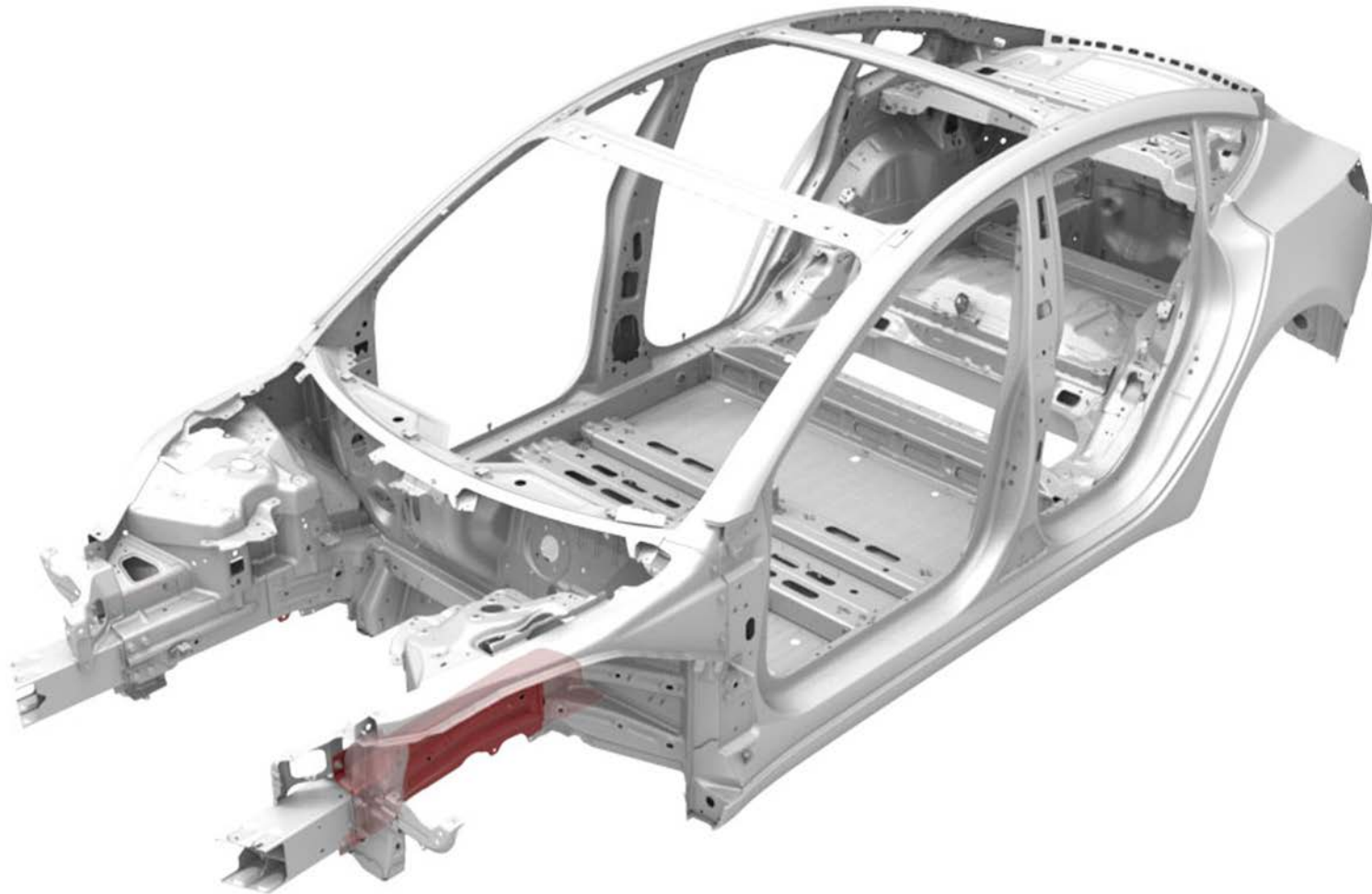








Front Frame Rail Outer (Complete)







Parts List

Quantity	Part Number	Description	Image / Notes
1	1103447-S0-A (LH) 1103448-S0-A (RH)	Front Frame Rail Outer	 <p>The Front Frame Rail Outer is listed in the Parts Manual as the "Front Rail Outer Assembly".</p>
25 rivets needed; order 30 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.
1 rivet 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.
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
<p>This procedure is for the left-hand component; the procedure is identical for the right-hand component.</p> <p>The items listed in the "Prerequisites" section of this document include only the last structural component that needs to be removed before starting the repair and any other prerequisites that are not obvious. Refer to the estimating system being used for a complete list of the prerequisites that must be performed before starting the repair.</p>	<p> WARNING: Wear the appropriate personal protective equipment (PPE) when performing this procedure.</p> <p> CAUTION: This procedure involves only steel components. Use the appropriate tools to avoid cross-contamination.</p>	<p>The special tools listed below are required to perform this procedure:</p> <ul style="list-style-type: none">• Microstop Countersink kit• Resistance Spot Welder <p>Use only an approved resistance spot welder. Refer to BR-16-92-007, "Approved Welders" for a list of current approved resistance spot welders.</p> <ul style="list-style-type: none">• Frame bench <p>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.</p>



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.

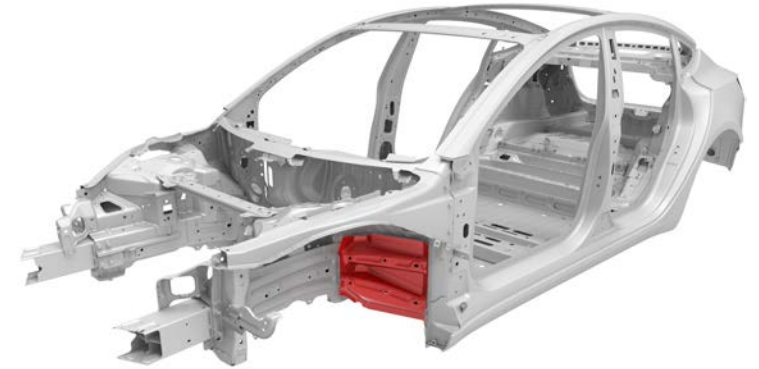




Prerequisites

2

Remove the [Torque Box Cover Assembly](#).



3

Remove the [Shotgun Shear Wall](#).



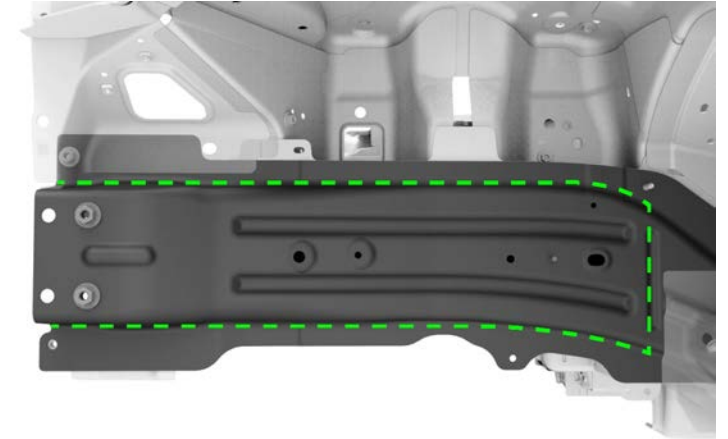


Removal

1 Remove the original component.

A Mark cut lines to prepare to cut away the bulk of the original component.

 Cut Line





Removal

- 1 Remove the original component (continued).
 - B Cut away the bulk of the original component.





Removal

1 Remove the original component (continued).

C Use a drill with a spot weld bit to drill out the factory spot welds. Use a belt sander to sand down any factory spot welds that cannot be reached with a drill.

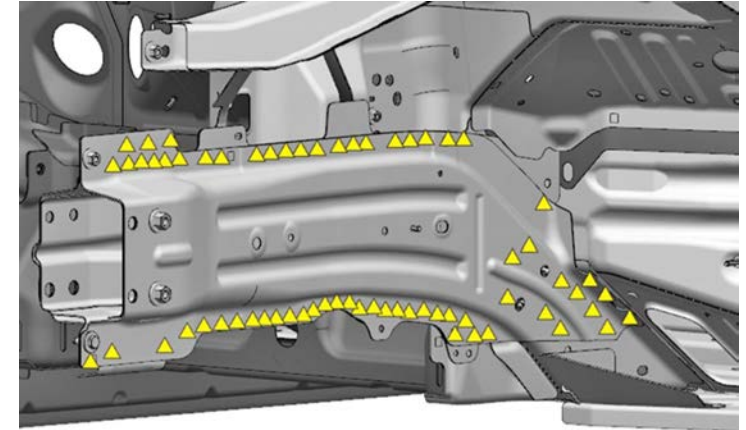
▲ Factory Spot Weld



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



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





Removal

- 1 Remove the original component (continued).
 - C Use a drill with a spot weld bit to drill out the factory spot welds. Use a belt sander to sand down any factory spot welds that cannot be reached with a drill (continued).

- D Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the remaining pieces of the original component.



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 the original component (continued).

D Use a heat gun to heat the adhesive joints, and then use a hammer and chisel to remove the remaining pieces of the original component (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.



3

Remove any foam.



Replacement

- 1 Prepare for installation.
 - A Put the new component into position and clamp it into place.

- B Align and temporarily secure the new component to the frame bench jig points.





Replacement

1 Prepare for installation (continued).

C Mark the fastener locations on the new component.

○ Structural Countersunk Rivet, 6.5 mm (x1)

● High Strength Structural Rivet, 6.5 mm (x25)

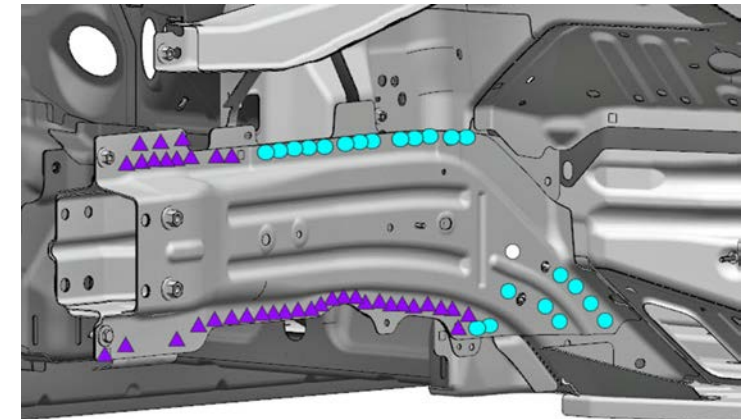
▲ Installation Spot Weld



NOTE: Make sure the brake pedal is moved out of the way.



NOTE: Holes for countersunk rivets must be marked 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.





Replacement

1 Prepare for installation (continued).

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



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.



E Use a drill with the Microstop countersink cage assembly and the appropriate-sized countersink bit to countersink the hole (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.



Replacement


- 1 Prepare for installation (continued).
 - F Mark the surface preparation boundary lines on the new component and on the vehicle.
 - G Remove the new component.

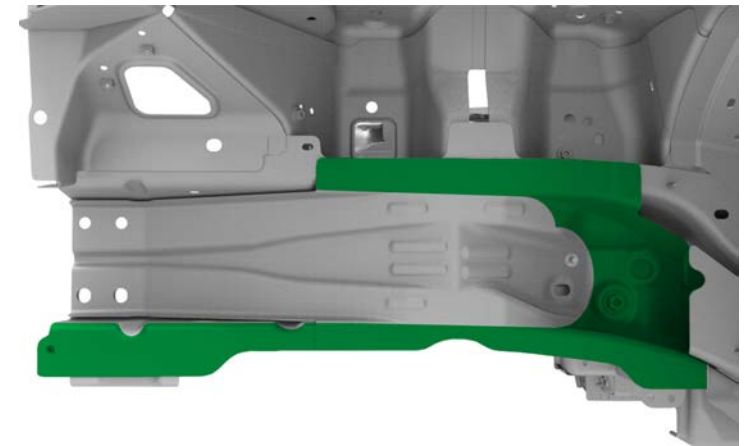


Replacement

1 Prepare for installation (continued).

H 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





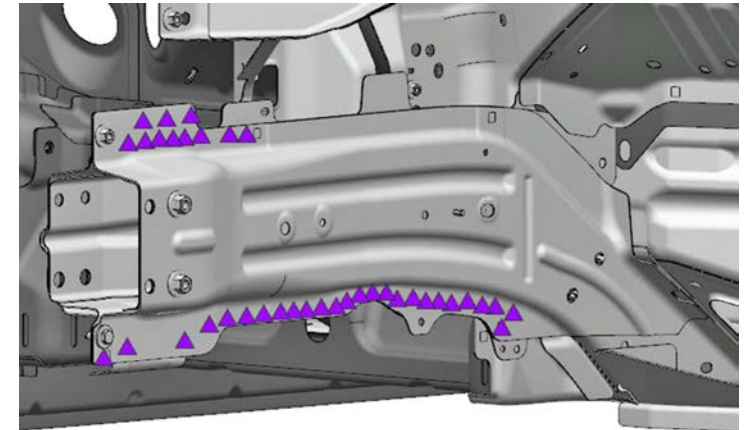
Replacement

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.

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

▲ Installation Spot Weld





Replacement

2 Prepare the surfaces (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.



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.

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

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.



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

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





Replacement

- 4 Install the new component (continued).
 - B Align and temporarily secure the new component to the frame bench jig points.

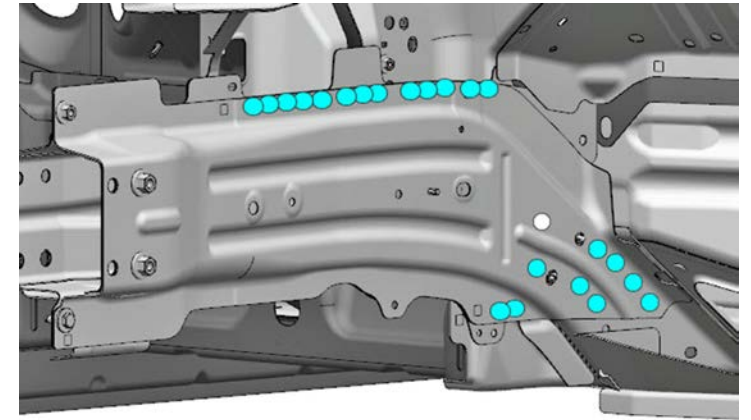
 - C Insert the structural rivets and the structural countersunk rivet.
 - Structural Countersunk Rivet, 6.5 mm (x1)
 - High Strength Structural Rivet, 6.5 mm (x25)





Replacement

- 4 Install the new component (continued).
 - C Insert the structural rivets and the structural countersunk rivet (continued).
 - D Install the structural rivets and the structural countersunk rivet.





Replacement

- 4 Install the new component (continued).
- D Install the structural rivets and the structural countersunk rivet (continued).



- E Wipe off any excess adhesive.





Replacement

4 Install the new component (continued).

F Temporarily install an M6 bolt through the existing hole on the top of the Front Frame Rail.



NOTE: The M6 bolt was removed with the Shotgun Shear Wall. A new bolt is not needed for this step.



NOTE: Do not torque the bolt at this time, as it will be removed when installing the Shotgun Shear Wall.





Replacement

4 Install the new component (continued).

G Perform resistance spot welding.
▲ Installation Spot Weld (x22)



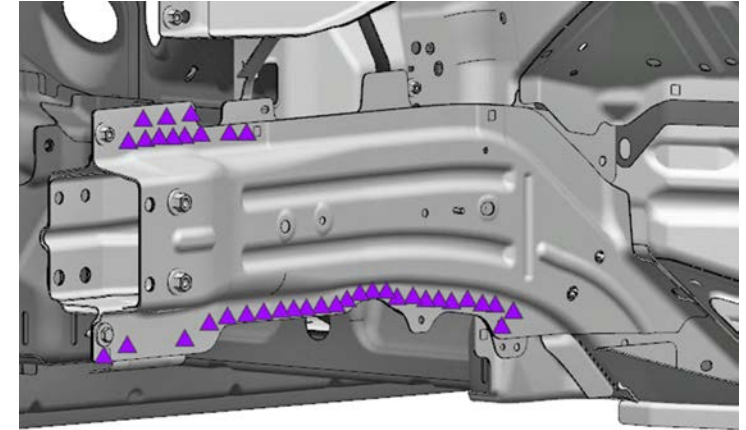
WARNING: Failure to follow all welding safety precautions, including the use of personal protective equipment, could result in serious injury or property damage. Only technicians who have successfully met Tesla's requirements for welding training are authorized to weld structural components on Tesla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



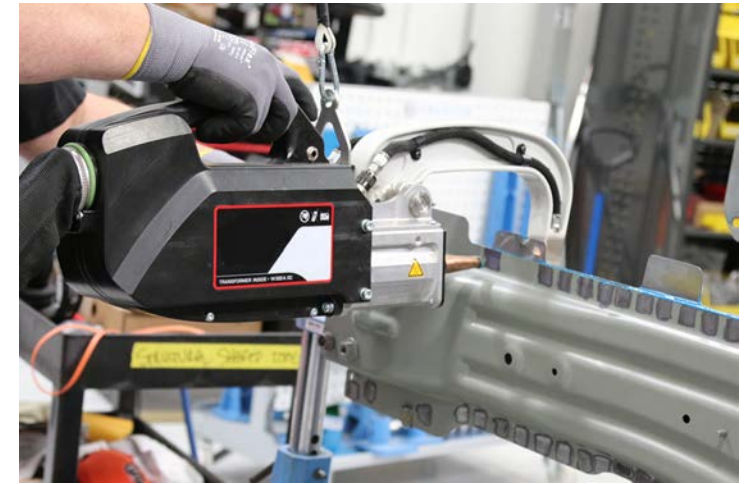
CAUTION: Use only insulated clamps within 200 mm (8 in) of resistance spot weld locations. Do not perform resistance spot welding when there is an uninsulated clamp within 200 mm (8 in) of the spot weld location.





Replacement

- 4 Install the new component (continued).
- G Perform resistance spot welding (continued).



- H Remove any discoloration from the weld areas.



Replacement

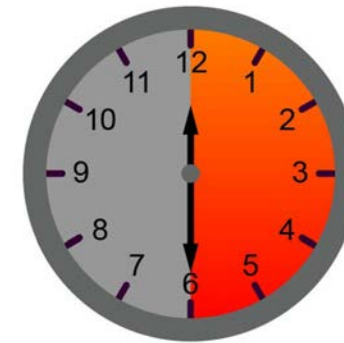
4 Install the new component (continued).

|

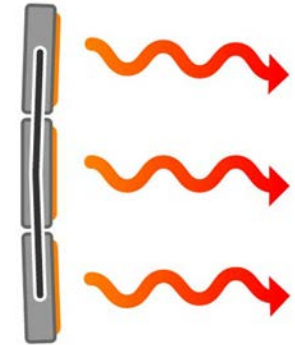
Bake the structural adhesive so that the bonded panels reach a temperature of 60°C–80°C (140°F–176°F) for at least 30 minutes to achieve full strength.



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.



00:30:00+



60°C–80°C

5 After refinishing, use a 360-degree spray wand of suitable length to apply corrosion-proofing material on the inside of the enclosed area to prevent corrosion.





Replacement

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

7 Install the new [Shotgun Shear Wall](#).





Replacement

8

Install the new [Torque Box Cover Assembly](#).

