 <b>Tesla, Inc.</b> Service Bulletin		<h2>Replace Steering Rack Housing Bolts, Model X</h2>	
<b>SB-20-32-002</b> October 26, 2021		<b>R2</b>	
<b>Classification</b> Recall Bulletin		<b>Section/Group</b> 32 - Steering	<b>Mobile Service</b> Cannot Perform
<b>Model Year</b> 2015 - 2016	<b>Model</b> Model X	<b>Country/Region</b> All	<b>Version</b> Left Hand Drive (LHD)
<small>The model(s) and model year(s) listed are a general approximation of the affected VIN list. Refer to the VIN/Bulletin Tracker or Customer/Vehicle profile to determine applicability of this bulletin for a particular vehicle.</small>			

Recall Bulletin: Recall Bulletins are mandatory service procedures that must be carried out by Tesla-certified Service Centers. Recall work performed by uncertified technicians could lead to unsafe conditions or voided warranty provisions.

*This Service Document supersedes SB-20-32-002 R1, dated 15-Jun-20. Each content change is marked by a vertical line in the left margin. Discard the previous version and replace it with this one.*

### Condition

Long-term exposure to high-corrosion environments might weaken the bolts that attach the power steering motor to the steering rack housing.

### Correction

Replace the bolts (x5) that attach the power steering motor to the steering rack housing and apply wax sealant.

**⚠ CAUTION:** If any of the bolts are found damaged or broken, or break during removal and cannot be removed, the steering rack must be replaced (refer to Service Manual procedure [32010102](#)).

Correction Description	Correction	Time
Replace Bolts In Steering Rack Housing And Apply Wax Sealant	S012032002	0.90
Replace Steering Rack	S022032002	4.55

	Part Number	Description	Quantity
<b>Parts Required</b>	1500015-00-A	STEEL BOLTS FOR BOSCH STEERING GEAR-MX (set of 5)	1
	1008722-00-A	BOLT HF M8x30 PC109 ADH MAT	4
	1037743-00-A	BOLT PF M6x40 PC109 ECOFIX	2
	1465753-00-A	PFINDER AP 13/18 WAX CAN (1 can of wax sealant services approximately 20 vehicles. Shake the can before use.)	1

**If Necessary** 1467673-00-A LHD STEERING GEAR W/ STEEL BOLTS + WAX 1

These part numbers were current at the time of publication. Use the revisions listed or later, unless otherwise specified in the [Parts Catalog](#).

**Special Tools** 1483205-00-A Kit, Steering Gear Bolt Extraction

**Shop Supplies** Alcohol wipes (1054788-00-A)  
Nylon brush (1057223-00-A)  
Paint pen, orange (1054783-00-A)  
Brake cleaner aerosol:

- North America (1023297-00-A, 1023297-03-A)
- Europe, Middle East, Africa (1099802-00-A, 1023297-07-A)
- Asia Pacific (1023297-02-A, 1023297-04-A, 1023297-06-A)

## Procedure

**⚠ WARNING:** Examine all steering rack housing bolts during the beginning of this procedure. If any bolts appear damaged or broken, or break during removal and cannot be removed, the steering rack must be replaced (refer to Service Manual procedure [32010102](#)).

**⚠ WARNING:** During the steps in this procedure, make sure only 1 steering rack housing bolt is removed from the steering rack at any time. Removing more than 1 bolt at a time could result in damage to the steering rack. This damage might lead to a loss of steering. If more than 1 bolt has been removed at the same time, the steering rack must be replaced.

1. Raise and support the vehicle on a 2-post lift (refer to Service Manual procedure [10000205](#)).
2. Remove the RH front wheel (refer to Service Manual procedure [34015001](#)).
3. Inspect all 5 steering rack housing bolts (steering gear to steering gear motor) (Figures 1 – 4):
  - If any bolts are damaged or broken, discontinue this procedure and replace the steering rack (refer to Service Manual procedure [32010102](#)).
  - If all 5 bolts are present and undamaged, continue to the next step.

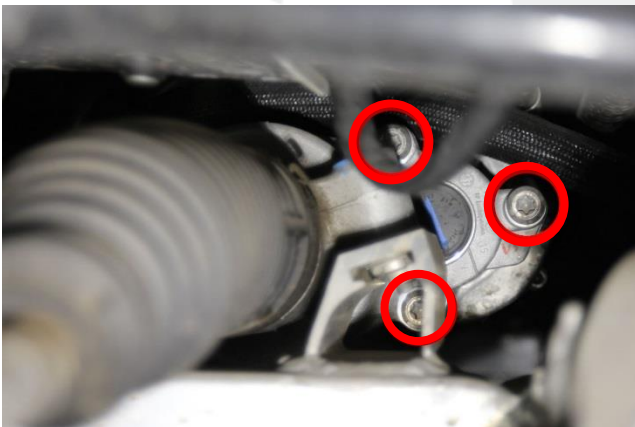


Figure 1 – Steering rack housing bolts 1, 2, and 3



Figure 2 – Steering rack housing bolt 4

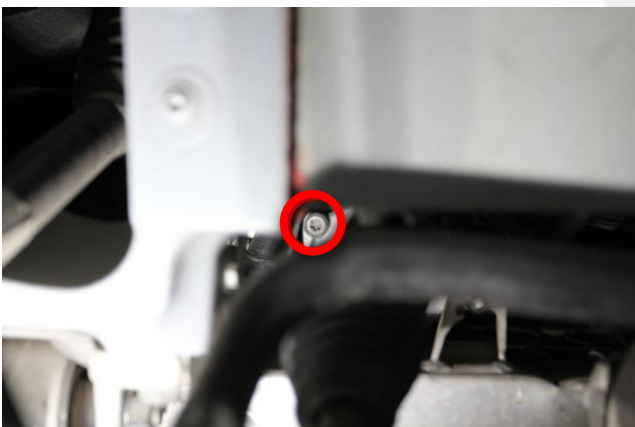


Figure 3 – Steering rack housing bolt 5

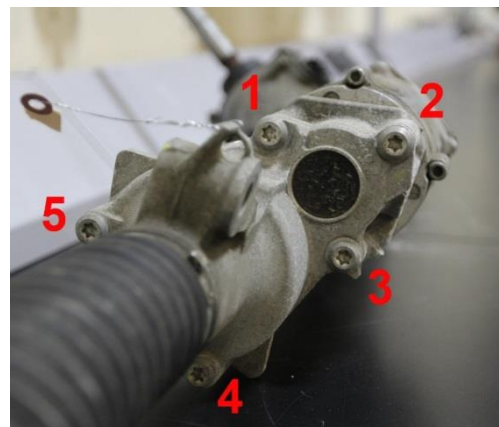
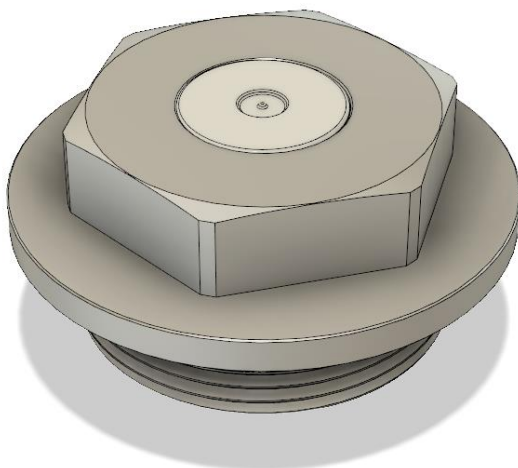


Figure 4 – Identification of all steering rack housing bolts (steering rack removed from vehicle)

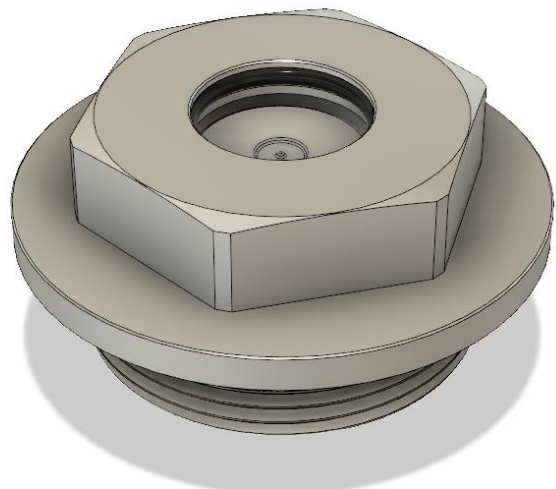
4. Visually inspect the valve body on the steering rack housing (Figure 5).
  - If the steering rack is equipped with a center valve plunger (Figure 6): the center valve plunger should be flush with the valve body (Figure 6). If the center valve plunger is not flush with the valve body (Figure 7), it has been in contact with water internally and the steering rack must be replaced (refer to service manual procedure [32010102](#)). Discontinue this procedure after replacing the steering rack.
  - If the steering rack is not equipped with a center valve plunger, continue to the next step.



Figure 5



✓ Figure 6



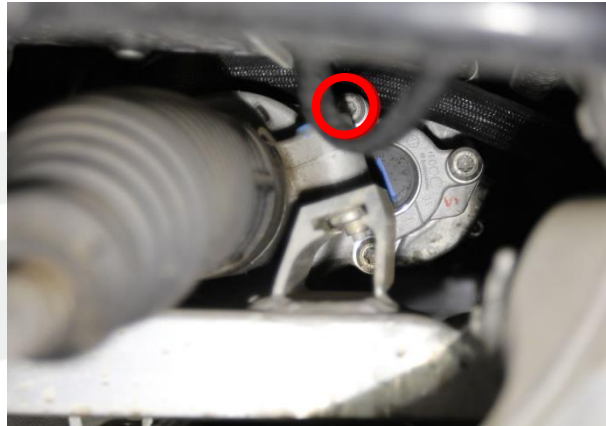
✗ Figure 7

5. Clean the area around the steering rack housing bolts with a shop towel, and then clear debris away with compressed air.

6. Remove and discard steering rack housing bolt 1 (Figure 8).

**⚠ WARNING:** Make sure only 1 steering rack housing bolt is removed from the steering rack at any time. Removing more than 1 bolt at a time could result in damage to the steering rack. This damage might lead to a loss of steering. If more than 1 bolt has been removed at the same time, the steering rack must be replaced.

**📄 NOTE:** If the steering rack housing bolt is sheared off or damaged during removal, use the Steering Gear Bolt Extraction Kit (1483205-00-A) to remove the bolt (refer to tool profile TP-1483205-00-A).



**Figure 8 – Steering rack housing bolt 1**

7. Inspect the removed bolt before discarding it to determine whether the threads of the steering rack housing are damaged.

**⚠ CAUTION:** If extraction is unsuccessful, or if the steering rack housing threads appear to be damaged, discontinue this procedure and replace the steering rack (refer to Service Manual procedure [32010102](#)).

8. Install a new steering rack housing bolt 1 (torque 5 Nm) (Figure 8).
9. Inspect the bolt to make sure it is fully seated against the steering rack housing (Figure 9) before applying a 90-degree angle torque. If the bolt does not seat properly (Figure 10), remove the bolt and inspect the hole on the steering rack to make sure there is no debris or damage preventing the bolt from fully seating.



**✓ Figure 9**



**✗ Figure 10**

10. Apply a 90-degree angle torque, and then mark the torqued bolt with an orange paint pen.

11. Repeat steps 6 – 10 for each of the remaining steering rack housing bolts 2, 3, 4, and 5 (Figures 11 - 14).

**⚠ WARNING:** Make sure only 1 steering rack housing bolt is removed from the steering rack at any time. Removing more than 1 bolt at a time could result in damage to the steering rack. This damage might lead to a loss of steering. If more than 1 bolt has been removed at the same time, the steering rack must be replaced.



Figure 11 – Steering rack housing bolt 2



Figure 12 – Steering rack housing bolt 3



Figure 13 – Steering rack housing bolt 4

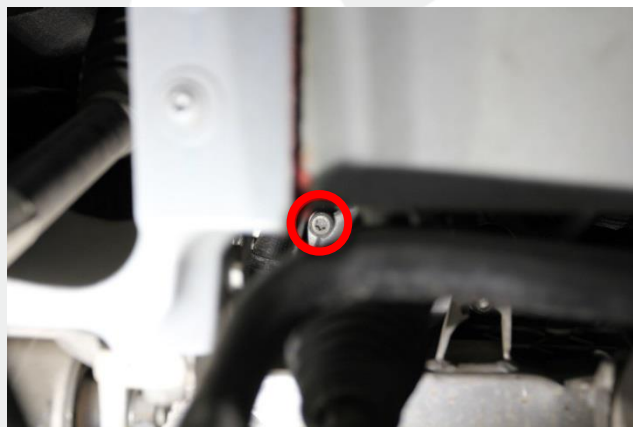


Figure 14 – Steering rack housing bolt 5

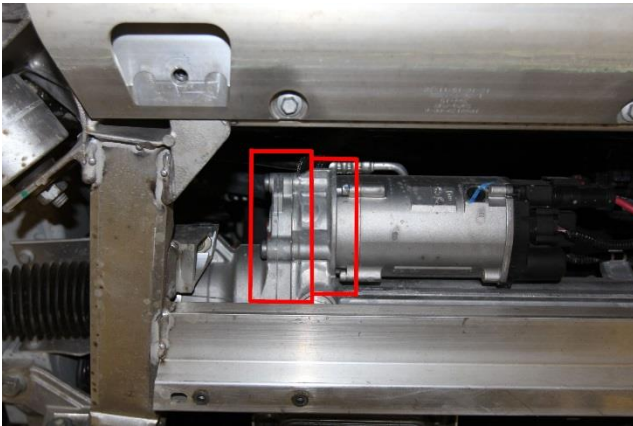
12. Remove the front aero shield panel (refer to Service Manual procedure [12030102](#)).

13. Remove the front extrusion bash plate (refer to Service Manual procedure [30011402](#)).

14. Remove the front skidplate (refer to Service Manual procedure [30011002](#)).

15. Use a nylon brush and brake cleaner aerosol to clean the 5 steering rack housing bolts and the steering rack housing seams (Figures 15 and 16).

**⚠ CAUTION:** Do not use a steel or brass brush to clean the area around the steering rack housing bolts. Rust damage to the steering rack might result.

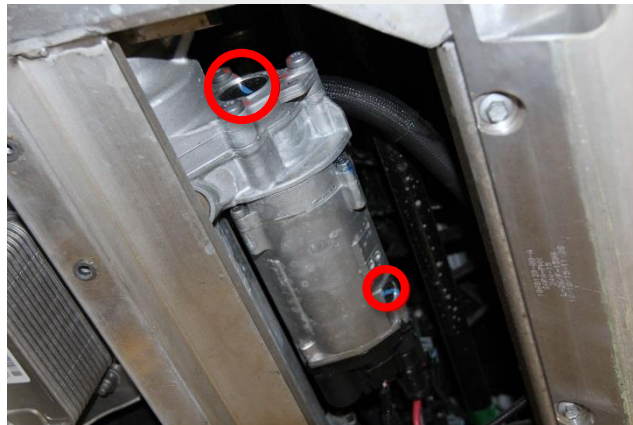


**Figure 15**



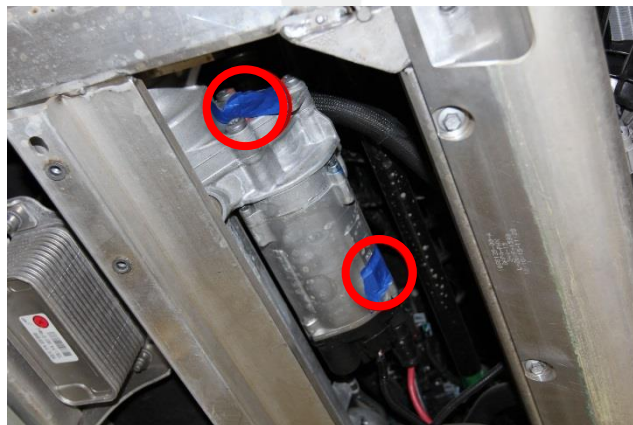
**Figure 16**

16. Use isopropyl alcohol (IPA) wipes to clean the sealing plugs (x2) on the steering rack (Figure 17) and allow the area to dry for at least 1 minute.



**Figure 17**

17. Cover the sealing plugs (x2) with masking tape (Figure 18).



**Figure 18**

18. Cover the components near the steering rack with shop towels to protect from drips during wax sealant application (Figure 19).



**Figure 19**

19. Shake well the wax sealant solution before use.

20. Apply the wax sealant to the steering rack housing bolts and steering rack housing seams (Figures 20 and 21). Make sure to apply wax sealant to the underside of the steering rack, as well as the motor housing. Completely cover the following areas with the wax sealant (Figure 22):

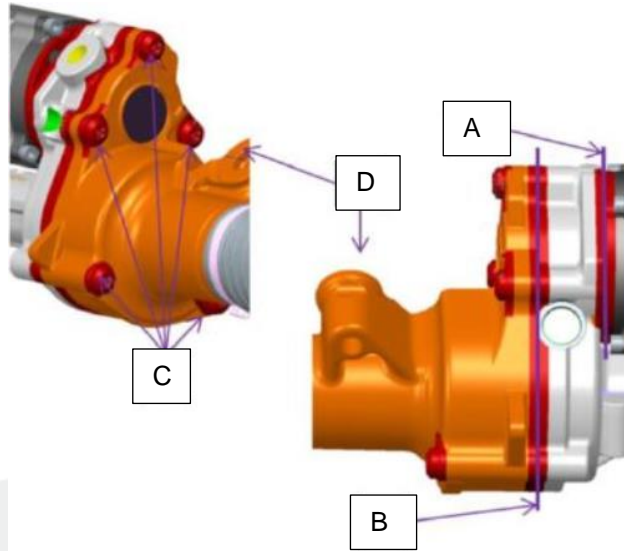
- A. The entire seam at the interface of the steering rack housing and the motor
- B. The entire seam at the interface of the steering rack housing and the gear cover
- C. All 5 bolt heads
- D. The open screw thread bore



**Figure 20**



**Figure 21**



**Figure 22**

21. Allow the first coat of the wax sealant to partially dry for 3 minutes.
22. Apply a second coat of wax sealant to the same areas described in step 19.
23. Close the lid on the wax sealant container when finished so that the contents do not solidify.
24. Remove the shop towels and wipe up any excess wax sealant.
25. Remove the masking tape covering the sealing plugs on the steering rack (Figure 18).
26. Install the RH front wheel (refer to Service Manual procedure [34015001](#)).
27. With the vehicle in Park, tires touching the ground, and brake pedal depressed, perform 4 lock-to-lock steering inputs, noting any friction, grinding, or other abnormal sensations from the steering wheel. Repeat this test with the brake pedal released.
28. Raise the vehicle slightly so that the tires are off the ground (refer to Service Manual procedure [10000205](#)).
29. With the vehicle in Park and the brake pedal released, perform 4 lock-to-lock steering inputs, noting any friction, grinding, or other abnormal sensations from the steering wheel. If any concerns were detected while performing the previous steering sweeps, perform further diagnosis to identify the cause for these concerns.
30. Install the front skidplate (refer to Service Manual procedure [30011002](#)).
31. Install the front extrusion bash plate (refer to Service Manual procedure [30011402](#)).
32. Install the front aero shield panel (refer to Service Manual procedure [12030102](#)).