

DTC P0716 or P0717

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor

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	P0716, P0717	P0716, P0717	P0716, P0717	P0716
Input Speed Sensor Signal	P0716, P0717	P0716, P0717	P0716, P0717	P0716

Typical Scan Tool Data

ISS Signal

Circuit	Normal Range	Short to Ground	Open/High Resistance	Short to Voltage
<i>Operating Conditions:</i> Engine running, normal operating temperature				
ISS Signal	450-7,000 RPM	0 RPM	0 RPM	0 RPM
ISS/OSS Supply Voltage	--	0 RPM	0 RPM	0 RPM

ISS/OSS Supply Voltage

Circuit	Normal Range	Short to Ground	Open/High Resistance	Short to Voltage
<i>Operating Conditions:</i> Key ON, Engine OFF or Engine running, normal operating temperature				
ISS Signal	OK	OK	OK	OK
ISS/OSS Supply Voltage	OK	Out of range	Out of range	Out of range
8.3-9.3 Volts = OK				

© 2013 General Motors Corporation. All rights reserved.

Any other voltage = Out of range

Circuit/System Description

The input speed sensor (ISS) is a hall-effect type sensor. The ISS mounts to the control valve upper body assembly and connects to the control solenoid (w/body and TCM) valve assembly through a wire harness and connector. 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 converter clutch (TCC) slip speed and gear ratio.

Conditions for Running the DTC

P0716

- No ISS DTC P0717.
- No OSS DTCs P0722 or P0723.
- The engine run time is greater than 5 seconds.
- The vehicle speed is greater than 16 km/h (10 mph).
- The calculated throttle position is greater than 8 percent.

P0717

- No OSS DTCs P0722 or P0723.
- The vehicle speed is greater than 16 km/h (10 mph).
- The engine torque is greater than 50 N·m (37 lb. ft).

Conditions for Setting the DTC

P0716

- The TCM detects an unrealistic drop in input shaft speed.
- ISS DTC P0716 is not failed this ignition.
- Transmission input speed is 1,050 RPM or greater for 2 seconds.
- Transmission input speed drops 1,000 RPM for greater than 4 seconds and does not recover.

P0717

- The TCM detects no output shaft speed when there is vehicle speed.

- DTC P0717 is not failed this ignition.
- Transmission input shaft speed is less than 100 RPM for 5 seconds.

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

Inspect the ISS, harness, connector, and control solenoid (w/body and TCM) valve assembly pins for metallic debris and the 1-2-3-4 and 3-5-R clutch housing machined teeth surface for damage or misalignment. Proper torque of the OSS mounting bolt is critical to proper OSS operation. Use a GM-approved terminal test kit for any test that requires probing the control solenoid (w/body and TCM) valve assembly harness connector or a component harness connector.

Reference Information

Schematic Reference

[Automatic Transmission Controls Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Electrical Information Reference

- [Circuit Testing](#).
- [Connector Repairs](#).
- [Testing for Intermittent Conditions and Poor Connections](#).
- [Wiring Repairs](#).

DTC Type Reference

[Powertrain Diagnostic Trouble Code \(DTC\) Type Definitions](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

Start the engine in Park and observe the transmission ISS on the scan tool while varying the engine speed. The transmission ISS should vary with the engine speed and not drop out.

Circuit/System Testing

1. With the ignition ON, observe the transmission ISS/OSS supply voltage circuit status on the scan tool, the parameter should display OK.
If the circuit status does not display OK, disconnect the ISS/OSS connector from the control solenoid (w/body and TCM) valve assembly and recheck the scan tool display.
If the transmission ISS/OSS supply voltage circuit status still displays OK, visually inspect the ISS, harness, connector, the control solenoid (w/body and TCM) valve assembly pins for metallic debris and 1-2-3-4 and 3-5-R clutch housing machined teeth surface for damage or misalignment. Repair or replace any damaged components.
2. Perform the [Control Solenoid Valve and Transmission Control Module Assembly Input Shaft Speed/Output Shaft Speed Input Test](#). The scan tool should display Transmission ISS between 100-400 RPM.
If 100-400 RPM ISS RPM is displayed, replace the ISS/OSS assembly.
If no ISS RPM is displayed or the RPM is out of range, replace the control solenoid (w/body and TCM) valve assembly.

Component Testing

Perform the [Control Solenoid Valve and Transmission Control Module Assembly Input Shaft Speed/Output Shaft Speed Input Test](#).

Repair Instructions

Important: Always perform the [Diagnostic Repair Verification](#) after completing the diagnostic procedure.

- Perform the [Input and Output Speed Sensor Replacement](#).
- Control solenoid (w/body and TCM) valve assembly, refer to [Control Module References](#) for replacement, setup, and programming.
- Perform the [Control Solenoid Valve and Transmission Control Module Assembly Inspection](#).
- Perform the [Control Solenoid Valve and Transmission Control Module Assembly Input Shaft Speed/Output Shaft Speed Input Test](#).
- Perform the [Service Fast Learn Adapts](#).