

P0716 or P0717 Input Speed Sensor Performance

Diagnostic Instructions

- Perform the Diagnostic System Check – Vehicle on page 6-60 prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis on page 6-57 for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions on page 6-58 provides an overview of each diagnostic category.

DTC Descriptors

DTC P0716: Input Speed Sensor Performance

DTC P0717: Input Speed Sensor Circuit Low Voltage

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Input Speed Sensor Supply Voltage	P0717	P0717	—	P0716
Input Speed Sensor Signal	P0716, P0717	P0716, P0717	P0716, P0717	P0716

Transmission ISS

Circuit	Short to Ground	Open/High Resistance	Short to Voltage
Operating Conditions: Engine running, normal operating temperature			
Parameter Normal Range: 450–7,000 RPM			
ISS/OSS Supply Voltage (Pin B)	Out of Range	Out of Range	OK
Transmission ISS (Pin A)	0 RPM	0 RPM	0 RPM

Circuit/System Description

The input speed sensor (ISS) is a hall-effect type sensor. The sensor faces the 1-2-3-4 and 3-5-R clutch housing machined teeth surface. The sensor receives 8.3–9.3 volts on the input/output speed sensor (ISS/OSS) supply voltage circuit from the transmission control module (TCM). As the 1-2-3-4 and 3-5-R clutch housing rotates, the sensor produces a signal frequency based on the machined surface of the 1-2-3-4 and 3-5-R clutch housing. This signal is transmitted through the ISS signal circuit to the control solenoid (w/body and TCM) valve assembly. The control solenoid (w/body and TCM) valve assembly uses the ISS signal to determine line pressure, transmission shift patterns, torque converterclutch (TCC) slip speed and gear ratio.

Conditions for Running the DTC

P0716

- No ISS DTC P0717.
- No OSS DTCs P0722 or P0723.
- The engine speed is greater than 500 RPM for 5 seconds.
- The ignition voltage is between 8.6 volts and 19.0 volts.
- DTC P0716 has not passed this ignition cycle.
- The engine torque is greater than 50 N·m (37 lb ft).
- The throttle position is greater than 8 percent.

P0717

- No OSS DTCs P0722 or P0723.
- The engine speed is greater than 500 RPM for 5 seconds.
- The ignition voltage is between 8.6 volts and 19.0 volts.
- The vehicle speed is greater than 16 km/h (10 mph).
- The engine torque is greater than 50 N·m (37 lb ft).
- DTC P0717 has not passed this ignition cycle.

Conditions for Setting the DTC

P0716

- Transmission input speed is 1,050 RPM or greater for 2 seconds.
- Transmission input speed drops 1,000 RPM for greater than 3.25 seconds and does not recover.

P0717

Transmission input shaft speed is less than 100 RPM for 4.5 seconds when output speed is detected.

Action Taken When the DTC Sets

- P0716 and P0717 are Type A DTCs.
- The TCM freezes transmission adaptive functions.
- The TCM turns OFF all solenoids.

Conditions for Clearing the DTC

P0716 and P0717 are Type A DTCs.

Diagnostic Aids

Damage or misalignment of the 3-5-R clutch piston housing machined teeth surface may cause a speed sensor malfunction.

Reference Information

Schematic Reference

Automatic Transmission Controls Schematics on page 17-8

Connector End View Reference

Component Connector End Views on page 11-211

Description and Operation

Electronic Component Description on page 17-279 for input speed sensor (ISS)

Electrical Information Reference

- Circuit Testing on page 11-456
- Connector Repairs on page 11-478
- Testing for Intermittent Conditions and Poor Connections on page 11-460
- Wiring Repairs on page 11-465

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions on page 6-61

Scan Tool Reference

Control Module References on page 6-1 for scan tool information

Special Tools

J 38522 Variable Signal Generator

Circuit/System Verification

- 1). Engine idling, observe the scan tool Transmission ISS parameter while varying the engine speed. The Transmission ISS parameter should change with the engine speed and not drop out.
- 2). Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

Circuit/System Testing

- 1). Ignition OFF, remove the control valve body cover. Refer to Control Valve Body Cover Replacement on page 17-160.
- 2). Connect the TCM harness connector.
- 3). Disconnect the input speed sensor (ISS) from the control solenoid (w/body and TCM) valve assembly.
- 4). Connect the J 38522 between the supply voltage terminal B and ISS signal terminal A at the control solenoid (w/body and TCM) valve assembly. Refer to Control Solenoid Valve and Transmission Control Module Assembly Input Shaft Speed/Output Shaft Speed Input Test on page 17-98 for further instructions.
- 5). Set the J 38522 signal to 8 volts, the frequency to 120 and the percent duty cycle to 50.
- 6). Ignition ON, observe the scan tool Transmission ISS parameter. The scan tool Transmission ISS parameter should be between 100–400 RPM.

If not within the specified range, replace the control solenoid (w/body and TCM) valve assembly. If all circuits test normal, test or replace the input speed sensor.

Repair Instructions

Important:

- Perform the Service Fast Learn Adapts on page 17-102 following all transmission related repairs. Input Speed Sensor Replacement on page 17-169
- Before replacing the TCM, perform the Control Solenoid Valve and Transmission Control Module Assembly Inspection on page 17-98.

Perform the Diagnostic Repair Verification on page 6-86 after completing the diagnostic procedure. Control Module References on page 6-1 for control solenoid (w/body and TCM) valve assembly replacement, setup, and programming

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