SHOPKEY.PRO

YMMS: 2020 Jeep Wrangler Unlimited Rubicon May 3, 2021
Engine: 3.6L Eng License:
VIN: Odometer:

SET CONDITION

- Transfer Case Motor speed is less than 1 RPM when motor current is above 15 amps for more than 30 ms.

WHEN MONITORED

This diagnostic runs continuously when the following conditions are met:

- Engine speed is more than 700 RPM for 1 second.
- No Controller Area Network (CAN) Bus DTCs.
- Incremental sensor data valid.

POSSIBLE CAUSES

Possible Causes
TRANSFER CASE INTERNAL CONDITION
TRANSFER CASE SHIFT MOTOR

Always perform the PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE before proceeding. Refer to PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE .

THEORY OF OPERATION

Active Transfer Case (DHP and DHF) - Shift Motor Operation
The Shift Motor is a serviceable component of the Transfer Case. There are two Control circuits between the Shift Motor and DTCM:

- Shift Motor Control A
- Shift Motor Control B

The Shift Motor turns a worm gear that in turn rotates a mechanical ramp style clutch actuator to apply and release the Front Drive Clutch.
The Shift Motor is used to apply and release the Front Drive Clutch in 2WD, 4WD, and 4WD-AUTO modes as follows:

- **2WD Mode:** The Front drive Clutch is released. No actuation of the clutch will occur and all torque is applied the Rear Axle.
- **4WD HIGH and 4WD LOW Modes:** The Front Drive Clutch will be applied at all times. Torque is split 50/50 between the Front and Rear Axles. However, the clutch is still actively controlled depending on engine torque. At a minimum, the clutch will be applied with 800 Nm of force. If engine torque increases, the DTCM will command the Shift Motor to increase clutch force up to 1600 Nm. Increasing the clutch force only when needed extends the life of the Front Drive Clutch, Clutch Actuator, and other Transfer Case components.
- **4WD-AUTO Mode:** The DTCM will automatically modulate the torque between the front and rear axles according to traction conditions by modulating the Front Drive Clutch. The ABS Wheel Speed

Sensors are monitored via CAN communication to determine traction conditions.

The DTCM learns the relative clutch position (Kisspoint) in order to adapt to normal wear of the clutch over its lifespan. If any clutch related components are replaced, the Kisspoint must be relearned by initiating a Non-Volatile Memory Reset (Clear T-Case Adaptives) with the scan tool.