# 14 OBDG11 TCM Summary Tables

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Transmission Control Module (TCM) | P0601 | Transmission Electro-Hydraulic Control Module Read Only Memory | Incorrect program/calibrations checksum | = | TRUE    Boolean | | | >= | 5 | Fail Counts | One Trip |
| | | | Disable Conditions: | | MIL not Illuminated for DTC's: | | TCM: P0601<br><br>ECM: None | | | | |
| Transmission Control Module (TCM) | P0603 | Transmission Electro-Hydraulic Control Module Long-Term Memory Reset | Non-volatile memory (static or dynamic) checksum failure at Powerup | = | TRUE    Boolean | | | | Runs Continously | | One Trip |
| | | | Disable Conditions: | | MIL not Illuminated for DTC's: | | TCM: P0603<br><br>ECM: None | | | | |
| Transmission Control Module (TCM) | P0604 | Transmission Electro-Hydraulic Control Module Random Access Memory | RAM Read/Write Failure (Single Word) | = | TRUE    Boolean | | | >= | 5 | Fail Counts | One Trip |
| | | | | | | | | = | 16 | Sample Counts | |
| | | | Disable Conditions: | | MIL not Illuminated for DTC's: | | TCM: P0604<br><br>ECM: None | | | | |
| Transmission Control Module (TCM) | P062F | Transmission Electro-Hydraulic Control Module Long Term Memory Performance | TCM Non-Volatile Memory bit Incorrect flag at Powerdown | = | TRUE    Boolean | | | | Runs Continously | | One Trip |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | | Secondary Malfunction | | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P062F | | | | | | |
| | | | | | | | | | | ECM: None | | | | | | |
| Transmission Control Module (TCM) | P0634 | Transmission Electro-Hydraulic Control Module Internal Temperature Too High | Fail Case 1 | | | | | | | | | | | | | One Trip |
| | | | Substrate Temperature | >= | 142.1016 | ℃ | | | | | | | >= | 5 | Fail Time (Sec) | |
| | | | Fail Case 2 | | | | | | | | | | | | | |
| | | | Substrate Temperature | >= | 50 | ℃ | | | | | | | >= | 2 | Fail Time (Sec) | |
| | | | Ignition Voltage | >= | 18 | Volts | | | | | | | | | | |
| | | | Note: either fail case can set the DTC | | | | | | | | | | | | | |
| | | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | | |
| | | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | | |
| | | | | | | | | Substrate Temp Lo | >= | 0 | ℃ | | | | | |
| | | | | | | | | Substrate Temp Hi | <= | 170 | ℃ | | | | | |
| | | | | | | | | Substrate Temp Between Temp Range for Time | >= | 0.25 | Sec | | | | | |
| | | | | | | | | P0634 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | | |
| | | | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | | | | ECM: None | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|
| High Side Driver 1 | P0658 | Actuator Supply Voltage Circuit Low | The HWIO reports a low voltage (open or ground short) error flag | = TRUE Boolean | | | >= 4 Fail Counts<br>out of 6 Sample Counts | One Trip |
| | | | | | P0658 Status is not | = Test Failed This Key On or Fault Active | | |
| | | | | | High Side Driver 1 On | = True Boolean | | |
| | | | | | Disable Conditions: MIL not Illuminated for DTC's: | TCM: None<br>ECM: None | | |
| Transmission Control Module (TCM) | P0667 | TCM Internal Temp (substrate) Sensor Circuit Range/Performance | If transmission oil temp to substrate temp Δ | > Refer to Table 19 in supporting documents °C | | | | Two Trips |
| | | | If TCM substrate temp to power up temp Δ | > Refer to Table 20 in supporting documents °C | | | | |
| | | | Both conditions above required to increment fail counter<br>Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp. | | | | >= 3000 Fail Counts (100ms loop)<br>Out of 3750 Sample Counts (100ms loop) | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Non-continuous (intermittent) fail conditions will delay resetting fail counter until | | | | | | >= | 700 | Pass Counts (100ms loop) | |
| | | | | | | | | | Out of | 875 | Sample Counts (100ms loop) | |
| | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | Accelerator Position Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | Brake torque active | = | FALSE | | | | | |
| | | | | | Below describes the brake torque entry criteria | | | | | | | |
| | | | | | Engine Torque | >= | 90 | N*m | | | | |
| | | | | | Throttle | >= | 30.0003 | Pct | | | | |
| | | | | | Transmission Input Speed | <= | 200 | RPM | | | | |
| | | | | | Vehicle Speed | <= | 8 | Kph | | | | |
| | | | | | Transmission Range | ≠ | Park | | | | | |
| | | | | | Transmission Range | ≠ | Neutral | | | | | |
| | | | | | PTO | = | Not Active | | | | | |
| | | | | | Set Brake Torque Active TRUE if above conditions are met for: | >= | 7 | sec | | | | |
| | | | | | Below describes the brake torque exit criteria | | | | | | | |
| | | | | | Brake torque entry criteria | = | Not Met | | | | | |
| | | | | | Clutch hydraulic pressure | ≠ | Clutch Hydraulic Air Purge Event | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Clutch used to exit brake torque active | = | CeTFTD_e _C3_RatlE nbl | | | |
| | | | | | The above clutch pressure is greater than this value for one loop | >= | 600 | kpa | | |
| | | | | | Set Brake Torque Active FALSE if above conditions are met for: | >= | 20 | Sec | | |
| | | | | | P0667 Status is | ≠ | Test Failed This Key On or Fault Active | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 | | | |
| | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | |
| Transmission Control Module (TCM) | P0668 | TCM internal temperature (substrate) thermistor failed at a low voltge | Type of Sensor Used | = CeTFTI_e_Vol tageDirectPro p | | | | | | Two Trips |
| | | | If TCM Substrate Temperature Sensor = Direct Proportional and Temp | <= -249 ºC | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If TCM Substrate Temperature Sensor = Indirect Proportional and Temp | >= | -249 | ℃ | | | | | | | | |
| | | | Either condition above will satisfy the fail conditions | | | | | | | | >= | 60 | Fail Timer (Sec) | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | | P0668 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | | ECM: None | | | | | | |
| Transmission Control Module (TCM) | P0669 | TCM internal temperature (substrate) thermistor failed at a high voltage | Type of Sensor Used | = | CeTFTI_e_Vol tageDirectPro p | | | | | | | | | Two Trips |
| | | | If TCM Substrate Temperature Sensor = Direct Proportional and Temp | >= | 249 | ℃ | | | | | | | | |
| | | | If TCM Substrate Temperature Sensor = Indirect Proportional and Temp | <= | 249 | ℃ | | | | | | | | |
| | | | Either condition above will satisfy the fail conditions | | | | | | | | >= | 60 | Fail Timer (Sec) | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | P0669 Status is | ≠ | Test Failed This Key On or Fault Active | | | |
| | | | | | For Hybrids, below conditions must also be met | | | | | |
| | | | | | Estimated Motor Power Loss | >= | 0 | kW | | |
| | | | | | Estimated Motor Power Loss greater than limit for time | >= | 0 | Sec | | |
| | | | | | Lost Communication with Hybrid Processor Control Module | = | FALSE | | | |
| | | | | | Estimated Motor Power Loss Fault | = | FALSE | | | |
| | | | | | **Disable Conditions:** | **MIL not Illuminated for DTC's:** TCM: P0716, P0717, P0722, P0723 | | | | |
| | | | | | | ECM: None | | | | |
| Transmission Control Module (TCM) | P06AC | TCM Power-up Temp Sensor Circuit Range/Performance | If TCM power-up temp to substrate temp Δ | > | Refer to Table 20 in supporting documents °C | | | | | Two Trips |
| | | | If transmission oil temp to power up temp Δ | > | Refer to Table 18 in supporting documents °C | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Both conditions above required to increment fail counter | | | | | | >= | 3000 | Fail Counts (100ms loop) | |
| | | | Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp. | | | | | | Out of | 3750 | Sample Counts (100ms loop) | |
| | | | Non-continuous (intermittent) fail conditions will delay resetting fail counter until | | | | | | >= | 700 | Pass Counts (100ms loop) | |
| | | | | | | | | | Out of | 875 | Sample Counts (100ms loop) | |
| | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | Accelerator Position Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | Brake torque active | = | FALSE | | | | | |
| | | | | | Below describes the brake torque entry criteria | | | | | | | |
| | | | | | Engine Torque | >= | 90 | N*m | | | | |
| | | | | | Throttle | >= | 30.0003 | Pct | | | | |
| | | | | | Transmission Input Speed | <= | 200 | RPM | | | | |
| | | | | | Vehicle Speed | <= | 8 | Kph | | | | |
| | | | | | Transmission Range | ≠ | Park | | | | | |
| | | | | | Transmission Range | ≠ | Neutral | | | | | |
| | | | | | PTO | = | Not Active | | | | | |
| | | | | | Set Brake Torque Active TRUE if above conditions are met for: | >= | 7 | sec | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Below describes the brake torque exit criteria | | | | |
| | | | | | Brake torque entry criteria | = | Not Met | | |
| | | | | | Clutch hydraulic pressure | ≠ | Clutch Hydraulic Air Purge Event | | |
| | | | | | Clutch used to exit brake torque active | = | CeTFTD_e _C3_RatlE nbl | | |
| | | | | | The above clutch pressure is greater than this value for one loop | >= | 600  kpa | | |
| | | | | | Set Brake Torque Active FALSE if above conditions are met for: | >= | 20  Sec | | |
| | | | | | P06AC Status is | ≠ | Test Failed This Key On or Fault Active | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | | TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730<br><br>ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transmission Control Module (TCM) | P06AD | TCM power-up thermistor circuit voltage low | Power Up Temp | <= | -59 | ℃ | | | | | | | >= | 60 | Fail Time (Sec) | Two Trips |
| | | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | | | P06AD Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | | | For Hybrids, below conditions must also be met | | | | | | | |
| | | | | | | | | Estimated Motor Power Loss | >= | 0 | kW | | | | |
| | | | | | | | | Estimated Motor Power Loss greater than limit for time | >= | 0 | Sec | | | | |
| | | | | | | | | Lost Communication with Hybrid Processor Control Module | = | FALSE | | | | | |
| | | | | | | | | Estimated Motor Power Loss Fault | = | FALSE | | | | | |
| | | | | | | Disable Conditions: | | MIL not Illuminated for DTC's: TCM: P0716, P0717, P0722, P0723 ECM: None | | | | | | | |
| Transmission Control Module (TCM) | P06AE | TCM power-up thermistor circuit voltage high | Power Up Temp | >= | 164 | ℃ | | | | | | | >= | 60 | Fail Time (Sec) | Two Trips |
| | | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | P06AE Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: None | | | | | |
| | | | | | | | ECM: None | | | | | |
| Transmission Fluid Temperature Sensor (TFT) | P0711 | Trans Fluid Temp Sensor Circuit Range/Performance | If transmission oil temp to substrate temp Δ | > | Refer to Table 19 in supporting documents | ºC | | | | | | Two Trips |
| | | | If transmission oil temp to power up temp Δ | > | Refer to Table 18 in supporting documents | ºC | | | | | | |
| | | | Both conditions above required to increment fail counter | | | | | | >= | 3000 | Fail Counts (100ms loop) | |
| | | | Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp. | | | | | | Out of | 3750 | Sample Counts (100ms loop) | |
| | | | Non-continuous (intermittent) fail conditions will delay resetting fail counter until | | | | | | >= | 700 | Pass Counts (100ms loop) | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Out of | 875 | Sample Counts (100ms loop) | |
| | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | Accelerator Position Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | Brake torque active | = | FALSE | | | | | |
| | | | | | Below describes the brake torque entry criteria | | | | | | | |
| | | | | | Engine Torque | >= | 90 | N*m | | | | |
| | | | | | Throttle | >= | 30.0003 | Pct | | | | |
| | | | | | Transmission Input Speed | <= | 200 | RPM | | | | |
| | | | | | Vehicle Speed | <= | 8 | Kph | | | | |
| | | | | | Transmission Range | ≠ | Park | | | | | |
| | | | | | Transmission Range | ≠ | Neutral | | | | | |
| | | | | | PTO | = | Not Active | | | | | |
| | | | | | Set Brake Torque Active TRUE if above conditions are met for: | >= | 7 | sec | | | | |
| | | | | | Below describes the brake torque exit criteria | | | | | | | |
| | | | | | Brake torque entry criteria | = | Not Met | | | | | |
| | | | | | Clutch hydraulic pressure | ≠ | Clutch Hydraulic Air Purge Event | | | | | |
| | | | | | Clutch used to exit brake torque active | = | CeTFTD_e _C3_RatIE nbl | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | The above clutch pressure is greater than this value for one loop | >= | 600 | kpa | | |
| | | | | | | | Set Brake Torque Active FALSE if above conditions are met for: | >= | 20 | Sec | | |
| | | | | | | | P0711 Status is | ≠ | Test Failed This Key On or Fault Active | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | |
| Transmission Fluid Temperature Sensor (TFT) | P0712 | Transmission fluid temperature thermistor failed at a low voltage | Type of Sensor Used | = | CeTFTI_e_VoltageDirectProp | | | | | | | Two Trips |
| | | | If Transmission Fluid Temperature Sensor = Direct Proportional and Temp | <= | -74 | ºC | | | | | | |
| | | | If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp | >= | -74 | ºC | | | | | | |

| Component/<br>System | Fault<br>Code | Monitor Strategy<br>Description | Malfunction<br>Criteria | Threshold<br>Value | Secondary<br>Malfunction | Enable<br>Conditions | | | Time<br>Required | | | Mil<br>Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Either condition above will satisfy the fail conditions | | | | | | >= | 60 | Fail Time (Sec) | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | P0712 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | | | For Hybrids, below conditions must also be met | | | | | | | |
| | | | | | Estimated Motor Power Loss | >= | 0 | kW | | | | |
| | | | | | Estimated Motor Power Loss greater than limit for time | >= | 0 | Sec | | | | |
| | | | | | Lost Communication with Hybrid Processor Control Module | = | FALSE | | | | | |
| | | | | | Estimated Motor Power Loss Fault | = | FALSE | | | | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723 | | | | | | |
| | | | | | | ECM: None | | | | | | |
| Transmission Fluid Temperature Sensor (TFT) | P0713 | Transmission fluid temperature thermistor failed at a high voltage | Type of Sensor Used | = CeTFTI_e_Vol tageDirectPro p | | | | | | | | Two Trips |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If Transmission Fluid Temperature Sensor = Direct Proportional and Temp | >= | 174 | ºC | | | | | | | | |
| | | | If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp | <= | 174 | ºC | | | | | | | | |
| | | | Either condition above will satisfy the fail conditions | | | | | | | | >= | 60 | Fail Time (Sec) | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | | P0713 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | Disable Conditions: | | | | MIL not Illuminated for DTC's: | TCM: P0713, P0716, P0717, P0722, P0723  ECM: None | | | | | | |
| Transmission Input Speed Sensor (TISS) | P0716 | Input Speed Sensor Performance | Transmission Input Speed Sensor Drops | >= | 900 | RPM | | | | | >= | 0.8 | Fail Time (Sec) | One Trip |
| | | | | | | | Engine Torque is | >= | 0 | N*m | | | | |
| | | | | | | | Engine Torque is | <= | 8191.88 | N*m | | | | |
| | | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | | Vehicle Speed is | >= | 10 | Kph | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Throttle Position is | >= | 0 | Pct | | | | |
| | | | | | | | | -------------- Transmission Input Speed is | >= | 0 | RPM | | | | |
| | | | | | | | | The previous requirement has been satisfied for | >= | 0 | Sec | | | | |
| | | | | | | | | -------------- The change (loop to loop) in transmission input speed is | < | 8191.88 | RPM/Loop | | | | |
| | | | | | | | | The previous requirement has been satisfied for | >= | 0 | Sec | | | | |
| | | | | | | | | Throttle Position Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | | | P0716 Status is not | = | Test Failed This Key On or Fault Active | | | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | | TCM: P0717, P0752, P0973, P0974 | | | | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0121, P0122, P0123 | | | | | | | |
| Transmission Input Speed Sensor (TISS) | P0717 | Input Speed Sensor Circuit Low Voltage | Fail Case 1 Transmission Input Speed is | < | 33 | RPM | | | | | | >= | 4.5 | Fail Time (Sec) | One Trip |
| | | | Fail Case 2 When P0722 DTC Status equal to Test Failed and Transmission Input Speed is | < | 653.13 | RPM | | Controller uses a single power supply for the speed sensors | = | 1 | Boolean | | | | |
| | | | | | | | | Engine Torque is | >= | 80 | N*m | | | | |
| | | | | | | | | Engine Torque is | <= | 8191.88 | N*m | | | | |
| | | | | | | | | Vehicle Speed | >= | 10 | Kph | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | | | |
| | | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | | P0717 Status is not | = | Test Failed This Key On or Fault Active | | | | | |

Disable Conditions: **MIL not Illuminated for DTC's:** TCM: P0722, P0723

ECM: P0101, P0102, P0103

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transmission Output Speed Sensor (TOSS) | P0722 | Output Speed Sensor Circuit Low Voltage | Transmission Output Speed Sensor Raw Speed | <= | 35 | RPM | | | | | >= | 4.5 | Fail Time (Sec) | One Trip |
| | | | | | | | P0722 Status is not | = | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | | Transmission Input Speed Check | = | TRUE | Boolean | | | | |
| | | | | | | | Engine Torque Check | = | TRUE | Boolean | | | | |
| | | | | | | | Throttle Position | >= | 8.0002 | Pct | | | | |
| | | | | | | | Transmission Fluid Temperature | >= | -40 | °C | | | | |
| | | | | | | | Disable this DTC if the PTO is active | = | 1 | Boolean | | | | |
| | | | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Throttle Position Signal Valid | = | TRUE | Boolean | | |
| | | | | | Ignition Voltage is | >= | 8.59961 | Volts | | |
| | | | | | Ignition Voltage is | <= | 31.99902 | Volts | | |
| | | | | | Engine Speed is | >= | 400 | RPM | | |
| | | | | | Engine Speed is | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | Enable_Flags Defined Below | | | | | |
| | | | | | The Engine Torque Check is TRUE, if either of the two following conditions are TRUE | | | | | |
| | | | | | Engine Torque Condition 1 | | | | | |
| | | | | | Range Shift Status | ≠ | Range shift completed | ENUM | | |
| | | | | | OR | | | | | |
| | | | | | Transmission Range is | = | Park or Neutral | | | |
| | | | | | Engine Torque is | >= | 8191.75 | N*m | | |
| | | | | | Engine Torque is | <= | 8191.75 | N*m | | |
| | | | | | Engine Torque Condition 2 | | | | | |
| | | | | | Engine Torque is | >= | 50 | N*m | | |
| | | | | | Engine Torque is | <= | 8191.75 | N*m | | |
| | | | | | --------------------- | | | | | |
| | | | | | The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TIS Check Condition 1 Transmission Input Speed is | >= | 653.13 | RPM | | | | |
| | | | | | | | Transmission Input Speed is | <= | 5350 | RPM | | | | |
| | | | | | | | TIS Check Condition 2 Engine Speed without the brake applied is | >= | 3200 | RPM | | | | |
| | | | | | | | Engine Speed with the brake applied is | >= | 3200 | RPM | | | | |
| | | | | | | | Engine Speed is | <= | 8191.88 | RPM | | | | |
| | | | | | | | Controller uses a single power supply for the speed sensors | = | 1 | Boolean | | | | |
| | | | | | | | Powertrain Brake Pedal is Valid | = | TRUE | Boolean | | | | |
| | | | | Disable Conditions: | | | MIL not Illuminated for DTC's: TCM: P0716, P0717, P0723 ECM: P0101, P0102, P0103, P0121, P0122, P0123 | | | | | | | |
| Transmission Output Speed Sensor (TOSS) | P0723 | Output Speed Sensor Circuit Intermittent | Transmission Output Speed Sensor Raw Speed | >= | 105 | RPM | | | | | >= | 0 | Enable Time (Sec) | One Trip |
| | | | Output Speed Delta | <= | 8192 | RPM | | | | | >= | 0 | Enable Time (Sec) | |
| | | | Output Speed Drop | > | 650 | RPM | | | | | >= | 1.5 | Output Speed Drop Recovery Fail Time (Sec) | |
| | | | AND Transmission Range is | = | Driven range (R,D) | | | | | | | | | |
| | | | | | | | -------------------- Range_Disable | = | FALSE | See Below | | | | |

# 14 OBDG11 TCM Summary Tables

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | OR -------------------- | | | | | |
| | | | | | Neutral_Range_Enable And | = | TRUE | See Below | | |
| | | | | | Neutral_Speed_Enable are TRUE concurrently -------------------- | = | TRUE | See Below | | |
| | | | | | Transmission_Range_Enable | = | TRUE | See Below | | |
| | | | | | Transmission_Input_Speed_Enable | = | TRUE | See Below | | |
| | | | | | No Change in Transfer Case Range (High <-> Low) for | >= | 5 | Seconds | | |
| | | | | | P0723 Status is not | = | Test Failed This Key On or Fault Active | | | |
| | | | | | Disable this DTC if the PTO is active | = | 1 | Boolean | | |
| | | | | | Ignition Voltage is | >= | 8.59961 | Volts | | |
| | | | | | Ignition Voltage is | <= | 31.99902 | Volts | | |
| | | | | | Engine Speed is | >= | 400 | RPM | | |
| | | | | | Engine Speed is | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | Enable_Flags Defined Below | | | | | |
| | | | | | Transmission_Input_Speed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE: | | | | | |

**TCM Summary Tables Page 20 of 93**

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | TIS Condition 1 is TRUE when both of the following conditions are satsified for | >= | 0 | Enable Time (Sec) | | |
| | | | | | Input Speed Delta | <= | 4095.88 | RPM | | |
| | | | | | Raw Input Speed | >= | 500 | RPM | | |
| | | | | | TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied | | | | | |
| | | | | | Input Speed | = | 0 | RPM | | |
| | | | | | A Single Power Supply is used for all speed sensors | = | TRUE | Boolean | | |
| | | | | | --------------------- | | | | | |
| | | | | | Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE | | | | | |
| | | | | | Transmission Range is | = | Neutral | ENUM | | |
| | | | | | Transmission Range is | = | Reverse/Neutral Transitonal | ENUM | | |
| | | | | | Transmission Range is | = | Neutral/Drive Transitional | ENUM | | |
| | | | | | And when a drop occurs | | | | | |
| | | | | | Loop to Loop Drop of Transmission Output Speed is | > | 650 | RPM | | |
| | | | | | --------------------- | | | | | |
| | | | | | Range_Disable is TRUE when any of the next three conditions are TRUE | | | | | |
| | | | | | Transmission Range is | = | Park | ENUM | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Transmission Range is | = | Park/Reverse Transitonal | ENUM | | |
| | | | | | Input Clutch is not | = | ON (Fully Applied) | ENUM | | |
| | | | | | --------------------- | | | | | |
| | | | | | Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified for | > | 1.5 | Seconds | | |
| | | | | | Transmission Output Speed | > | 130 | RPM | | |
| | | | | | The loop to loop change of the Transmission Output Speed is | < | 20 | RPM | | |
| | | | | | The loop to loop change of the Transmission Output Speed is | > | -10 | RPM | | |
| | | | | | --------------------- | | | | | |
| | | | | | Transmission_Range_Enable is TRUE when one of the next six conditions is TRUE | | | | | |
| | | | | | Transmission Range is | = | Neutral | ENUM | | |
| | | | | | Transmission Range is | = | Reverse/Neutral Transitional | ENUM | | |
| | | | | | Transmission Range is | = | Neutral/Drive Transitional | ENUM | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Time since a driven range (R,D) has been selected | >= | Table Based Time Please Refer to Table 21 in supporting documents | | Sec | | | | |
| | | | | | | | Transmission Output Speed Sensor Raw Speed | >= | 500 | | RPM | | | | |
| | | | | | | | Output Speed when a fault was detected | >= | 500 | | RPM | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0973, P0974, P0976, P0977 | | | | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0121, P0122, P0123 | | | | | | | |
| Torque Converter Clutch (TCC) | P0741 | TCC System Stuck OFF | TCC Pressure | >= | 750 | Kpa | | | | | | >= | 2 | Enable Time (Sec) | Two Trips |
| | | | Either Condition (A) or (B) Must be Met | | | | | | | | | | | | |
| | | | (A) TCC Slip Error @ TCC On Mode | >= | Refer to Table 1 in Supporting Documents | RPM | | | | | | >= | 5 | Fail Time (Sec) | |
| | | | (B) TCC Slip @ Lock On Mode | >= | 130 | RPM | | | | | | >= | 5 | Fail Time (Sec) | |
| | | | If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter | | | | | | | | | >= | 2 | TCC Stuck Off Fail Counter | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | TCC Mode | = | On or Lock | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | |
| | | | | | Engine Speed | >= | 400 | RPM | | |
| | | | | | Engine Speed | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | Engine Torque Lo | >= | 50 | N*m | | |
| | | | | | Engine Torque Hi | <= | 8191.88 | N*m | | |
| | | | | | Throttle Position Lo | >= | 8.0002 | Pct | | |
| | | | | | Throttle Position Hi | <= | 99.9985 | Pct | | |
| | | | | | 2nd Gear Ratio Lo | >= | 2.19482 | Ratio | | |
| | | | | | 2nd Gear Ratio High | <= | 2.52515 | Ratio | | |
| | | | | | 3rd Gear Ratio Lo | >= | 1.42285 | Ratio | | |
| | | | | | 3rd Gear Ratio High | <= | 1.63708 | Ratio | | |
| | | | | | 4th Gear Ratio Lo | >= | 1.06946 | Ratio | | |
| | | | | | 4th Gear Ratio High | <= | 1.23047 | Ratio | | |
| | | | | | 5th Gear Ratio Lo | >= | 0.79053 | Ratio | | |
| | | | | | 5th Gear Ratio Hi | <= | 0.90955 | Ratio | | |
| | | | | | 6th Gear Ratio Lo | >= | 0.62305 | Ratio | | |
| | | | | | 6th Gear Ratio High | <= | 0.71692 | Ratio | | |
| | | | | | Transmission Fluid Temperature Lo | >= | -6.6563 | °C | | |
| | | | | | Transmission Fluid Temperature Hi | <= | 130 | °C | | |
| | | | | | PTO Not Active | = | TRUE | Boolean | | |
| | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | |
| | | | | | Throttle Position Signal Valid | = | TRUE | Boolean | | |
| | | | | | Dynamic Mode | = | FALSE | Boolean | | |
| | | | | | P0741 Status is | ≠ | Test Failed This Key On or Fault Active | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P0742, P2763, P2764 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | |
| Torque Converter Clutch (TCC) | P0742 | TCC System Stuck ON | TCC Slip Speed | >= | -50 | RPM | | | | | | | | One Trip |
| | | | TCC Slip Speed | <= | 13 | RPM | | | | | | | | |
| | | | If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter | | | | | | | | >= | 1.5 | Fail Time (Sec) | |
| | | | | | | | | | | | >= | 6 | Fail Counter | |
| | | | | | | | TCC Mode | = | Off | | | | | |
| | | | | | | | Enable test if Cmnd Gear = 1stFW and value true | = | 1 | Boolean | | | | |
| | | | | | | | Enable test if Cmnd Gear = 2nd and value true | = | 0 | Boolean | | | | |
| | | | | | | | Engine Speed Hi | <= | 6000 | RPM | | | | |
| | | | | | | | Engine Speed Lo | >= | 500 | RPM | | | | |
| | | | | | | | Vehicle Speed HI | <= | 511 | KPH | | | | |
| | | | | | | | Vehicle Speed Lo | >= | 1 | KPH | | | | |
| | | | | | | | Engine Torque Hi | <= | 8191.88 | Nm | | | | |
| | | | | | | | Engine Torque Lo | >= | 80 | Nm | | | | |
| | | | | | | | Current Range | ≠ | Neutral | Range | | | | |
| | | | | | | | Current Range | ≠ | Reverse | Range | | | | |
| | | | | | | | Transmission Sump Temperature | <= | 130 | °C | | | | |
| | | | | | | | Transmission Sump Temperature | >= | 18 | °C | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Throttle Position Hyst High AND | >= | 5.0003 | Pct | | |
| | | | | | Max Vehicle Speed to Meet Throttle Enable | <= | 8 | KPH | | |
| | | | | | Once Hyst High has been met, the enable will remain while Throttle Position | >= | 2.0004 | Pct | | |
| | | | | | Disable for Throttle Position | >= | 75 | Pct | | |
| | | | | | Disable if PTO active and value true | = | 1 | Boolean | | |
| | | | | | Disable if in D1 and value true | = | 1 | Boolean | | |
| | | | | | Disable if in D2 and value true | = | 1 | Boolean | | |
| | | | | | Disable if in D3 and value true | = | 1 | Boolean | | |
| | | | | | Disable if in D4 and value true | = | 1 | Boolean | | |
| | | | | | Disable if in D5 and value true | = | 1 | Boolean | | |
| | | | | | Disable if in MUMD and value true | = | 1 | Boolean | | |
| | | | | | Disable if in TUTD and value true | = | 1 | Boolean | | |
| | | | | | 4 Wheel Drive Low Active | = | FALSE | Boolean | | |
| | | | | | Disable if Air Purge active and value false | = | 0 | Boolean | | |
| | | | | | RVT Diagnostic Active | = | FALSE | Boolean | | |
| | | | | | Ignition Voltage | >= | 8.59961 | V | | |
| | | | | | Ignition Voltage | <= | 31.99902 | V | | |
| | | | | | Vehicle Speed | <= | 511 | KPH | | |
| | | | | | Engine Speed | >= | 400 | RPM | | |
| | | | | | Engine Speed | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | | Threshold Value | | Secondary Malfunction | | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Throttle Position Signal Valid | = | TRUE | Boolean | | | | | |
| | | | | | | | | P0742 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | | |
| | | | Disable Conditions: | | | | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P0741, P2763, P2764 | | | | | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | | | | |
| Mode 2 Multiplex Valve | P0751 | Shift Solenoid Valve A Stuck Off | Commaned Gear Slip | >= | 400 | RPM | | | | | | | | | | Two Trips |
| | | | Commanded Gear | = | 1st Lock | rpm | | | | | >= | 0.2 | Fail Tmr | | | |
| | | | Gear Ratio | <= | 1.20959 | | | | | | = | 5 | Fail Counts | | | |
| | | | Gear Ratio | >= | 1.09436 | | | | | | | | | | | |
| | | | If the above parameters are true | | | | | | | | ≠ | 0 | Neutral Timer (Sec) | | | |
| | | | | | | | | | | | >= | 0.3 | Fail Timer (Sec) | | | |
| | | | | | | | | | | | >= | 8 | Counts | | | |
| | | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | | |
| | | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | | |
| | | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | | |
| | | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | | |
| | | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|
| | | | | | Transmission Fluid Temperature | >= -6.6563 ºC | | |
| | | | | | Range Shift State | = Range Shift Completed ENUM | | |
| | | | | | TPS<br>OR | >= 0.5005 % | | |
| | | | | | Output Speed | >= 67 RPM | | |
| | | | | | Throttle Position Signal Valid from ECM | = TRUE Boolean | | |
| | | | | | Engine Torque Signal Valid from ECM, High side driver is enabled | = TRUE Boolean | | |
| | | | | | High-Side Driver is Enabled | = TRUE Boolean | | |
| | | | | | Input Speed Sensor fault | = FALSE Boolean | | |
| | | | | | Output Speed Sensor fault | = FALSE Boolean | | |
| | | | | | Default Gear Option is not present | = TRUE | | |
| | | | | | Disable Conditions: MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | |
| | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | |
| Mode 2 Multiplex Valve | P0752 | Shift Solenoid Valve A Stuck On | Gear Box Slip | >= 400 RPM | | | | One Trip |
| | | | Commanded Gear | = 3rd Gear | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Commanded Gear has Achieved 1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol. Commanded On | = | TRUE | Boolean | | | | | | | | | |
| | | | If the above parameters are true | | | | | | | | | >= | Please Refer to Table 16 in Supporting Documents | Neutral Timer (Sec) | |
| | | | Command 4th Gear once Output Shaft Speed | <= | 400 | RPM | | | | | | | | | |
| | | | If Gear Ratio | >= | 3.82568 | | | | | | | | | | |
| | | | And Gear Ratio | <= | 4.22839 | | | | | | | >= | 1.5 | Fail Timer (Sec) | |
| | | | | | | | | | | | | >= | 5 | Counts | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | | |
| | | | | | | | High-Side Driver is Enabled | = | TRUE | Boolean | | | | | |
| | | | | | | | Throttle Position Signal Valid from ECM | = | TRUE | Boolean | | | | | |
| | | | | | | | Output Speed | >= | 67 | RPM | | | | | |
| | | | | | | | OR | | | | | | | | |
| | | | | | | | TPS | >= | 0.5005 | % | | | | | |
| | | | | | | | Range Shift State | = | Range Shift Completed | ENUM | | | | | |
| | | | | | | | Transmission Fluid Temperature | >= | -6.6563 | ℃ | | | | | |
| | | | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | | | |
| | | | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|
| | | | | | Default Gear Option is not present | = TRUE | | |
| | | | | | Disable Conditions: MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | |
| | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | |
| Mode 2 Multiplex Valve | P0756 | Shift Solenoid Valve B Stuck Off | Fail Case 1 Commanded Gear = 1st Locked; Gear Box Slip >= 400 RPM; Intrusive Shift to 2nd; Commanded Gear Previous = 1st Locked Gear; Gear Ratio <= 2.48218; Gear Ratio >= 2.24585; If the above parameters are true | | | | Please Refer to Table 5 in Supporting Documents >= Neutral Timer (Sec); >= 1 sec; >= 3 counts | One Trip |
| | | | | | Ignition Voltage Lo >= 8.59961 Volts; Ignition Voltage Hi <= 31.99902 Volts; Engine Speed Lo >= 400 RPM; Engine Speed Hi <= 7500 RPM; Engine Speed is within the allowable limits for >= 5 Sec; Output Speed >= 67 RPM; OR; TPS >= 0.5005 % | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Range Shift State | = | Range Shift Completed | ENUM | | | |
| | | | | | | | Transmission Fluid Temperature | >= | -6.6563 | ºC | | | |
| | | | | | | | High-Side Driver is Enabled | = | TRUE | Boolean | | | |
| | | | | | | | Throttle Position Signal Valid from ECM | = | TRUE | Boolean | | | |
| | | | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | |
| | | | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | |
| | | | | | | | Default Gear Option is not present | = | TRUE | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | |
| Variable Bleed Solenoid (VBS) | P0776 | Pressure Control (PC) Solenoid B Stuck Off  [C35R] | Fail Case 1 | | | | | | | | | | One Trip |
| | | | Case: Steady State 3rd Gear | | | | | | | | | | |
| | | | Commanded Gear | = | 3rd | Gear | | | | | | | |
| | | | Gearbox Slip | >= | 400 | RPM | | | | | Please Refer to Table 16 in Supporting Documents | >= | Neutral Timer (Sec) | |
| | | | Command 4th Gear once Output Shaft Speed | <= | 400 | RPM | | | | | | | |
| | | | If Gear Ratio | >= | 1.09436 | | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | And Gear Ratio | <= | 1.20959 | | | | | | | | | |
| | | | | | | | | | | | >= | 3 | Fail Timer (Sec) | |
| | | | It the above condiations are true, Increment 3rd gear fail counter | | | | | | | | >= | 3 | 3rd Gear Fail Counts | |
| | | | | | | | | | | | | | or | |
| | | | and C35R Fail counter | | | | | | | | >= | 14 | 3-5R Clutch Fail Counts | |
| | | | Fail Case 2 Case: Steady State 5th Gear | | | | | | | | | | | |
| | | | Commanded Gear | = | 5th | Gear | | | | | | | | |
| | | | Gearbox Slip | >= | 400 | Rpm | | | | | >= | Please Refer to Table 5 in Supporting Documents | Neutral Timer (Sec) | |
| | | | Intrusive Test: Command 6th Gear | | | | | | | | | | | |
| | | | If attained Gear=6th gear Time | >= | Please refer to Table 3 in supporting documents | Shift Time (Sec) | | | | | | | | |
| | | | It the above condiations are true, Increment 5th gear fail counter | | | | | | | | >= | 3 | 5th Gear Fail Counts | |
| | | | | | | | | | | | | | or | |
| | | | and C35R Fail counter | | | | | | | | >= | 14 | 3-5R Clutch Fail Counts | |
| | | | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | | |
| | | | | | | | inhibit RVT | = | FALSE | Boolean | | | | |
| | | | | | | | IMS fault pending indication | = | FALSE | Boolean | | | | |
| | | | | | | | TPS validity flag | = | TRUE | Boolean | | | | |
| | | | | | | | Hydraulic System Pressurized | = | TRUE | Boolean | | | | |
| | | | | | | | Minimum output speed for RVT | >= | 67 | RPM | | | | |
| | | | | | | | A OR B | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (A) Output speed enable | >= | 67 | RPM | | |
| | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Pct | | |
| | | | | | Common Enable Criteria | | | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | Throttle Position Signal valid | = | TRUE | Boolean | | |
| | | | | | HSD Enabled | = | TRUE | Boolean | | |
| | | | | | Transmission Fluid Temperature | >= | -6.6563 | ºC | | |
| | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | |
| | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | |
| | | | | | Default Gear Option is not present | = | TRUE | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: TCM: P0716, P0717, P0722, P0723, P182E<br><br>ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | |
| Variable Bleed Solenoid (VBS) | P0777 | Pressure Control (PC) Solinoid B Stuck On [C35R] (Steady State) | Fail Case 1<br><br>Case: Steady State 1st<br><br>Attained Gear slip | >= 400 RPM | | | | | | One Trip |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 4 in supporting documents | Enable Time (Sec) | | | | | | |
| | | | Intrusive test: (CBR1 clutch exhausted) | | | | | | | | | |
| | | | Gear Ratio | <= | 1.60864 | | | | | | | |
| | | | Gear Ratio | >= | 1.45544 | | | | | | | |
| | | | If the above parameters are true | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | | | >= | 2 | Fail Count in 1st Gear or | |
| | | | | | | | | | >= | 3 | Total Fail Counts | |
| | | | Fail Case 2  Case: Steady State 2nd gear | | | | | | | | | |
| | | | Max Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 22 in supporting documents | rpm/sec | | | | | | |
| | | | Min Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 23 in supporting documents | rpm/sec | | | | | | |
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 17 in supporting documents | Sec | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Intrusive test: (CB26 clutch exhausted) | | | | | | | |
| | | | Gear Ratio <= | 1.60864 | | | | | | |
| | | | Gear Ratio >= | 1.45544 | | | | | | |
| | | | If the above parameters are true | | | | | | | |
| | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | >= | 3 | Fail Count in 2nd Gear or | |
| | | | | | | | >= | 3 | Total Fail Counts | |
| | | | Fail Case 3   Case: Steady State 4th gear | | | | | | | |
| | | | Max Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 22 in supporting documents  rpm/sec | | | | | | |
| | | | Min Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 23 in supporting documents  rpm/sec | | | | | | |
| | | | If the Above is True for Time >= | Table Based Time Please Refer to Table 17 in supporting documents  Sec | | | | | | |
| | | | Intrusive test: (C1234 clutch exhausted) | | | | | | | |
| | | | Gear Ratio <= | 0.89465 | | | | | | |
| | | | Gear Ratio >= | 0.80945 | | | | | | |
| | | | If the above parameters are true | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | >= | 3 | Fail Count in 4th Gear or | |
| | | | | | | | >= | 3 | Total Fail Counts | |
| | | | Fail Case 4    Case: Steady State 6th gear | | | | | | | |
| | | | Max Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 22 in supporting documents rpm/sec | | | | | | |
| | | | Min Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 23 in supporting documents rpm/sec | | | | | | |
| | | | If the Above is True for Time >= | Table Based Time Please Refer to Table 17 in supporting documents Sec | | | | | | |
| | | | Intrusive test: (CB26 clutch exhausted) | | | | | | | |
| | | | Gear Ratio <= | 0.89465 | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | Gear Ratio >= | 0.80945 | | | >= | 3 | counts | |
| | | | If the above parameters are true | | | | | | | |
| | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | >= | 3 | Fail Count in 6th Gear or | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | >= | 3 | Total Fail Counts | |
| | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | | |
| | | | | | inhibit RVT | = | FALSE | Boolean | | | | |
| | | | | | IMS fault pending indication | = | FALSE | Boolean | | | | |
| | | | | | output speed | >= | 0 | RPM | | | | |
| | | | | | TPS validity flag | = | TRUE | Boolean | | | | |
| | | | | | HSD Enabled | = | TRUE | Boolean | | | | |
| | | | | | Hydraulic_System_Pressurized | = | TRUE | Boolean | | | | |
| | | | | | A OR B | | | | | | | |
| | | | | | (A) Output speed enable | >= | 67 | Nm | | | | |
| | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Nm | | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | if Attained Gear=1st FW Accelerator Pedal enable | >= | 5.0003 | Pct | | | | |
| | | | | | if Attained Gear=1st FW Engine Torque Enable | >= | 5 | Nm | | | | |
| | | | | | if Attained Gear=1st FW Engine Torque Enable | <= | 8191.88 | Nm | | | | |
| | | | | | Transmission Fluid Temperature | >= | -6.6563 | ºC | | | | |
| | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Disable Conditions: | | | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E<br><br>ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | |
| Variable Bleed Solenoid (VBS) | P0777 | Pressure Control (PC) Solenoid B StuckOn  [C35R] (Dymanic) | Primary Offgoing Clutch is exhausted (See Table 12 in Supporting Documents for Exhaust Delay Timers) | = | TRUE | Boolean | | | One Trip |
| | | | Primary Oncoming Clutch Pressure Command Status | = | Maximum pressurized | | | | |
| | | | Primary Offgoing Clutch Pressure Command Status | = | Clutch exhaust command | | | | |
| | | | Range Shift Status | ≠ | Initial Clutch Control | | | | |
| | | | Attained Gear Slip | <= | 40 | RPM | | | |
| | | | If the above conditions are true run appropriate Fail 1 Timers Below: | | | | | | |
| | | | fail timer 1 (3-1 shifting with Closed Throttle) | >= | 0.5 | Fail Time (Sec) | | | |
| | | | fail timer 1 (3-2 shifting with Throttle) | >= | 0.2998 | Fail Time (Sec) | | | |
| | | | fail timer 1 (3-2 shifting with Closed Throttle) | >= | 0.5 | Fail Time (Sec) | | | |
| | | | fail timer 1 (3-4 shifting with Throttle) | >= | 0.2998 | Fail Time (Sec) | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | fail timer 1 (3-4shifting with Closed Throttle) | >= | 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (3-5 shifting with Throttle) | >= | 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (3-5 shifting with Closed Throttle) | >= | 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-3 shifting with Throttle) | >= | 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-3 shifting with Closed Throttle) | >= | 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-4 shifting with Throttle) | >= | 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-4 shifting with Closed Throttle) | >= | 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-6 shifting with Throttle) | >= | 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-6 shifting with Closed Throttle) | >= | 0.5 | Fail Time (Sec) | | | | |
| | | | If Attained Gear Slip is Less than Above Cal Increment Fail Timers | | | | | | Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and sec Reference Supporting Table 15 for Fail Timer 2 | |
| | | | If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3rd gear fail counter | | | | | | >= | 3 | 3rd gear fail counts OR | |
| | | | 5th gear fail counter | | | | | | >= | 3 | 5th gear fail counts OR | |
| | | | Total fail counter | | | | | | >= | 5 | total fail counts | |
| | | | | | TUT Enable temperature | >= | -6.6563 | ℃ | | | | |
| | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | Command / Attained Gear | ≠ | 1st | Boolean | | | | |
| | | | | | High Side Driver ON | = | TRUE | Boolean | | | | |
| | | | | | output speed limit for TUT | >= | 100 | RPM | | | | |
| | | | | | input speed limit for TUT | >= | 150 | RPM | | | | |
| | | | | | PRNDL state defaulted | = | FALSE | Boolean | | | | |
| | | | | | IMS Fault Pending | = | FALSE | Boolean | | | | |
| | | | | | Service Fast Learn Mode | = | FALSE | Boolean | | | | |
| | | | | | HSD Enabled | = | TRUE | Boolean | | | | |
| | | | | | Default Gear Option is not present | = | TRUE | | | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | | | | |
| | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | |
| Variable Bleed Solenoid (VBS) | P0796 | Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State) | Fail Case 1 Case: Steady State 4th Gear | | | | | | | | | One Trip |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Gear slip | >= | 400 | RPM | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 5th gear | | | | | | | | | |
| | | | If attained Gear ≠5th for time | >= | Please refer to Table 3 in Supporting Documents | Shift Time (Sec) | | | | | | |
| | | | if the above conditions have been met | | | | | | | | | |
| | | | Increment 4th Gear Fail Counter | | | | | | >= | 3 | 4th Gear Fail Count OR | |
| | | | and C456 Fail Counters | | | | | | >= | 14 | C456 Fail Counts | |
| | Fail Case 2 | Case: Steady State 5th Gear | | | | | | | | | | |
| | | | Gear slip | >= | 400 | RPM | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 6th gear | | | | | | | | | |
| | | | If attained Gear ≠ 6th for time | >= | Please Refer to Table 3 in Supporting Documents | Shift Time (Sec) | | | | | | |
| | | | if the above conditions have been met | | | | | | | | | |
| | | | Increment 5th Gear Fail Counter | | | | | | >= | 3 | 5th Gear Fail Count OR | |
| | | | and C456 Fail Counters | | | | | | >= | 14 | C456 Fail Counts | |
| | Fail Case 3 | Case: Steady State 6th Gear | | | | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Gear slip | >= | 400 | RPM | | | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 5th gear | | | | | | | | | | | |
| | | | If attained Gear ≠ 5th for time | >= | Please refer to Table 3 in Supporting Documents | Shift Time (Sec) | | | | | | | | |
| | | | if the above conditions have been met | | | | | | | | | | | |
| | | | Increment 6th Gear Fail Counter and C456 Fail Counter | | | | | | | | >= | 3 | 6th Gear Fail Count OR | |
| | | | and C456 Fail Counter | | | | | | | | >= | 14 | C456 Fail Counts | |
| | | | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | | |
| | | | | | | | inhibit RVT | = | FALSE | Boolean | | | | |
| | | | | | | | IMS fault pending indication | = | FALSE | Boolean | | | | |
| | | | | | | | TPS validity flag | = | TRUE | Boolean | | | | |
| | | | | | | | Hydraulic System Pressurized | = | TRUE | Boolean | | | | |
| | | | | | | | Minimum output speed for RVT | >= | 67 | RPM | | | | |
| | | | | | | | A OR B | | | | | | | |
| | | | | | | | (A) Output speed enable | >= | 67 | RPM | | | | |
| | | | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Pct | | | | |
| | | | | | | | Common Enable Criteria | | | | | | | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | | Throttle Position Signal valid | = | TRUE | Boolean | | | | |

| Component/<br>System | Fault<br>Code | Monitor Strategy<br>Description | Malfunction<br>Criteria | Threshold<br>Value | Secondary<br>Malfunction | Enable<br>Conditions | Time<br>Required | Mil<br>Illum. |
|---|---|---|---|---|---|---|---|---|
| | | | | | HSD Enabled | = TRUE Boolean | | |
| | | | | | Transmission Fluid<br>Temperature | >= -6.6563 °C | | |
| | | | | | Input Speed Sensor fault | = FALSE Boolean | | |
| | | | | | OutputSpeed Sensor fault | = FALSE Boolean | | |
| | | | | | Default Gear Option is not<br>present | = TRUE | | |
| | | | | Disable<br>Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723,<br>P182E | | |
| | | | | | | ECM: P0101, P0102, P0103, P0106,<br>P0107, P0108, P0171, P0172, P0174,<br>P0175, P0201, P0202, P0203, P0204,<br>P0205, P0206, P0207, P0208, P0300,<br>P0301, P0302, P0303, P0304, P0305,<br>P0306, P0307, P0308, P0401, P042E | | |
| Variable Bleed Solenoid (VBS) | P0797 | Pressure Control (PC) Solenoid C<br>Stuck On [C456] (Steady State) | Fail Case 1<br><br>Case: Steady State 1st<br><br>Attained Gear slip<br><br>If the Above is True for Time<br><br><br>Intrusive test:<br>(CBR1 clutch exhausted)<br>Gear Ratio<br>Gear Ratio<br>If the above parameters are true | <br><br><br>>= 400 RPM<br>Table Based<br>Time Please<br>Refer to Table<br>4 in<br>supporting<br>documents<br><br><br><br><= 1.20959<br>>= 1.09436 | <br><br><br><br>Enable Time<br>(Sec) | | | One Trip |
| | | | | | | | >= 1.1 Fail Timer (Sec) | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | >= 2 Fail Count in 1st Gear or | |
| | | | | | | | >= 3 Total Fail Counts | |
| | | | Fail Case 2 Case Steady State 2nd | | | | | |
| | | | Max Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 22 in supporting documents rpm/sec | | | | |
| | | | Min Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 23 in supporting documents rpm/sec | | | | |
| | | | If the Above is True for Time >= | Table Based Time Please Refer to Table 17 in supporting documents Sec | | | | |
| | | | Intrusive test: (CB26 clutch exhausted) | | | | | |
| | | | Gear Ratio <= | 1.20959 | | | | |
| | | | Gear Ratio >= | 1.09436 | | | | |
| | | | If the above parameters are true | | | | | |
| | | | | | | | >= 1.1 Fail Timer (Sec) | |
| | | | | | | | >= 3 Fail Count in 2nd Gear or | |
| | | | | | | | >= 3 Total fail counts | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Fail Case 3 | Case Steady State 3rd | | | | | | | | | | |
| | | | Max Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 22 in supporting documents | rpm/sec | | | | | | | | |
| | | | Min Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 23 in supporting documents | rpm/sec | | | | | | | | |
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 17 in supporting documents | Sec | | | | | | | | |
| | | | Intrusive test: (C35R clutch exhausted) | | | | | | | | | | | |
| | | | Gear Ratio | <= | 1.20959 | | | | | | | | | |
| | | | Gear Ratio | >= | 1.09436 | | | | | | | | | |
| | | | If the above parameters are true | | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | | | | >= | 3 | Fail Count in 3rd Gear | |
| | | | | | | | | | | | OR | | |
| | | | | | | | | | | >= | 3 | Total Fail Counts | |
| | | | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | | |
| | | | | | | | inhibit RVT | = | FALSE | Boolean | | | | |
| | | | | | | | IMS fault pending indication | = | FALSE | Boolean | | | | |
| | | | | | | | output speed | >= | 0 | RPM | | | | |
| | | | | | | | TPS validity flag | = | TRUE | Boolean | | | | |
| | | | | | | | HSD Enabled | = | TRUE | Boolean | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Hydraulic_System_Pressurized | = | TRUE | Boolean | | |
| | | | | | A OR B | | | | | |
| | | | | | (A) Output speed enable | >= | 67 | Nm | | |
| | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Nm | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | if Attained Gear=1st FW Accelerator Pedal enable | >= | 5.0003 | Pct | | |
| | | | | | if Attained Gear=1st FW Engine Torque Enable | >= | 5 | Nm | | |
| | | | | | if Attained Gear=1st FW Engine Torque Enable | <= | 8191.88 | Nm | | |
| | | | | | Transmission Fluid Temperature | >= | -6.6563 | ºC | | |
| | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | |
| | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | |
| | | | | | Default Gear Option is not present | = | TRUE | | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | | | |
| | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|
| Variable Bleed Solenoid (VBS) | P0797 | Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic) | Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers) | = | TRUE Boolean | | | | One Trip |
| | | | Primary Oncoming Clutch Pressure Command Status | = | Maximum pressurized | | | | |
| | | | Primary Offgoing Clutch Pressure Command Status | = | Clutch exhaust command | | | | |
| | | | Range Shift Status | ≠ | Initial Clutch Control | | | | |
| | | | Attained Gear Slip | <= | 40 RPM | | | | |
| | | | If the above conditions are true increment appropriate Fail 1 Timers Below: | | | | | | |
| | | | fail timer 1 (4-1 shifting with throttle) | >= | 0.2998 Fail Time (Sec) | | | | |
| | | | fail timer 1 (4-1 shifting without throttle) | >= | 0.5 Fail Time (Sec) | | | | |
| | | | fail timer 1 (4-2 shifting with throttle) | >= | 0.2998 Fail Time (Sec) | | | | |
| | | | fail timer 1 (4-2 shifting without throttle) | >= | 0.5 Fail Time (Sec) | | | | |
| | | | fail timer 1 (4-3 shifting with throttle) | >= | 0.2998 Fail Time (Sec) | | | | |
| | | | fail timer 1 (4-3 shifting without throttle) | >= | 0.5 Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-3 shifting with throttle) | >= | 0.2998 Fail Time (Sec) | | | | |
| | | | fail timer 1 (5-3 shifting without throttle) | >= | 0.5 Fail Time (Sec) | | | | |
| | | | fail timer 1 (6-2 shifting with throttle) | >= | 0.2998 Fail Time (Sec) | | | | |
| | | | fail timer 1 (6-2 shifting without throttle) | >= | 0.5 Fail Time (Sec) | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|
| | | | If Attained Gear Slip is Less than Above Cal Increment Fail Timers | | | | Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and >= sec Reference Supporting Table 15 for Fail Timer 2 | |
| | | | If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter | | | | | |
| | | | 4th gear fail counter | | | | >= 3 Fail Counter From 4th Gear OR | |
| | | | 5th gear fail counter | | | | >= 3 Fail Counter From 5th Gear OR | |
| | | | 6th gear fail counter | | | | >= 3 Fail Counter From 6th Gear OR | |
| | | | Total fail counter | | | | >= 5 Total Fail Counter | |
| | | | | | TUT Enable temperature | >= -6.6563 ºC | | |
| | | | | | Input Speed Sensor fault | = FALSE Boolean | | |
| | | | | | Output Speed Sensor fault | = FALSE Boolean | | |
| | | | | | Command / Attained Gear | ≠ 1st Boolean | | |
| | | | | | High Side Driver ON | = TRUE Boolean | | |
| | | | | | output speed limit for TUT | >= 100 RPM | | |
| | | | | | input speed limit for TUT | >= 150 RPM | | |
| | | | | | PRNDL state defaulted | = FALSE Boolean | | |
| | | | | | IMS Fault Pending | = FALSE Boolean | | |
| | | | | | Service Fast Learn Mode | = FALSE Boolean | | |
| | | | | | HSD Enabled | = TRUE Boolean | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Disable Conditions: | | | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | | | |
| | | | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | |
| Tap Up Tap Down Switch (TUTD) | P0815 | Upshift Switch Circuit | Fail Case 1 | Tap Up Switch Stuck in the Up Position in Range 1 Enabled | = | 0 | Boolean | | | | | | Special No MIL |
| | | | | Tap Up Switch Stuck in the Up Position in Range 2 Enabled | = | 0 | Boolean | | | | | | |
| | | | | Tap Up Switch Stuck in the Up Position in Range 3 Enabled | = | 0 | Boolean | | | | | | |
| | | | | Tap Up Switch Stuck in the Up Position in Range 4 Enabled | = | 0 | Boolean | | | | | | |
| | | | | Tap Up Switch Stuck in the Up Position in Range 5 Enabled | = | 0 | Boolean | | | | | | |
| | | | | Tap Up Switch Stuck in the Up Position in Range 6 Enabled | = | 0 | Boolean | | | | | | |
| | | | | Tap Up Switch Stuck in the Up Position in Neutral Enabled | = | 1 | Boolean | | | | | | |
| | | | | Tap Up Switch Stuck in the Up Position in Park Enabled | = | 1 | Boolean | | | | | | |
| | | | | Tap Up Switch Stuck in the Up Position in Reverse Enabled | = | 0 | Boolean | | | | | | |
| | | | | Tap Up Switch ON | = | TRUE | Boolean | | | >= | 1 | Fail Time (Sec) | |
| | | | Fail Case 2 | Tap Up Switch Stuck in the Up Position in Range 1 Enabled | = | 1 | Boolean | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | | Threshold Value | Secondary Malfunction | | | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Tap Up Switch Stuck in the Up Position in Range 2 Enabled | = | 1 | Boolean | | | | | | | | |
| | | | Tap Up Switch Stuck in the Up Position in Range 3 Enabled | = | 1 | Boolean | | | | | | | | |
| | | | Tap Up Switch Stuck in the Up Position in Range 4 Enabled | = | 1 | Boolean | | | | | | | | |
| | | | Tap Up Switch Stuck in the Up Position in Range 5 Enabled | = | 1 | Boolean | | | | | | | | |
| | | | Tap Up Switch Stuck in the Up Position in Range 6 Enabled | = | 1 | Boolean | | | | | | | | |
| | | | Tap Up Switch Stuck in the Up Position in Neutral Enabled | = | 0 | Boolean | | | | | | | | |
| | | | Tap Up Switch Stuck in the Up Position in Park Enabled | = | 0 | Boolean | | | | | | | | |
| | | | Tap Up Switch Stuck in the Up Position in Reverse Enabled | = | 0 | Boolean | | | | | | | | |
| | | | Tap Up Switch ON | = | TRUE | Boolean | | | | | | | | |
| | | | NOTE: Both Failcase1 and Failcase 2 Must Be Met | | | | | | | | >= | 600 | Fail Time (Sec) | |
| | | | | | | | Time Since Last Range Change | >= | 1 | Enable Time (Sec) | | | | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | | P0815 Status is | ≠ | Test Failed This Key On or Fault Active | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None | | | |
| Tap Up Tap Down Switch (TUTD) | P0816 | Downshift Switch Circuit | Fail Case 1 Tap Down Switch Stuck in the Down Position in Range 1 Enabled | = | 0 | Boolean | | | | | Special No MIL |
| | | | Tap Down Switch Stuck in the Down Position in Range 2 Enabled | = | 0 | Boolean | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 3 Enabled | = | 0 | Boolean | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 4 Enabled | = | 0 | Boolean | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 5 Enabled | = | 0 | Boolean | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 6 Enabled | = | 0 | Boolean | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range Neutral Enabled | = | 1 | Boolean | | | | | |

# 14 OBDG11 TCM Summary Tables

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Tap Down Switch Stuck in the Down Position in Range Park Enabled | = | 1 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range Reverse Enabled | = | 0 | Boolean | | | | | | |
| | | | Tap Down Switch ON | = | TRUE | Boolean | | | >= | 1 | sec | |
| | | | Fail Case 2 | | | | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 1 Enabled | = | 1 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 2 Enabled | = | 1 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 3 Enabled | = | 1 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 4 Enabled | = | 1 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 5 Enabled | = | 1 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Range 6 Enabled | = | 1 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Neutral Enabled | = | 0 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Park Enabled | = | 0 | Boolean | | | | | | |
| | | | Tap Down Switch Stuck in the Down Position in Reverse Enabled | = | 0 | Boolean | | | | | | |
| | | | Tap Down Switch ON | = | TRUE | Boolean | | | | | | |
| | | | NOTE: Both Failcase1 and Failcase 2 Must Be Met | | | | | | >= | 600 | sec | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Time Since Last Range Change | >= | 1 | Enable Time (Sec) | | | | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | | P0816 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None | | | | | | |
| Tap Up Tap Down Switch (TUTD) | P0826 | Up and Down Shift Switch Circuit | TUTD Circuit Reads Invalid Voltage | = | TRUE | Boolean | | | | | >= | 60 | Fail Time (Sec) | Special No MIL |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | P0826 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P1761 | | | | | |
| | | | | | | | | ECM: None | | | | | |
| Variable Bleed Solenoid (VBS) | P0961 | Pressure Control (PC) Solenoid A Control Circuit Rationality Test (Line Pressure VBS) | The HWIO reports an invalid voltage (out of range) error flag | = | TRUE    Boolean | | | | | >= | 4.4 | Fail Time (Sec) | Two Trips |
| | | | | | | | | | | out of | 5 | Sample Time (Sec) | |
| | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: None | | | | | |
| | | | | | | | | ECM: None | | | | | |
| Variable Bleed Solenoid (VBS) | P0962 | Pressure Control (PC) Solenoid A Control Circuit Low Voltage (Line Pressure VBS) | The HWIO reports a low voltage (ground short) error flag | = | TRUE    Boolean | | | | | >= | 1.5 | Fail Time (Sec) | One Trip |
| | | | | | | | | | | out of | 1.875 | Sample Time (Sec) | |
| | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | **Disable Conditions:** | **MIL not Illuminated for DTC's:** TCM: None | | | | | | | |
| | | | | | | | ECM: None | | | | | | | |
| Variable Bleed Solenoid (VBS) | P0963 | Pressure Control (PC) Solenoid A Control Circuit High Voltage (Line Pressure VBS) | The HWIO reports a high voltage (open or power short) error flag | = | TRUE | Boolean | | | | | >= | 4.4 | Fail Time (Sec) | Two Trips |
| | | | | | | | | | | | out of | 5 | Sample Time (Sec) | |
| | | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | **Disable Conditions:** | **MIL not Illuminated for DTC's:** TCM: None | | | | | | | |
| | | | | | | | ECM: None | | | | | | | |
| Variable Bleed Solenoid (VBS) | P0966 | Pressure Control (PC) Solenoid B Control Circuit Low Voltage (C35R VBS) | The HWIO reports a low voltage (ground short) error flag | = | TRUE | Boolean | | | | | >= | 0.3 | Fail Time (Sec) | One Trip |
| | | | | | | | | | | | out of | 0.375 | Sample Time (Sec) | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | P0966 Status is not | = | Test Failed This Key On or Fault Active | | | | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | ECM: None | | | | | | |
| Variable Bleed Solenoid (VBS) | P0967 | Pressure Control (PC) Solenoid B Control Circuit High Voltage (C35R VBS) | The HWIO reports a high voltage (open or power short) error flag | = TRUE Boolean | | | | | >= | 0.3 | Fail Time (Sec) | One Trip |
| | | | | | | | | | out of | 0.375 | Sample Time (Sec) | |
| | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | P0967 Status is not | = | Test Failed This Key On or Fault Active | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Disable Conditions: | | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | ECM: None | | | | | | |
| Variable Bleed Solenoid (VBS) | P0970 | Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS) | The HWIO reports a low voltage (ground short) error flag | = | TRUE Boolean | | | | | >= | 0.3 | Fail Time (Sec) | One Trip |
| | | | | | | | | | | out of | 0.375 | Sample Time (Sec) | |
| | | | | | | P0970 Status is not | | = | Test Failed This Key On or Fault Active | | | | |
| | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | Disable Conditions: | | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | ECM: None | | | | | | |
| Variable Bleed Solenoid (VBS) | P0971 | Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS) | The HWIO reports a high voltage (open or power short) error flag | = | TRUE Boolean | | | | | >= | 0.3 | Fail Time (Sec) | One Trip |
| | | | | | | | | | | out of | 0.375 | Sample Time (Sec) | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P0971 Status is not | = | Test Failed This Key On or Fault Active | | | | | | |
| | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | | |
| | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | | |
| | | | | | Engine Speed | >= | 400 | RPM | | | | | |
| | | | | | Engine Speed | <= | 7500 | RPM | | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: None | | | | | | | |
| | | | | | | ECM: None | | | | | | | |
| Shift Solinoid | P0973 | Shift Solenoid A Control Circuit Low (Mode 2 Solenoid) | The HWIO reports a low voltage (ground short) error flag | = TRUE Boolean | | | | | | >= | 1.2 | Fail Time (Sec) | One Trip |
| | | | | | | | | | | out of | 1.5 | Sample Time (Sec) | |
| | | | | | P0973 Status is not | = | Test Failed This Key On or Fault Active | | | | | | |
| | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | | |
| | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | | |
| | | | | | Engine Speed | >= | 400 | RPM | | | | | |
| | | | | | Engine Speed | <= | 7500 | RPM | | | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Disable Conditions: | | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | ECM: None | | | | | | |
| Shift Solinoid | P0974 | Shift Solenoid A Control Circuit High (Mode 2 Solenoid) | The HWIO reports a high voltage (open or power short) error flag | = | TRUE Boolean | | | | | >= | 1.2 | Fail Time (Sec) | Two Trips |
| | | | | | | | | | | out of | 1.5 | Sample Time (Sec) | |
| | | | | | | P0974 Status is not | = | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | Disable Conditions: | | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | ECM: None | | | | | | |
| Mode 3 Multiplex Valve | P0977 | Shift Solenoid B Control Circuit High (Mode 3 Solenoid) | The HWIO reports a high voltage (open or power short) error flag | = | TRUE Boolean | | | | | >= | 1.2 | Sec | One Trip |
| | | | | | | | | | | out of | 1.5 | Sec | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|
| | | | | | P0977 Status is not | = | Test Failed This Key On or Fault Active | | |
| | | | | | Ignition Voltage | >= | 8.59961 Volts | | |
| | | | | | Ignition Voltage | <= | 31.99902 Volts | | |
| | | | | | Engine Speed | >= | 400 RPM | | |
| | | | | | Engine Speed | <= | 7500 RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 Sec | | |
| | | | | | **Disable Conditions:** MIL not Illuminated for DTC's: TCM: None ECM: None | | | | |
| Tap Up Tap Down Switch (TUTD) | P1761 | Tap Up and Down switch signal circuit (rolling count) | Rolling count value received from BCM does not match expected value | = TRUE Boolean | | | >= 3 Fail Counter > 10 Sample Timer (Sec) | Special No MIL |
| | | | | | Tap Up Tap Down Message Health | = | TRUE Boolean | | |
| | | | | | Engine Speed Lo | >= | 400 RPM | | |
| | | | | | Engine Speed Hi | <= | 7500 RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 Sec | | |
| | | | | | **Disable Conditions:** MIL not Illuminated for DTC's: TCM: None ECM: None | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Internal Mode Switch (IMS) | P182E | Internal Mode Switch - Invalid Range | Fail Case 1 | | | | | | | | | One Trip |
| | | | Current range | = | Transition 1 (bit state 1110) | Range | | | | | | |
| | | | Previous range | ≠ | CeTRGR_e_P RNDL_Drive6 | Range | | | | | | |
| | | | Previous range | ≠ | CeTRGR_e_P RNDL_Drive4 | Range | | | | | | |
| | | | Range Shift State | = | Range Shift Completed | ENUM | | | | | | |
| | | | Absolute Attained Gear Slip | <= | 50 | rpm | | | | | | |
| | | | Attained Gear | <= | Sixth | | | | | | | |
| | | | Attained Gear | >= | First | | | | | | | |
| | | | Throttle Position Available | = | TRUE | | | | | | | |
| | | | Throttle Position | >= | 8.0002 | pct | | | | | | |
| | | | Output Speed | >= | 200 | rpm | | | | | | |
| | | | Engine Torque | >= | 50 | Nm | | | | | | |
| | | | Engine Torque | <= | 8191.75 | Nm | | | | | | |
| | | | If the above conditions are met then Increment Fail Timer | | | | | | >= | 1 | Fail Seconds | |
| | | | If Fail Timer has Expired then Increment Fail Counter | | | | | | >= | 5 | Fail Counts | |
| | | | Fail Case 2  Output Speed | <= | 70 | rpm | | | | | | |
| | | | The following PRNDL sequence events occur in this exact order: | | | | | | | | | |
| | | | PRNDL state | = | Drive 6 (bit state 0110) | Range | | | | | | |
| | | | PRNDL state = Drive 6 for | >= | 1 | Sec | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PRNDL state = | Transition 8 (bit state 0111) | Range | | | | | | | | |
| | | | PRNDL state = | Drive 6 (bit state 0110) | Range | | | | | | | | |
| | | | PRNDL state = | Transition 1 (bit state 1110) | Range | | | | | | | | |
| | | | Above sequencing occurs in <= | 1 | Sec | | | | | | | | |
| | | | Neutral Idle Mode = | Inactive | | | | | | | | | |
| | | | If all conditions above are met Increment delay Timer | | | | | | | | | | |
| | | | If the below two conditions are met Increment Fail Timer | | | | | | | >= | 3 | Fail Seconds | |
| | | | delay timer >= | 1 | Sec | | | | | | | | |
| | | | Input Speed >= | 400 | Sec | | | | | | | | |
| | | | If Fail Timer has Expired then Increment Fail Counter | | | | | | | >= | 2 | Fail Counts | |
| | | | Fail Case 3 | | | | | | | | | | |
| | | | Current range = | Transition 13 (bit state 0010) | Range | Previous range | ≠ | CeTRGR_ e_PRNDL_ Drive1 | | | | | |
| | | | Engine Torque >= | -8192 | Nm | Previous range | ≠ | CeTRGR_ e_PRNDL_ Drive2 | | | | | |
| | | | Engine Torque <= | 8191.75 | Nm | IMS is 7 position configuration | = | 1 | Boolean | | | | |
| | | | If the above conditions are met then, Increment Fail Timer | | | If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current | | | | >= | 0.225 | Seconds | |
| | | | If Fail Timer has Expired then Increment Fail Counter | | | | | | | >= | 15 | Fail Counts | |
| | | | Fail Case 4 | | | | | | | | | | |
| | | | Current range = | Transition 8 (bit state 0111) | Range | Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8 | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Inhibit bit (see definition) | = | FALSE | | Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park) | | | | | |
| | | | Steady State Engine Torque | >= | 100 | Nm | | | | | | |
| | | | Steady State Engine Torque | <= | 8191.75 | Nm | | | | | | |
| | | | If the above conditions are met then Increment Fail Timer | | | | | | >= | 0.225 | Seconds | |
| | | | If the above Condtions have been met, Increment Fail Counter | | | | | | >= | 15 | Fail Counts | |
| | | | Fail Case 5 Throttle Position Available | = | TRUE | Boolean | | | | | | |
| | | | The following PRNDL sequence events occur in this exact order: | | | | | | | | | |
| | | | PRNDL State | = | Reverse (bit state 1100) | Range | | | | | | |
| | | | PRNDL State | = | Transition 11 (bit state 0100) | Range | | | | | | |
| | | | PRNDL State | = | Neutral (bit state 0101) | Range | | | | | | |
| | | | PRNDL State | = | Transition 11 (bit state 0100) | Range | | | | | | |
| | | | Above sequencing occurs in | <= | 1 | Sec | | | | | | |
| | | | Then delay timer increments | | | | | | | | | |
| | | | Delay timer | >= | 5 | sec | | | | | | |
| | | | Range Shift State | = | Range Shift Complete | | | | | | | |
| | | | Absolute Attained Gear Slip | <= | 50 | rpm | | | | | | |
| | | | Attained Gear | <= | Sixth | | | | | | | |
| | | | Attained Gear | >= | First | | | | | | | |
| | | | Throttle Position | >= | 8.0002 | pct | | | | | | |
| | | | Output Speed | >= | 200 | rpm | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If the above conditions are met Increment Fail Timer | | | | | >= | 20 | Seconds | |
| | | | Fail Case 6 | | A Open Circuit Definition (flag set false if the following conditions are met): | | | | | | |
| | | | Current range = | Illegal (bit state 0000 or 1000 or 0001) | | | | | | | |
| | | | and | | Current Range | ≠ | Transition 11 (bit state 0100) | | | | |
| | | | A Open Circuit (See Definition) = | FALSE Boolean | or | | | | | | |
| | | | | | Last positive state | ≠ | Neutral (bit state 0101) | | | | |
| | | | | | or | | | | | | |
| | | | | | Previous transition state | ≠ | Transition 8 (bit state 0111) | | | | |
| | | | | | Fail case 5 delay timer | = | 0 sec | | | | |
| | | | If the above Condtions are met then, Increment Fail timer | | | | | >= | 6.25 | Seconds | |
| | | | Fail Case 7 | | | | | | | | |
| | | | Current PRNDL State = | PRNDL circuit ABCP = 1101 Range | | | | | | | |
| | | | and | | | | | | | | |
| | | | Previous PRNDL state = | PRNDL circuit ABCP =1111 Range | | | | | | | |
| | | | Input Speed >= | 150 RPM | | | | | | | |
| | | | Reverse Trans Ratio <= | 2.84583 ratio | | | | | | | |
| | | | Reverse Trans Ratio >= | 3.27417 ratio | | | | | | | |
| | | | If the above Condtions are met then, Increment Fail timer | | | | | >= | 6.25 | Seconds | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P182E will report test fail when any of the above 7 fail cases are met | | | | | | | | | | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | |
| | | | | | | | Engine Torque Signal Valid | = | TRUE | Boolean | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P07C0, P07BF, P077C, P077D | | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | |
| Internal Mode Switch (IMS) | P1915 | Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start | PRNDL State is | ≠ | Park or Neutral | Enumeration | | | | | | | One Trip |
| | | | The following events must occur Sequentially | | | | | | | | | | |
| | | | Initial Engine speed | <= | 50 | RPM | | | | | >= 0.25 | Enable Time (Sec) | |
| | | | Then Engine Speed Between Following Cals | | | | | | | | | | |
| | | | Engine Speed Lo Hist | >= | 50 | RPM | | | | | | | |
| | | | Engine Speed Hi Hist | <= | 480 | RPM | | | | | >= 0.06875 | Enable Time (Sec) | |
| | | | Then | | | | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Final Engine Speed | >= | 525 | RPM | | | | | | | | |
| | | | Final Transmission Input Speed | >= | 100 | RPM | | | | | >= | 1.25 | Fail Time (Sec) | |
| | | | | | | | DTC has Ran this Key Cycle? | = | FALSE | Boolean | | | | |
| | | | | | | | Ignition Voltage Lo | >= | 6 | V | | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | V | | | | |
| | | | | | | | Ignition Voltage Hyst High (enables above this value) | >= | 5 | V | | | | |
| | | | | | | | Ignition Voltage Hyst Low (disabled below this value) | <= | 2 | V | | | | |
| | | | | | | | Transmission Output Speed | <= | 90 | rpm | | | | |
| | | | | | | | P1915 Status is | ≠ | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0722, P0723 | | | | | | |
| | | | | | | | | ECM: None | | | | | | |
| Transmission Control Module (TCM) | P2534 | Ignition Switch Run/Start Position Circuit Low | TCM Run crank active (based on voltage thresholds below) | = | FALSE | Boolean | | | | | | | | One Trip |
| | | | Ignition Voltage High Hyst (run crank goes true when above this value) | | 5 | Volts | | | | | >= | 280 | Fail Counts (25ms loop) | |
| | | | Ignition Voltage Low Hyst (run crank goes false when below this value) | | 2 | Volts | | | | | Out of | 280 | Sample Counts (25ms loop) | |
| | | | | | | | ECM run/crank active status available | = | TRUE | Boolean | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ECM run/crank active status | = | TRUE | Boolean | | | | |
| | | | | Disable Conditions: | | | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | | ECM: None | | | | | | |
| Transmission Control Module (TCM) | P2535 | Ignition Switch Run/Start Position Circuit High | TCM Run crank active (based on voltage thresholds below) | = | TRUE | Boolean | | | | | | | | One Trip |
| | | | Ignition Voltage High Hyst (run crank goes true when above this value) | | 5 | Volts | | | | | >= | 280 | Fail Counts (25ms loop) | |
| | | | Ignition Voltage Low Hyst (run crank goes false when below this value) | | 2 | Volts | | | | | Out of | 280 | Sample Counts (25ms loop) | |
| | | | | | | | ECM run/crank active status available | = | TRUE | Boolean | | | | |
| | | | | | | | ECM run/crank active status | = | FALSE | Boolean | | | | |
| | | | | Disable Conditions: | | | MIL not Illuminated for DTC's: | TCM: None | | | | | | |
| | | | | | | | | ECM: None | | | | | | |
| Variable Bleed Solenoid (VBS) | P2714 | Pressure Control (PC) Solenoid D Stuck Off [CB26] | Fail Case 1 | | | | | | | | | | | One Trip |
| | | | Case: Steady State 2nd Gear | | | | | | | | | | | |
| | | | Gear slip | >= | 400 | RPM | | | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 3rd gear | | | | | | | | | | | |
| | | | If attained Gear = 3rd for Time | >= | Table Based Time Please see Table 2 in Supporting Documents | Enable Time (Sec) | | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If Above Conditions have been met | | | | | | | | | | | | | |
| | | | Increment 2nd gear fail count | | | | | | | | | | >= | 3 | 2nd Gear Fail Count | |
| | | | | | | | | | | | | | | | or | |
| | | | and CB26 Fail Count | | | | | | | | | | >= | 14 | CB26 Fail Count | |
| | | | Fail Case 2 | Case: Steady State 6th Gear | | | | | | | | | | | | |
| | | | Gear slip | >= | 400 | | RPM | | | | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 5th gear | | | | | | | | | | | | | |
| | | | If attained Gear = 5th For Time | >= | Table Based Time Please see Table 2 in Supporting Documents | Enable Time (Sec) | | | | | | | | | | |
| | | | If Above Conditions have been met, Increment 5th gear fail counter | | | | | | | | | | >= | 3 | 5th Gear Fail Count | |
| | | | | | | | | | | | | | | | or | |
| | | | and CB26 Fail Count | | | | | | | | | | >= | 14 | CB26 Fail Count | |
| | | | | | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | | |
| | | | | | | | | | inhibit RVT | = | FALSE | Boolean | | | | |
| | | | | | | | | | IMS fault pending indication | = | FALSE | Boolean | | | | |
| | | | | | | | | | TPS validity flag | = | TRUE | Boolean | | | | |
| | | | | | | | | | Hydraulic System Pressurized | = | TRUE | Boolean | | | | |
| | | | | | | | | | Minimum output speed for RVT | >= | 0 | RPM | | | | |
| | | | | | | | | | A OR B | | | | | | | |
| | | | | | | | | | (A) Output speed enable | >= | 67 | RPM | | | | |
| | | | | | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Pct | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Common Enable Criteria | | | | | | |
| | | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | |
| | | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | |
| | | | | | | | Engine Speed Lo | >= | 400 | RPM | | | |
| | | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | |
| | | | | | | | Throttle Position Signal valid | = | TRUE | Boolean | | | |
| | | | | | | | HSD Enabled | = | TRUE | Boolean | | | |
| | | | | | | | Transmission Fluid Temperature | >= | -6.6563 | ºC | | | |
| | | | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | |
| | | | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | |
| | | | | | | | Default Gear Option is not present | = | TRUE | | | | |
| | | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | |
| Variable Bleed Solenoid (VBS) | P2715 | Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic) | Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers) | = | TRUE | Boolean | | | | | | | One Trip |
| | | | Primary Oncoming Clutch Pressure Command Status | = | Maximum pressurized | | | | | | | | |
| | | | Primary Offgoing Clutch Pressure Command Status | = | Clutch exhaust command | | | | | | | | |

# 14 OBDG11 TCM Summary Tables

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Range Shift Status | ≠ | Initial Clutch Control | | | | |
| | | | Attained Gear Slip | <= 40 | RPM | | | | |
| | | | If above coditons are true, increment appropriate Fail 1 Timers Below: | | | | | | |
| | | | fail timer 1 (2-1 shifting with throttle) | >= 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (2-1 shifting without throttle) | >= 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (2-3 shifting with throttle) | >= 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (2-3 shifting without throttle) | >= 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (2-4 shifting with throttle) | >= 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (2-4 shifting without throttle) | >= 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (6-4 shifting with throttle) | >= 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (6-4 shifting without throttle) | >= 0.5 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (6-5 shifting with throttle) | >= 0.2998 | Fail Time (Sec) | | | | |
| | | | fail timer 1 (6-5 shifting without throttle) | >= 0.5 | Fail Time (Sec) | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If Attained Gear Slip is Less than Above Cal Increment Fail Timers | | | | | | >= | Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and Reference Supporting Table 15 for Fail Timer 2 | sec | |
| | | | If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter | | | | | | | | | |
| | | | 2nd gear fail counter | | | | | | >= | 3 | Fail Counter From 2nd Gear | |
| | | | 6th gear fail counter | | | | | | >= | 3 | OR Fail Counter From 6th Gear OR | |
| | | | total fail counter | | | | | | >= | 5 | Total Fail Counter | |
| | | | | | TUT Enable temperature | >= | -6.6563 | ºC | | | | |
| | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | Command / Attained Gear | ≠ | 1st | Boolean | | | | |
| | | | | | High Side Driver ON | = | TRUE | Boolean | | | | |
| | | | | | output speed limit for TUT | >= | 100 | RPM | | | | |
| | | | | | input speed limit for TUT | >= | 150 | RPM | | | | |
| | | | | | PRNDL state defaulted | = | FALSE | Boolean | | | | |
| | | | | | IMS Fault Pending | = | FALSE | Boolean | | | | |
| | | | | | Service Fast Learn Mode | = | FALSE | Boolean | | | | |
| | | | | | HSD Enabled | = | TRUE | Boolean | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Disable Conditions: | | | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | | | |
| | | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | |
| Variable Bleed Solenoid (VBS) | P2715 | Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State) | Fail Case 1 | Case: Steady State 1st | | | | | | | | One Trip |
| | | | Attained Gear slip | >= | 400 | RPM | | | | | | |
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 4 in supporting documents | Enable Time (Sec) | | | | | | |
| | | | Intrusive test: (CBR1 clutch exhausted) | | | | | | | | | |
| | | | Gear Ratio | <= | 2.48218 | | | | | | | |
| | | | Gear Ratio | >= | 2.24585 | | | | | | | |
| | | | If the above parameters are true | | | | | | | | | |
| | | | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | | | >= | 5 | Fail Count in 1st Gear | |
| | | | | | | | | | | | or | |
| | | | | | | | | | >= | 5 | Total Fail Counts | |
| | | | Fail Case 2 | Case: Steady State 3rd Gear | | | | | | | | |

# 14 OBDG11 TCM Summary Tables

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Max Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 22 in supporting documents rpm/sec | | | | | | |
| | | | Min Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 23 in supporting documents rpm/sec | | | | | | |
| | | | If the Above is True for Time >= | Table Based Time Please Refer to Table 17 in supporting documents Sec | | | | | | |
| | | | Intrusive test: (C35R clutch exhausted) | | | | | | | |
| | | | Gear Ratio <= | 2.48218 | | | | | | |
| | | | Gear Ratio >= | 2.24585 | | | | | | |
| | | | If the above parameters are true | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | >= | 3 | Fail Count in 3rd Gear | |
| | | | | | | | | | or | |
| | | | | | | | >= | 5 | Total Fail Counts | |
| | | | Fail Case 3   Case: Steady State 4rd Gear | | | | | | | |
| | | | Max Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 22 in supporting documents rpm/sec | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 23 in supporting documents | rpm/sec | | | | | | |
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 17 in supporting documents | Sec | | | | | | |
| | | | Intrusive test: (C1234 clutch exhausted) | | | | | | | | | |
| | | | Gear Ratio | <= | 0.70032 | | | | | | | |
| | | | Gear Ratio | >= | 0.63367 | | | | | | | |
| | | | If the above parameters are true | | | | | | | | | |
| | | | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | | | >= | 3 | Fail Count in 4th Gear | |
| | | | | | | | | | | | or | |
| | | | | | | | | | >= | 5 | Total Fail Counts | |
| | | | Fail Case 4     Case: Steady State 5th Gear | | | | | | | | | |
| | | | Max Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 22 in supporting documents | rpm/sec | | | | | | |
| | | | Min Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 23 in supporting documents | rpm/sec | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 17 in supporting documents | Sec | | | | | | |
| | | | | | | | | | | | | |
| | | | Intrusive test: (C35R clutch exhausted) | | | | | | | | | |
| | | | Gear Ratio | <= | 0.70032 | | | | | | | |
| | | | Gear Ratio | >= | 0.63367 | | | | | | | |
| | | | If the above parameters are true | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | | | | >= | 3 | Fail Count in 5th Gear |
| | | | | | | | | | | | | or |
| | | | | | | | | | | >= | 5 | Total Fail Counts |
| | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | |
| | | | | | inhibit RVT | = | FALSE | Boolean | | | |
| | | | | | IMS fault pending indication | = | FALSE | Boolean | | | |
| | | | | | output speed | >= | 0 | RPM | | | |
| | | | | | TPS validity flag | = | TRUE | Boolean | | | |
| | | | | | HSD Enabled | = | TRUE | Boolean | | | |
| | | | | | Hydraulic_System_Pressurized | = | TRUE | Boolean | | | |
| | | | | | A OR B | | | | | | |
| | | | | | (A) Output speed enable | >= | 67 | Nm | | | |
| | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Nm | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | if Attained Gear=1st FW Accelerator Pedal enable | >= | 5.0003 | Pct | | | | |
| | | | | | | | if Attained Gear=1st FW Engine Torque Enable | >= | 5 | Nm | | | | |
| | | | | | | | if Attained Gear=1st FW Engine Torque Enable | <= | 8191.88 | Nm | | | | |
| | | | | | | | Transmission Fluid Temperature | >= | -6.6563 | ºC | | | | |
| | | | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | | | Default Gear Option is not present | = | TRUE | | | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E  ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | | | |
| Variable Bleed Solenoid (VBS) | P2720 | Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS) | The HWIO reports a low voltage (ground short) error flag | = | TRUE | Boolean | | | | | >= out of | 0.3 0.375 | Fail Time (Sec) Sample Time (Sec) | One Trip |
| | | | | | | | P2770 Status is not | = | Test Failed This Key On or Fault Active | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | | TCM: None | | | | | | | |
| | | | | | | | ECM: None | | | | | | | |
| Variable Bleed Solenoid (VBS) | P2721 | Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS) | The HWIO reports a high voltage (open or power short) error flag | = | TRUE | Boolean | | | | | >= | 0.3 | Fail Time (Sec) | One Trip |
| | | | | | | | | | | | out of | 0.375 | Sample Time (Sec) | |
| | | | | | | | P2721 Status is not | = | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | | Ignition Voltage | >= | 8.59961 | Volts | | | | |
| | | | | | | | Ignition Voltage | <= | 31.99902 | Volts | | | | |
| | | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | | TCM: None | | | | | | | |
| | | | | | | | ECM: None | | | | | | | |
| Variable Bleed Solenoid (VBS) | P2723 | Pressure Control (PC) Solenoid E Stuck Off | Fail Case 1 | Case: Steady State 1st Gear | | | | | | | | | | One Trip |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Gear slip | >= | 400 | RPM | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 2nd gear | | | | | | | | | |
| | | | If attained Gear ≠ 2nd for Time | >= | Please refer to Table 3 in Supporting Documents | Shift Time (Sec) | | | | | | |
| | | | If Above Conditions have been met, Increment 1st gear fail counter | | | | | | >= | 3 | 1st Gear Fail Count | |
| | | | | | | | | | | | or | |
| | | | and C1234 fail counter | | | | | | >= | 14 | C1234 Clutch Fail Count | |
| | | Fail Case 2    Case: Steady State 2nd Gear | | | | | | | | | | |
| | | | Gear slip | >= | 400 | RPM | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 3rd gear | | | | | | | | | |
| | | | If attained Gear ≠ 3rd for Time | >= | Please refer to Table 3 in Supporting Documents | Shift Time (Sec) | | | | | | |
| | | | If Above Conditions have been met, Increment 2nd gear fail counter | | | | | | >= | 3 | 2nd Gear Fail Count | |
| | | | | | | | | | | | or | |
| | | | and C1234 fail counter | | | | | | >= | 14 | C1234 Clutch Fail Count | |
| | | Fail Case 3    Case: Steady State 3rd Gear | | | | | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Gear slip | >= | 400 | RPM | | | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 4th gear | | | | | | | | | | | |
| | | | If attained Gear ≠ 4th for time | >= | Please refer to Table 3 in Supporting Documents | Shift Time (Sec) | | | | | | | | |
| | | | If Above Conditions have been met, Increment 3rd gear fail counter | | | | | | | | >= | 3 | 3rd Gear Fail Count | |
| | | | | | | | | | | | | | or | |
| | | | and C1234 fail counter | | | | | | | | >= | 14 | C1234 Clutch Fail Count | |
| | | Fail Case 4    Case: Steady State 4th Gear | | | | | | | | | | | | |
| | | | Gear slip | >= | 400 | RPM | | | | | >= | Please See Table 5 For Neutral Time Cal | Neutral Timer (Sec) | |
| | | | Intrusive test: commanded 5th gear | | | | | | | | | | | |
| | | | If attained Gear = 5th For Time | >= | Please refer to Table 3 in Supporting Documents | Shift Time (Sec) | | | | | | | | |
| | | | If Above Conditions have been met, Increment 4th gear fail counter | | | | | | | | >= | 3 | 4th Gear Fail Count | |
| | | | | | | | | | | | | | or | |
| | | | and C1234 fail counter | | | | | | | | >= | 14 | C1234 Clutch Fail Count | |
| | | | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | | |
| | | | | | | | inhibit RVT | = | FALSE | Boolean | | | | |
| | | | | | | | IMS fault pending indication | = | FALSE | Boolean | | | | |
| | | | | | | | TPS validity flag | = | TRUE | Boolean | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Hydraulic System Pressurized | = | TRUE | Boolean | | |
| | | | | | Minimum output speed for RVT | >= | 0 | RPM | | |
| | | | | | A OR B | | | | | |
| | | | | | (A) Output speed enable | >= | 67 | RPM | | |
| | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Pct | | |
| | | | | | Common Enable Criteria | | | | | |
| | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | |
| | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | |
| | | | | | Engine Speed Lo | >= | 400 | RPM | | |
| | | | | | Engine Speed Hi | <= | 7500 | RPM | | |
| | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | |
| | | | | | Throttle Position Signal valid | = | TRUE | Boolean | | |
| | | | | | HSD Enabled | = | TRUE | Boolean | | |
| | | | | | Transmission Fluid Temperature | >= | -6.6563 | ºC | | |
| | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | |
| | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | |
| | | | | | Default Gear Option is not present | = | TRUE | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Disable Conditions: | | | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E<br><br>ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | |
| Variable Bleed Solenoid (VBS) | P2724 | Pressure Control (PC) Solenoid E Stuck On (Dynamic) | Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers) | = | TRUE  Boolean | | | | One Trip |
| | | | Primary Oncoming Clutch Pressure Command Status | = | Maximum pressurized | | | | |
| | | | Primary Offgoing Clutch Pressure Command Status | = | Clutch exhaust command | | | | |
| | | | Range Shift Status | ≠ | Initial Clutch Control | | | | |
| | | | Attained Gear Slip | <= | 40  RPM | | | | |
| | | | If the above conditions are true increment appropriate Fail 1 Timers Below: | | | | | | |
| | | | fail timer 1 (2-6 shifting with throttle) | >= | 0.2998  sec | | | | |
| | | | fail timer 1 (2-6 shifting without throttle) | >= | 0.5  sec | | | | |
| | | | fail timer 1 (3-5 shifting with throttle) | >= | 0.2998  sec | | | | |
| | | | fail timer 1 (3-5 shifting without throttle) | >= | 0.5  sec | | | | |
| | | | fail timer 1 (4-5 shifting with throttle) | >= | 0.2998  sec | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | fail timer 1 (4-5 shifting without throttle) | >= | 0.5 | sec | | | | | | | | |
| | | | fail timer 1 (4-6 shifting with throttle) | >= | 0.2998 | sec | | | | | | | | |
| | | | fail timer 1 (4-6 shifting without throttle) | >= | 0.5 | sec | | | | | | | | |
| | | | If Attained Gear Slip is Less than Above Cal Increment Fail Timers | | | | | | | | Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and Reference Supporting Table 15 for Fail Timer 2 | >= | sec | |
| | | | If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter | | | | | | | | | | | |
| | | | 2nd gear fail counter | | | | | | | | Fail Counter From 2nd Gear | >= | 3 | |
| | | | 3rd gear fail counter | | | | | | | | Fail Counter From 3rd Gear | >= | 3 | |
| | | | 4th gear fail counter | | | | | | | | Fail Counter From 4th Gear | >= | 3 | |
| | | | total fail counter | | | | | | | | Total Fail Counter | >= | 5 | |
| | | | | | | | TUT Enable temperature | >= | -6.6563 | ºC | | | | |
| | | | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | | | Command / Attained Gear | ≠ | 1st | Boolean | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | | | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | High Side Driver ON | = | TRUE | Boolean | | |
| | | | | | output speed limit for TUT | >= | 100 | RPM | | |
| | | | | | input speed limit for TUT | >= | 150 | RPM | | |
| | | | | | PRNDL state defaulted | = | FALSE | Boolean | | |
| | | | | | IMS Fault Pending | = | FALSE | Boolean | | |
| | | | | | Service Fast Learn Mode | = | FALSE | Boolean | | |
| | | | | | HSD Enabled | = | TRUE | Boolean | | |
| | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | |
| Variable Bleed Solenoid (VBS) | P2724 | Pressure Control (PC) Solenoid E Stuck On (Steady State) | Fail Case 1<br>Case: 5th Gear<br><br>Max Delta Output Speed Hysteresis >=<br><br>Min Delta Output Speed Hysteresis >= | Table Based value Please Refer to Table 22 in supporting documents rpm/sec<br><br>Table Based value Please Refer to Table 23 in supporting documents rpm/sec | | | | | | One Trip |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | | Threshold Value | | Secondary Malfunction | Enable Conditions | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 17 in supporting documents | Sec | | | | | | |
| | | | Intrusive test: (C35R clutch exhausted) | | | | | | | | | |
| | | | Gear Ratio | <= | 1.20959 | | | | | | | |
| | | | Gear Ratio | >= | 1.09436 | | | | | | | |
| | | | If the above parameters are true | | | | | | | | | |
| | | | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | | | >= | 3 | Fail Count in 5th Gear OR | |
| | | | | | | | | | >= | 3 | Total Fail Counts | |
| | | | Fail Case 2 | Case: 6th Gear | | | | | | | | |
| | | | Max Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 22 in supporting documents | rpm/sec | | | | | | |
| | | | Min Delta Output Speed Hysteresis | >= | Table Based value Please Refer to Table 23 in supporting documents | rpm/sec | | | | | | |
| | | | If the Above is True for Time | >= | Table Based Time Please Refer to Table 17 in supporting documents | Sec | | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Intrusive test: (CB26 clutch exhausted) | | | | | | | | | | |
| | | | Gear Ratio | <= | 1.20959 | | | | | | | | |
| | | | Gear Ratio | >= | 1.09436 | | | | | | | | |
| | | | If the above parameters are true | | | | | | | | | | |
| | | | | | | | | | | >= | 1.1 | Fail Timer (Sec) | |
| | | | | | | | | | | >= | 3 | Fail Count in 6th Gear OR | |
| | | | | | | | | | | >= | 3 | Total Fail Counts | |
| | | | | | | PRNDL State defaulted | = | FALSE | Boolean | | | | |
| | | | | | | inhibit RVT | = | FALSE | Boolean | | | | |
| | | | | | | IMS fault pending indication | = | FALSE | Boolean | | | | |
| | | | | | | output speed | >= | 0 | RPM | | | | |
| | | | | | | TPS validity flag | = | TRUE | Boolean | | | | |
| | | | | | | HSD Enabled | = | TRUE | Boolean | | | | |
| | | | | | | Hydraulic_System_Pressurized | = | TRUE | Boolean | | | | |
| | | | | | | A OR B | | | | | | | |
| | | | | | | (A) Output speed enable | >= | 67 | Nm | | | | |
| | | | | | | (B) Accelerator Pedal enable | >= | 0.5005 | Nm | | | | |
| | | | | | | Ignition Voltage Lo | >= | 8.59961 | Volts | | | | |
| | | | | | | Ignition Voltage Hi | <= | 31.99902 | Volts | | | | |
| | | | | | | Engine Speed Lo | >= | 400 | RPM | | | | |
| | | | | | | Engine Speed Hi | <= | 7500 | RPM | | | | |
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |
| | | | | | | if Attained Gear=1st FW Accelerator Pedal enable | >= | 5.0003 | Pct | | | | |
| | | | | | | if Attained Gear=1st FW Engine Torque Enable | >= | 5 | Nm | | | | |
| | | | | | | if Attained Gear=1st FW Engine Torque Enable | <= | 8191.88 | Nm | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Transmission Fluid Temperature | >= | -6.6563 | °C | | | | |
| | | | | | | Input Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | | Output Speed Sensor fault | = | FALSE | Boolean | | | | |
| | | | | | | Default Gear Option is not present | = | TRUE | | | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0716, P0717, P0722, P0723, P182E | | | | | | |
| | | | | | | | ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E | | | | | | |
| Variable Bleed Solenoid (VBS) | P2729 | Pressure Control (PC) Solenoid E Control Circuit Low (C1234 VBS) | The HWIO reports a low voltage (ground short) error flag | = TRUE Boolean | | | | | | >= 0.3 out of 0.375 | Fail Time (Sec) Sample Time (Sec) | | One Trip |
| | | | | | | P2729 Status is not | = | Test Failed This Key On or Fault Active | | | | | |
| | | | | | | Ignition Voltage | >= | 8.59961 | Volt | | | | |
| | | | | | | Ignition Voltage | <= | 31.99902 | Volt | | | | |
| | | | | | | Engine Speed | >= | 400 | RPM | | | | |
| | | | | | | Engine Speed | <= | 7500 | RPM | | | | |
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | |

# 14 OBDG11 TCM Summary Tables

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | Secondary Malfunction | Enable Conditions | Time Required | Mil Illum. |
|---|---|---|---|---|---|---|---|---|
| | | | | | Disable Conditions: MIL not Illuminated for DTC's: | TCM: None<br>ECM: None | | |
| Variable Bleed Solenoid (VBS) | P2730 | Pressure Control (PC) Solenoid E Control Circuit High (C1234 VBS) | The HWIO reports a high voltage (open or power short) error flag | = TRUE Boolean | | | >= 0.3 Fail Time (Sec)<br>out of 0.375 Sample Time (Sec) | One Trip |
| | | | | | P2730 Status is not | = Test Failed This Key On or Fault Active | | |
| | | | | | Ignition Voltage<br>Ignition Voltage<br>Engine Speed<br>Engine Speed<br>Engine Speed is within the allowable limits for | >= 8.59961 Volt<br><= 31.99902 Volt<br>>= 400 RPM<br><= 7500 RPM<br>>= 5 Sec | | |
| | | | | | Disable Conditions: MIL not Illuminated for DTC's: | TCM: None<br>ECM: None | | |
| Variable Bleed Solenoid (VBS) | P2763 | Torque Converter Clutch Pressure High | The HWIO reports a low pressure/high voltage (open or power short) error flag | = TRUE Boolean | | | >= 4.4 Fail Time (Sec)<br>out of 5 Sample Time (Sec) | Two Trips |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | Secondary Malfunction | Enable Conditions | | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P2763 Status is not | = | Test Failed This Key On or Fault Active | | | | | | |
| | | | | | | Ignition Voltage | >= | 8.59961 | Volt | | | | | |
| | | | | | | Ignition Voltage | <= | 31.99902 | Volt | | | | | |
| | | | | | | Engine Speed | >= | 400 | RPM | | | | | |
| | | | | | | Engine Speed | <= | 7500 | RPM | | | | | |
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | | |
| | | | | | | High Side Driver Enabled | = | TRUE | Boolean | | | | | |
| | | | | | Disable Conditions: | MIL not Illuminated for DTC's: | TCM: P0658, P0659 ECM: None | | | | | | | |
| Variable Bleed Solenoid (VBS) | P2764 | Torque Converter Clutch Pressure Control Solenoid Control Circuit Low | The HWIO reports a high pressure/low voltage (ground short) error flag | = | TRUE  Boolean | | | | | | >=  4.4 | Fail Time (Sec) | | One Trip |
| | | | | | | | | | | | out of  5 | Sample Time (Sec) | | |
| | | | | | | P2764 Status is not | = | Test Failed This Key On or Fault Active | | | | | | |
| | | | | | | Ignition Voltage | >= | 8.59961 | Volt | | | | | |
| | | | | | | Ignition Voltage | <= | 31.99902 | Volt | | | | | |
| | | | | | | Engine Speed | >= | 400 | RPM | | | | | |
| | | | | | | Engine Speed | <= | 7500 | RPM | | | | | |
| | | | | | | Engine Speed is within the allowable limits for | >= | 5 | Sec | | | | | |
| | | | | | | High Side Driver Enabled | = | TRUE | Boolean | | | | | |

| Component/ System | Fault Code | Monitor Strategy Description | Malfunction Criteria | Threshold Value | | | Secondary Malfunction | Enable Conditions | | | Time Required | | | Mil Illum. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Disable Conditions: | | | | MIL not Illuminated for DTC's: TCM: P0658, P0659  ECM: None | | | | | | | |
| Communication | U0073 | Controller Area Network Bus Communication Error | CAN Hardware Circuitry Detects a Low Voltage Error | = | TRUE | Boolean | | | | | >= | 62 | Fail counts (≈ 10 seconds) | One Trip |
| | | | Delay timer | >= | 0.1125 | sec | | | | | Out of | 70 | Sample Counts (≈ 11 seconds) | |
| | | | | | | | Stabilization delay | >= | 3 | sec | | | | |
| | | | | | | | Ignition Voltage | >= | 8.59961 | Volt | | | | |
| | | | | | | | Ignition Voltage | <= | 31.99902 | Volt | | | | |
| | | | | | | | Power Mode | = | Run | | | | | |
| | | | Disable Conditions: | | | | MIL not Illuminated for DTC's: TCM: None  ECM: None | | | | | | | |
| Communication | U0100 | Lost Communications with ECM (Engine Control Module) | CAN messages from ECM are not received by the TCM | = | TRUE | Boolean | | | | | >= | 12 | sec | One Trip |
| | | | | | | | Stabilization delay | >= | 3 | sec | | | | |
| | | | | | | | Ignition Voltage | >= | 8.59961 | Volt | | | | |
| | | | | | | | Ignition Voltage | <= | 31.99902 | Volt | | | | |
| | | | | | | | Power Mode | = | Run | | | | | |
| | | | Disable Conditions: | | | | MIL not Illuminated for DTC's: TCM: U0073  ECM: None | | | | | | | |

# 14 OBDG11 TCM Supporting Tables - 2D

**Table 1**

| Axis | 0.00 | 64.00 | 128.00 | 192.00 | 256.00 | 320.00 | 384.00 | 448.00 | 512.00 | N*m |
|---|---|---|---|---|---|---|---|---|---|---|
| Curve | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | RPM |

**Table 2**

| Axis | -6.67 | -6.66 | 40.00 | ºC |
|---|---|---|---|---|
| Curve | 409.59 | 2.00 | 2.00 | Sec |

**Table 3**

| Axis | -6.67 | -6.66 | 40.00 | ºC |
|---|---|---|---|---|
| Curve | 409.59 | 4.00 | 4.00 | Sec |

**Table 4**

| Axis | -6.67 | -6.66 | 40.00 | ºC |
|---|---|---|---|---|
| Curve | 409.59 | 2.00 | 2.00 | Sec |

**Table 5**

| Axis | -6.67 | -6.66 | 40.00 | ºC |
|---|---|---|---|---|
| Curve | 409.59 | 3.00 | 3.00 | Sec |

**Table 6**

| Axis | -6.67 | -6.66 | 40.00 | 80.00 | 120.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 409.00 | 3.60 | 1.60 | 1.40 | 1.40 | Sec |

**Table 7**

| Axis | -6.67 | -6.66 | 40.00 | 80.00 | 120.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 409.00 | 3.40 | 1.40 | 1.30 | 1.20 | Sec |

**Table 8**

| Axis | -6.67 | -6.66 | 40.00 | 80.00 | 120.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 409.00 | 3.60 | 1.60 | 1.50 | 1.40 | Sec |

**Table 9**

| Axis | -6.67 | -6.66 | 40.00 | 80.00 | 120.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 409.00 | 3.30 | 1.30 | 1.20 | 1.10 | Sec |

**Table 10**

| Axis | -40.00 | -20.00 | 0.00 | 30.00 | 110.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 3.03 | 1.86 | 1.00 | 0.75 | 0.58 | Sec |

**Table 11**

| Axis | -40.00 | -20.00 | 0.00 | 30.00 | 110.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 1.72 | 1.11 | 0.60 | 0.36 | 0.22 | Sec |

**Table 12**

| Axis | -40.00 | -20.00 | 0.00 | 30.00 | 110.00 | ºC |
|---|---|---|---|---|---|---|

| Curve | 2.12 | 1.39 | 0.84 | 0.64 | 0.33 | Sec |
|---|---|---|---|---|---|---|

**Table 13**

| Axis | -40.00 | -20.00 | 0.00 | 30.00 | 110.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 2.51 | 0.95 | 0.50 | 0.29 | 0.13 | Sec |

**Table 14**

| Axis | -40.00 | -20.00 | 0.00 | 30.00 | 110.00 | ºC |
|---|---|---|---|---|---|---|
| Curve | 2.97 | 0.82 | 0.47 | 0.20 | 0.13 | Sec |

**Table 15**

| Axis | -40.00 | -30.00 | -20.00 | -10.00 | 0.00 | 10.00 | 20.00 | 30.00 | 40.00 | ºC |
|---|---|---|---|---|---|---|---|---|---|---|
| Curve | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | Sec |

**Table 16**

| Axis | -6.67 | -6.66 | 40.00 | ºC |
|---|---|---|---|---|
| Curve | 409.59 | 2.50 | 2.50 | Sec |

**Table 17**

| Axis | -6.67 | -6.66 | 40.00 | ºC |
|---|---|---|---|---|
| Curve | 0.40 | 0.35 | 0.30 | Sec |

**Table 18**

| Axis  | -40.10 | -40.00 | -20.00 | 0.00  | 30.00 | 60.00 | 100.00 | 149.00 | 149.10 | ºC |
|-------|--------|--------|--------|-------|-------|-------|--------|--------|--------|----|
| Curve | 256.00 | 50.00  | 45.00  | 40.00 | 34.00 | 25.00 | 20.00  | 20.00  | 256.00 | ºC |

**Table 19**

| Axis  | -40.10 | -40.00 | -20.00 | 0.00  | 30.00 | 60.00 | 100.00 | 149.00 | 149.10 | ºC |
|-------|--------|--------|--------|-------|-------|-------|--------|--------|--------|----|
| Curve | 256.00 | 50.00  | 45.00  | 40.00 | 34.00 | 25.00 | 20.00  | 20.00  | 256.00 | ºC |

**Table 20**

| Axis  | -40.10 | -40.00 | -20.00 | 0.00 | 30.00 | 60.00 | 100.00 | 149.00 | 149.10 | ºC |
|-------|--------|--------|--------|------|-------|-------|--------|--------|--------|----|
| Curve | 256.00 | 10.00  | 8.00   | 8.00 | 8.00  | 8.00  | 8.00   | 8.00   | 256.00 | ºC |

**Table 21**

| Axis  | -40.00 | -20.00 | 40.00 | ºC  |
|-------|--------|--------|-------|-----|
| Curve | 5.00   | 3.00   | 1.00  | Sec |

**Table 22**

| Axis  | -6.67   | -6.66   | 40.00   | ºC      |
|-------|---------|---------|---------|---------|
| Curve | 8191.75 | 8191.75 | 8191.75 | RPM/Sec |

**Table 23**

| Axis  | -6.67   | -6.66   | 40.00   | ºC      |
|-------|---------|---------|---------|---------|
| Curve | 8191.75 | 8191.75 | 8191.75 | RPM/Sec |