Tesla, Inc. Service Bulletin		*Inspect Suspension Knuckles*	
SB-21-31-004 December 1, 2021	**R1**		
Classification		**Section/Group**	**Mobile Service**
Recall Bulletin		31 - Suspension	Cannot Perform
Model Year	**Model**	**Country/Region**	**Version**
2020 - 2022	Model Y	All	All
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.			

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-21-31-004, dated 24-Nov-21. Each content change is marked by a vertical line in the left margin. Discard the previous version and replace it with this one.

Condition

Certain Model Y vehicles may have been manufactured with suspension knuckles that do not meet correct specifications.

Correction

Inspect all suspension knuckles for symptoms related to the condition. If symptoms are present, replace the affected knuckles.

Correction Description	Correction	Time
Inspect All Knuckles; No Replacement Needed	S012131004	0.25
Inspect All Knuckles; Replace LH Front Knuckle (RWD)	S022131004	0.80
Inspect All Knuckles; Replace RH Front Knuckle (RWD)	S032131004	0.80
Inspect All Knuckles; Replace LH Front Knuckle (Dual Motor)	S042131004	0.90
Inspect All Knuckles; Replace RH Front Knuckle (Dual Motor)	S052131004	0.90
Inspect All Knuckles; Replace LH Rear Knuckle	S062131004	1.25
Inspect All Knuckles; Replace RH Rear Knuckle	S072131004	1.25
Inspect All Knuckles; Replace LH Front and RH Front Knuckles (RWD)	S082131004	1.25
Inspect All Knuckles; Replace LH Front and RH Front Knuckles (Dual Motor)	S092131004	1.45
Inspect All Knuckles; Replace LH Front and LH Rear Knuckles (RWD)	S102131004	1.65
Inspect All Knuckles; Replace LH Front and RH Rear Knuckles (RWD)	S112131004	1.65
Inspect All Knuckles; Replace RH Front and LH Rear Knuckles (RWD)	S122131004	1.65
Inspect All Knuckles; Replace RH Front and RH Rear Knuckles (RWD)	S132131004	1.65
Inspect All Knuckles; Replace LH Front and LH Rear Knuckles (Dual Motor)	S142131004	1.75
Inspect All Knuckles; Replace LH Front and RH Rear Knuckles (Dual Motor)	S152131004	1.75
Inspect All Knuckles; Replace RH Front and LH Rear Knuckles (Dual Motor)	S162131004	1.75
Inspect All Knuckles; Replace RH Front and RH Rear Knuckles (Dual Motor)	S172131004	1.75
Inspect All Knuckles; Replace LH Rear and RH Rear Knuckles	S182131004	2.05
Inspect All Knuckles; Replace LH Front, RH Front, LH Rear Knuckles (RWD)	S192131004	2.10
Inspect All Knuckles; Replace LH Front, RH Front, RH Rear Knuckles (RWD)	S202131004	2.10
Inspect All Knuckles; Replace LH Front, RH Front, LH Rear Knuckles (Dual Motor)	S212131004	2.30
Inspect All Knuckles; Replace LH Front, RH Front, RH Rear Knuckles (Dual Motor)	S222131004	2.30
Inspect All Knuckles; Replace LH Front, RH Rear, LH Rear Knuckles (RWD)	S232131004	2.50

Inspect All Knuckles; Replace RH Front, RH Rear, LH Rear Knuckles (RWD)	S242131004	2.50
Inspect All Knuckles; Replace LH Front, RH Rear, LH Rear Knuckles (Dual Motor)	S252131004	2.55
Inspect All Knuckles; Replace RH Front, RH Rear, LH Rear Knuckles (Dual Motor)	S262131004	2.55
Inspect All Knuckles; Replace All Knuckles (RWD)	S272131004	2.90
Inspect All Knuckles; Replace All Knuckles (Dual Motor)	S282131004	3.10

	Part Number	Description	Quantity
If Necessary	1188311-00-E	FR KNUCKLE, LH	1
	1188316-00-E	FR KNUCKLE, RH	1
	1188411-00-F	RR KNUCKLE ASSY, LH	1
	1188416-00-F	RR KNUCKLE ASSY, RH	1
	1109263-00-B	NUT&WSHR[SW],M14x1.5,[10],ZNFL,PTP	3–6
	1114797-00-A	BOLT,HF,M6-1x16,[58],ZNFL,SMAT	1–4
	1088969-00-B	BOLT,TE,M12x45,STL[109],ZNFL[BLCK]	2–8
	1111542-00-A	NUT,HF,M10x1.25,[10],ZNNI,PTP	1–2
	1115558-00-A	NUT&WSHR[SW],M24, STL[8],ZNFL,SERR	1–4
	1111145-00-A	NUT,HF,M10-1.5,[10],ZNNI,PTP	1–2

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

1769449-00-A	Hardness Tester Tool
1082171-00-A	Brake Caliper S-Hook
1076973-00-A	Dead Blow Hammer
1062500-00-A	Magnetic Field Viewer Card
1459409-00-A	Hub Jack Adapter
1071271-00-A	Chassis Height Measurement Tool
1090881-00-A	Brake Pedal Depressor
1090880-00-A	Steering Wheel Holder
1096075-00-A	Hydraulic Hub Puller
1457016-00-A	Gedore Spring Compressor
1137855-00-A	Rear Ride Height Torque Tool

Shop Supplies

Paint Pen
Molykote M-77 (if replacing a driven knuckle)

Procedure

NOTE: If the on-hand hardness tester tooling is different than the tool described below, consult the tool's instruction manual for operating instructions. The following settings must be selected:

- **Hardness Scale:** "HB" or "Brinell". **DO NOT** select "HRB" or "Rockwell".
- **Material Type**: Cast aluminium.
- **Measurement Direction:** Downward vertical for rear knuckles; horizontal for front knuckles.

1. Calibrate the hardness tester tool:

   NOTE: Calibration only needs to be performed once per day.

   a. Simultaneously press **Enter** and **On/Off** to enter calibration mode (Figure 1).

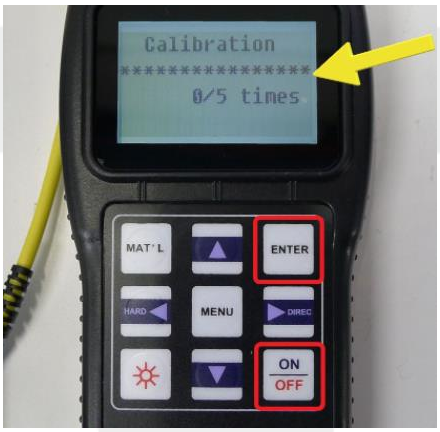

Figure 1

   b. Load the impact tool by sliding the black tube towards the tip.

   c. Trigger the tool on the test block 5 times, striking a different location each time (Figure 2).

      NOTE: Load the impact tool (step 1b) prior to every triggering.

Figure 2 – Press the release button to trigger the impact tool

d. After striking the test block 5 times, you will be prompted to enter the test block's hardness value. Press ▲ or ▼ to enter the hardness value of the test block (Figure 3), and then press **Enter**.

Figure 3

2. Press **Mat'l** until "Cast Aluminium Alloys" is selected (Figure 4).

Figure 4

3. Press **Hard** until "HB" is selected (Figure 5).

NOTE: Select "Brinell" if "HB" is not available. **DO NOT** select "HRB".

Figure 5

4. Remove all 4 wheels (refer to Service Manual procedure 34015001).
5. Use a wire brush to clean the circled area on the LH rear knuckle (Figure 6).

   CAUTION: Dirt/debris/paint can yield inaccurate hardness readings. Carefully clean all dirt/debris/paint from the circled area until **only bare metal is visible**.

   NOTE: Clean an area that is larger than the tip of the impact tool, as multiple measurements will be taken.

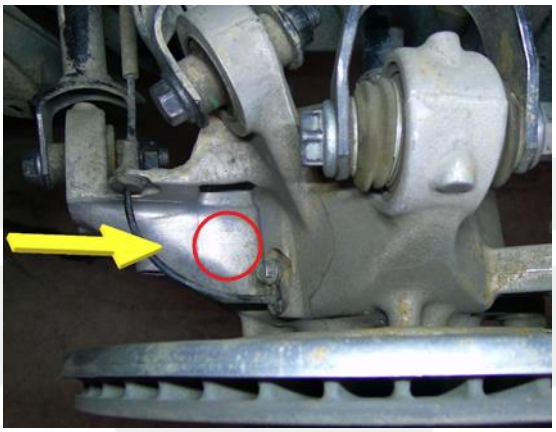

Figure 6 – Clean the circled area

6. Press **Direc** until the impact icon faces downward (Figure 7).

   NOTE: This step sets the hardness tester tool to vertical firing mode.

Figure 7

7. Load the impact tool by sliding the black tube towards the tip.

8. Position the impact tool on the LH rear knuckle as pictured (Figure 8).

CAUTION: Hold the tip of the impact tool firmly against the knuckle and make sure the entire tip of the impact tool is flush against the knuckle.

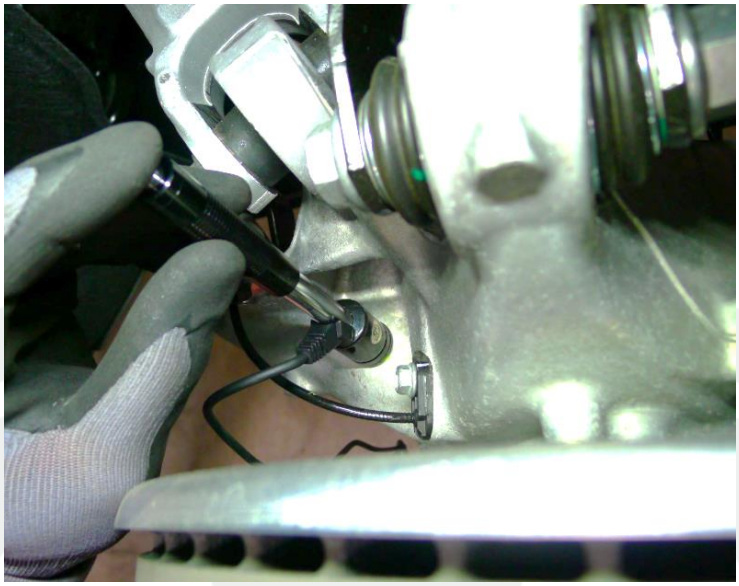

Figure 8 – Striking location on the LH rear knuckle

9. Carefully hold the tip of the impact tool (Figure 2) to stabilize it against the knuckle, and then press the release button to trigger the tool. The tool will record the measurement.
10. Take 2 more measurements (3 total), slightly shifting the impact location with each measurement.

CAUTION: Hold the tip of the impact tool firmly against the knuckle and make sure the entire tip of the impact tool is flush against the knuckle.

NOTE: Load the impact tool (step 7) prior to every triggering.

11. When 3 successful measurements are taken, the hardness tester tool will beep and automatically calculate the average hardness of the knuckle (Figure 9).

NOTE: If using different tooling that does not automatically calculate average hardness:

a. Take 5 measurements.

b. Discard the lowest and highest measurements.

c. Calculate the average hardness of the 3 remaining measurements.

Figure 9

- If the average hardness is 80 HB or higher, the knuckle does not require replacement. Take note and skip to the next step.
- If the average hardness is less than 80 HB, the knuckle requires replacement. Take note and continue to the next step.

12. Perform steps 5, 7, 8, 9, 10, and 11 on the RH rear knuckle (Figure 10).

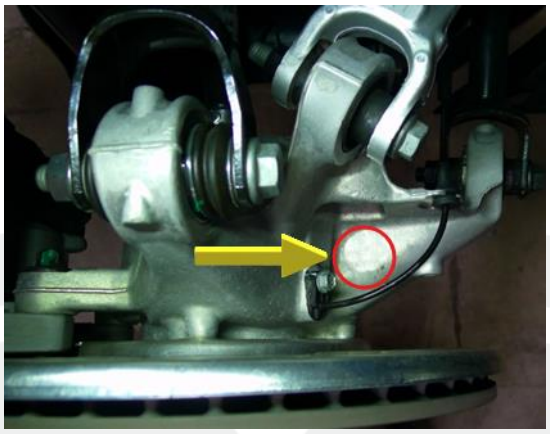

Figure 10 – Striking location on the RH rear knuckle

13. Use a wire brush to clean the circled area on the LH front knuckle (Figure 11).

CAUTION: Dirt/debris/paint can yield inaccurate hardness readings. Carefully clean all dirt/debris/paint from the circled area until **only bare metal is visible**.

NOTE: Clean an area that is larger than the tip of the impact tool, as multiple measurements will be taken.

NOTE: Take care not to scrape off the numbering and barcode.

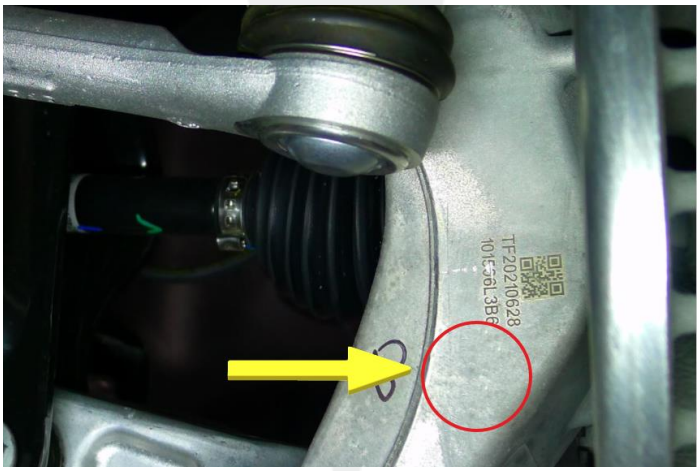

Figure 11 – Clean the circled area

14. Press **Direc** until the impact icon faces sideways (Figure 12).

NOTE: This step sets the hardness tester tool to horizontal firing mode.

Figure 12

15. Load the impact tool by sliding the black tube towards the tip.
16. Position the impact tool on the LH front knuckle as pictured (Figure 13).

CAUTION: Hold the tip of the impact tool firmly against the knuckle and make sure the entire tip of the impact tool is flush against the knuckle.

CAUTION: Make sure the impact tool is positioned completely outboard of the knuckle's casting line.

Figure 13 – Striking location on the LH front knuckle

17. Carefully hold the tip of the impact tool (Figure 2) to stabilize it against the knuckle, and then press the release button to trigger the tool. The tool will record the measurement.
18. Take 2 more measurements (3 total), slightly shifting the impact location with each measurement.

CAUTION: Hold the tip of the impact tool firmly against the knuckle and make sure the entire tip of the impact tool is flush against the knuckle.

NOTE: Load the impact tool (step 15) prior to every triggering.

19. When 3 successful measurements are taken, the hardness tester tool will beep and automatically calculate the average hardness of the knuckle (Figure 14).

NOTE: If using different tooling that does not automatically calculate average hardness:

a. Take 5 measurements.

b. Discard the lowest and highest measurements.

c. Calculate the average hardness of the 3 remaining measurements.

Figure 14

- If the average hardness is 80 HB or higher, the knuckle does not require replacement. Take note and skip to the next step.
- If the average hardness is less than 80 HB, the knuckle requires replacement. Take note and continue to the next step.

20. Perform steps 13, 15, 16, 17, 18, and 19 on the RH front knuckle (Figure 15).

Figure 15 – Striking location on the RH front knuckle

21. Replace all suspension knuckles that did not pass the hardness test.

TIP: To loosen a halfshaft nut with the wheels already removed, insert a screwdriver or punch into the brake rotor slots so that as the halfshaft nut is loosened, the screwdriver presses against the brake caliper. (Figure 16).

CAUTION: Insert a rolled up towel between the screwdriver and caliper to prevent damage to the caliper.

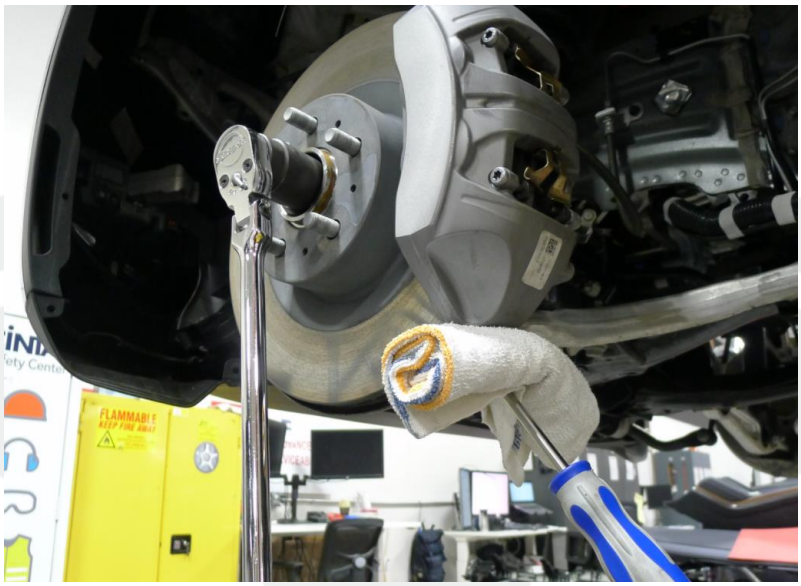

Figure 16 – LH brakes shown; the screwdriver is positioned *above* RH brake calipers

- RWD front knuckle (refer to Service Manual procedure 31010102).
- Dual Motor Front knuckle (refer to Service Manual procedure 31010112).
- Rear knuckle (refer to Service Manual procedure 31030102).

22. Return all failed suspension knuckles to MRB through the standard process.

NOTE: As a condition of applying this recall, it is not possible for the customer to retain the removed hardware.