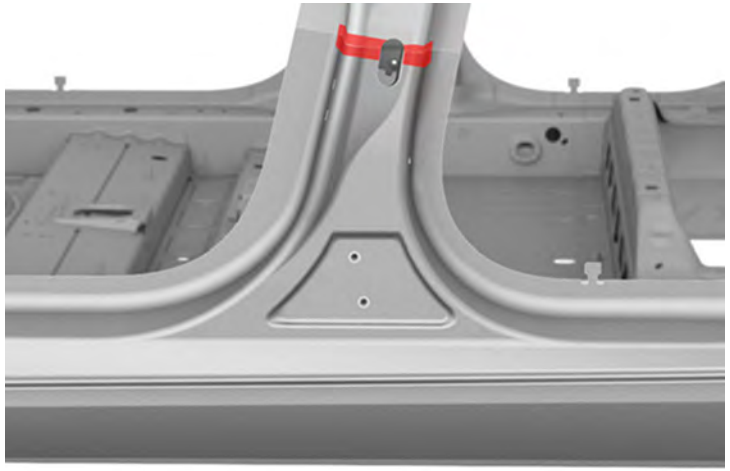
CAUTION: Do not weld on a Tesla vehicle with an energized high voltage or 12V system. Welding on a Tesla vehicle with an energized high voltage or 12V system might damage vehicle components.

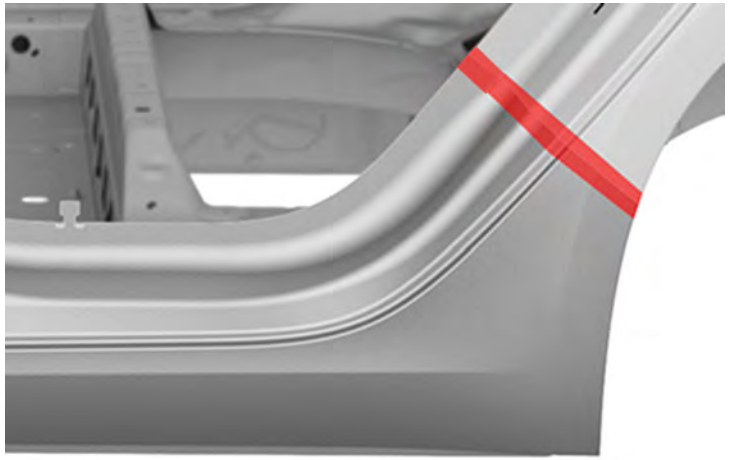
NOTE: Before GMA welding, a test weld using material of the same gauge and type should be performed to make sure that the welding equipment settings produce a satisfactory joint.

Replacement

19 GMA weld the Body Side Outer butt joints (continued).

B Perform GMA welding in the butt joint areas directly above the backing plates (continued).



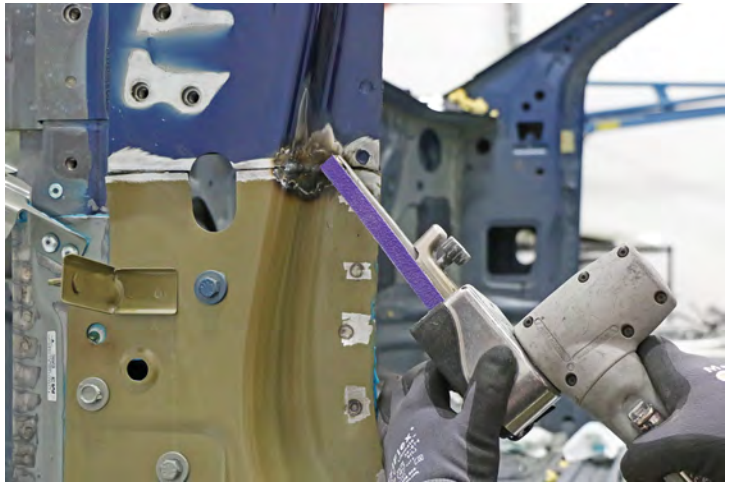


Replacement

19 GMA weld the Body Side Outer butt joints (continued).

B Perform GMA welding in the butt joint areas directly above the backing plates (continued).

C Grind down welds to restore all components to their original dimensions.

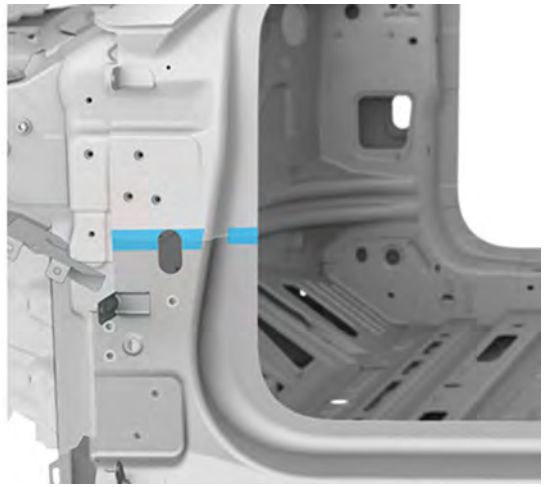


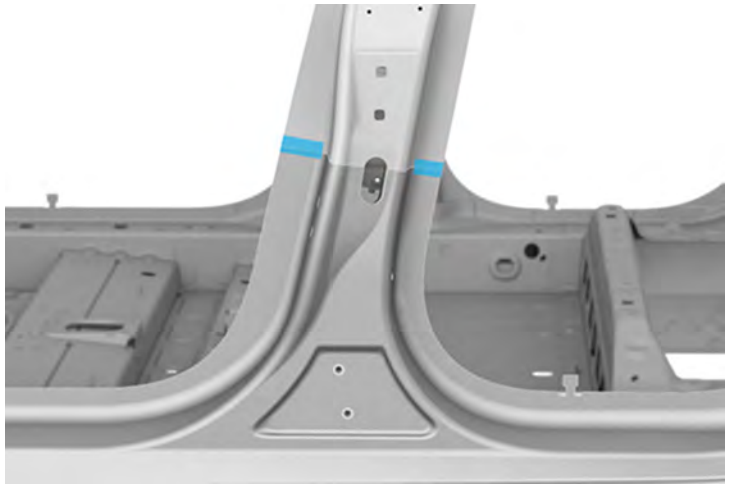
Replacement

20 Secure the Body Side Outer butt joint flanges.

A Pry up the flanges of the original Body Side Outer on both sides of each butt joint weld in preparation to apply structural adhesive.

Structural Adhesive

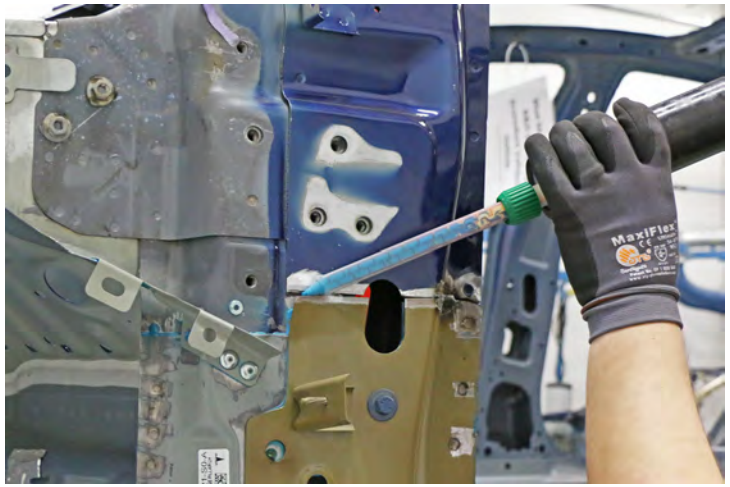




Replacement

20 Secure the Body Side Outer butt joint flanges (continued).

B Apply structural adhesive underneath the flanges that were pried up in the previous substep.



C Clamp the flanges back into position.

Replacement

21 If required, apply a suitable body filler to the joints and finish for paint.

22 Prime any bare metal with a suitable corrosion-resistant epoxy primer.

Replacement

23 Seal the seams in the factory locations, and as necessary.

24 After refinishing, install expanding foam in area of the C-Pillar where the factory foam was removed in an earlier step.

Replacement

25 After refinishing, use a 360-degree spray wand of suitable length to apply corrosion-proofing material on the inside of the butt joints to prevent corrosion.

26 Install the new Shotgun Outer.