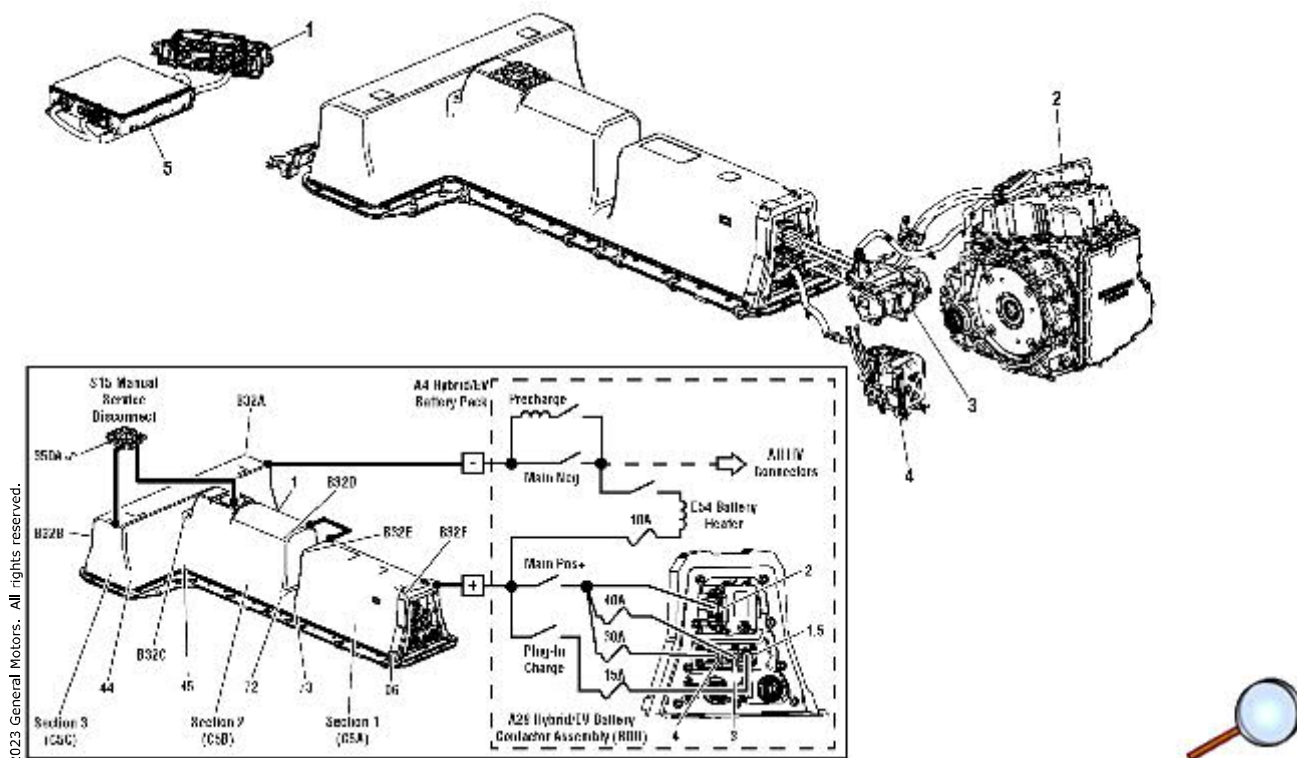


Drive Motor Battery System Description



- (1) K1 14V Power Module
- (2) T6 Power Inverter Module
- (3) G1 A/C Compressor
- (4) K10 Cabin Heater
- (5) T18 Battery Charger

Overview

The high voltage hybrid/EV battery contains 192 individual lithium-ion cells. Two cells are welded together in parallel and called a cell group. There are a total of 96 cell groups in the hybrid/EV battery assembly. These cell groups are electrically connected in series. Each individual cell group is rated at 3.7 V, for a nominal system voltage of 355 V direct current. The battery cell groups are joined to form 3 distinct sections. The first 24 battery cell groups make up battery section 1. This section is adjacent to the cowl and contains battery cell groups 73 through 96. The next 28 battery cell groups make up battery section 2. This section is located behind section 1 and contains battery cell groups 45 through 72. The transverse battery section is section number 3 and it contains the remaining 44 battery cell groups 1 through 44. The battery sections also contain two temperature sensors, with one sensor located at each end of the section for a Hybrid/EV battery pack total of six temperature sensors.

Located within the high voltage Hybrid/EV battery pack, the battery energy control module monitors the temperature, current and voltage of the 96 battery cell groups. The voltage sense lines are attached to each individual cell group, and these sense lines terminate at a connector located on the top surface of the battery section. A voltage sense harness joins this connector to the battery energy control module.

The battery energy control module will determine when a fault condition is present. Diagnostics and system status are communicated from the battery energy control module to the hybrid

powertrain control module 2 through serial data. The hybrid powertrain control module 2 is the host controller for battery energy control module diagnostic trouble code information.

Location

The high voltage hybrid/EV battery is located beneath the vehicle. The battery energy control module, current sensor, and high voltage contactors are located within the hybrid battery assembly. The hybrid powertrain control module 2 is located behind the front passenger seat instrument panel.

High Voltage Control

The hybrid/EV battery contains 4 high voltage contactors and 1 solid state relay (transistor). The high voltage contactors and transistor allow the high voltage DC batteries to be connected to the vehicle or contain the high voltage DC within the hybrid/EV battery assembly. The 4 high voltage contactors consist of a main positive high voltage contactor, main negative high voltage contactor, charge positive high voltage contactor and a precharge negative high voltage contactor. The transistor controls the battery heater high voltage negative circuit.

In order to prevent large in-rush current to capacitors located in the vehicles high voltage components, the contactors close in a specific precharge sequence controlled by the hybrid/EV powertrain control module 2.

Contactor Close Sequence (Precharge)

1. Plug-In Charge Positive Contactor
2. Main Positive Contactor
3. Precharge Negative Contactor

Note: Wait for bus high voltage to attain almost the same level as hybrid/EV battery voltage.

4. Main Negative Contactor
5. The precharge contactor opens when bus voltage and hybrid/EV battery voltage are equal.

Thermal Management

The hybrid/EV battery is cooled and heated with pre-mixed DEX-COOL®, which is a 50/50 mixture of DEX-COOL® and de-ionized water. A refrigerant/coolant heat exchanger (chiller) and the electric A/C compressor motor control module assembly cools down the high voltage hybrid/EV battery. A high voltage heater inside the hybrid/EV battery can also heat the coolant entering the hybrid/EV battery when needed. Refer to [Hybrid/EV Cooling System Description and Operation](#).