BMS Funktion Ford

This is taken directly from the 2016 Ford Utility Interceptor Service Manual regarding battery state of charge monitoring, external charger connections, jump starting and battery replacement:

Battery State of Charge

The BCM uses the battery current sensor to keep track of the battery state of charge. The battery current sensor is a Hall-effect sensor attached to the battery ground cable. During a drive cycle the Electrical Energy Management software adjusts the battery state of charge by monitoring the charge and discharge current and adjusting the state of charge up during charging, and down during discharge. During rest periods (key off with no electrical loads) when the vehicle enters sleep mode, the battery voltage is sampled to calibrate the State of Charge. The BCM automatically executes this calibration anytime the vehicle enters sleep mode and when the total vehicle current draw is below 300mA. It takes 8 hours in the sleep mode to calibrate the battery state of charge to high accuracy. If the system draw does not allow the battery state of charge calibration over the previous 7 to 10 days the State of Charge quality factor changes to flag this and some Electrical Energy Management Functions which rely on the accuracy of the battery state of charge may be temporarily turned off until a calibration takes place.

Battery Charging

When charging the vehicle battery by connecting the charger to engine or chassis ground , the negative charger clamp must be connected to an unpainted chassis surface or a solid engine component such as a generator mount or engine lifting eye. In this instance, after charging, the BMS Reset is not required . Through this method of charging the BCM updates the battery state of charge during the charging process.

When charging the vehicle battery by connecting the charger to the negative battery terminal is necessary , such as when using a combination battery charger and battery tester/analyzer, like the GR 1 190 V3.0 Intelligent Diagnostic Charger, the BCM does not immediately update the battery state of charge. In this instance, the BMS Reset must be carried out using a diagnostic scan tool. This reset is needed for proper engine off load shedding and to prevent invoking of engine off load shedding earlier than normal.
If the reset is not carried out, when the battery is charged by connecting the charger to the negative battery terminal, it takes approximately 8 hours for the BCM to learn the new battery state of charge. During this 8 hour period, the vehicle must be undisturbed, with no doors opened or keyless entry button presses. If the vehicle is used before the BCM is allowed to learn the new battery state of charge, engine off load shedding can still occur and a message may be displayed.

Jump Starting

When it is necessary to jump start the vehicle it is important to connect the cables properly in order for the Electrical Energy Management system to measure the energy input to the system to keep an accurate state of charge. Connect the positive cable to the battery positive post and the jump start negative cable to a vehicle ground. Do not connect to the negative battery terminal. Connecting directly to the battery negative post bypasses the ability of the vehicle to measure the input current, and does not adjust the battery state of charge accordingly. For a good connection point, follow the negative cable from the battery monitoring sensor to the vehicle body connection (typically on the shock tower sheet metal). If the vehicle was improperly jump started, the Electrical Energy Management system calibrates the battery state of charge after about 8 hours.

Battery Replacement

If the vehicle battery is replaced, it is very important to perform the BMS Reset using a diagnostic scan tool. If the BMS Reset is not carried out, it holds the old battery parameters and time in service counter in memory. Additionally it tells the system the battery is in an aged state and may limit the Electrical Energy Management system functions. For more information,

Refer to: Battery and Cables - System Operation and Component Description (414-01 Battery, Mounting and Cables, Description and Operation).