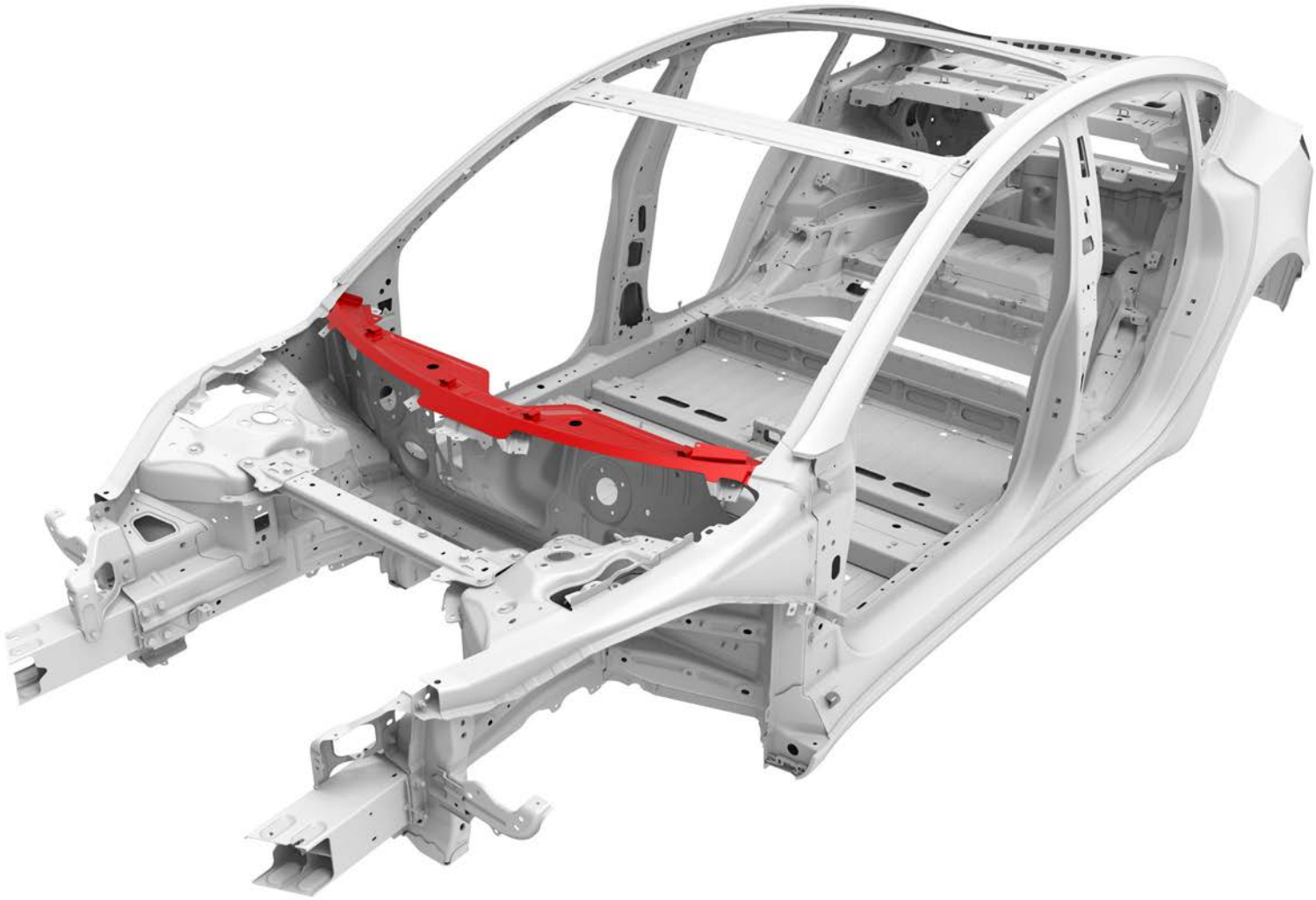
Cowl Top Assembly (Section)

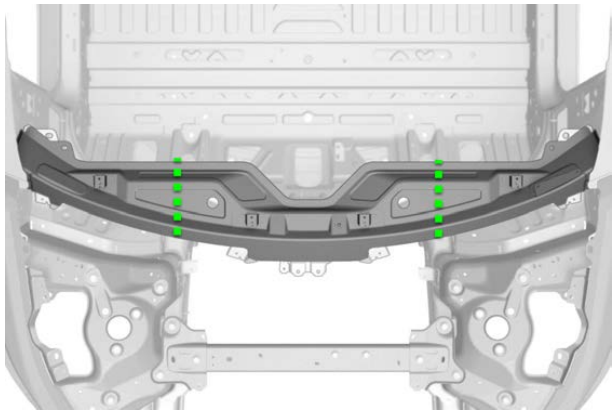


Parts List

Quantity	Part Number	Description	Image / Notes
1	1089305-S0-A	Cowl Top Assembly	
3 rivets needed; order 10 rivets.	1028719-00-A	Structural Rivet, 4.8 mm	All rivets come in packages of 10; order all rivets in multiples of 10. Order only if replacing a side section of the Cowl Top Assembly.
1 rivet needed; order 10 rivets.	1063943-00-A	Structural Bulb Rivet, 6.5 mm	All rivets come in packages of 10; order all rivets in multiples of 10. Order only if replacing a side section of the Cowl Top Assembly.
1	—	Weld-Through Primer	Source locally; not available from Tesla.
1	—	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	—	Seam Sealer	Source locally; not available from Tesla.

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
Use this procedure to replace any 1 or 2 of the 3 sections of the Cowl Top Assembly shown below. Remove and install the appropriate fasteners depending on the sections being replaced. 	**WARNING:** Wear the appropriate personal protective equipment (PPE) when performing this procedure. **CAUTION:** This procedure involves only steel components. Use the appropriate tools to avoid cross-contamination.	The special tools listed below are required to perform this procedure: • 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.

Prerequisites

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.

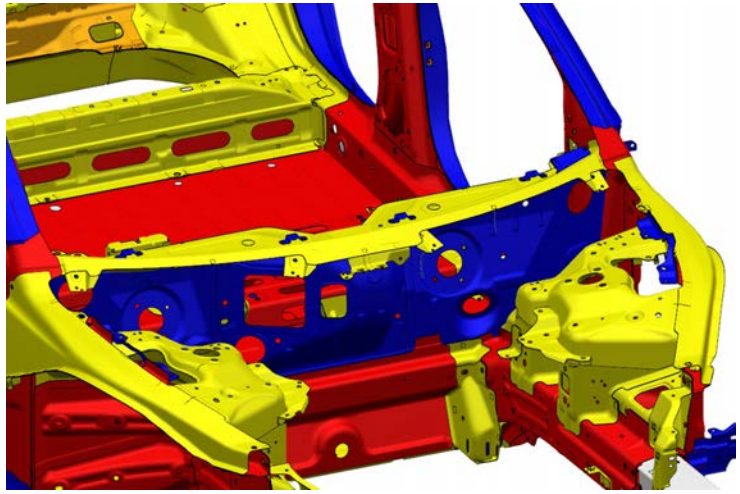
NOTE: Before disconnecting the 12V power supply, make sure that the driver's door window is fully open. Failure to lower the driver's door window before disconnecting the 12V power supply could result in vehicle lockout.

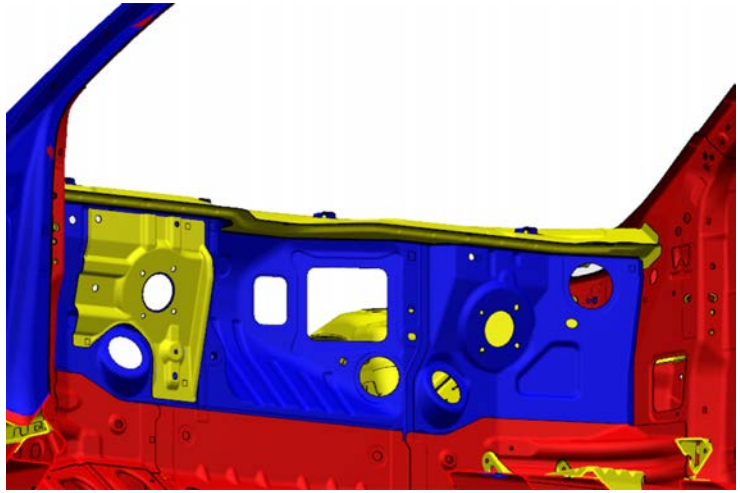
Removal

1 Identify the component materials in the repair area.

- 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.





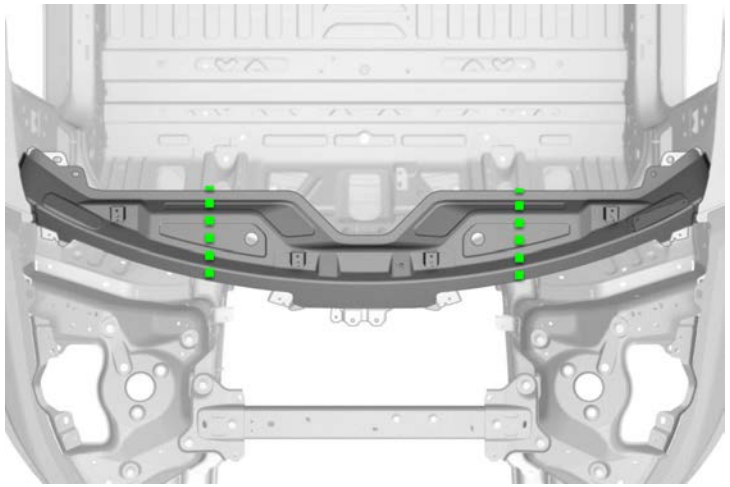
Removal

2 Remove the original component.

A Mark a cut line or cut lines in the appropriate location on the original component for the portion being replaced.

Cut Line

NOTE: Any 1 or 2 of the 3 sections of the Cowl Top Assembly shown can be replaced using this procedure.



Removal

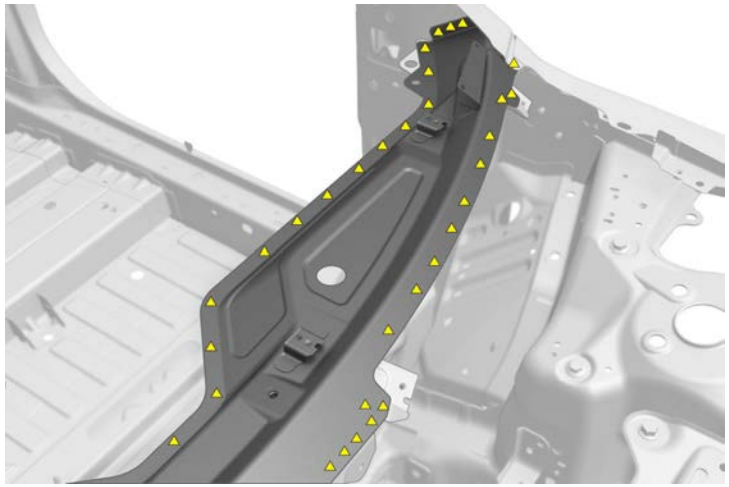
2 Remove the original component (continued).

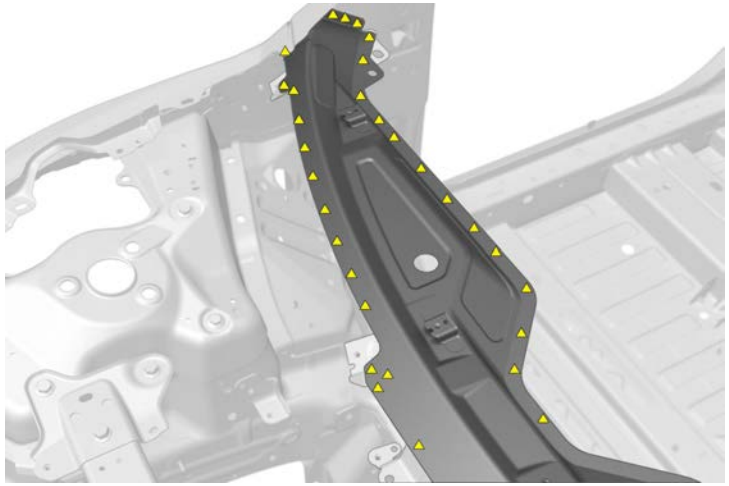
B Mark the locations of the factory spot welds.

△ Factory Spot Weld

NOTE: Factory spot welds for the entire Cowl Top Assembly are shown. Mark and remove only the factory spot welds for the section of the Cowl Top Assembly being replaced.

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





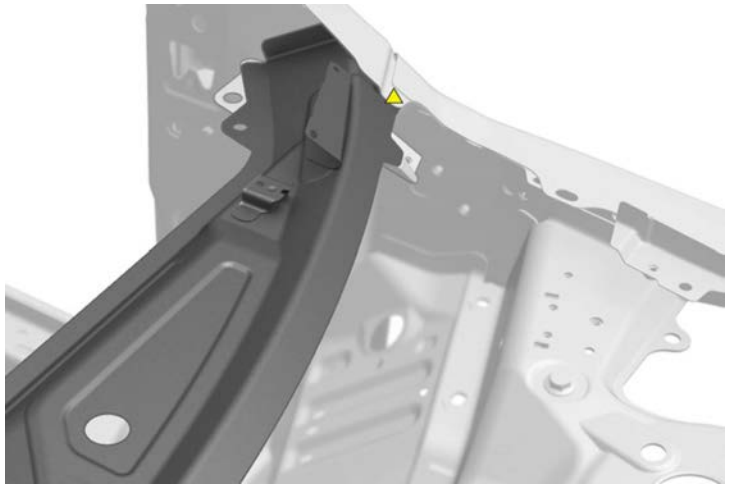
Removal

2 Remove the original component (continued).

C **If replacing one of the side sections:** Use a drill with a 6.7 mm (17/64 in) bit to drill completely through the spot weld shown.

△ Factory Spot Weld (x1)

NOTE: Left side shown, right side similar.



Removal

2 Remove the original component (continued).

D Use a drill with a spot weld bit to drill out the remaining factory spot welds.

E Cut the component on the cut line or lines marked in an earlier substep.

CAUTION: Do not damage the surrounding components.

Removal

2 Remove the original component (continued).

F Use a hammer and chisel to remove the section or sections of the original Cowl Top Assembly.

Removal

3 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.

Replacement

1 Prepare for installation.

A Use the remaining piece of the original component (highlighted) to mark a cut line or lines in the appropriate location on the new component for the section or sections being replaced.

Cut Line

Replacement

1 Prepare for installation (continued).

B Cut the new component on the cut line or lines 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.

C Put the new component into position and clamp it into place.

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

Replacement

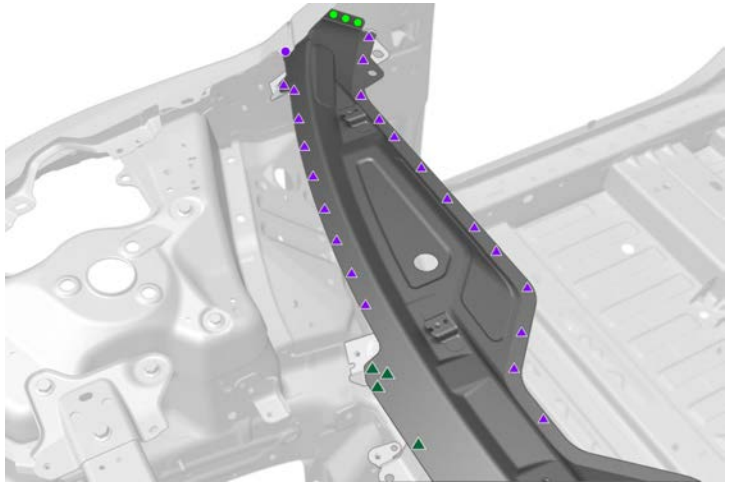
1 Prepare for installation (continued).

C Put the new component into position and clamp it into place (continued).

D Mark the appropriate fastener locations on the new component.

NOTE: Fasteners for the entire Cowl Top Assembly are shown. Mark only the fasteners for the section or sections of the Cowl Top Assembly being replaced.

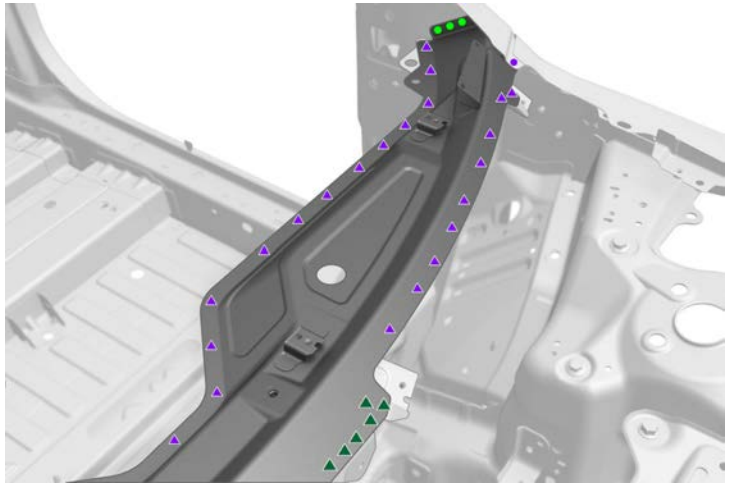
- Structural Rivet, 4.8 mm (x3, if necessary)
- Structural Bulb Rivet, 6.5 mm (x1, if necessary)
- Installation Spot Weld
- Steel Plug Weld (x10, if necessary)



Replacement

1 Prepare for installation (continued).

D Mark the appropriate fastener locations on the new component (continued).



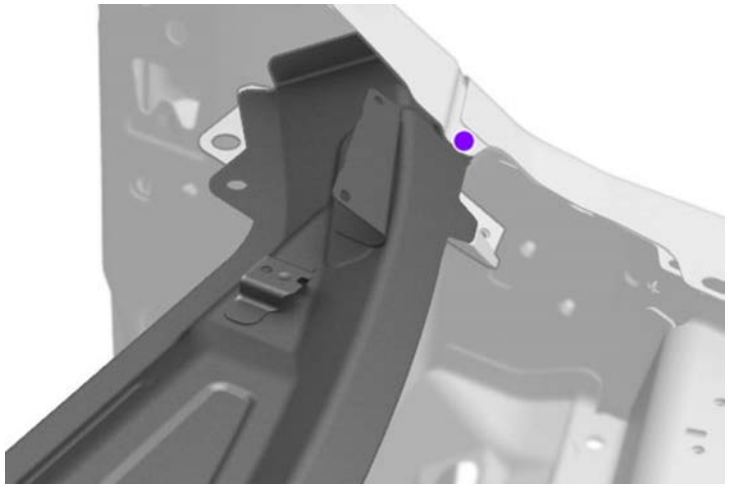
Replacement

1 Prepare for installation (continued).

E **If replacing one of the side sections:** Use a drill with a 6.7 mm (17/64 in) bit to drill a hole for a structural bulb rivet.

- Structural Bulb Rivet, 6.5 mm (x1)

NOTE: Left side shown, right side similar.



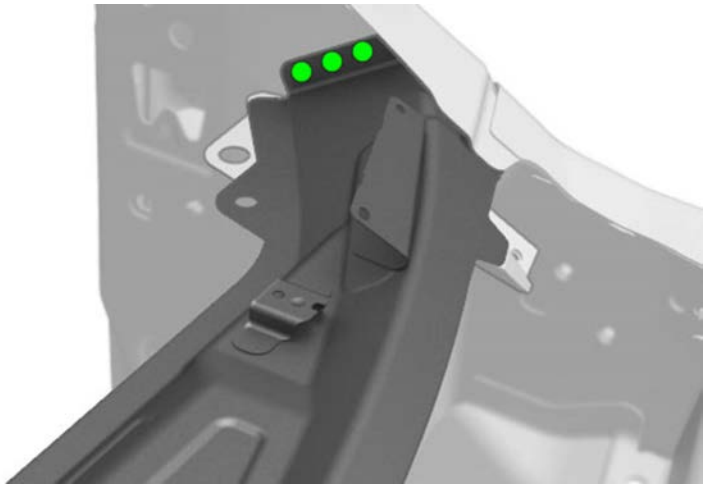
Replacement

1 Prepare for installation (continued).

F **If replacing one of the side sections:** Use a drill with a 4.8 mm (3/16 in) bit to drill holes for structural rivets.

- Structural Rivet, 4.8 mm (x3)

NOTE: Left side shown, right side similar.



Replacement

1 Prepare for installation (continued).

G Mark the surface preparation boundary lines on the new component and on the vehicle.

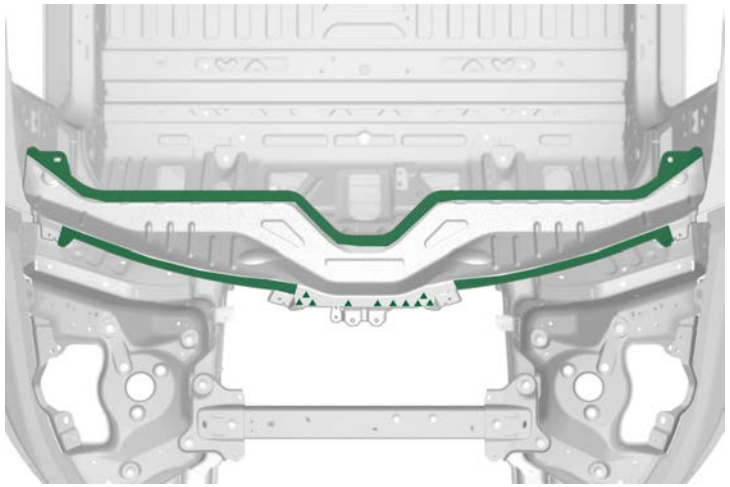
H Remove the new section or sections.

Replacement

1 Prepare for installation (continued).

I Mark the bond path areas, GMA weld locations, and plug weld locations (if replacing the middle section) on the new section or sections and on the vehicle.

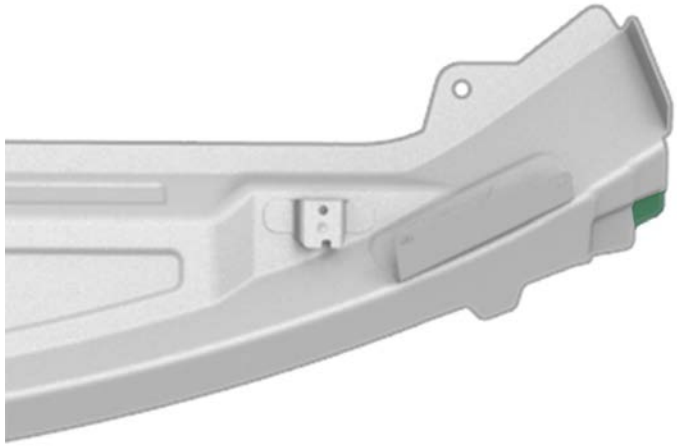
Steel-to-Steel Bond Path

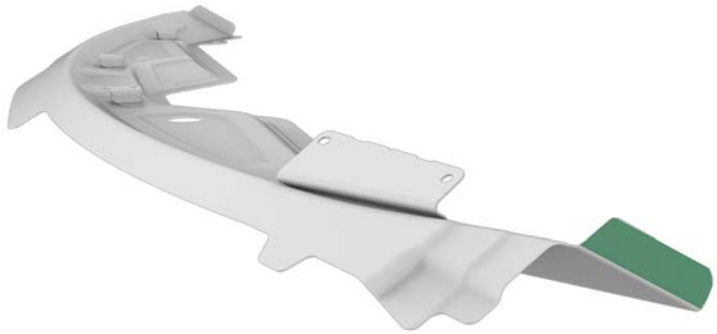


Replacement

1 Prepare for installation (continued).

| Mark the bond path areas, GMA weld locations, and plug weld locations (if replacing the middle section) on the new section or sections and on the vehicle (continued).





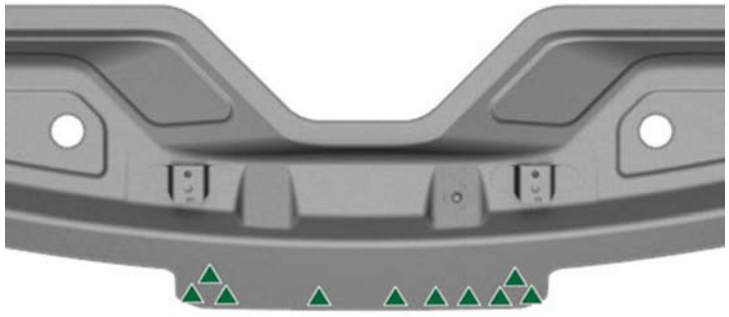
Replacement

1 Prepare for installation (continued).

I Mark the bond path areas, GMA weld locations, and plug weld locations (if replacing the middle section) on the new section or sections and on the vehicle (continued).

J **If replacing the middle section:** Use a drill with an 8 mm (5/16 in) bit to drill holes for plug welds in the new section.

▲ Steel Plug Weld (x10)



Replacement

1 Prepare for installation (continued).

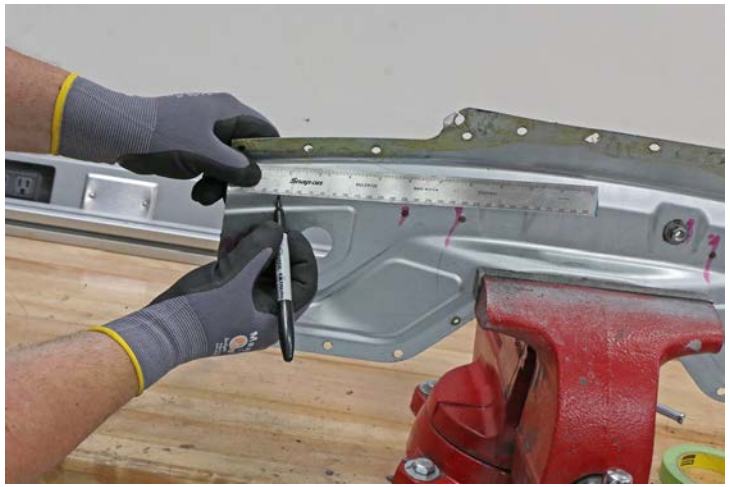
J If replacing the middle section: Use a drill with an 8 mm (5/16 in) bit to drill holes for plug welds in the new section (continued).

Replacement

2 Create backing plates for the butt joint.

A Cut a 40 mm (1-9/16 in) section from the end of the unused portion of the new Cowl Top Assembly.

NOTE: If only the middle section is being replaced, create backing plates for both butt joints.



Replacement

2 Create backing plates for the butt joint (continued).

B Trim the excess material from the section cut in the previous substep.

Cut Line

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

Replacement

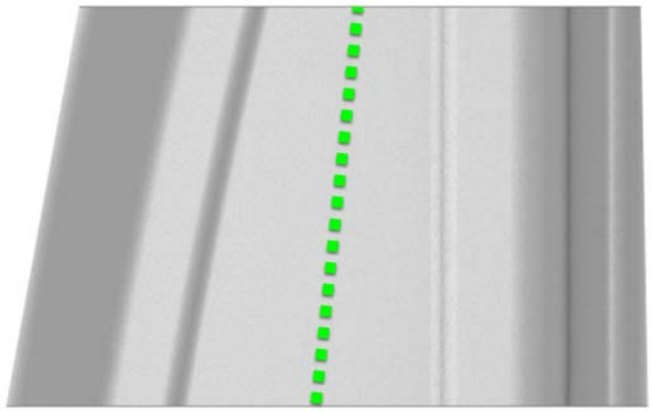
2 Create backing plates for the butt joint (continued).

B Trim the excess material from the section cut in the previous substep (continued).

C Cut the backing plate down the middle to create 2 backing plates.

Cut Line

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



Replacement

2 Create backing plates for the butt joint (continued).

C Cut the backing plate down the middle to create 2 backing plates (continued).

D Put the backing plates into position and check their fit. If necessary, trim them to fit.

Replacement

2 Create backing plates for the butt joint (continued).

E Remove the backing plates.

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

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

Replacement

2 Create backing plates for the butt joint (continued).

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

NOTE: Pry up the flange where necessary to gain access to the inside of the flange.

Replacement

2 Create backing plates for the butt joint (continued).

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

I 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 flange.

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

Replacement

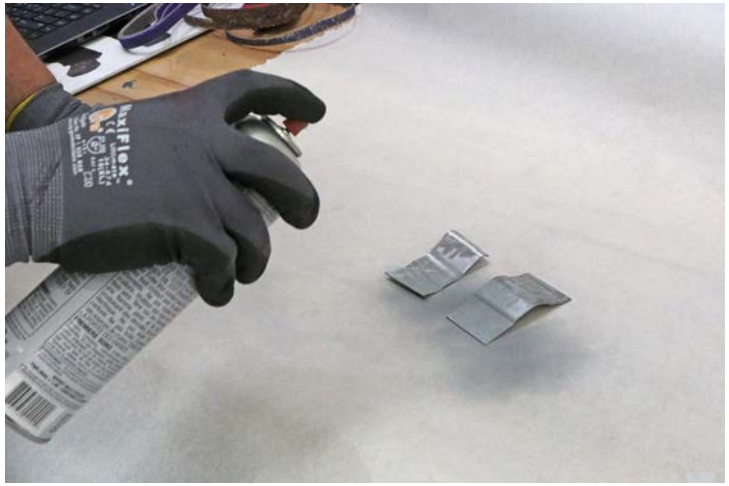
2 Create backing plates for the butt joint (continued).

J Use a disc sander with a medium-abrasive surface conditioning disc to remove the e-coat from the top sides of the backing plates (the sides that will be facing up when installed).

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

K Apply a suitable weld-through primer to the sides of the backing plates that will be facing up when installed.

CAUTION: Only use zinc weld-through primers. Other primers might cause corrosion and compromise the integrity of the repair.



Replacement

2 Create backing plates for the butt joint (continued).

L Put the backing plates into position and clamp them into place.

M Mark the backing plates in the butt joint weld area.

Replacement

2 Create backing plates for the butt joint (continued).

N Remove the backing plates.

O Remove the weld-through primer from the butt joint weld area on the backing plates marked in an earlier substep.

Replacement

3 Install the backing plates.

A Put the backing plates into position and clamp them into place.

B 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.

Replacement

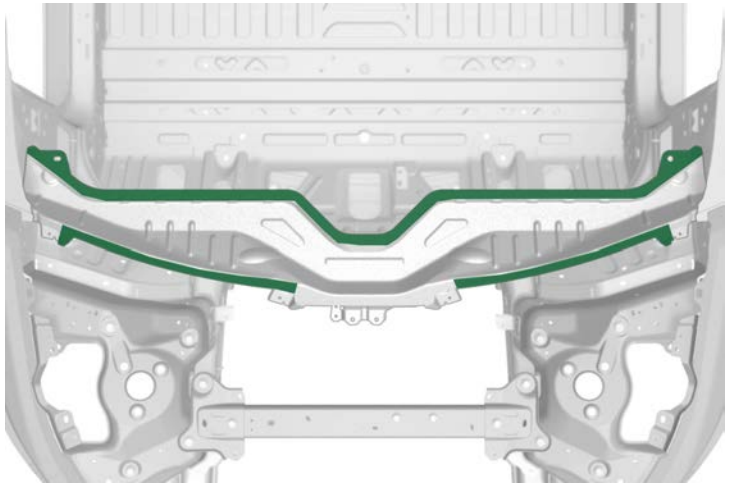
3 Install the backing plates (continued).

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

4 Prepare the surfaces.

A Use a red Scotch-Brite pad or equivalent to scuff the e-coat on the new component and on the vehicle in the bond path areas.

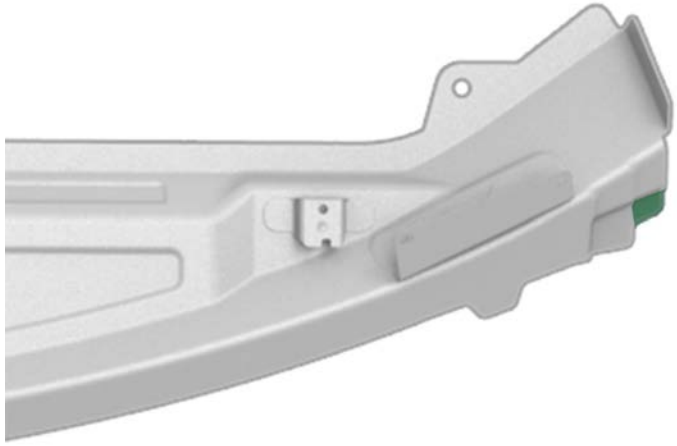
Steel-to-Steel Bond Path



Replacement

4 Prepare the surfaces (continued).

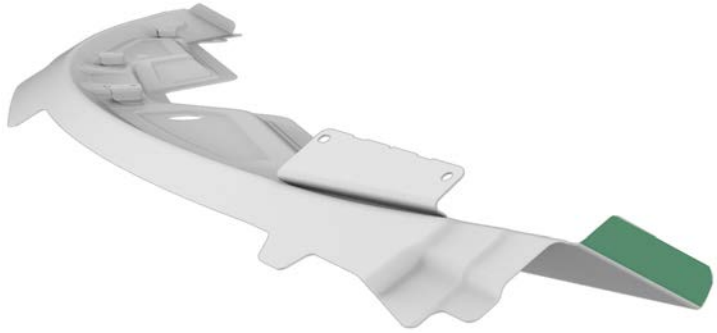
A Use a red Scotch-Brite pad or equivalent to scuff the e-coat on the new component and on the vehicle in the bond path areas (continued).



Replacement

4 Prepare the surfaces (continued).

A Use a red Scotch-Brite pad or equivalent to scuff the e-coat on the new component and on the vehicle in the bond path areas (continued).



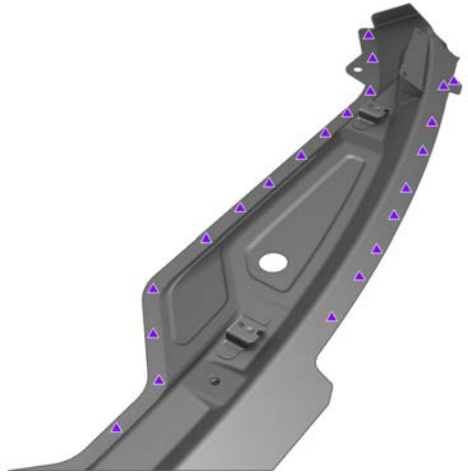
Replacement

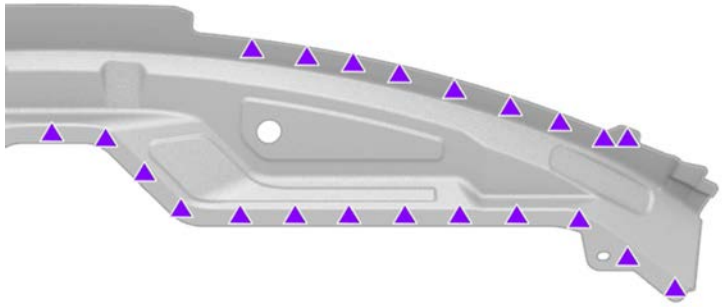
4 Prepare the surfaces (continued).

B Mark the installation spot weld locations on the new section or sections and on the vehicle.

▲ Installation Spot Weld

NOTE: Left side shown; right side similar.

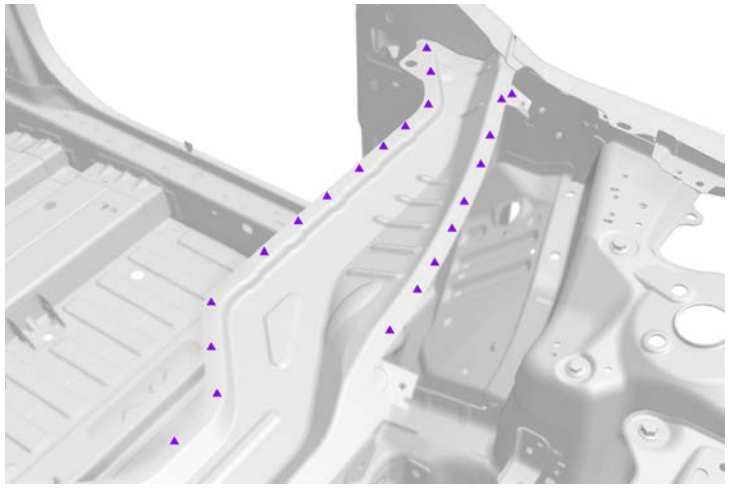




Replacement

4 Prepare the surfaces (continued).

B Mark the installation spot weld locations on the new section or sections and on the vehicle (continued).



C Use a disc sander with a medium-abrasive surface conditioning disc to remove the e-coat on the new component and on the vehicle in the weld areas. Use a belt sander with a medium-abrasive belt for any areas that cannot be reached with a disc sander.

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

Replacement

4 Prepare the surfaces (continued).

D Clean all bond paths and weld areas on the new section or sections 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.

5 **If replacing the middle section:** Prepare the surface for plug welding.

A Use tape to mask off the bond path areas and installation spot weld areas on the new section and on the vehicle.

Replacement

5 If replacing the middle section: Prepare the surface for plug welding (continued).

B Apply weld-through primer to the plug weld areas of the new section and the vehicle.

C Remove the tape.

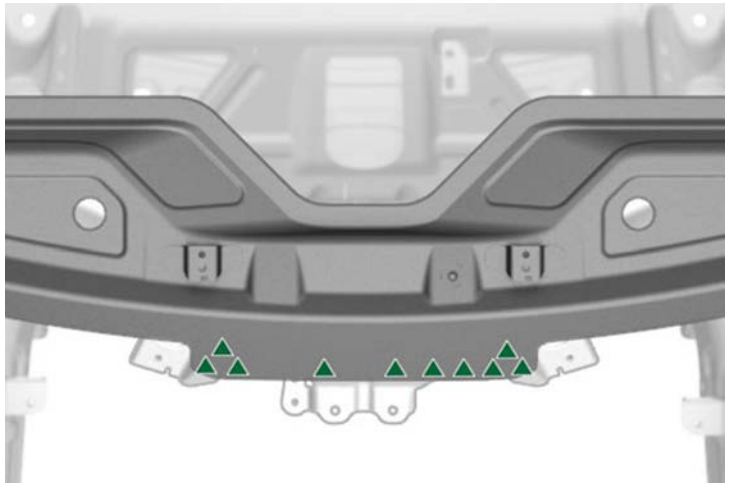
Replacement

5 If replacing the middle section: Prepare the surface for plug welding (continued).

D Put the new section into position and clamp it into place.

E Use the holes in the new section to mark the locations of the plug welds on the vehicle.

▲ Steel Plug Weld (x10)



Replacement

5 If replacing the middle section: Prepare the surface for plug welding (continued).

E Use the holes in the new section to mark the locations of the plug welds on the vehicle (continued).

F Remove the new section.

Replacement

5 If replacing the middle section: Prepare the surface for plug welding (continued).

G Use a disc sander to remove the weld-through primer in the plug weld locations on the vehicle marked in an earlier substep.

H Clean the plug weld areas on the new section 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

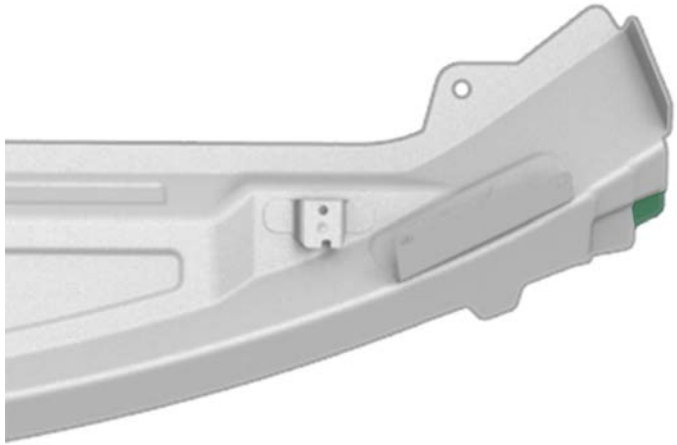
6 Apply structural adhesive.

A Spread a thin coating of structural adhesive as a primer layer on the bond path areas on the new section and the vehicle.

Steel-to-Steel Bond Path

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.

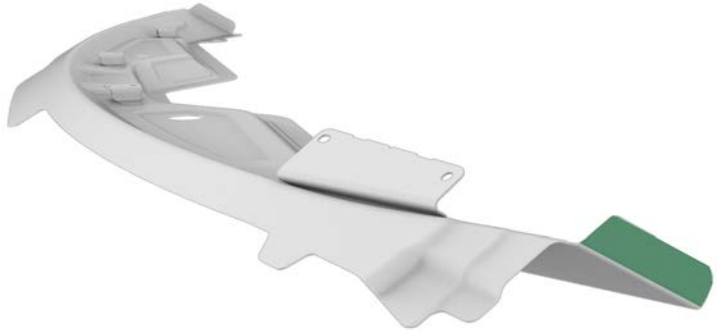
NOTE: Assembly must be performed while the primer layer is still wet. The drying time of the adhesive varies depending on temperature and humidity.

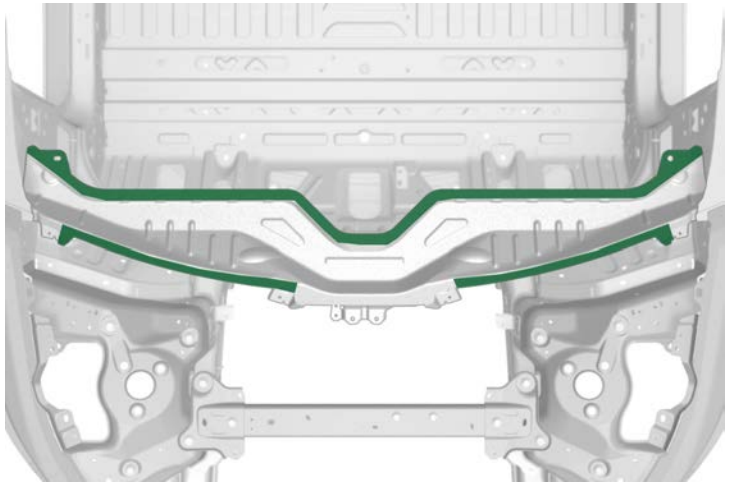


Replacement

6 Apply structural adhesive (continued).

A Spread a thin coating of structural adhesive as a primer layer on the bond path areas on the new section and the vehicle (continued).





Replacement

6 Apply structural adhesive (continued).

A Spread a thin coating of structural adhesive as a primer layer on the bond path areas on the new section and the vehicle (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.

Replacement

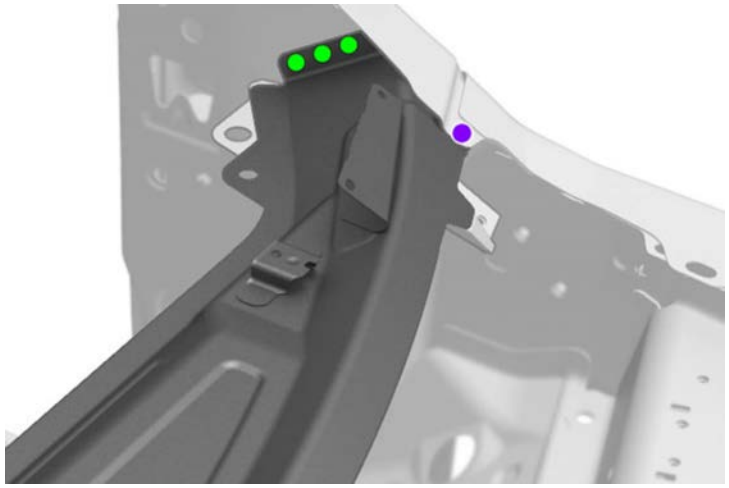
7 Install the new section or sections.

A Put the new section or sections into position.

B **If replacing one of the side sections:** Insert the structural bulb rivets and the structural rivets.

- Structural Rivet, 4.8 mm (x3)
- Structural Bulb Rivet, 6.5 mm (x1)

NOTE: Left side shown, right side similar.



Replacement

7 Install the new section or sections (continued).

B If replacing one of the side sections: Insert the structural bulb rivets and the structural rivets (continued).

C Clamp the new section or sections into place.

Replacement

7 Install the new section or sections (continued).

D **If replacing one of the side sections:** Install the structural bulb rivets and the structural rivets.

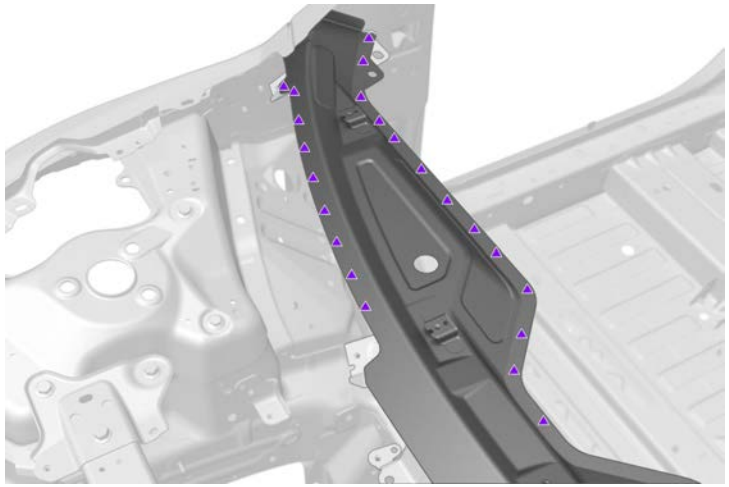
E Wipe off any excess adhesive.

Replacement

7 Install the new section or sections (continued).

F 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.

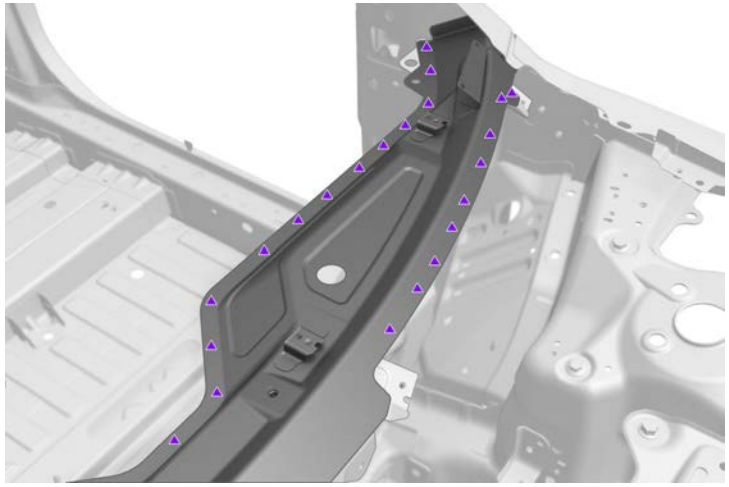
CAUTION: Do not weld on a Tesla vehicle with an energized high voltage or 12V system. Welding on a Tesla vehicle with an energized high voltage or 12V system might damage vehicle components.

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

7 Install the new section or sections (continued).

F Perform resistance spot welding (continued).



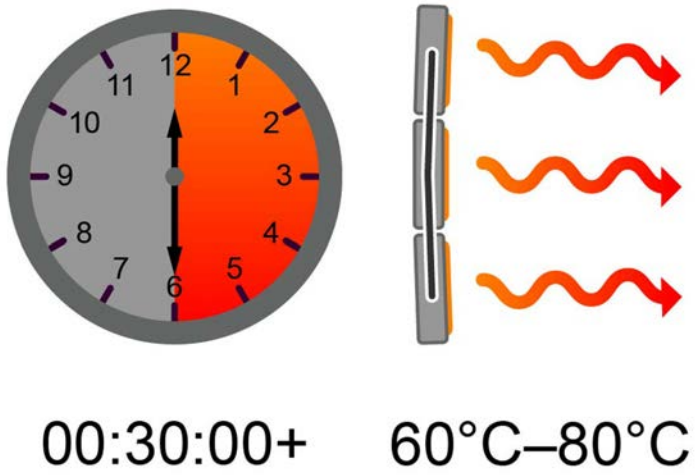
Replacement

7 Install the new section or sections (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.

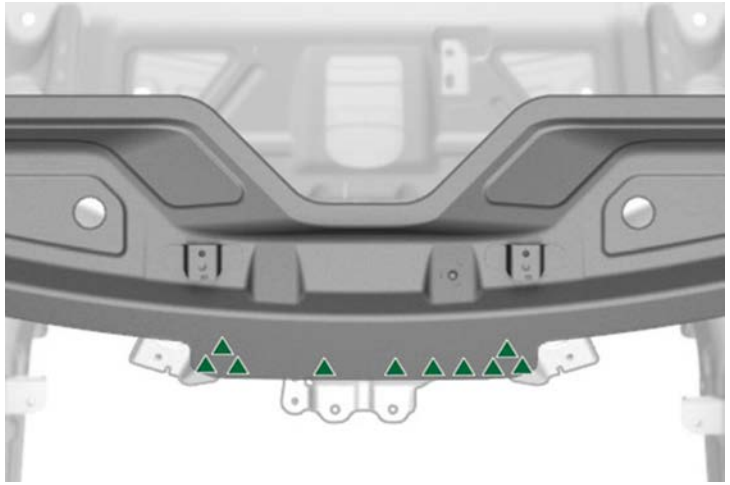


Replacement

8 Perform GMA welding.

A **If replacing the middle section:** Plug weld the locations shown.

▲ Steel Plug Weld (x10)



Replacement

8 Perform GMA welding (continued).

B GMA weld the butt joint or butt joints.

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 Bohler Union X96 welding wire and an approved GMA welder to perform steel GMA welding on high-strength steel and ultra high-strength 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

8 Perform GMA welding (continued).

C Use a grinding tool to grind down the welds.

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

Replacement

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