		Tesla, Inc. Service Bulletin	Replace Refrigerant Pressure/Temperature Sensors	
SB-21-18-002 August 17, 2022		R6		
Classification		Section/Group		Mobile Service
Campaign Bulletin		18 - Thermal Management		Cannot Perform
Model Year	Model	Country/Region		Version
2020 - 2021	Model 3, Model Y	All		Heat Pump
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.				

Campaign Bulletin: This campaign bulletin addresses a non-safety-related condition and provides recommended technical diagnosis and repair procedures. Apply this procedure to the applicable vehicles.

This Service Document supersedes SB-21-18-002 R5, dated March 16, 2022. 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 3 and Model Y vehicles may be equipped with refrigerant pressure/temperature (P/T) sensors in the heat pump that can fault over time.

Correction


Replace all 3 refrigerant P/T sensors.

Correction Description	Correction	Time
Replace Refrigerant P/T Sensors	S012118002	1.00

	Part Number	Description	Quantity
Parts Required	1581610-00-B or later revision	PT SENSOR, HIGH PRESSURE	2
	1581608-00-B or later revision	PT SENSOR, LOW PRESSURE	1
	Or		
	1510047-00-C or later revision	PT SENSOR, HIGH PRESSURE	2
	1510048-00-C or later revision	PT SENSOR, LOW PRESSURE	1
	And if available:		
	1111738-00-A	WASHER, 1/2, STL ZN, SEAL	1
	1111740-00-A	WASHER, 3/4, STL ZN, SEAL	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	1588741-00-A	Model Y HVAC Socket Kit	
	1501412-00-A	Oil Injector, R1234YF	
Shop Supplies	ND-11 Oil		

Procedure

1. Remove the underhood storage unit (refer to Service Manual procedure 15240702; [Model 3](#), [Model Y](#)).
2. Place the vehicle's key onto the center console.
3. Enable Service Mode through the touchscreen (refer to Service Manual procedure 00050100; [Model 3](#), [Model Y](#)).
4. On the touchscreen, touch the wrench icon > **Diagnostics** > **Thermal**.

 **NOTE:** Alternatively, touch **Controls** (vehicle icon) > **Service Mode** > **Diagnostics** > **Thermal**.

5. Hold up on the turn signal stalk and then press and hold the brake pedal at the same time for 10 seconds to authorize.
6. Touch **START** to the left of "Start Thermal Fill Drain (Refrigerant only)", touch **RUN TASK**, wait for "PASS" to be displayed, then touch **X** in the upper left corner.
7. When the touchscreen indicates that the vehicle is "Ready for Recharge/Reclaim", recover the A/C refrigerant (refer to Service Manual procedure 182000122 [Model 3](#), 18200102 [Model Y](#)).
8. After recovery completes, remove the 13 mm bolt that attaches the Supermanifold-to-compressor A/C line to the Supermanifold (Figure 1).

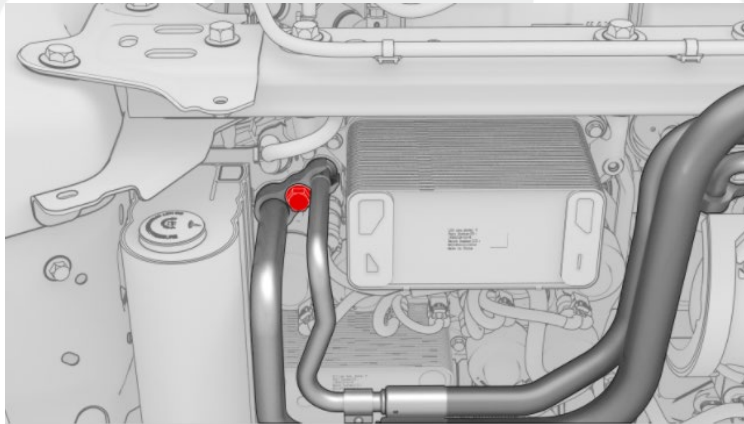


Figure 1

9. Remove the Supermanifold-to-compressor A/C line from the Supermanifold, and then use an S-hook to restrain the line to the underhood storage unit support beam (Figure 2).

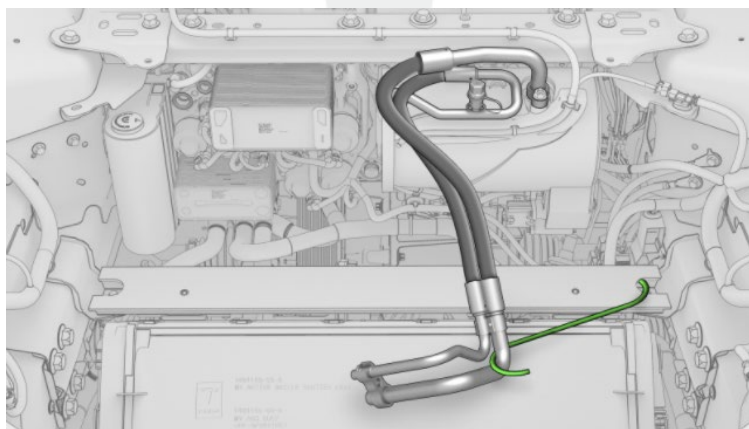


Figure 2

10. Release the locking tab, and then disconnect the electrical harness from the subcool high pressure P/T sensor connector (Figure 3).

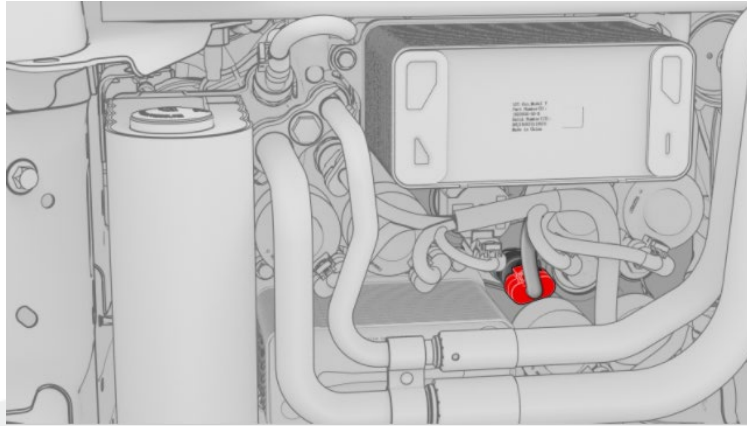


Figure 3

11. Use the HVAC socket kit special tool to remove the subcool high pressure P/T sensor from the Supermanifold (Figure 4).

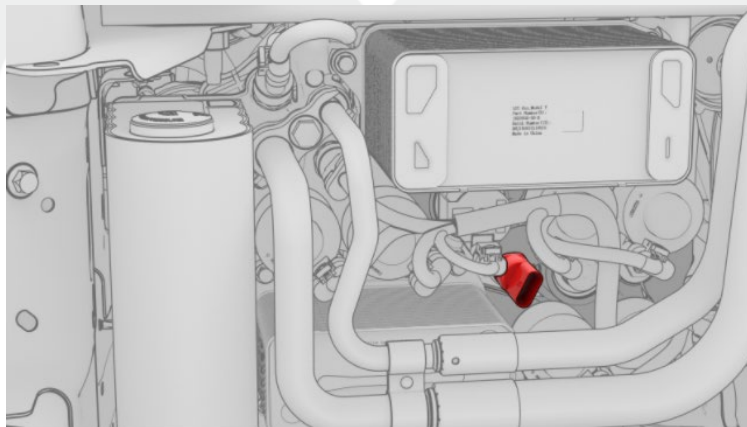


Figure 4

12. Release the locking tab, and then disconnect the electrical harness from the high pressure P/T sensor connector (Figure 5).

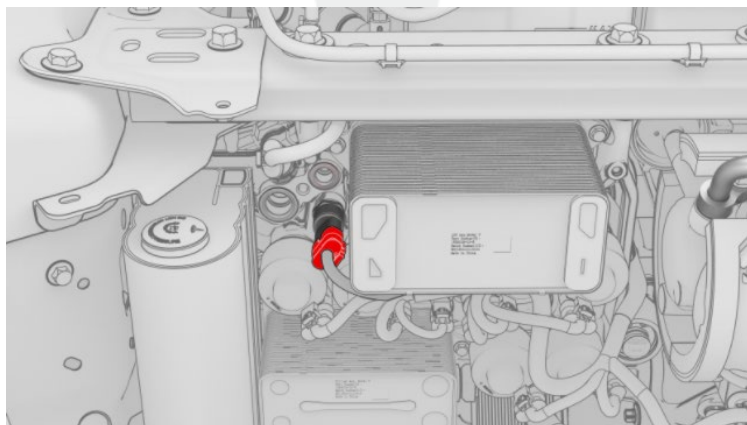


Figure 5

13. Use the HVAC socket kit special tool to remove the high pressure P/T sensor from the Supermanifold (Figure 6).

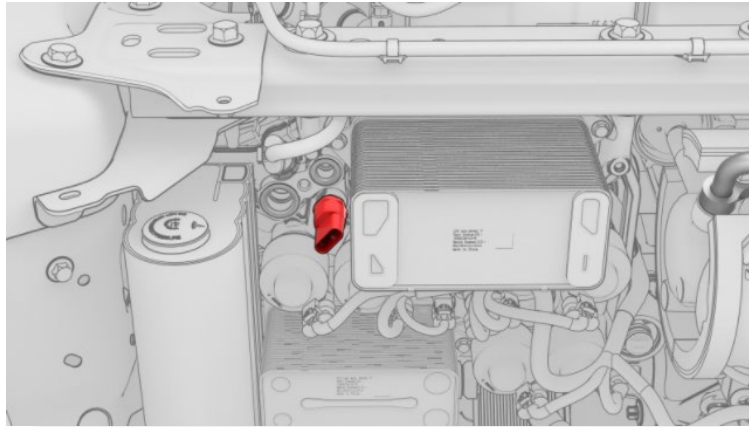


Figure 6

14. Release the locking tab, and then disconnect the electrical harness from the low pressure P/T sensor connector (Figure 7).

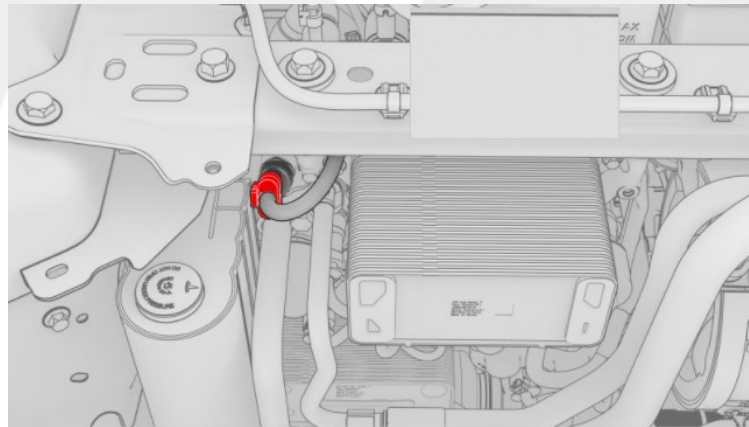


Figure 7

15. Use the HVAC socket kit special tool to remove the low pressure P/T sensor from the Supermanifold (Figure 8).

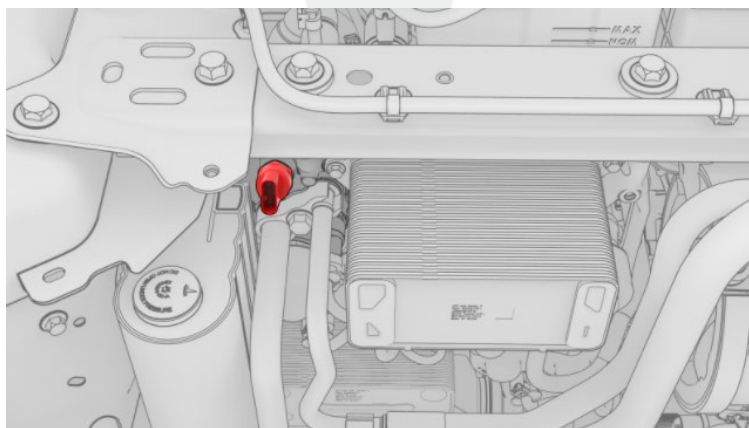


Figure 8


16. Record the old and new P/T sensor part numbers and serial numbers.

17. If parts are available, install new washers on the Supermanifold-to-compressor A/C line.

NOTE: If the parts are not available, reuse the existing washers.

18. Lubricate the washers of the Supermanifold-to-compressor A/C line and the O-rings and threads of the 3 new P/T sensors with ND-11 oil.

19. Install the new low pressure P/T sensor (brown connector) into the Supermanifold (Figure 8):
 - a. Install and hand-tighten the low pressure P/T sensor until the sensor O-ring just makes contact with the Supermanifold (Figure 9).

 **NOTE:** Use an inspection mirror to visualize this and subsequent steps.

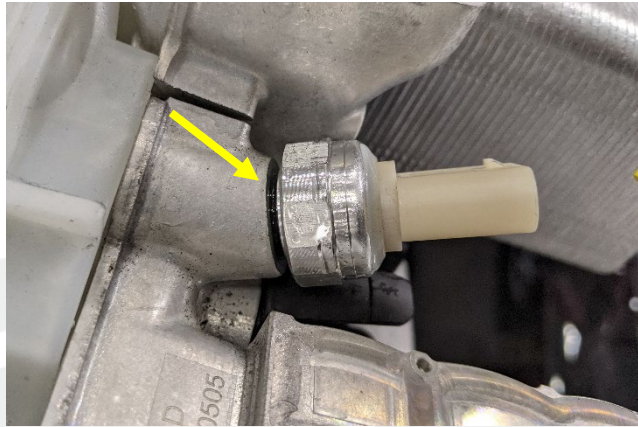


Figure 9 – O-ring just makes contact

- b. Manually back off and tighten the low pressure P/T sensor in an incremental manner so that the sensor O-ring properly slides into the chamfer in the Supermanifold (Figures 10 and 11).

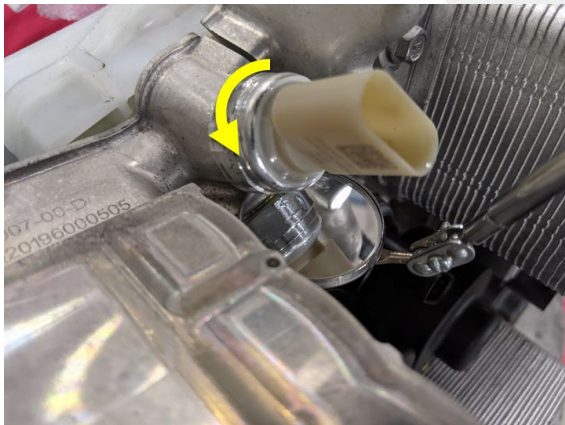


Figure 10 – Back off little



Figure 11 – Tighten more

- c. If the low pressure P/T sensor O-ring appears to pinch (Figure 12), or no longer slides into the chamfer, stop and back off the P/T sensor until the O-ring no longer appears to be pinched.

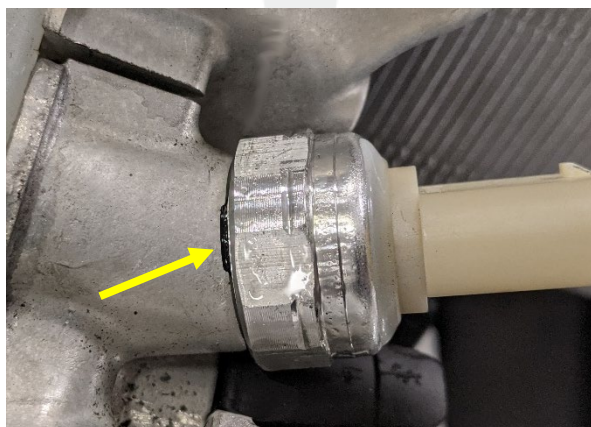



Figure 12 – O-ring pinched

- d. Continue to back off and tighten the low pressure P/T sensor until the O-ring slides completely into the chamfer and is no longer visible.

 **NOTE:** There should be no gap, and the sensor body should be bottomed out against the Supermanifold (Figure 13).

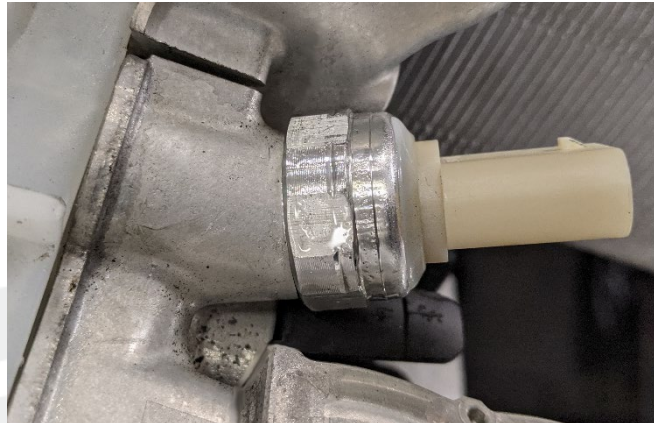



Figure 13 – P/T sensor properly seated

- e. Use the HVAC socket kit to tighten the low pressure P/T sensor (torque 9 Nm).
 - f. Connect the electrical harness to the low pressure P/T sensor connector, and then fasten the locking tab (Figure 7).
20. Repeat step 18.a through 18.f to install the new high pressure P/T sensor (black connector) into the Supermanifold (Figure 6) and connect the electrical harness (Figure 5).
 21. Repeat step 18.a through 18.f to install the new subcool high pressure P/T sensor (black connector) into the Supermanifold (Figure 4) and connect the electrical harness (Figure 3).
 22. Release the S-hook from the vehicle (Figure 2), install the Supermanifold-to-compressor A/C line into the Supermanifold, hand-install the 13 mm bolt that attaches the A/C line to the Supermanifold, and then tighten (torque 22 Nm) (Figure 1).
 23. Perform the vacuum leak test and oil injection (refer to Service Manual procedure 182000122 [Model 3](#), 18200102 [Model Y](#)).
 24. Recharge the A/C refrigerant (refer to Service Manual procedure 182000122 [Model 3](#), 18200102 [Model Y](#)).
-  **CAUTION:** When using a Robinair A/C machine, if asked to clear out residual oil, press **ESC** for No.
25. When the recharge process has ended, on the vehicle touchscreen, touch **START** to the left of “Stop Thermal Fill Drain”, touch **RUN TASK**, wait for “PASS” to be displayed, then touch **X** in the upper left corner.
 26. Touch **START** to the left of “Run Heat Pump Commissioning”, touch **RUN TASK**, wait for the task to complete, then touch **X** in the upper left corner.
 27. Turn on the vehicle climate control, and set the following parameters:
 - Temperature setting: Lo
 - Panel mode: On
 - Fresh air mode: On
 - Blower speed: 3
 28. Verify that the Discharge pressure does not exceed 26 bar, and the Suction pressure is above 1.15 bar.
 29. Turn off climate control, and remove the A/C machine high pressure hose from the vehicle.

30. Repeat step 27, turn the A/C machine valves open, and then remove the A/C machine low pressure hose from the vehicle.
31. Clear the A/C machine hoses.
32. Connect a laptop with Toolbox 3 to the vehicle.
33. In Toolbox, click the **Actions/Autodiag** tab, type “reset vcf front” in the search field, select **TEST-RESET_VCFRONT**, click **RUN**, and allow the routine to clear all active alerts recorded for the failed sensors.
34. Disconnect the laptop from the vehicle.
35. On the vehicle touchscreen, touch **START** to the left of “Test HVAC Performance”, touch **RUN TASK**, wait for the task to complete, then touch **X** in the upper left corner.
36. If a refrigerant leak detector is available, make sure that there are no leaks.
37. Install the underhood storage unit (refer to Service Manual procedure 15240702; [Model 3](#), [Model Y](#)).
38. Disable Service Mode through the touchscreen (refer to Service Manual procedure 00050100; [Model 3](#), [Model Y](#)).