

| | NUMBER |
|----------------------------|--|
| GROUP HYBRID CONTROL | 18-HC-004 |
| DATE | MODEL |
| DECEMBER, 2018 | IONIC HYBRID/ PLUG-IN HYBRID (AE HEV/PHEV) |
| | • |

HEV/PHEV CALIBRATION USING GDS

DESCRIPTION:

This bulletin provides the procedures for calibrating Ionic Hybrid sensors using GDS whenever the components listed below are replaced or the DTC listed are stored:

Applicable Vehicles: 2017~ Ionic Hybrid/Plug-in Hybrid (AE HEV/PHEV)

| # | Procedure | After replacing the following: |
|----|--|---|
| 1. | Motor/HSG (Hybrid Starter Generator) Resolver Calibration | HSG replacedIf DTC P0C1700 or P1C76 is stored |
| 2. | EWP (Electronic Water Pump) Actuation | HSG, HPCU, EWP, OBC, inverter radiator or coolant hoses replaced |
| 3. | Brake Pedal Travel Sensor Calibration & AHB (Active Hydraulic Booster) Pressure | HPCU, ECU, brake pedal or brake pressure sensor replaced If DTC C137801, C137902, C138004 or C138404 stored |
| 4. | Initialization of the engine clutch inspection line learning and diagnostic information Removal of air from engine clutch hydraulic pressure line Engine Clutch/Motor Resolver Adaptation Stabilization of engine clutch hardware transfer torque | DCT replaced Hybrid motor replaced Engine clutch, Engine clutch actuator HPCU, HSG replaced If DTC P17EB, P17C000 or P1744 are stored |
| | DCT Manual Input Function (DCT exchange) DCT Leaning Function | DCT (Additional steps) |

NOTICE

Follow the prompts on the GDS to determine if the vehicle should be in <u>HEV Ready</u> or <u>HEV</u> <u>Not Ready</u> mode.

NOTICE

If any test shows "Failed":

- Check for DTC in all modules and erase any DTC.
- Turn off the ignition and GDS. Turn on the ignition and GDS and perform the test.

Circulate To: Service Manager, Warranty Manager, Service Advisors, Technicians, Fleet Repair

SUBJECT: HEV/PHEV CALIBRATION PROCEDURES USING GDS

Warranty Information: Normal Warranty applies

SERVICE PROCEDURE

1. MOTOR/HSG RESOLVER CALIBRATION:

Conditions where calibration is required:

- After reinstalling or replacing the HSG.
- When DTC P0C17 or P1C76 is stored and the service indicator in the cluster is illuminated.

GDS procedure to perform Motor/HSG Resolver Calibration:

CONDITION: <u>HEV Ready:</u> (Press the Start-Stop Button (SSB) one time with brake pedal depressed)

Select S/W Management, PHEV/HEV Motor Control System and Motor/HSG Resolver Calibration. Select OK and follow the prompts on the GDS.

The GDS will automatically go back to the home screen. Go to Step 4 and select **S/W Management, HCU/Low DC-DC Converter**. Select **OK** and follow the prompts on the GDS.

| PHEV Motor Control System | Ð |
|--|---|
| System Identification | 8 |
| Motor/HSG Resolver Calibration | e |
| Electric Water Pump Control | |
| HPCU (MCU/GCU) self-diagnosis function | 8 |
| HPCU(MCU,GCU) Diagnosis Parameter Initialization | Θ |

NOTICE

After selecting this test, the GDS will return to the home page. Go to Step 4 and perform all 4 procedures in the listed order.

2. ELECTRIC WATER PUMP (EWP) ACTUATION:

Conditions where calibration is required:

- After changing or adding coolant.
- After reinstalling or replacing the HPCU, HSG, EWP, OBC, inverter radiator or coolant hoses.

GDS procedure to perform Electric Water Pump Actuation:

CONDITION: <u>HEV not Ready:</u> (Press the SSB two times without depressing brake pedal)

Select S/W Management, PHEV/HEV Motor Control System and Electric Water Pump Control. Select OK and follow the prompts on the GDS.

The GDS will display "Test Completed". Press OK.

| PHEV Motor Control System | |
|--|---|
| System Identification | |
| Motor/HSG Resolver Calibration | |
| Electric Water Pump Control | 8 |
| HPCU (MCU/GCU) self-diagnosis function | |
| HPCU(MCU,GCU) Diagnosis Parameter Initialization | |

3. BRAKE PEDAL TRAVEL SENSOR & AHB PRESSURE SENSOR CALIBRATION

Conditions where calibration is required:

- After reinstalling or replacing the HPCU, ECU, brake pedal or brake pressure sensor.
- If C137801, C137902, C137902, C138004 or C138404 are stored.

GDS procedure for Brake Pedal Travel Sensor & AHB Pressure Sensor Calibration:

CONDITION: HEV not Ready: (Press the SSB two times without depressing brake pedal).

Select **S/W Management, ESC/AHB** and **Pressure Sensor Calibration**. Select **OK** and follow the prompts on the GDS.

The GDS will display "Calibration Completed". Press OK.

| ESC/AHB | |
|---|---|
| System Identification | |
| Auto Detected Configuration(ESC Only) | E |
| Longitudinal G Sensor Calibration(HAC/DBC Only) | |
| ESC Variant Coding | Ξ |
| Pressure Sensor Calibration | Ξ |
| Pedal Travel Sensor (PTS) Calibration | • |
| High Pressure Release Mode | |
| Fluid Circulation Mode | 8 |

Select S/W Management, ESC/AHB and Pedal Travel Sensor (PTS) Calibration. Select OK and follow the prompts on the GDS.

CONDITION: HEV not Ready: (Press the SSB two times without depressing brake pedal).

The GDS will display "Calibration Completed". Press OK.

| ESC/AHB | 1 |
|---|---|
| System Identification | |
| Auto Detected Configuration(ESC Only) | e |
| Longitudinal G Sensor Calibration(HAC/DBC Only) | 8 |
| ESC Variant Coding | Ξ |
| Pressure Sensor Calibration | |
| Pedal Travel Sensor (PTS) Calibration | |
| High Pressure Release Mode | |
| Fluid Circulation Mode | |

4. DUAL CLUTCH TRANSMISSION, HYBRID MOTOR, ENGINE CLUTCH, ENGINE CLUTCH ACTUATOR, HPCU or HSG are replaced.

If DTC P17EB or P17C000 or ENGINE CLUTCH DTC P1744 are stored.

Select **S/W Management, HCU/Low DC-DC Converter**. Select **OK** and follow the prompts on the GDS.

CONDITION: HEV Ready: (Press the SSB one time with brake pedal depressed).

NOTE: <u>Perform the procedure in the order listed below</u>.

The GDS will display "Calibration Completed". Press OK.

| HCU/Low DC-DC Converter | 1 |
|---|---|
| System Identification | |
| Engine Test On | |
| Engine Test Off | |
| LDC Activation Test | |
| Compression pressure test of engine cylinder | |
| Initialization of the engine clutch inspection line learning and diagnostic information | |
| Removal of air from engine clutch hydraulic pressure line | |
| Engine Clutch/Motor Resolver Adaptation | |
| Stabilization of the engine clutch hardware transfer torque | |
| HCU Variant Coding | 8 |
| Stabilization of Hydraulic Oil Flow of Engine Clutch | |

DCT REPLACEMENT (ADDITIONAL), HPCU, TCM or GEAR ACTUATOR ASSY:

Select S/W Management, Transmission/dual Clutch Transmission. Select OK and follow the prompts on the GDS.

CONDITION: <u>**HEV Not Ready:**</u> (Press the **SSB** two times without depressing brake pedal). Perform the DCT Learning Function. Next, the GDS will prompt you to select <u>**HEV Ready**</u> to continue. The GDS will display "Calibration Completed". Press **OK.**

| Dual Clutch Transmission | 1 |
|---|---|
| System Identification | • |
| DCT Learning Function | Ξ |
| DCT Manual Input Function (Transmission Exchange) | 8 |

CONDITION: HEV Not Ready: (Press the SSB two times without depressing brake pedal).

| Dual Clutch Transmission | 1 |
|---|---|
| System Identification | 0 |
| DCT Learning Function | 8 |
| DCT Manual Input Function (Transmission Exchange) | E |