

KNUCKLE - SUSPENSION - FRONT - LH (DUAL MOTOR) (REMOVE AND REPLACE)

Correction code 31010112
FRT: 0.75 hours

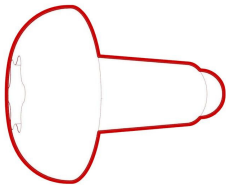
NOTE: See Flat Rate Times to learn more about FRTs and how they are created. To provide feedback on FRT values, email LaborTimeFeedback@tesla.com (<mailto:LaborTimeFeedback@tesla.com>).

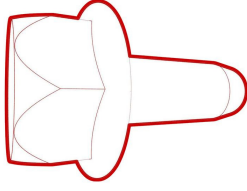
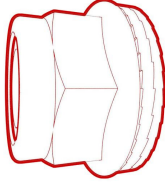
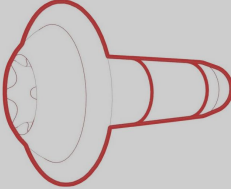
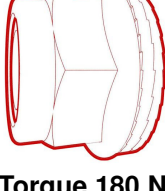
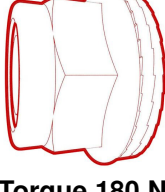


Parent topic: 3101 - Front Suspension (Including Hubs)

TORQUE SPECIFICATIONS

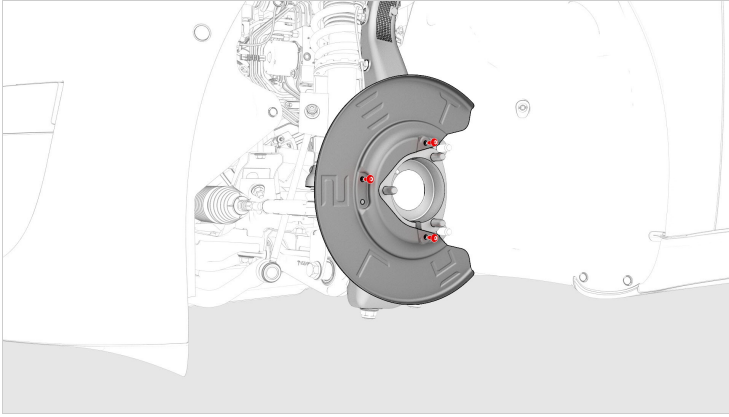
Table 1. Torque Specifications: Knuckle - Suspension - Front - LH (Dual Motor) (Remove and Replace)

Description	Torque Value	Recommended Tools	Reuse/Replace	Notes
Bolts that attach the LH front brake dust shield to the knuckle	 Torque 8 Nm	<ul style="list-style-type: none"> Torx T30 socket Flex head ratchet/flex head torque wrench 4 in extension 	Reuse	

Description	Torque Value	Recommended Tools	Reuse/Replace	Notes
Bolt that attaches the LH front ABS wheel speed sensor to the LH front suspension knuckle	 Torque 5 Nm	<ul style="list-style-type: none"> • 10 mm deep socket • Flex head ratchet/flex head torque wrench • 4 in extension 	Replace	
Nut that attaches the LH tie rod end to the LH front suspension knuckle	 Torque 180 Nm	<ul style="list-style-type: none"> • 22 mm socket • 12 pt 10mm combination wrench • 12 pt 22 mm combination wrench 	Replace	
Nut that attach the LH upper control arm to the LH front suspension knuckle	 Torque 56 Nm	<ul style="list-style-type: none"> • Torx T47 socket • 12 pt 15 mm combination wrench 	Replace	
Nut that attaches the LH front lower compliance link to the front suspension knuckle	 Torque 180 Nm	<ul style="list-style-type: none"> • 22 mm socket • 22 mm ratcheting combination wrench • Torx T45 socket 	Replace	
Nut that attaches the LH front lower lateral link to the LH front suspension knuckle	 Torque 180 Nm	<ul style="list-style-type: none"> • 22 mm socket • 22 mm ratcheting combination wrench • Torx T45 socket 	Replace	

REMOVE

- 1 Remove the LH front hub. See Hub - Front - LH (Dual Motor) (Remove and Replace).

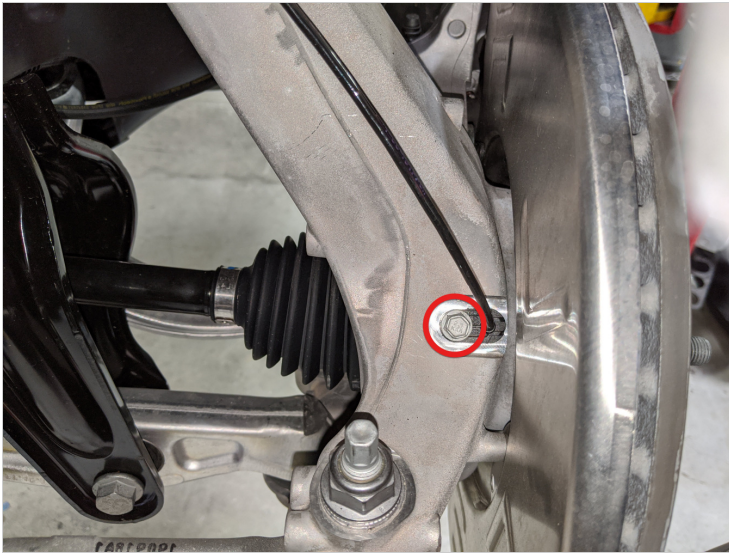


- 2 Remove the bolts that attach the LH front brake dust shield to the knuckle, and then remove the dust shield from the vehicle.



Tip: Use of the following tool(s) is recommended:

- Torx T30 socket
- Flex head ratchet/flex head torque wrench
- 4 in extension

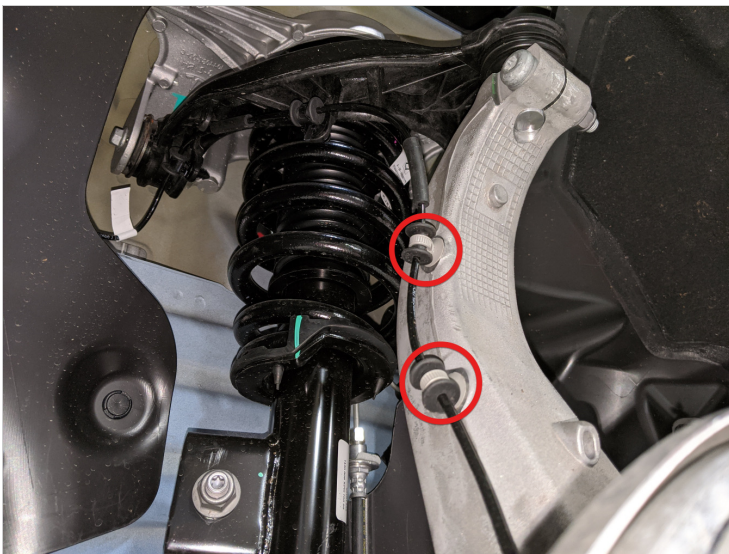


- 3 Remove and discard the bolt that attaches the LH front ABS wheel speed sensor to the LH front suspension knuckle.

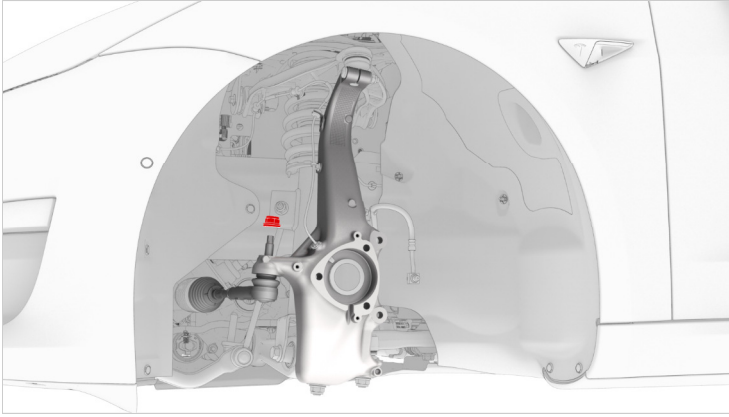


Tip: Use of the following tool(s) is recommended:

- 10 mm deep socket
- Flex head ratchet/flex head torque wrench
- 4 in extension



- 4 Release the clips that attach the LH front ABS wheel speed sensor electrical harness to the LH front suspension knuckle.

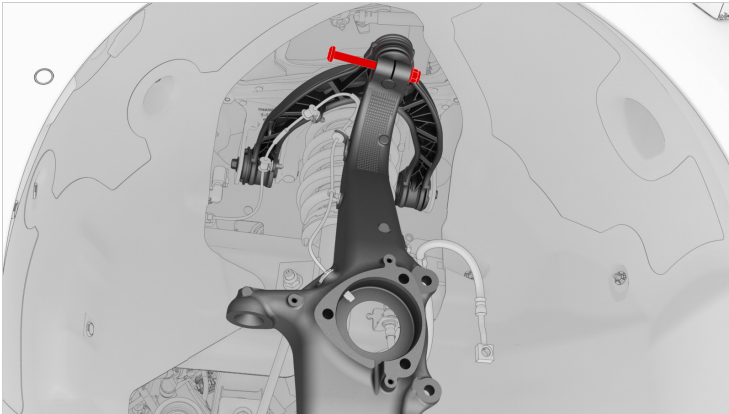


- 5** Remove and discard the nut that attaches the LH tie rod end to the LH front suspension knuckle, and then remove the tie rod end from the knuckle.



Tip: Use of the following tool(s) is recommended:

- 22 mm socket
- 12 pt 10mm combination wrench
- 12 pt 22 mm combination wrench



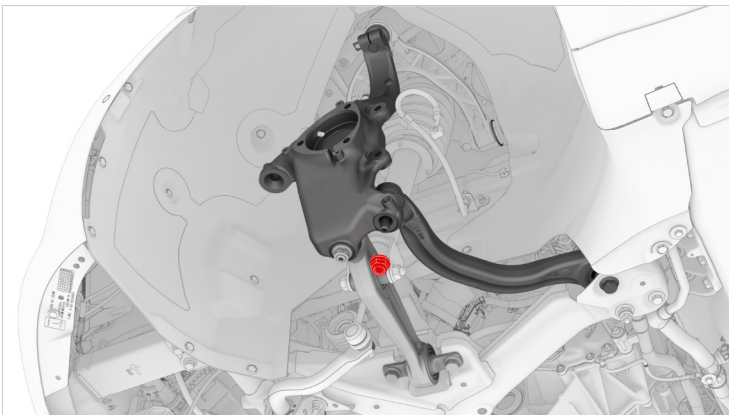
- 6** Remove the bolt and discard the nut that attach the LH upper control arm to the LH front suspension knuckle.

Note: Compress the joint to remove the bolt.



Tip: Use of the following tool(s) is recommended:

- Torx T47 socket
- 12 pt 15 mm combination wrench

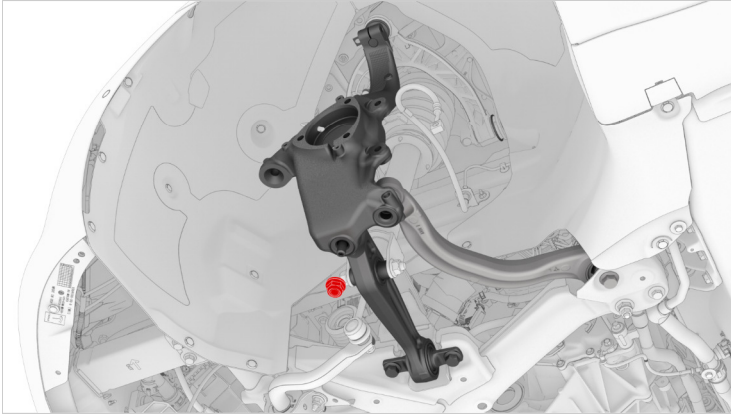


- 7** Remove and discard the nut that attaches the LH front lower compliance link to the front suspension knuckle.



Tip: Use of the following tool(s) is recommended:

- 22 mm socket
- 22 mm ratcheting combination wrench
- Torx T45 socket



- 8** Remove and discard the nut that attaches the LH front lower lateral link to the LH front suspension knuckle.



Tip: Use of the following tool(s) is recommended:

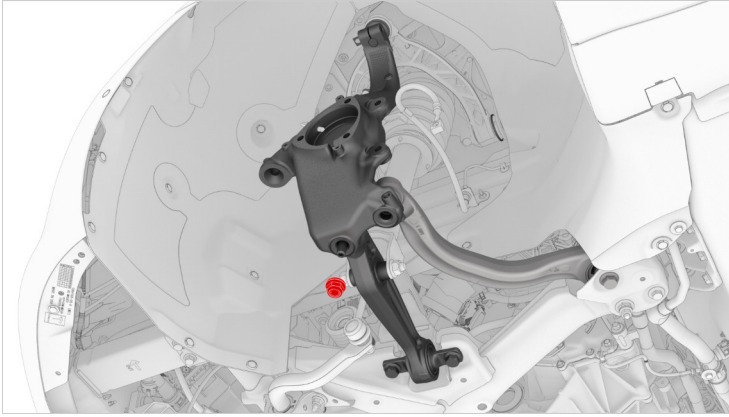
- 22 mm socket
- 22 mm ratcheting combination wrench
- Torx T45 socket

- 9** Remove the LH front suspension knuckle from the vehicle.

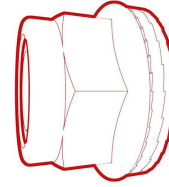


INSTALL

- 1** Position the LH front suspension knuckle into the vehicle.



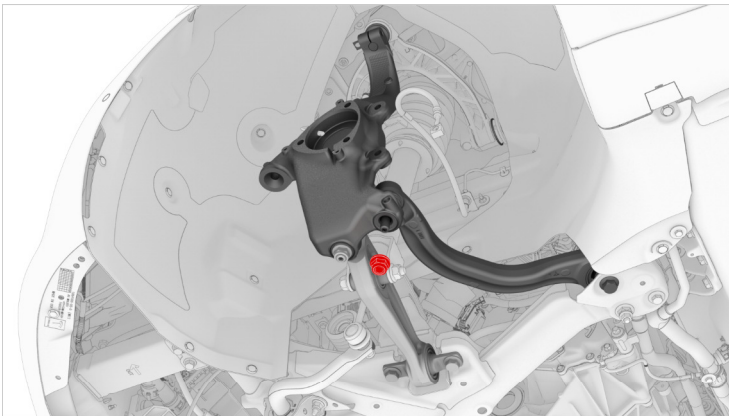
- 2** Rest the LH front drive unit half shaft in the LH front suspension knuckle, and then install a new nut that attaches the knuckle to the lower lateral link.



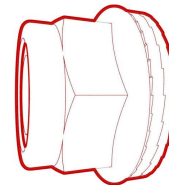
Torque 180 Nm

i **Tip:** Use of the following tool(s) is recommended:

- 22 mm socket
- 22 mm ratcheting combination wrench
- Torx T45 socket



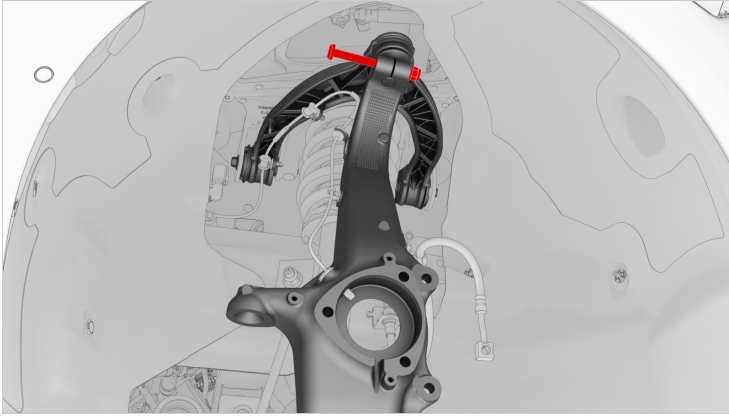
- 3** Install a new nut that attaches the LH front lower compliance link to the LH front suspension knuckle.



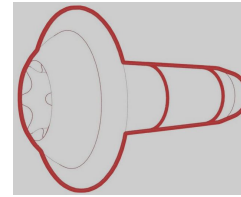
Torque 180 Nm

i **Tip:** Use of the following tool(s) is recommended:

- 22 mm socket
- 22 mm ratcheting combination wrench
- Torx T45 socket



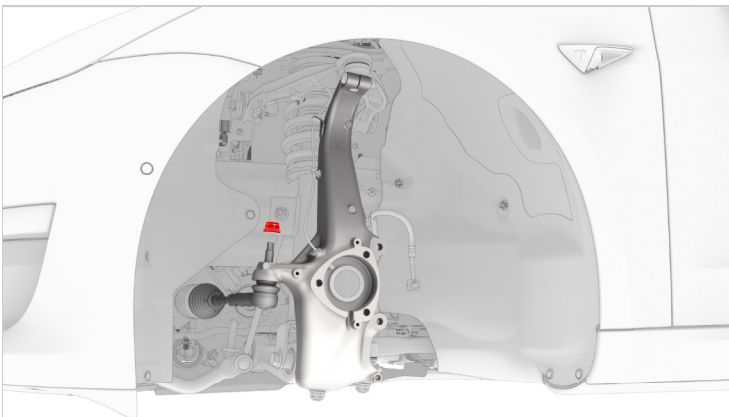
- 4** Install the bolt and new nut that attach the LH upper control arm to the LH front suspension knuckle.



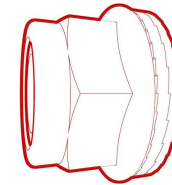
Torque 56 Nm

i **Tip:** Use of the following tool(s) is recommended:

- Torx T47 socket
- 12 pt 15 mm combination wrench



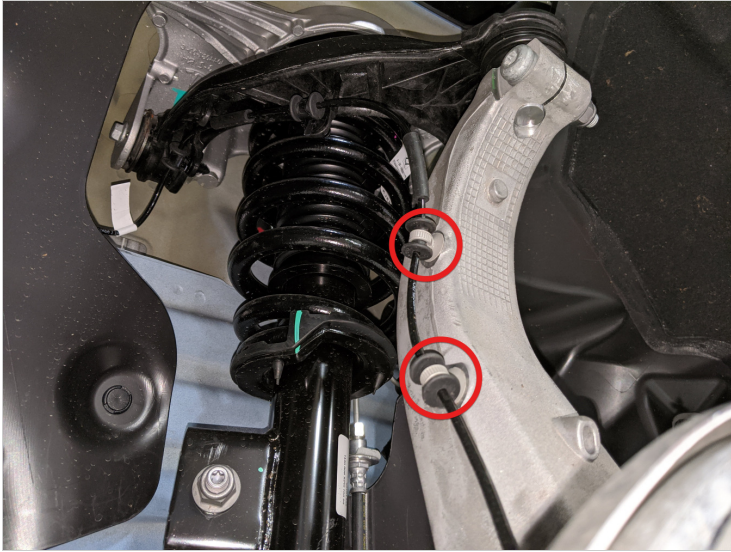
- 5** Install a new nut that attaches the LH tie rod end to the LH front suspension knuckle.



Torque 180 Nm

i **Tip:** Use of the following tool(s) is recommended:

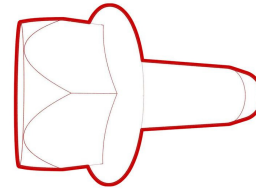
- 22 mm socket
- 12 pt 10mm combination wrench
- 12 pt 22 mm combination wrench



- ◀ 6 Install the clips that attach the LH front ABS wheel speed sensor electrical harness to the LH front suspension knuckle.



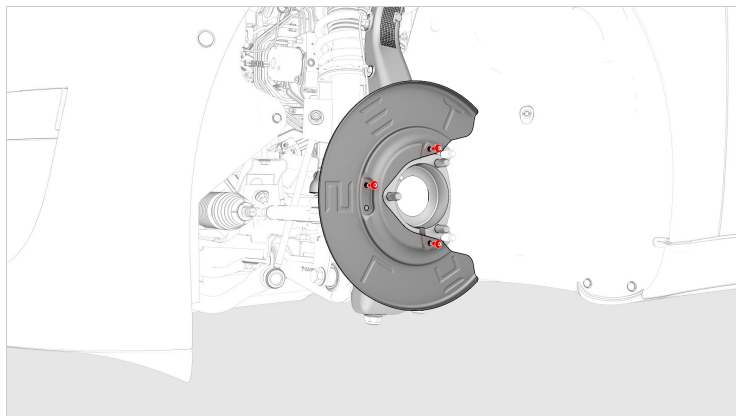
- ◀ 7 Install a new bolt that attaches the LH front ABS wheel speed sensor to the LH front suspension knuckle.



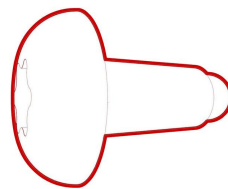
Torque 5 Nm

i **Tip:** Use of the following tool(s) is recommended:

- 10 mm deep socket
- Flex head ratchet/flex head torque wrench
- 4 in extension



- 8** Install the bolts that attach the LH front brake dust shield to the knuckle.



Torque 8 Nm



Tip: Use of the following tool(s) is recommended:

- Torx T30 socket
- Flex head ratchet/flex head torque wrench
- 4 in extension

- 9** Install the LH front hub. See Hub - Front - LH (Dual Motor) (Remove and Replace).



Last updated: 20/08/2020 17:15:46

HUB - FRONT - LH (DUAL MOTOR) (REMOVE AND REPLACE)

Correction code 31010802

FRT: 0.35 hours

NOTE: See Flat Rate Times to learn more about FRTs and how they are created. To provide feedback on FRT values, email LaborTimeFeedback@tesla.com (<mailto:LaborTimeFeedback@tesla.com>).



SPECIAL TOOLS


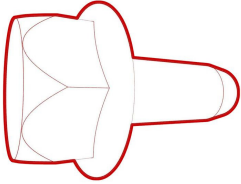
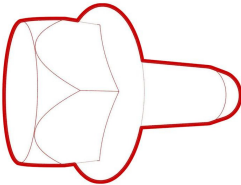
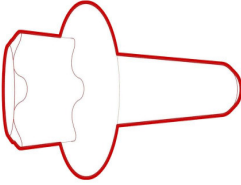
Card, Magnetic Field Viewer (1062500-00-A)

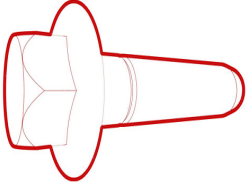
Parent topic: 3101 - Front Suspension (Including Hubs)

TORQUE SPECIFICATIONS

Table 1. Torque Specifications: Hub - Front - LH (Dual Motor) (Remove and Replace)

Description	Torque Value	Recommended Tools	Reuse/Replace	Notes
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Description	Torque Value	Recommended Tools	Reuse/Replace	Notes
LH front drive unit halfshaft nut Close Procedure	 Torque 245 Nm Close Procedure	32 mm deep impact socket Close Procedure	Replace Close Procedure	Close Procedure
Bolt that attaches the LH front rotor to the LH front hub Close Procedure	 Torque 5 Nm Close Procedure	<ul style="list-style-type: none">• 10 mm socket• 2 in extension• Ratchet/torque wrench Close Procedure	Reuse Close Procedure	Close Procedure
Bolt that attaches the front brake hose bracket to the LH front knuckle Close Procedure	 Torque 5 Nm Close Procedure	<ul style="list-style-type: none">• 10 mm socket• Flex head ratchet/flex head torque wrench• 4 in extension Close Procedure	Reuse Close Procedure	Close Procedure
Bolts that attach the LH front caliper to the LH front knuckle Close Procedure	 Torque 94 Nm Close Procedure	External Torx E18 Close Procedure	Replace Close Procedure	Close Procedure

Description	Torque Value	Recommended Tools	Reuse/Replace	Notes
Bolts that attach the LH front hub and bearing to the LH front knuckle <div>Close Procedure</div>	 Torque 85 Nm <div>Close Procedure</div>	<ul style="list-style-type: none"> • 18 mm socket • Flex head ratchet/flex head torque wrench • 3 in extension <div>Close Procedure</div>	Reuse <div>Close Procedure</div>	<div>Close Procedure</div>

REMOVE



1 Raise and support the vehicle. See Raise Vehicle - 2 Post Lift.

2 If equipped, remove the LH front wheel center cap. See Cap - Wheel (Remove and Replace).

3 Loosen the LH front drive unit halfshaft nut.

Note: Use of the following tool(s) is recommended:

- Long Breaker Bar
- 32 mm deep impact socket

4 Loosen the LH front wheel lug nuts.



Caution: Use only hand tools to remove or install the fasteners. Do not use impact or power tools.



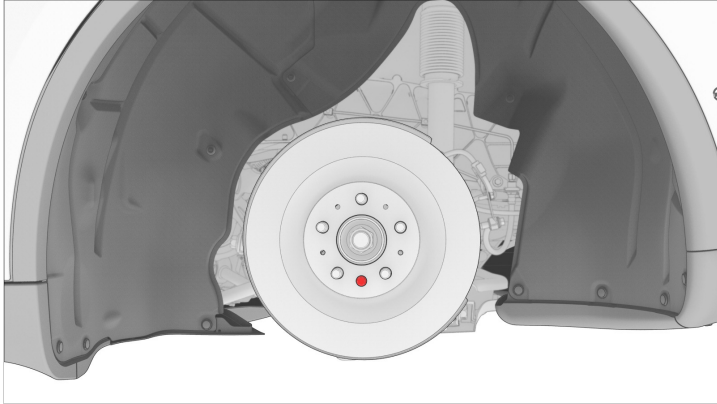
Caution: Use a 6 point socket. Do not use a 12 point socket or a specialty socket.

5 Remove the LH front wheel. See Wheel (Remove and Install).



6 Remove and discard the LH front drive unit halfshaft nut and washers.

Note: The washers are attached to the nut.



7 Remove the bolt that attaches the LH rear brake rotor to the hub, but do not remove the rotor at this time.

i Tip: Use of the following tool(s) is recommended:

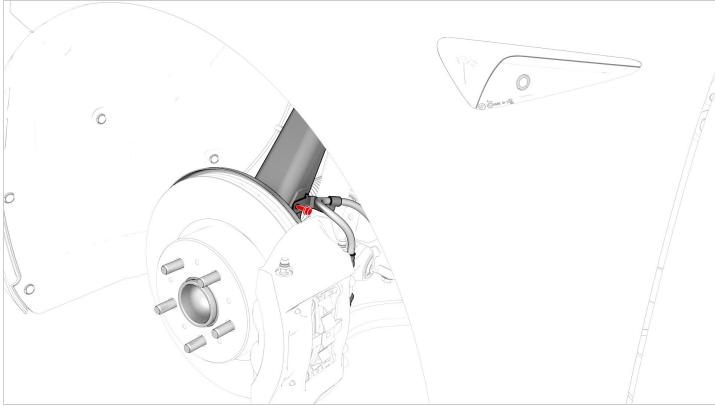
- 10 mm socket
- 2 in extension
- Ratchet/torque wrench

8 Position a hydraulic hub puller tool onto the LH front wheel studs, and then hand tighten the wheel lug nuts (x5).

9 Separate the LH front drive unit halfshaft from the LH front hub assembly.

Note: While holding the hub in position, turn the hydraulic hub puller tool handle clockwise to separate the LH front drive unit halfshaft from the hub assembly.

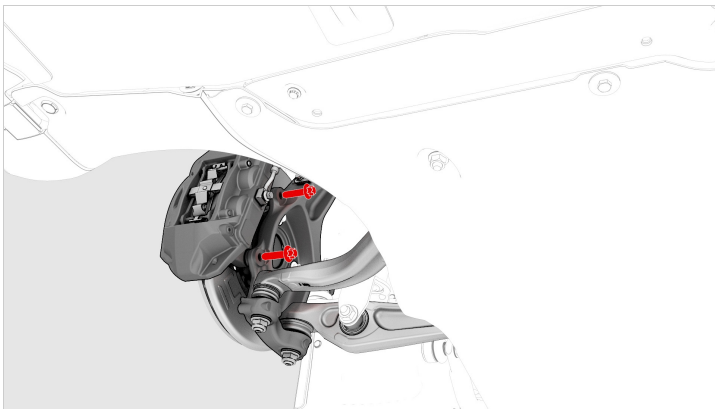
10 Remove the hub puller tool from the LH front wheel studs.



- ◀ 11 Remove the bolt that attaches the front brake hose bracket to the LH front knuckle.

i **Tip:** Use of the following tool(s) is recommended:

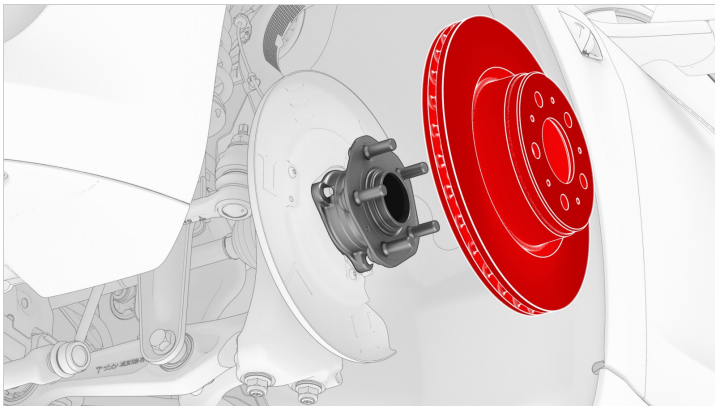
- 10 mm socket
- Flex head ratchet/flex head torque wrench
- 4 in extension



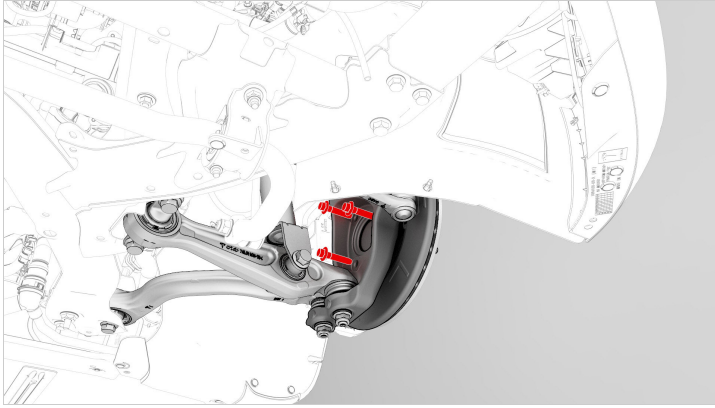
- ◀ 12 Remove and discard the bolts that attach the LH front brake caliper to the LH front knuckle, and then hang the caliper aside with an S-hook.

i **Tip:** Use of the following tool(s) is recommended:

External Torx E18



- ◀ 13 Remove the LH front rotor from the vehicle.

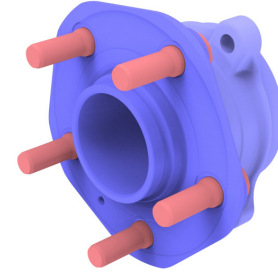


- ◀ 14 Remove the bolts that attach the LH front hub to the LH front knuckle.

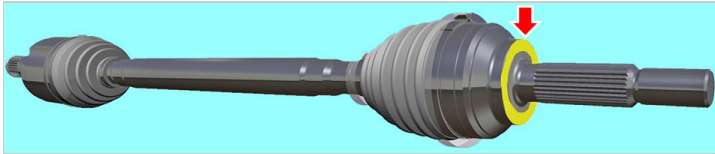
i Tip: Use of the following tool(s) is recommended:

- 18 mm socket
- Flex head ratchet/flex head torque wrench
- 3 in extension

- 15 Remove the LH front hub from the vehicle.



INSTALL



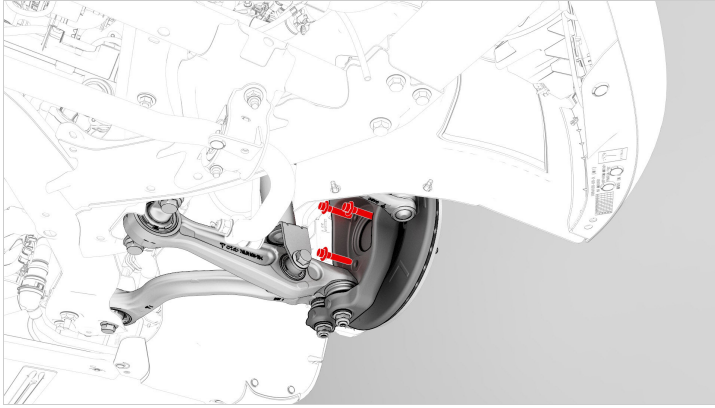
- 1 Use a magnetic field viewing card to check the LH front hub's tone ring.

- ◀ 2 Apply anti-seize silicone paste to the outboard side of the LH rear halfshaft assembly.

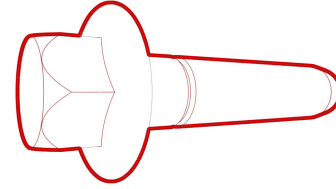
Note: Clean the halfshaft before applying if necessary.

Note: Apply no more than 1 gram to axle only.

- 3 Line up the LH front drive unit halfshaft splines, and then install the LH front hub on the LH front knuckle.



- 4** Install the bolts that attach the LH front hub to the LH front knuckle.

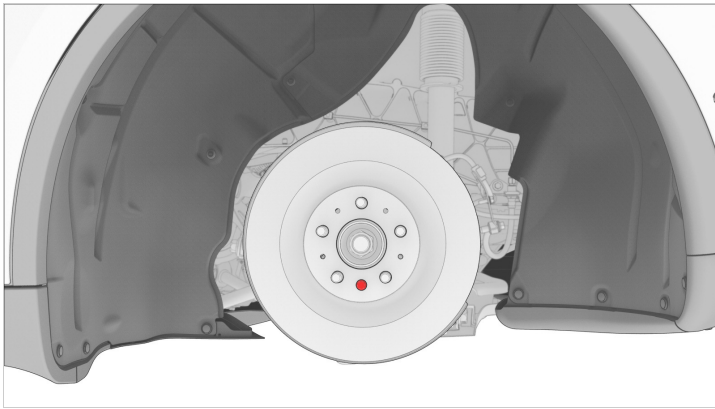


Torque 85 Nm

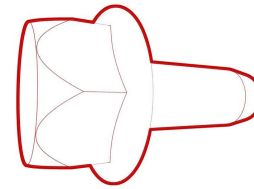


Tip: Use of the following tool(s) is recommended:

- 18 mm socket
- Flex head ratchet/flex head torque wrench
- 3 in extension



- 5** Install the LH front rotor on the LH front hub, and then install the bolt that attaches the rotor to the hub.



Torque 5 Nm

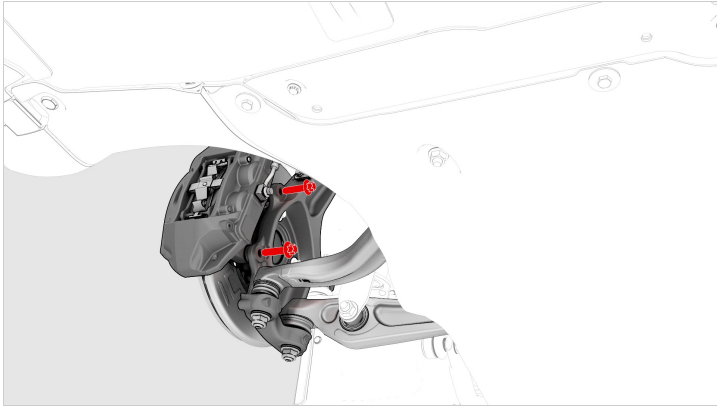


Tip: Use of the following tool(s) is recommended:

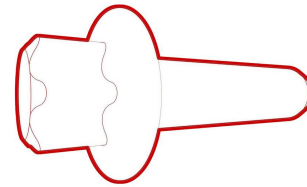
- 10 mm socket
- Flex head ratchet/flex head torque wrench
- 4 in extension



- 6 Install and hand tighten a new halfshaft nut on the halfshaft.



- 7 Install the new bolts that attach the LH front brake caliper to the LH front knuckle, and then remove the S-hook from the vehicle.

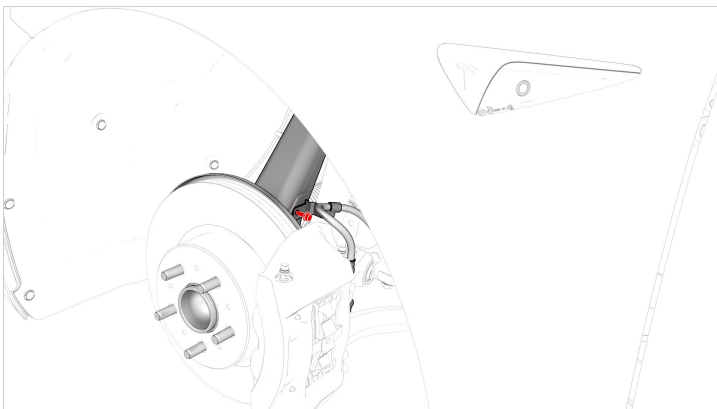


Torque 94 Nm

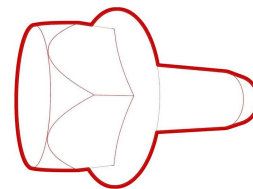
Note: Mark the bolts with a paint pen.

i Tip: Use of the following tool(s) is recommended:

External Torx E18



- 8 Install the bolt that attaches the front brake hose bracket to the LH front knuckle.



Torque 5 Nm

i Tip: Use of the following tool(s) is recommended:

- 10 mm socket
- Flex head ratchet/flex head torque wrench
- 4 in extension



9 Install the LH front wheel and hand tighten the wheel lug nuts.

10 Lower the vehicle until the tires are touching the ground. See Raise Vehicle - 2 Post Lift.

11 Fully tighten the wheel lug nuts. See Wheel (Remove and Install).

◀ 12 Fully tighten the new LH front drive unit halfshaft nut.



Torque 245 Nm

i **Tip:** Use of the following tool(s) is recommended:

32 mm deep impact socket

13 If equipped, install the LH front wheel center cap. See Cap - Wheel (Remove and Replace).

Close Procedure

10 Check the vehicle alignment, and adjust if necessary. See GUID-37AC4BEB-0B44-494C-997B-8C2CEE173AEA.html#GUID-37AC4BEB-0B44-494C-997B-8C2CEE173AEA.