System	Date of Issue	Type of Service Information
G2V2	**12/8/15**	☐ **Troubleshooting** ☒ **Procedure**

Title: Phoenix Traction Motor / Phoenix Traction Motor Inverter Resolver Calibration

This document describes how to calibrate the Phoenix traction inverter to the Phoenix traction motor resolver offset.

Special Tools or Software Required:

Description	Part Number
Raptor-Cal Service Software	Odyne P/N 90016
Raptor-Cal Adaptor	Odyne P/N 90017
RP 1210 Vehicle Interface Adaptor (Noregon, Nexiq, etc.)	n/a

Instruction:

1. Insert the RP 1210 adaptor into a USB port on your laptop and connect it to the Raptor-Cal Adaptor (P/N 90017). Then connect the Raptor-Cal Adaptor to the Odyne diagnostic connector located under the vehicle dash near the chassis diagnostic connector.
2. Open the Raptor-Cal program.
3. Confirm the inverter has the latest programing by verifying there is a white X on the connector face of inverter.
4. Make sure the PTO drivetrain is safe to operate / clear to spin and rotate (PTO, shaft, motor).
5. Remove the hydraulic pump or the driveshaft from the traction motor output. This ensures that a load is not present on the traction motor.
6. Turn the ignition key on and verify the system is operational and diagnostic codes are not present.

7. On the laptop, open the Raptor Cal_vX_Prod display. Navigate to the tabs shown below.

   Main Tab – Verify the following.

   a. Controlled Shutdown displays **0**.
   b. Critical Shutdown displays **0**.

   HCU I/O Tab – Verify the following.

   a. InverterOutputEnable displays **1**.
   b. PackOutputEnable displays **1**.
   c. PTOOutputEnable shows **0**.

   Appcal Tab – In the Phoenix Inverter / Motor resolver setting section:

   a. Change the Control_Mode_CMD_new override to **Diagnostics**.
   b. Change the Control_Mode_CMD_ovr override to **Override**.
   c. Verify the InverterCntrlMode value changes to **3**.
   d. Verify the Drive_State4_CDS2 value is a **1 or 0** (1 is likely if inverter is new).
   e. Change MotorDriveState_new override to **Run**.
   f. Change MotorDriveState_ovr to override to **Override.**

   The driveshaft runs at different speeds and directions to set the resolver position.

   g. Watch the driveshaft as the inverter runs the motor. Looking at the driveshaft rotation from the front of the truck / motor, compare the rotation direction to the InverterSpeed value (+ / -) and verify the rotation is correct as follows.
      - Positive Value (+) – The driveshaft rotates clockwise towards the frame.
      - Negative Value (-) – The driveshaft rotates counter clockwise away from the frame.

   Once the inverter is calibrated, the driveshaft stops rotating. Then verify the following.

   h. InverterCntrlMode value is **4**.
   i. Drive_State4_CDS2 value is **0**. If the value is 1 then the calibration is incorrect. Repeat Appcal Tab step and recheck.

8. Turn the ignition key off to save the new calibration settings.
9. Turn the ignition key back on and verify there are no diagnostic faults.
10. Reinstall hydraulic pump or driveshaft to traction motor if it was removed prior to recalibration.
11. Test the vehicle hybrid applications to ensure system is operational.

Odyne Service Support Resources:

To request technical assistance, contact ServiceSupport@Odyne.com.
To request parts, contact Parts@Odyne.com.