RWRG0075 - Input Shaft Speed Sensor Pre-Authorization

**Overview**
The UltraShift PLUS and Fuller Advantage transmissions are equipped with electronic speed sensors. The Input Shaft, Main Shaft and Output Shaft Speed Sensors are used to calculate gear ratios within the transmission. The Input Shaft Speed Sensor measures the rotational speed of the Input Shaft, taken from the upper countershaft drive gear. The Main Shaft Speed Sensor measures the rotational speed of the transmission gearing exiting the main case, taken from the auxiliary upper countershaft gear. The Output Shaft Speed Sensor measures the rotational speed of the output shaft taken from the Output Shaft Tone Wheel. The Transmission Electronic Control Unit (TECU) compares these speeds to calculate the gear ratios of the main case, auxiliary case and overall transmission.

The Input Shaft Speed Sensor transmits a voltage signal to the TECU based on the rotational speed of the Input Shaft entering the transmission main case. The TECU compares Input Shaft Speed to Main Shaft Speed to confirm the gear ratio of the main case and compares Input Shaft Speed to Output Shaft Speed to confirm the overall transmission gear ratio.

Fault Code 56 indicates an electrical fault within the Input Shaft Speed Sensor circuit or a speed value that is inconsistent with the calculated gear ratios.

**Note:** it has been determined that performing an electrical pre-test is not needed.

**Symptom(s)**
- “F” flashes in gear display.
- Service light flashes (if equipped).
- Transmission will not engage a gear from neutral.
- Transmission may be limited to down shifts only.
- Transmission operates as normal until neutral gear selection is attained. Once in neutral, the transmission will not engage a start gear.

**Warranty Coverage**
This Warranty Repair Guideline repair DOES NOT apply if the Fault Code is Inactive and there are other Active Faults in the Eaton/OEM System. If there are other Active Faults, please follow normal troubleshooting procedure using the correct troubleshooting manual per transmission model.

This Pre-Authorization DOES NOT apply if the failed part has been replaced within the last 90 days on the truck.

The warranty coverage varies depending on vehicle vocation and transmission model type. Warranty coverage is the same as that of its respective transmission coverage including extended warranty.

**Possible Causes**
- Transmission Harness
- Input Shaft Speed Sensor
- Transmission Gear Damage
Component Identification

1. 38-Way Transmission Harness Connector
2. Transmission Electronic Control Unit (TECU)
3. 2-Way Input Shaft Speed Sensor
1. Transmission Electronic Control Unit (TECU)
2. 38-Way Transmission Harness Connector
3. 2-Way Input Shaft Speed Sensor Connector
4. 2-Way Input Shaft Speed Sensor
Fault Code 56 Troubleshooting

A **Purpose:** Check for Active or Inactive fault codes.

1. Record the transmission fault codes, FMIs, occurrences, and timestamps from the Service Activity Report created during the Diagnostic Procedure.

   **Note:** Inspect clutch for caging bolts if Fault Code 56 FMI 2 is Active immediately after start up.

   - If Fault Code 56 is Active with FMI 5, go to Step C.
   - If Fault Code 56 is Inactive with FMI 2, but sets active after attempting a gear, go to Step D.
   - If Fault Code 56 is Inactive, engages a gear with FMI 2 or 5, and is intermittent complaint go to go to Step B.

B **Purpose:** Replace Transmission Harness and Input Shaft Speed Sensor.

1. Key off, set parking brake and chock wheels.
   - Replace Transmission Harness and Input Shaft Speed Sensor. Go to Step V.

C **Purpose:** Verify continuity of Input Shaft Speed Sensor circuit and no continuity to ground.

1. Key off, set parking brake and chock wheels.
   - Replace transmission harness and Input Speed Sensor. Go to Step V.

D **Purpose:** Verify no internal damage.

1. Remove PTO cover and inspect for mechanical damage.

   **Note:** Drain fluid into clean pan for reuse. replacement fluid is non-warrantable.

   - If damage found, contact Realtime Warranty for further assistance. Go to Step V.
1. Key off.
2. Reconnect all connectors and verify that all components are properly installed.
3. Key on with engine off.
5. Drive vehicle and attempt to reset the code or duplicate the previous complaint.
6. Check for fault codes using ServiceRanger.
   - If no fault codes set Active and vehicle operates properly, test complete.
   - If Fault Code 56 sets Active during the test drive, utilize roadranger.com for further troubleshooting options.
   - If a fault code other than 56 sets, troubleshoot using appropriate troubleshooting manual.

Warranty Parts
- K-4148 Speed Sensor
- Transmission Harness
- PTO Cover Gaskets (if needed)

Warranty Labor
- PTO Cover R&R (if Step D completed)
  Or
- PTO R&R (if Step D completed)
  - Software Update if not current revision - 0.5hr
- SRT Input Speed Sensor
- SRT Transmission Harness

Warranty Coding
- Failed Part #: Kit Number Used
- Complaint Code: ENGAGEMENT - WONT GO INTO GEAR
- Failure Code: ROOT CAUSE NOT DETERMINED

Warranty Claim Filing
File pre-authorized warranty claim through appropriate OEM or through Direct Pay.
- RWRG0075
- OEM Warranty Coverage
- Software Revision (from and to)
- Photos of PTO if installed on unit

Filing through Direct Pay
Click here for Direct Pay submission guidelines and claim forms:

Parts Disposition
Return All Parts Per OEM or Direct Pay Guidelines.

Warranty Disclaimer
If the failure is not the result of an accident, damage, negligence, abuse or misuse, improper installation or maintenance or any other conditions described in the Limits and Exclusions section of the Eaton Warranty Manual TCWY0600, then Eaton will treat the condition as covered under its warranty. However, this conclusion does not necessarily mean that a defect in fact exists. In all cases, Eaton shall make the final determination and interpretation as to the warrantability of the product.