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Case Number: S1408000384 REV. J

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Symptom/Vehicle Issue: Start Stop Charging Warning Lamp Illuminated On, Intelligent Battery Sensor (IBS) State of Charge (SOC) Inaccurate, Battery Charging Message, Presence of IBS related Diagnostic Trouble Codes (DTCs), or Battery Warning Lamp On

*Dealer tech should **avoid incorrect and unnecessary IBS replacement as most are deemed ok.***

IBS in the Context of Battery Exchange and Recharging

IBS DOES NOT NEED TO BE REPLACED WITH NEW OR RECHARGED BATTERIES. However, it might require new SOC adaptation.

SOC reading from IBS and external charger can have mismatch due to blind charging of the battery, use of different algorithms, or due to different converging time by each device. **DO NOT** remove IBS to charge the battery.

IBS SOC Adaptation (Learning)

Learning needs 1 crank followed by 2-4 hours of quiescent/sleep time for ICE vehicles without use of external charger.
Quiescent/Sleep time is defined as Quiescent phase: [-500mA, 50mA] battery current.

In the event SOC is an inaccurate and learning takes place after use of an **external charger** or in **BEV** application, IBS SOC learning can take up to **2 days.**

If unsure of quiescent state current, disconnect the vehicle ground cable (example below: Vehicle battery ground/charge point) from the IBS to guarantee no current flows through the battery during this period. IBS 2-way connection and clamp connection to battery negative post should remain connected for the IBS to operate while learning. After completion of quiescent state, re-connect the ground back to the IBS. In normal operation, all current flowing through the battery needs to pass through the IBS for proper reading.

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IBS Related DTCs (set by BCM):

- **B2193**: Intelligent Battery Sensor Internal
- **U113E**: Lost communication with intelligent battery

DTC B2193

If you observe an active DTC B2193,

1. Reset the IBS by cycling the 2-way connection.
2. Then start the vehicle and wait for about 30 seconds to determine if the DTC clears or it changes to a stored DTC.
3. If you find it no longer exhibits an active fault, then it is appropriate to keep the same IBS.
4. Else if an active DTC B2193 remains, replace the IBS.

DTC U113E and LIN Diagnostics

If you observe an active DTC U113E set by the BCM, it means a defect exists in the LIN bus. BCM monitors IBS data when IGN ON.

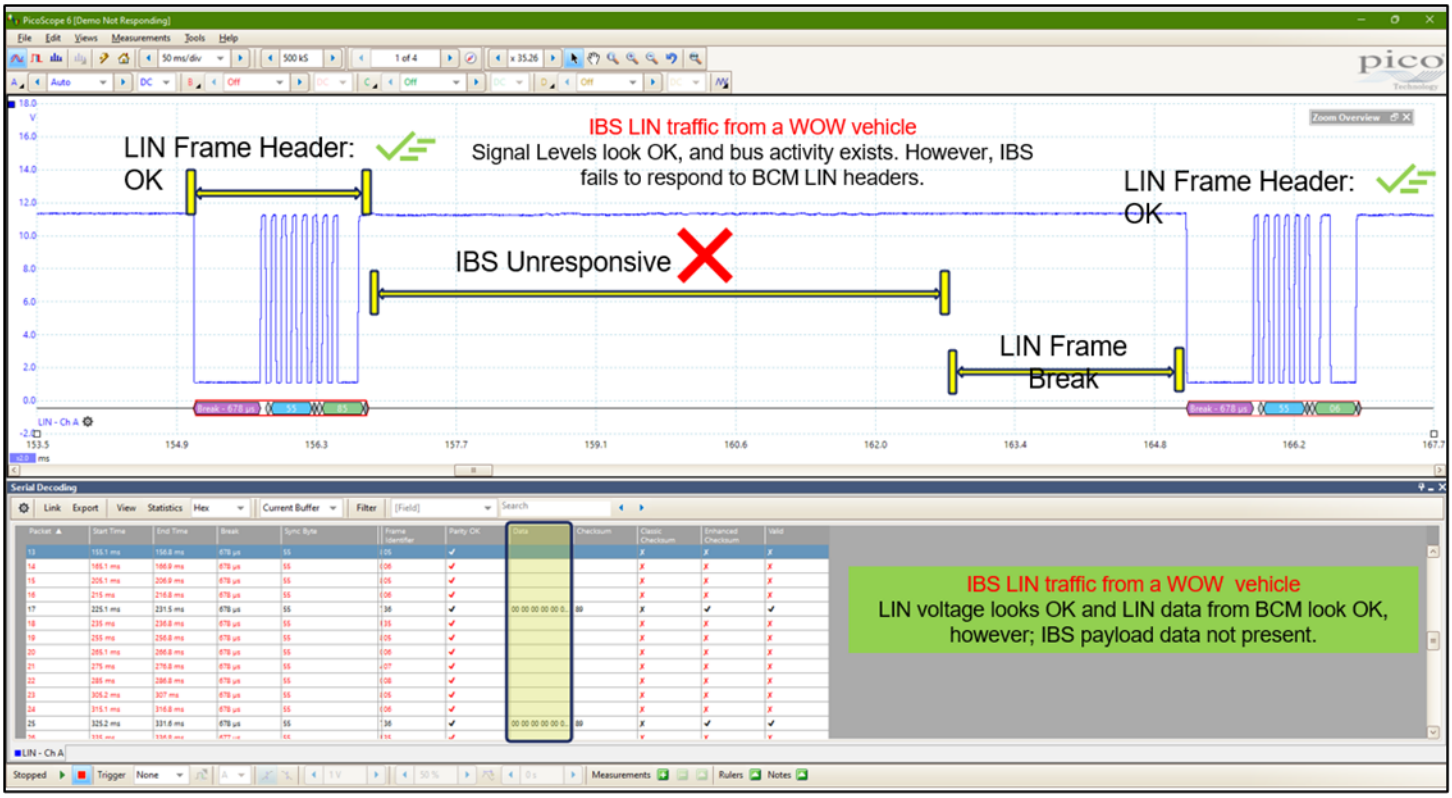
This defect may result from a LIN-bus wiring issue—such as a short, open circuit, or a blown IBS fuse—and, in rare cases, from an internal IBS or BCM hardware or software fault

U113E DTC Root Cause Inspection:

1. Read vehicle DTCs while the IGN ON.
2. Wiggle the IBS 2-way harness takeout (LIN and IBS feed takeout) and monitor the state of **DTC U113E**.
    - If this step affects **U113E** behavior, the issue is likely related to a failure in the harness.
3. Verify power to IBS by back probing the IBS 2-way connector (pin 2, “RD” wire).
    - If voltage is lower than 11.8V, follow normal procedures for low batteries.
4. Verify IBS feed fuse state. Replace the fuse if needed.
5. Verify LIN bus activity with Mopar scope.
    - Config scope to LIN monitor if feasible.
    - Replace the IBS only based confirmation from the LIN diagnostic.

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Please ensure claim narratives list details and reference any DTCs at time of IBS replacement. A replacement IBS is not required on a vehicle without DTCs.

Proper Battery Charging

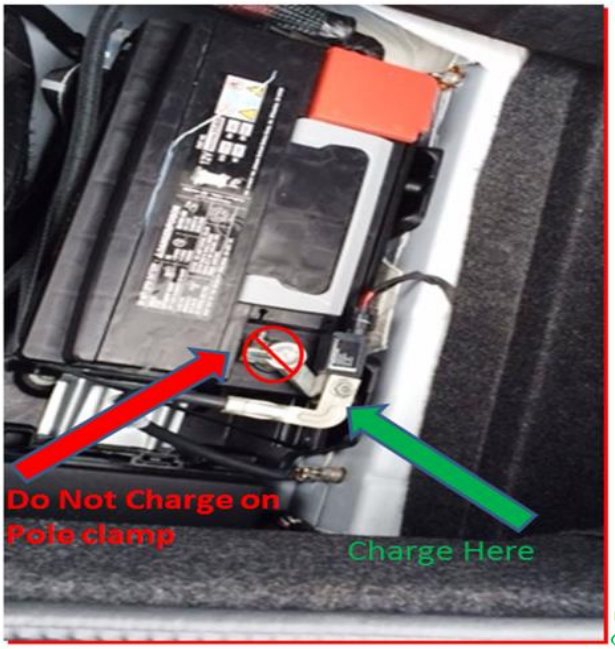
Follow tips below.

- Please charge through the IBS or tie negative clamp to Body/engine ground.
- Customers, Dealers, Mechanics, and Engineers usually want to place the negative clamp on the pole of the battery. This creates Blind charging (bypass of IBS sensing).
- **"DO NOT BLIND CHARGE"** See below proper connections for charging.

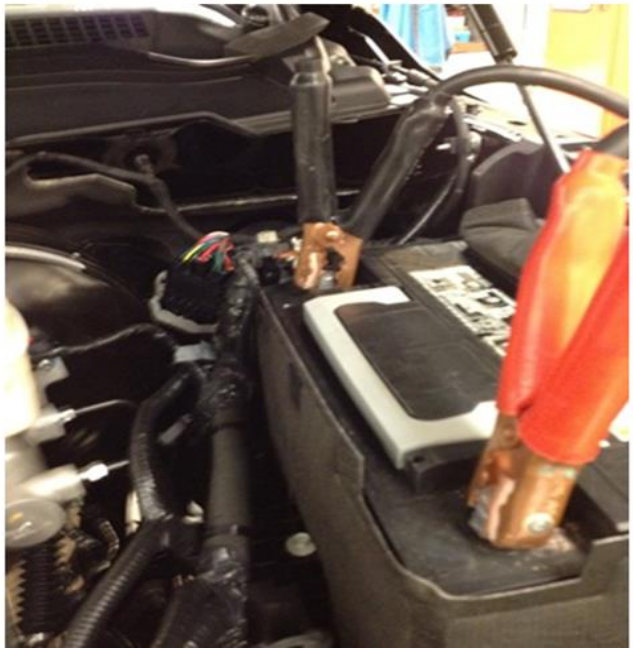
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Improper IBS Charging

Do not put Negative clamp on IBS Pole clamp



Do not remove IBS for charging





START/STOP INOP

Follow tips below.

- ESS INOP can occur due to many factors not related to the IBS functionality.
- Investigate battery and other ESS parameters first.
- Moreover, ESS can get inhibited if battery SOC (state of charge) falls below the allowed SOC level. Typically, around 65% at 25C, but can be as high as 80% at 0C.

IBS Functional Summary: The IBS measures voltage, current and temperature. From these core measurements, it estimates other characteristics of the battery such as SOC and battery internal resistance. SOC reading variances may appear between IBS and external battery charger and are acceptable. SOC estimation is not instantaneous and will require successful IBS learning adaptation.

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