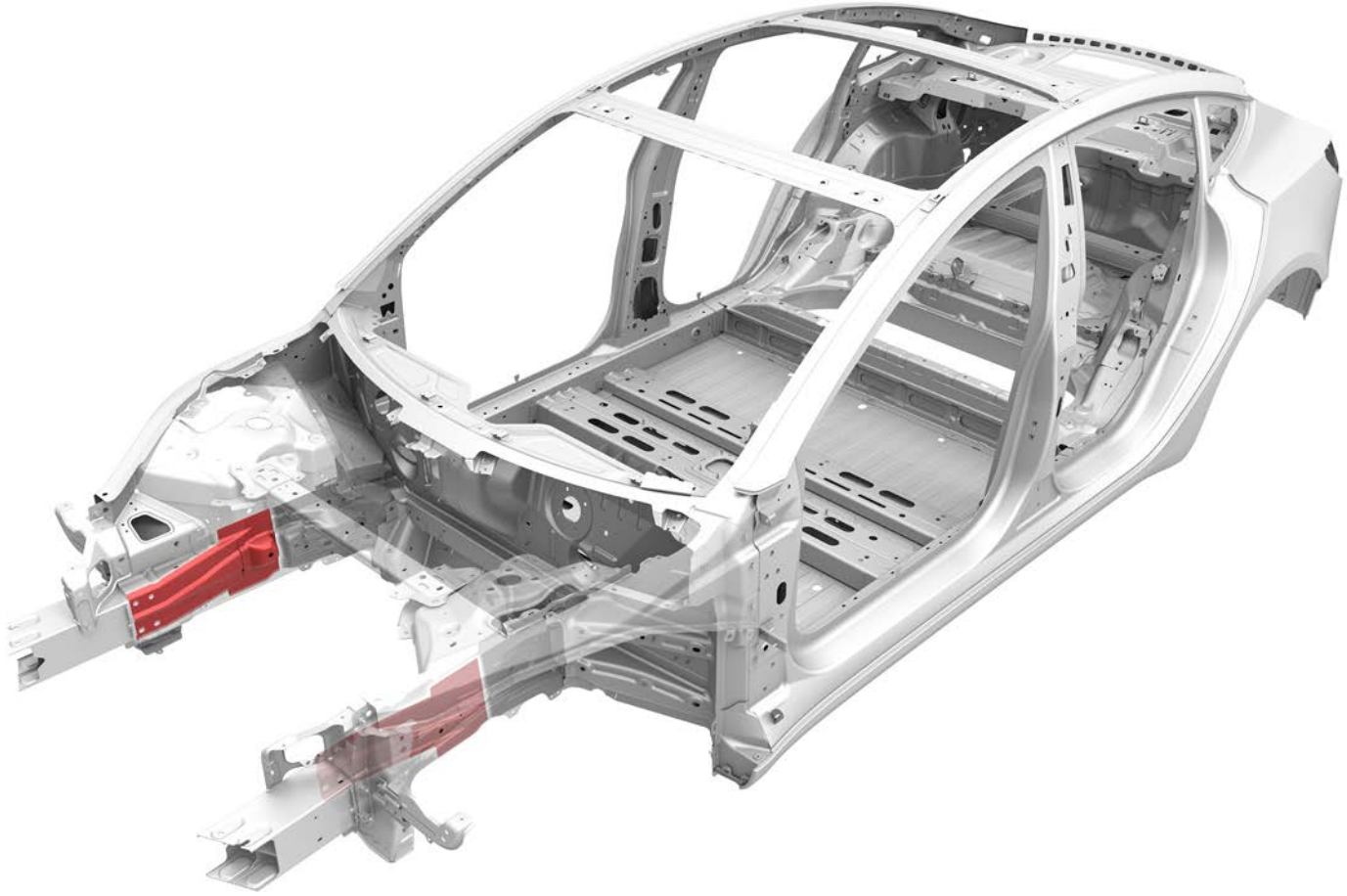
Front Frame Rail Inner Reinforcement (Section)



Parts List

Quantity	Part Number	Description	Image / Notes
1	1080477-S0-A (LH) 1080478-S0-A (RH)	Front Frame Rail Inner Reinforcement	
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	—	Corrosion-Resistant Epoxy Primer	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
This procedure is for the right-hand component; the procedure is identical for the left-hand component.	**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. • 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 Front Frame Rail Outer (Section).

Removal

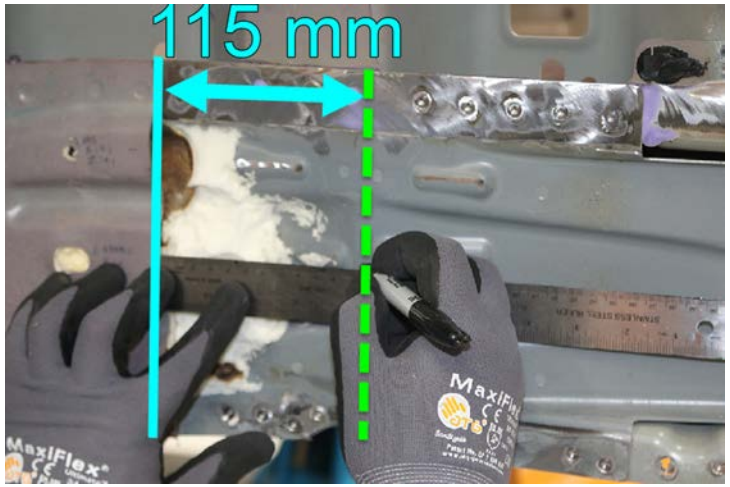
1 Remove a section of the original component.

A Mark a cut line 115 mm (4-1/2 in) forward from the remaining piece of the Front Frame Rail Outer section.

Cut Line

Reference Line/Point

NOTE: The Front Frame Rail Outer was cut at the reference line during removal of the Front Frame Rail Outer (section).



Removal

1 Remove a section of the original component (continued).

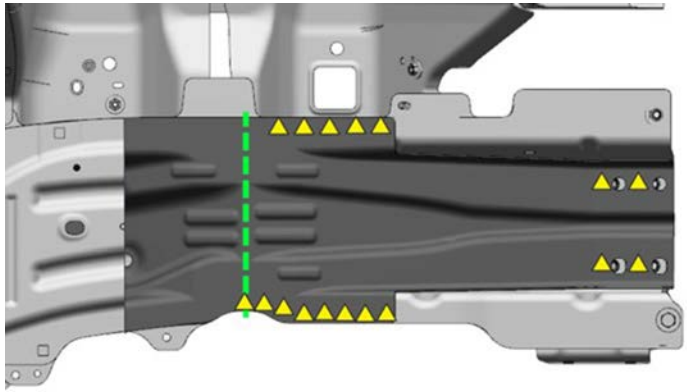
B Cut the component on the cut line marked in the previous substep.

NOTE: Do not damage the Front Frame Rail Inner.

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

△ Factory Spot Weld (x17)

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



Removal

1 Remove a section of the original component (continued).

C Use a drill with a spot weld bit to drill out the factory spot welds (continued).

D Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the section of the original Front Frame Rail Inner Reinforcement.

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

1 Remove a section of the original component (continued).

D Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the section of the original Front Frame Rail Inner Reinforcement (continued).

Removal

2 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.

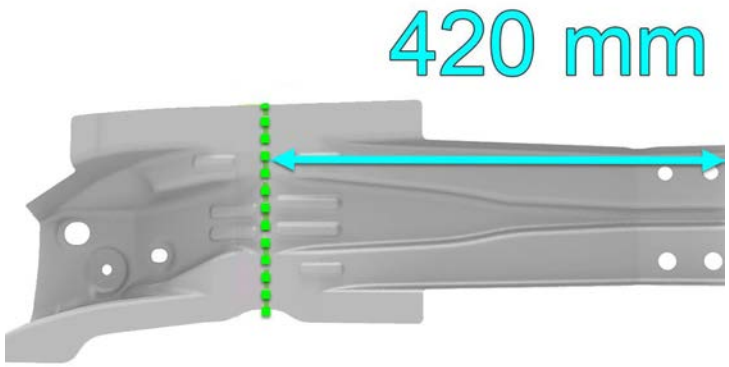
WARNING: Remove the epoxy adhesive in a well-ventilated area. Wear suitable personal protective equipment.

Replacement

1 Prepare for installation.

A Mark a cut line 420 mm (16-1/2 in) from the front of the new Front Frame Rail Inner Reinforcement.

Cut Line



Replacement

1 Prepare for installation (continued).

B Cut the component 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.

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

TIP: Make sure all 4 holes in the new Front Frame Rail Inner Reinforcement are aligned with the 4 holes in the existing Front Frame Rail Inner.

Replacement

1 Prepare for installation (continued).

D Mark the surface preparation boundary lines on the new section and on the vehicle.

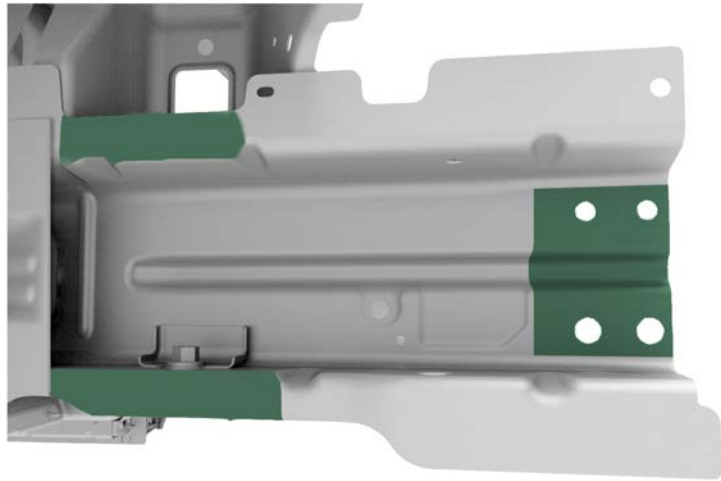
E Remove the new section.

Replacement

1 Prepare for installation (continued).

F 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



NOTE: Mark the bond path areas on the new section that correspond to the bond paths shown on the vehicle.

2 Prepare the surfaces.

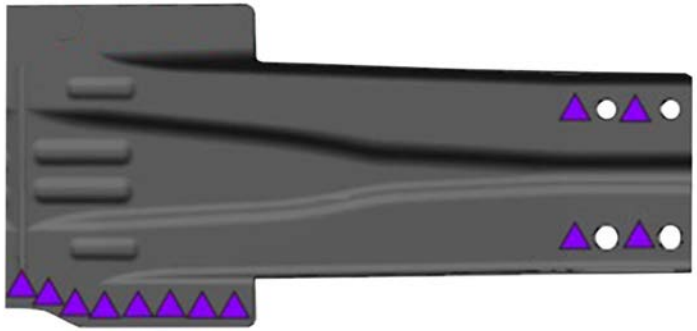
A Use a red Scotch-Brite pad or equivalent to scuff the e-coat on the new component and on the vehicle in the bond path areas.

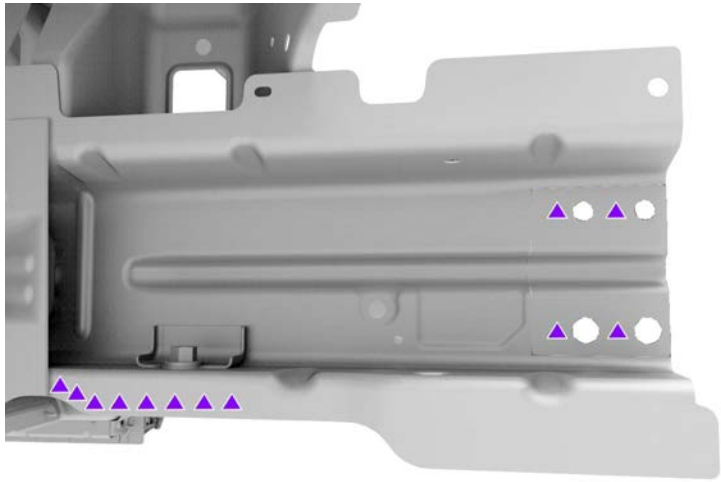
Replacement

2 Prepare the surfaces (continued).

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

▲ Installation Spot Weld (x12)

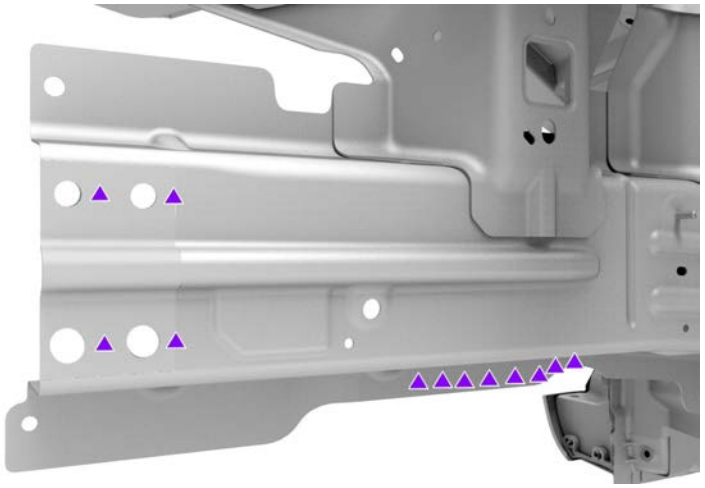




Replacement

2 Prepare the surfaces (continued).

B Mark the installation spot weld locations on the new section 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 section and 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

2 Prepare the surfaces (continued).

D Clean the bond path areas and weld areas on the new section and on the vehicle with isopropyl alcohol (IPA).

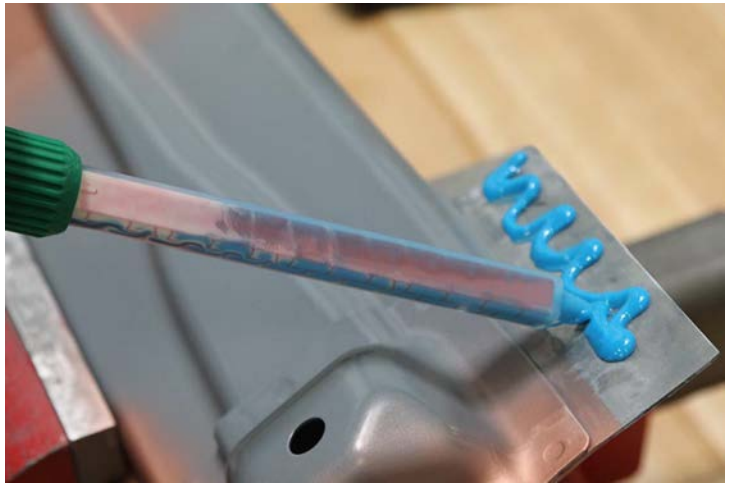
WARNING: Wipe off the remaining isopropyl alcohol with a clean, dry towel immediately after application. Do not let the remaining isopropyl alcohol air dry. Allowing the remaining isopropyl alcohol to air dry can compromise the adhesive bond.

3 Apply structural adhesive.

A Spread a thin coating of structural adhesive as a primer layer on the bond paths on the vehicle and the new component.

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

3 Apply structural adhesive (continued).

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

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

Replacement

4 Install the new component.

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

TIP: Make sure all 4 holes in the new Front Frame Rail Reinforcement are aligned with the 4 holes in the existing Front Frame Rail Inner.

NOTE: Clamp any area that will not be attached with a fastener.

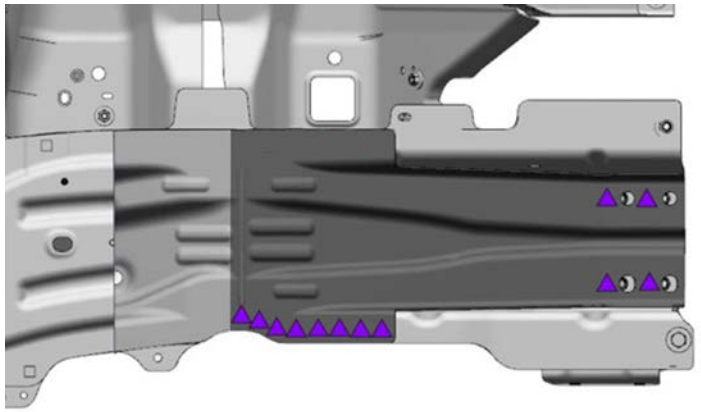
B Wipe off any excess adhesive.

Replacement

4 Install the new component (continued).

C Perform resistance spot welding.

▲ Installation Spot Weld (x12)



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

4 Install the new component (continued).

C Perform resistance spot welding (continued).

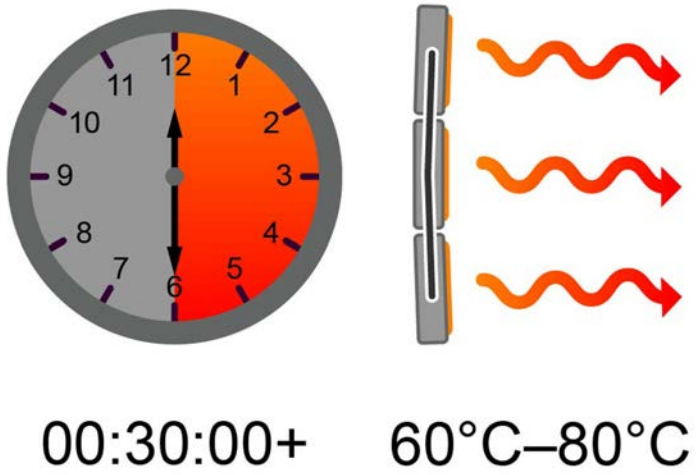
D Remove any discoloration from the weld areas.

Replacement

4 Install the new component (continued).

E 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.

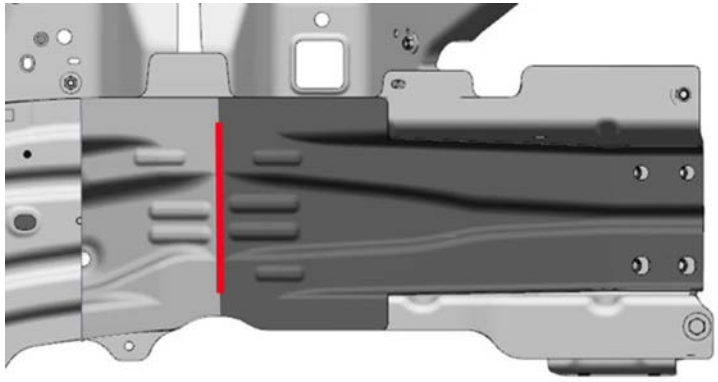
WARNING: Do not allow the High Voltage Battery to reach a temperature above 74°C (165°F). Heating the High Voltage Battery above 74°C (165°F) for an extended period could result in injury to personnel and/or damage to the battery.



5 GMA weld the butt joint.

A Identify the GMA weld location.

NOTE: Note that the GMA weld should not go from the top edge of the panel to the bottom edge of the panel. Weld only the portion of the Front Frame Rail Inner Reinforcement that does not contact the Front Frame Rail Inner flanges to avoid transferring heat to the Front Frame Rail Inner.



Replacement

5 GMA weld the butt joint (continued).

B Perform GMA welding.

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.

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

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

7 Install the new Front Frame Rail Outer (Section).