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Case Number: S2008000075 REV. A

Release Date: July 2022

Symptom/Vehicle Issue: No Start, Start Stop Inoperative, Cluster Message Service Start Stop System

Customer Complaint/ Technician Observation: Customer may observe a “Service Start/Stop” message and that the start stop is inoperative. Owner also may complain of a no start condition with a drained battery and the need to jump start the vehicle.

Technician observed: Diagnostic Trouble Code (DTC) **P00FD BATTERY -B- STATE OF CHARGE PERFORMANCE** or **P2AF5 STARTER RELAY STUCK**

Auxiliary Battery Disconnected: During an initial key start, the Power Control Relay (PCR) is commanded on (**open**) and the auxiliary battery State Of Charge (SOC) is evaluated. If the Fused B+ voltage to the Powertrain Control Module (PCM) is so low approx 8.0 volts that the PCM experiences a reset during the initial key-on or engine crank event, the **PCM will set P00FD and Electric Start Stop (ESS) will be disabled.**

The diagnostic for the P00FD fault is basically designed to detect a **discharging, discharged or disconnected Auxiliary Battery** any time there is a disconnect between the two Batteries. It detects this if the Fused B+ voltage to the PCM drops low enough to cause a PCM reset when disconnected from the main/cranking battery. This fault will detect a faulty auxiliary battery, or wiring issue between the auxiliary battery, Power Distribution Center (PDC) and battery supply and the PCM.

Repair Procedure:

Set Conditions:

The PCM detects that the **Auxiliary Battery** is disconnected at initial key crank event.

The PCM detects that the **Auxiliary Battery** voltage is below 7.98 volts during an ESS Auto-Start event.

The PCM detects that the **Auxiliary Battery** voltage is below 10.30 volts during an ESS Auto-Start event, and the counter has reached 10 counts.

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Contact STAR Center, or your Technical Assistance Center Via TechCONNECT or eCONTACT ticket if no solution is found



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Battery Testing:

NOTE: If the vehicle is equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable and on dual battery vehicles it is best to disconnect both negative battery cables during testing.

Caution: When testing the battery, disconnect the auxiliary battery ground cable before testing the main battery to avoid false test results. The main battery SOC can be viewed in the Body Control Module (BCM) data. Verify the static battery SOC readings for the **primary battery**, document readings on repair order. Target battery SOC should be greater than 65% for ESS operation.

Vehicles that have had **recent limited driving miles or were jump started** may set DTC's **P00FD**. Refer to service diagnostics battery charging tables to ensure properly charged batteries prior to further testing.

Note: Vehicles that have DTC - P00FD use the example DTC possible cause list to further test. Inspect all main and AUX battery connections for loose or corroded connections. Examples of multiple ground locations shown below.

Possible Causes

OPEN FUSE IN BATTERY JUMP POST TERMINAL

PCR CONTROL RELAY OUTPUT CIRCUIT SHORTED TO VOLTAGE

POOR CONNECTION AT THE VEHICLE BATTERY POSITIVE OR NEGATIVE CABLE ENDS

HIGH RESISTANCE IN THE VEHICLE BATTERY POSITIVE CABLE

HIGH RESISTANCE IN THE VEHICLE BATTERY GROUND

HIGH RESISTANCE IN THE FUSED B+ CIRCUIT TO THE PCM

POWER CONTROL RELAY (PCR) STUCK ON (OPEN)

PCR CONTROL RELAY (ON PCB IN PDC) STUCK ON

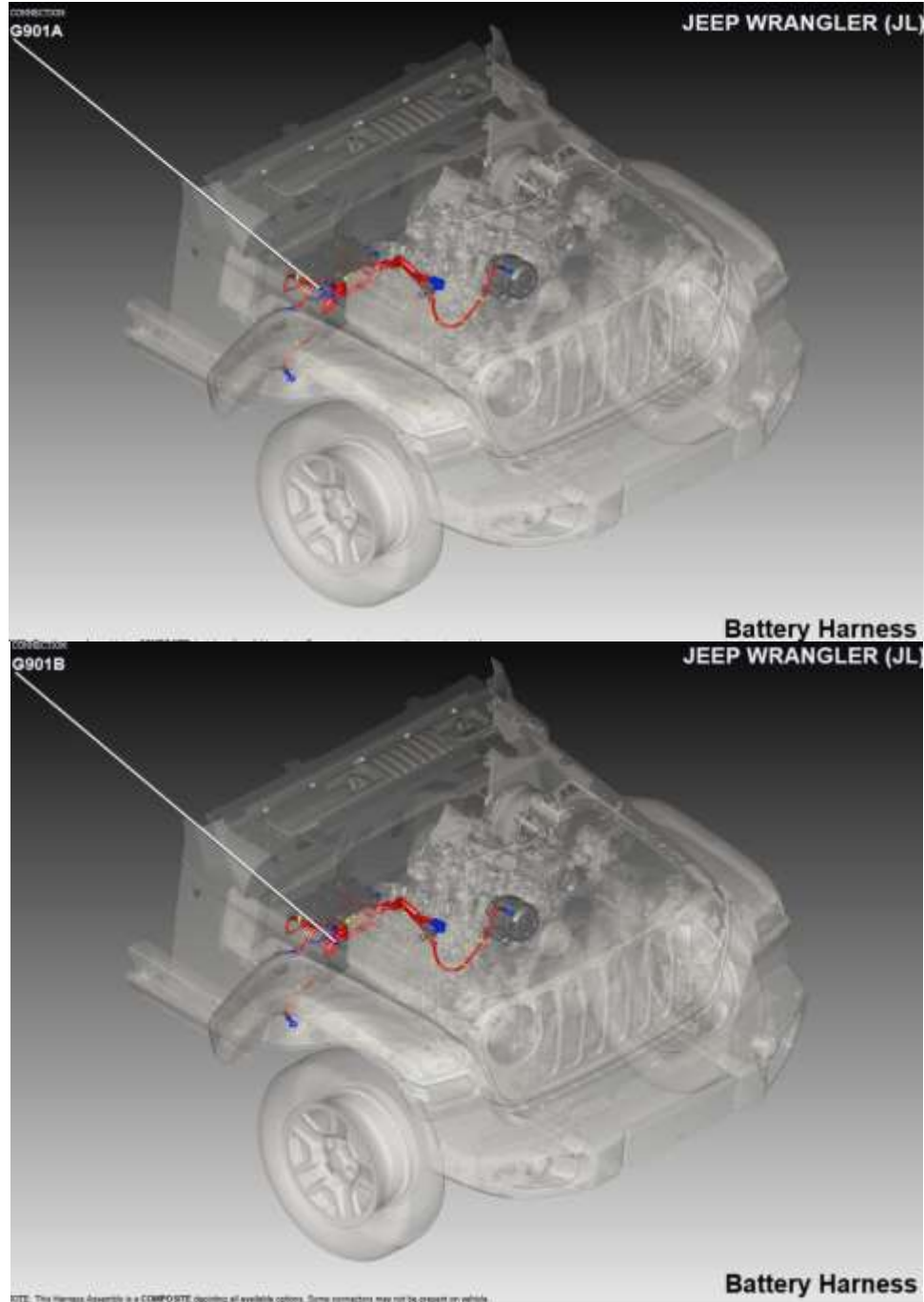
FAULTY VEHICLE BATTERY

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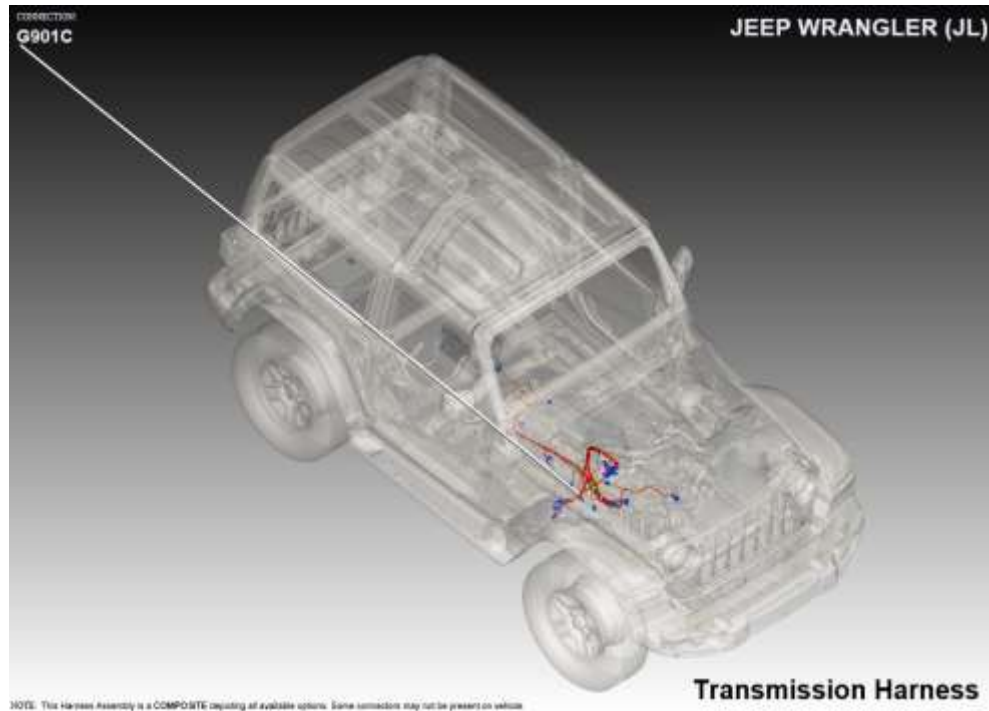
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Example for 2019-2020, G901C



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