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TECH TIP

12MY-15MY COE TRANSMISSION DTC P0974 and P0986

OVERVIEW

The transmission DTC's P0974 and P0986, may be found on 12MY-15MY COE models. There could also be a complaint of low power and erratic shifting. These diagnostic codes may be set due to low voltage between the transmission case and the battery post.

NOTE: This procedure is provided as technical information and is not an authorization for a warranty repair.

SUBJECT VEHICLES

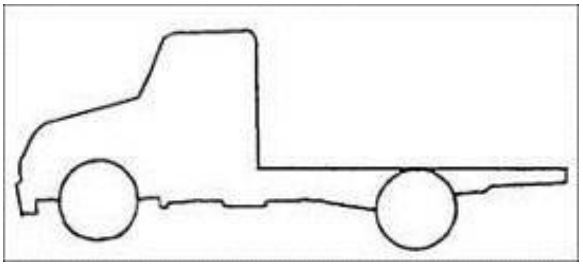
2012MY – 2015MY Hino COE Trucks with an Aisin Transmission.

BEFORE YOU BEGIN:

- Read and understand all instructions and procedures before you begin the work.
- Read and follow all WARNINGS and NOTICES set forth in this publication. These alerts help to avoid damage to components, serious personal injury, or both.
- Park the vehicle on a flat, level and solid surface.
- Place the gear shift lever in "Neutral" or "Park".
- Apply the parking brake firmly and confirm parking brake activation.
- Turn off the engine and remove the key from the ignition switch.
- Always wear safety glasses or goggles to protect your eyes.
- Place wheel chocks in front of and behind all the wheels to prevent the vehicle from moving.

VEHICLE PREPARATION:

1. Park the vehicle on level ground.



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2. Confirm the engine is stopped, the ignition switch in the off (LOCK) position and the key is removed.

3. Apply the parking brake.

4. Chock the front wheels.

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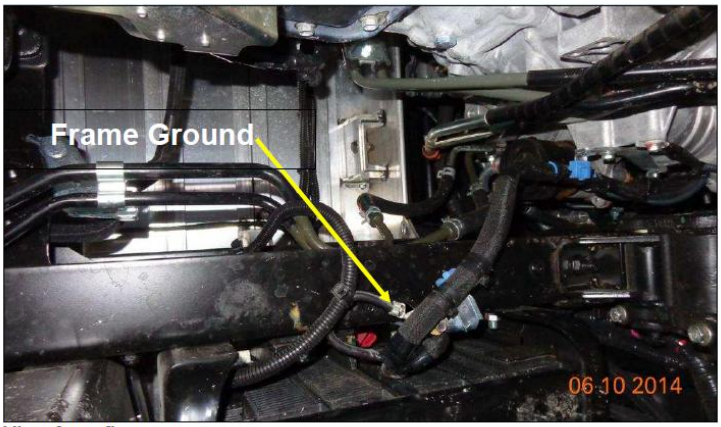
REPAIR PROCEDURE

1. Locate the engine starter cable ground. Remove and inspect the starter ground connection at the frame rail.



View from floor up.

2. Clean excess paint at the starter ground connection to bare metal. Reconnect the starter ground cable at the frame rail.

Cleaned starter ground at frame rail.

View from inside frame rail

3. Connect the DX2 diagnostic tool and clear all transmission DTC's. Start and stop the engine four to five times and inspect for transmission DTC's.

Note: in order to identify this type of failure you can use the **"Voltage Drop"** method to confirm the poor (or proper) grounding of the transmission case through the engine case and starter ground to ground stud then to battery negative post.

Important: Use extra caution when starting the truck. Do not activate starter when working under the truck.

1. Set the DMM (digital multi meter) to 20 Volts scale. Attach one DMM lead with good contact to the transmission case and attach the other test lead to the battery negative terminal.
2. Activate the starter motor and note the voltage drop. It should be less than 1 Volt (typically 0.6 volts). If the voltage drop is above 1 Volt and transmission DTC's are getting recorded, this is likely poor grounding of the transmission case.

You can use the "Voltage Drop" method to narrow down the point of resistance during starter activation by measuring each parts of the circuit separately.

The transmission solenoids are grounded to the transmission case, the transmission case is grounded through the engine flywheel housing and cylinder block, the cylinder block and starter motor are grounded through a wire that goes to the frame rail (left side near the batteries). The frame rail is grounded to the battery negative post through a ground wire, bolt and nut.

Any part of the electrical circuit can have unwanted resistance and it has been found in some situations that the ground wire(cable) from the starter to the frame rail bolt to be faulty because of the connection through the paint coating on the truck frame.