## ENGINE PERFORMANCE

### Diagnostic Trouble Codes - MSV80 Engine Operating System

# BMW MSV80

MSV80 engine operating system applies to N54 engine.

**DIAGNOSTIC TROUBLE CODES TABLE**

| DTC | Description |
|---|---|
| **DTC P0010** | 'A' Camshaft Position - Actuator Circuit/Open (Bank 1) (SIG) |
| **DTC P0012** | 'A' Camshaft Position - Timing Over-Retarded (Bank 1) (PLAUS) |
| **DTC P0013** | 'B' Camshaft Position - Actuator Circuit/Open (Bank 1) (SIG) |
| **DTC P0015** | 'B' Camshaft Position - Timing Over-Retarded (Bank 1) (PLAUS) |
| **DTC P0016** | Crankshaft Position - Camshaft Position Correlation (Bank 1 Sensor A) (MAX) |
| **DTC P0017** | Crankshaft Position - Camshaft Position Correlation (Bank 1 Sensor B) (MAX) |
| **DTC P0030** | HO2S Heater Control Circuit (Bank 1 Sensor 1) (SIG) |
| **DTC P0031** | HO2S Heater Control Circuit Low (Bank 1 Sensor 1) (MIN) |
| **DTC P0032** | HO2S Heater Control Circuit High (Bank 1 Sensor 1) (MAX) |
| **DTC P0036** | HO2S Heater Control Circuit (Bank 1 Sensor 2) (SIG) |
| **DTC P0037** | HO2S Heater Control Circuit Low (Bank 1 Sensor 2) (MIN) |
| **DTC P0038** | HO2S Heater Control Circuit High (Bank 1 Sensor 2) (MAX) |
| **DTC P0040** | O2 Sensor Signals Swapped Bank 1 Sensor 1 / Bank 2 Sensor 1 (PLAUS) |
| **DTC P0041** | O2 Sensor Signals Swapped Bank 1 Sensor 2 / Bank 2 Sensor 2 (PLAUS) |
| **DTC P0050** | HO2S Heater Control Circuit (Bank 2 Sensor 1) (SIG) |
| **DTC P0051** | HO2S Heater Control Circuit Low (Bank 2 Sensor 1) (MIN) |
| **DTC P0052** | HO2S Heater Control Circuit High (Bank 2 Sensor 1) (MAX) |
| **DTC P0056** | HO2S Heater Control Circuit (Bank 2 Sensor 2) (SIG) |
| **DTC P0057** | HO2S Heater Control Circuit Low (Bank 2 Sensor 2) (MIN) |
| **DTC P0058** | HO2S Heater Control Circuit High (Bank 2 Sensor 2) (MAX) |
| **DTC P0070** | Ambient Air Temperature Sensor Circuit (SIG) |
| **DTC P0071** | Ambient Air Temperature Sensor Range/Performance (PLAUS) |
| **DTC P0072** | Ambient Air Temperature Sensor Circuit Low (MIN) |
| **DTC P0073** | Ambient Air Temperature Sensor Circuit High (MAX) |
| **DTC P00B2** | Radiator Coolant Temperature Sensor Circuit Range/Performance (PLAUS) |
| **DTC P00B3** | Radiator Coolant Temperature Sensor Circuit Low (MIN) |
| **DTC P00B4** | Radiator Coolant Temperature Sensor Circuit High (MAX) |
| **DTC P0100** | Mass or Volume Air Flow 'A' Circuit (MAX) |
| **DTC P0111** | Intake Air Temperature Sensor 1 Circuit Range/Performance (Bank 1) (PLAUS) |
| **DTC P0112** | Intake Air Temperature Sensor 1 Circuit Low (Bank 1) (MIN) |
| **DTC P0113** | Intake Air Temperature Sensor 1 Circuit High (Bank 1) (MAX) |
| **DTC P0117** | Engine Coolant Temperature Sensor 1 Circuit Low (MIN) |

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| **DTC P0118** | Engine Coolant Temperature Sensor 1 Circuit High (MAX) |
| **DTC P0121** | Throttle/Pedal Position Sensor/Switch 'A' Circuit Range/Performance (PLAUS) |
| **DTC P0122** | Throttle/Pedal Position Sensor/Switch 'A' Circuit Low (MIN) |
| **DTC P0123** | Throttle/Pedal Position Sensor/Switch 'A' Circuit High (MAX) |
| **DTC P0128** | Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature) (PLAUS) |
| **DTC P0131** | O2 Sensor Circuit Low Voltage (Bank 1 Sensor 1) (MIN) |
| **DTC P0132** | O2 Sensor Circuit High Voltage (Bank 1 Sensor 1) (MAX) |
| **DTC P0133** | O2 Sensor Circuit Slow Response (Bank 1 Sensor 1) (MAX) |
| **DTC P0135** | O2 Sensor Heater Circuit (Bank 1 Sensor 1) (MAX) |
| **DTC P0135** | O2 Sensor Heater Circuit (Bank 1 Sensor 1) (MIN) |
| **DTC P0137** | O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2) (MIN) |
| **DTC P0138** | O2 Sensor Circuit High Voltage (Bank 1 Sensor 2) (MAX) |
| **DTC P0139** | O2 Sensor Circuit Slow Response (Bank 1 Sensor 2) (PLAUS) |
| **DTC P0140** | O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 2) (SIG) |
| **DTC P0141** | O2 Sensor Heater Circuit (Bank 1 Sensor 2) (MAX) |
| **DTC P0151** | O2 Sensor Circuit Low Voltage (Bank 2 Sensor 1) (MIN) |
| **DTC P0152** | O2 Sensor Circuit High Voltage (Bank 2 Sensor 1) (MAX) |
| **DTC P0153** | O2 Sensor Circuit Slow Response (Bank 2 Sensor 1) (MAX) |
| **DTC P0155** | O2 Sensor Heater Circuit (Bank 2 Sensor 1) (MAX) |
| **DTC P0155** | O2 Sensor Heater Circuit (Bank 2 Sensor 1) (MIN) |
| **DTC P0157** | O2 Sensor Circuit Low Voltage (Bank 2 Sensor 2) (MIN) |
| **DTC P0158** | O2 Sensor Circuit High Voltage (Bank 2 Sensor 2) (MAX) |
| **DTC P0159** | O2 Sensor Circuit Slow Response (Bank 2 Sensor 2) (PLAUS) |
| **DTC P0160** | O2 Sensor Circuit No Activity Detected (Bank 2 Sensor 2) (SIG) |
| **DTC P0161** | O2 Sensor Heater Circuit (Bank 2 Sensor 2) (MAX) |
| **DTC P0171** | System Too Lean (Bank 1) (MAX) |
| **DTC P0172** | System Too Rich (Bank 1) (MIN) |
| **DTC P0174** | System Too Lean (Bank 2) (MAX) |
| **DTC P0175** | System Too Rich (Bank 2) (MIN) |
| **DTC P0201** | Injector Circuit/Open - Cylinder 1 (SIG) |
| **DTC P0202** | Injector Circuit/Open - Cylinder 2 (SIG) |
| **DTC P0203** | Injector Circuit/Open - Cylinder 3 (SIG) |
| **DTC P0204** | Injector Circuit/Open - Cylinder 4 (SIG) |
| **DTC P0205** | Injector Circuit/Open - Cylinder 5 (SIG) |
| **DTC P0206** | Injector Circuit/Open - Cylinder 6 (SIG) |
| **DTC P0221** | Throttle/Pedal Position Sensor/Switch 'B' Circuit Range/Performance (PLAUS) |
| **DTC P0222** | Throttle/Pedal Position Sensor/Switch 'B' Circuit Low (MIN) |
| **DTC P0223** | Throttle/Pedal Position Sensor/Switch 'B' Circuit High (MAX) |
| **DTC P0261** | Cylinder 1 Injector Circuit Low (MIN) |
| **DTC P0262** | Cylinder 1 Injector Circuit High (MAX) |
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| **DTC P0264** | Cylinder 2 Injector Circuit Low (MIN) |
| **DTC P0265** | Cylinder 2 Injector Circuit High (MAX) |
| **DTC P0267** | Cylinder 3 Injector Circuit Low (MIN) |
| **DTC P0268** | Cylinder 3 Injector Circuit High (MAX) |
| **DTC P0270** | Cylinder 4 Injector Circuit Low (MIN) |
| **DTC P0271** | Cylinder 4 Injector Circuit High (MAX) |
| **DTC P0273** | Cylinder 5 Injector Circuit Low (MIN) |
| **DTC P0274** | Cylinder 5 Injector Circuit High (MAX) |
| **DTC P0276** | Cylinder 6 Injector Circuit Low (MIN) |
| **DTC P0277** | Cylinder 6 Injector Circuit High (MAX) |
| **DTC P0300** | Random/Multiple Cylinder Misfire Detected (MAX) |
| **DTC P0300** | Random/Multiple Cylinder Misfire Detected (MIN) |
| **DTC P0300** | Random/Multiple Cylinder Misfire Detected (PLAUS) |
| **DTC P0300** | Random/Multiple Cylinder Misfire Detected (SIG) |
| **DTC P0301** | Cylinder 1 Misfire Detected (MAX) |
| **DTC P0301** | Cylinder 1 Misfire Detected (MIN) |
| **DTC P0301** | Cylinder 1 Misfire Detected (SIG) |
| **DTC P0302** | Cylinder 2 Misfire Detected (MAX) |
| **DTC P0302** | Cylinder 2 Misfire Detected (MIN) |
| **DTC P0302** | Cylinder 2 Misfire Detected (SIG) |
| **DTC P0303** | Cylinder 3 Misfire Detected (MAX) |
| **DTC P0303** | Cylinder 3 Misfire Detected (MIN) |
| **DTC P0303** | Cylinder 3 Misfire Detected (SIG) |
| **DTC P0304** | Cylinder 4 Misfire Detected (MAX) |
| **DTC P0304** | Cylinder 4 Misfire Detected (MIN) |
| **DTC P0304** | Cylinder 4 Misfire Detected (SIG) |
| **DTC P0305** | Cylinder 5 Misfire Detected (MAX) |
| **DTC P0305** | Cylinder 5 Misfire Detected (MIN) |
| **DTC P0305** | Cylinder 5 Misfire Detected (SIG) |
| **DTC P0306** | Cylinder 6 Misfire Detected (MAX) |
| **DTC P0306** | Cylinder 6 Misfire Detected (MIN) |
| **DTC P0306** | Cylinder 6 Misfire Detected (SIG) |
| **DTC P0313** | Misfire Detected With Low Fuel (MIN) |
| **DTC P0326** | Knock Sensor 1 Circuit Range/Performance (Bank 1 or Single Sensor) (PLAUS) |
| **DTC P0327** | Knock Sensor 1 Circuit Low (Bank 1 or Single Sensor) (MIN) |
| **DTC P0328** | Knock Sensor 1 Circuit High (Bank 1 or Single Sensor) (MAX) |
| **DTC P0335** | Crankshaft Position Sensor 'A' Circuit (MAX) |
| **DTC P0335** | Crankshaft Position Sensor 'A' Circuit (MIN) |
| **DTC P0340** | Camshaft Position Sensor 'A' Circuit (Bank 1 or Single Sensor) (MAX) |
| **DTC P0341** | Camshaft Position Sensor 'A' Circuit Range/Performance (Bank 1 or Single Sensor) (MAX) |
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| **DTC P0344** | Camshaft Position Sensor 'A' Circuit Intermittent (Bank 1 or Single Sensor) (MAX) |
| **DTC P0351** | Ignition Coil 'A' Primary/Secondary Circuit (MAX) |
| **DTC P0352** | Ignition Coil 'B' Primary/Secondary Circuit (MAX) |
| **DTC P0353** | Ignition Coil 'C' Primary/Secondary Circuit (MAX) |
| **DTC P0354** | Ignition Coil 'D' Primary/Secondary Circuit (MAX) |
| **DTC P0355** | Ignition Coil 'E' Primary/Secondary Circuit (MAX) |
| **DTC P0356** | Ignition Coil 'F' Primary/Secondary Circuit (MAX) |
| **DTC P0365** | Camshaft Position Sensor 'B' Circuit (Bank 1) (MAX) |
| **DTC P0366** | Camshaft Position Sensor 'B' Circuit Range/Performance (Bank 1) (MAX) |
| **DTC P0369** | Camshaft Position Sensor 'B' Circuit Intermittent (Bank 1) (MAX) |
| **DTC P0370** | Timing Reference High Resolution Signal 'A' (MAX) |
| **DTC P0370** | Timing Reference High Resolution Signal 'A' (MAX) |
| **DTC P0370** | Timing Reference High Resolution Signal 'A' (MIN) |
| **DTC P0373** | Timing Reference High Resolution Signal 'A' Intermittent/Erratic Pulses (MAX) |
| **DTC P0420** | Catalyst System Efficiency Below Threshold (Bank 1) (MAX) |
| **DTC P0420** | Catalyst System Efficiency Below Threshold (Bank 1) (MIN) |
| **DTC P0430** | Catalyst System Efficiency Below Threshold (Bank 2) (MAX) |
| **DTC P0430** | Catalyst System Efficiency Below Threshold (Bank 2) (MIN) |
| **DTC P0440** | Evaporative Emission System (PLAUS) |
| **DTC P0441** | Evaporative Emission System Incorrect Purge Flow (SIG) |
| **DTC P0442** | Evaporative Emission System Leak Detected (small leak) (MAX) |
| **DTC P0444** | Evaporative Emission System Purge Control Valve Circuit Open (SIG) |
| **DTC P0456** | Evaporative Emission System Leak Detected (very small leak) (MIN) |
| **DTC P0458** | Evaporative Emission System Purge Control Valve Circuit Low (MIN) |
| **DTC P0459** | Evaporative Emission System Purge Control Valve Circuit High (MAX) |
| **DTC P0461** | Fuel Level Sensor 'A' Circuit Range/Performance (PLAUS) |
| **DTC P0462** | Fuel Level Sensor 'A' Circuit Low (MIN) |
| **DTC P0463** | Fuel Level Sensor 'A' Circuit High (MAX) |
| **DTC P0475** | Exhaust Pressure Control Valve (SIG) |
| **DTC P0477** | Exhaust Pressure Control Valve Low (MIN) |
| **DTC P0478** | Exhaust Pressure Control Valve High (MAX) |
| **DTC P0480** | Fan 1 Control Circuit (SIG) |
| **DTC P0491** | Secondary Air Injection System Insufficient Flow (Bank 1) (MAX) |
| **DTC P0492** | Secondary Air Injection System Insufficient Flow (Bank 2) (MIN) |
| **DTC P0500** | Vehicle Speed Sensor 'A' (SIG) |
| **DTC P0503** | Vehicle Speed Sensor 'A' Intermittent/Erratic/High (PLAUS) |
| **DTC P0506** | Idle Air Control System RPM Lower Than Expected (MIN) |
| **DTC P0507** | Idle Air Control System RPM Higher Than Expected (MAX) |
| **DTC P0512** | Starter Request Circuit (MAX) |
| **DTC P0512** | Starter Request Circuit (MIN) |
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| **DTC P0512** | Starter Request Circuit (SIG) |
| **DTC P0520** | Engine Oil Pressure Sensor/Switch Circuit (SIG) |
| **DTC P0521** | Engine Oil Pressure Sensor/Switch Range/ Performance (PLAUS) |
| **DTC P0522** | Engine Oil Pressure Sensor/Switch Low (MIN) |
| **DTC P0523** | Engine Oil Pressure Sensor/Switch High (MAX) |
| **DTC P0524** | Engine Oil Pressure Too Low (MIN) |
| **DTC P0571** | Brake Switch 'A' Circuit (PLAUS) |
| **DTC P0597** | Thermostat Heater Control Circuit/Open (SIG) |
| **DTC P0598** | Thermostat Heater Control Circuit Low (MIN) |
| **DTC P0599** | Thermostat Heater Control Circuit High (MAX) |
| **DTC P0604** | Internal Control Module Random Access Memory (RAM) Error (MAX) |
| **DTC P0604** | Internal Control Module Random Access Memory (RAM) Error (MIN) |
| **DTC P0604** | Internal Control Module Random Access Memory (RAM) Error (MIN) |
| **DTC P0605** | Internal Control Module Read Only Memory (ROM) Error (MAX) |
| **DTC P0606** | ECM/PCM Processor (SIG) |
| **DTC P060C** | Internal Control Module Main Processor Performance (PLAUS) |
| **DTC P0620** | Generator Control Circuit (MAX) |
| **DTC P0620** | Generator Control Circuit (SIG) |
| **DTC P062F** | Internal Control Module EEPROM Error (PLAUS) |
| **DTC P062F** | Internal Control Module EEPROM Error (SIG) |
| **DTC P062F** | Internal Control Module EEPROM Error (SIG) |
| **DTC P0645** | A/C Clutch Relay Control Circuit (SIG) |
| **DTC P0646** | A/C Clutch Relay Control Circuit Low (MIN) |
| **DTC P0647** | A/C Clutch Relay Control Circuit High (MAX) |
| **DTC P0668** | PCM/ECM/TCM Internal Temperature Sensor Circuit Low (MIN) |
| **DTC P0669** | PCM/ECM/TCM Internal Temperature Sensor Circuit High (MAX) |
| **DTC P0686** | ECM/PCM Power Relay Control Circuit Low (MIN) |
| **DTC P0687** | ECM/PCM Power Relay Control Circuit High (MAX) |
| **DTC P0691** | Fan 1 Control Circuit Low (MIN) |
| **DTC P0692** | Fan 1 Control Circuit High (MAX) |
| **DTC P0703** | Brake Switch 'B' Circuit (PLAUS) |
| **DTC P0831** | Clutch Pedal Switch 'A' Circuit Low (MIN) |
| **DTC P0832** | Clutch Pedal Switch 'A' Circuit High (MAX) |
| **DTC P0A14** | Engine Mount 'A' Control Circuit/Open (MAX) |
| **DTC P0A14** | Engine Mount 'A' Control Circuit/Open (MIN) |
| **DTC P0A14** | Engine Mount 'A' Control Circuit/Open (SIG) |
| **DTC P0A14** | Engine Mount 'A' Control Circuit/Open (SIG) |
| **DTC P0A15** | Engine Mount 'A' Control Circuit Low (MIN) |
| **DTC P0A16** | Engine Mount 'A' Control Circuit High (MAX) |
| **DTC P0A3B** | Generator Over Temperature (MAX) |
| **DTC P0A3B** | Generator Over Temperature (MAX) |
| **DTC P1004** | |

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| | VVT-Guiding Sensor Solenoid Loss (Bank 1) (MAX) |
| **DTC P1006** | VVT-Guiding Sensor Parity Error (Bank 1) (SIG) |
| **DTC P1012** | VVT-Reference Sensor Solenoid Loss (Bank 1) (MAX) |
| **DTC P1014** | VVT-Reference Sensor Parity Error (Bank 1) (SIG) |
| **DTC P1017** | VVT-Sensors Plausibility (Bank 1) (PLAUS) |
| **DTC P1017** | VVT-Sensors Plausibility (Bank 1) (PLAUS) |
| **DTC P1019** | VVT-Supply Voltage Sensors High Input (Bank 1) (MAX) |
| **DTC P101A** | VVT-Self-Learning Function, Stops Not Learned (MAX) |
| **DTC P101A** | VVT-Self-Learning Function, Stops Not Learned (MIN) |
| **DTC P101A** | VVT-Self-Learning Function, Stops Not Learned (SIG) |
| **DTC P1020** | VVT-Supply Voltage Sensors Low Input (Bank 1) (MIN) |
| **DTC P1023** | VVT-Self-Learning Function Faulty Adjustment Range (Bank 1) (MAX) |
| **DTC P1024** | VVT-Self-Learning Function Faulty Lower Learning Range (Bank 1) (MIN) |
| **DTC P102B** | VVT-Guiding Sensor Diagnostic Error (Bank 1) (MIN) |
| **DTC P102C** | VVT-Reference Sensor Diagnostic Error (Bank 1) (MIN) |
| **DTC P1030** | VVT-Actuator Monitoring Position Control, Control Deviation (Bank 1) (PLAUS) |
| **DTC P1030** | VVT-Actuator Monitoring Position Control, Control Deviation (Bank 1) (SIG) |
| **DTC P103A** | VVT-System Current Too High (MAX) |
| **DTC P1041** | Internal VVT-Control Module EEPROM Error (Bank 1) (PLAUS) |
| **DTC P1047** | VVT-Control Circuit High Input (Bank 1) (MAX) |
| **DTC P1048** | VVT-Control Circuit Low Input (Bank 1) (MIN) |
| **DTC P1049** | VVT-Control Circuit Engine Cables Short Circuit (Bank 1) (SIG) |
| **DTC P1055** | VVT-Supply Voltage Control Motor High Input (Bank 1) (MAX) |
| **DTC P1056** | VVT-Supply Voltage Control Motor Low Input (Bank 1) (MIN) |
| **DTC P1057** | VVT-Supply Voltage Control Motor Electrical (Bank 1) (PLAUS) |
| **DTC P105A** | Internal Control Module VVT Error, Current Too High (MAX) |
| **DTC P105B** | Internal Control Module VVT Error, Voltage Too Low (MIN) |
| **DTC P1062** | VVT-Limp Home Request Full Stroke Position not Reached (Bank 1) (SIG) |
| **DTC P1064** | VVT-Value Comparison Starting Position/Parking Position Plausibility (Bank 1) (MAX) |
| **DTC P1075** | VVT-Overload Protection (Bank 1) (MAX) |
| **DTC P1076** | VVT-Overload Protection ECU-Temperature High Input (Bank 1) (SIG) |
| **DTC P1078** | VVT-Overload Protection Control Motor Current High Input (Bank 1) (MIN) |
| **DTC P107A** | VVT-Overload Protection Control Motor Current Too High (MAX) |
| **DTC P107B** | VVT-Overload Protection Control Motor Temperature Too High (MIN) |
| **DTC P107C** | VVT-Overload Protection Temperature Too High (MIN) |
| **DTC P107C** | VVT-Overload Protection Temperature Too High (SIG) |
| **DTC P1104** | Differential Pressure Sensor Intake Manifold Pressure Too Low (Bank 1) (MIN) |
| **DTC P1105** | Differential Pressure Sensor Intake Manifold Pressure Too High (Bank 1) (MAX) |
| **DTC P110D** | Throttle Position Sensor A and B Range/Performance (PLAUS) |

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| **DTC P111E** | Intake Air Temperature Sensor 1 Maximum Temperature Implausible (Bank 1) (MAX) |
| **DTC P111F** | Intake Air Temperature Sensor 1 Minimum Temperature Implausible (Bank 1) (MIN) |
| **DTC P1124** | Differential Pressure Sensor Intake Manifold Offset (Bank 1) (PLAUS) |
| **DTC P112C** | O2 Sensor Negative Current or Positive Current Control Circuit/Open (Bank 1 Sensor 1) (MIN) |
| **DTC P112C** | O2 Sensor Negative Current or Positive Current Control Circuit/Open (Bank 1 Sensor 1) (SIG) |
| **DTC P112D** | O2 Sensor Negative Current or Positive Current Control Circuit/Open (Bank 2 Sensor 1) (MIN) |
| **DTC P112D** | O2 Sensor Negative Current or Positive Current Control Circuit/Open (Bank 2 Sensor 1) (SIG) |
| **DTC P1130** | O2 Sensor Circuit Dynamic Test (Bank 1 Sensor 2) (PLAUS) |
| **DTC P1131** | O2 Sensor Circuit Dynamic Test (Bank 2 Sensor 2) (PLAUS) |
| **DTC P114A** | Post Catalyst Fuel Trim Via Oxygen Sensor System Too Rich (Bank 1) (MAX) |
| **DTC P114B** | Post Catalyst Fuel Trim Via Oxygen Sensor System Too Lean (Bank 1) (MIN) |
| **DTC P114C** | Post Catalyst Fuel Trim Via Oxygen Sensor System Too Rich (Bank 2) (MAX) |
| **DTC P114D** | Post Catalyst Fuel Trim Via Oxygen Sensor System Too Lean (Bank 2) (MIN) |
| **DTC P114F** | Air Mass Flow Sensor Defective (MIN) |
| **DTC P115A** | Mass or Volume Air Flow 'A' Maximum Exceeded (MAX) |
| **DTC P116C** | Air Mass Flow Sensor Signal Range (MAX) |
| **DTC P116D** | Air Mass Flow Sensor Signal Gradient Error (MIN) |
| **DTC P116E** | Air Mass Flow Sensor Signal Electrical (SIG) |
| **DTC P1197** | Differential Pressure Sensor Intake Manifold High Input (Bank 1) (MAX) |
| **DTC P1198** | Differential Pressure Sensor Intake Manifold Low Input (Bank 1) (MIN) |
| **DTC P1214** | Fuel Pump Speed Too High (MAX) |
| **DTC P1215** | Fuel Pump Speed Too Low (MIN) |
| **DTC P1216** | Fuel Pump Emergency Operation (SIG) |
| **DTC P1217** | Fuel Pump Overtemperature Condition (PLAUS) |
| **DTC P1230** | Fuel Pump Relay Primary Circuit (SIG) |
| **DTC P1234** | Fuel Pump Relay Primary Circuit Low (MIN) |
| **DTC P1236** | Fuel Pump Relay Primary Circuit High (MAX) |
| **DTC P1244** | Fuel Pump Emergency Cut-Off (SIG) |
| **DTC P1300** | Camshaft Position Sensor 'A' Segment Timing Error (Bank 1) (MAX) |
| **DTC P1301** | Ignition Monitoring Cylinder 1 Spark Duration Too Short (MIN) |
| **DTC P1302** | Ignition Monitoring Cylinder 2 Spark Duration Too Short (MIN) |
| **DTC P1303** | Ignition Monitoring Cylinder 3 Spark Duration Too Short (MIN) |
| **DTC P1304** | Ignition Monitoring Cylinder 4 Spark Duration Too Short (MIN) |
| **DTC P1305** | Ignition Monitoring Cylinder 5 Spark Duration Too Short (MIN) |
| **DTC P1306** | Ignition Monitoring Cylinder 6 Spark Duration Too Short (MIN) |
| **DTC P130A** | Camshaft Position Sensor 'B' Segment Timing Error (Bank 1) (MAX) |

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| **DTC P1327** | Knock Sensor 2 Circuit Low Input (Bank 1) (MIN) |
| **DTC P1328** | Knock Sensor 2 Circuit High Input (Bank 1) (MAX) |
| **DTC P135B** | Knock Sensor 2 Circuit Range/Performance (Bank 1) (PLAUS) |
| **DTC P1383** | Ignition Monitoring Malfunction (SIG) |
| **DTC P1396** | Crankshaft Position Sensor Segment Timing Plausibility (MIN) |
| **DTC P1407** | Fuel Level Signal 1 (PLAUS) |
| **DTC P1408** | Fuel Level Signal 2 (PLAUS) |
| **DTC P140A** | Secondary Air Injection System Insufficient Total Flow (Bank 1 and Bank 2) (SIG) |
| **DTC P140E** | Cylinder Injection Cut-Off, Fuel Level Too Low (PLAUS) |
| **DTC P1413** | Secondary Air Injection Pump Relay Control Circuit Signal Low (MIN) |
| **DTC P1414** | Secondary Air Injection Pump Relay Control Circuit Signal High (MAX) |
| **DTC P1415** | Mass or Volume Air Flow Too Low (MIN) |
| **DTC P1417** | Throttle Control Incorrect Air Supply (SIG) |
| **DTC P1424** | Mass or Volume Air Flow Too High (MAX) |
| **DTC P1434** | Diagnostic Module Tank Leakage (DM-TL) (SIG) |
| **DTC P143B** | Direct Ozone Reduction Catalyst Temperature Sensor Wrong Code (PLAUS) |
| **DTC P143C** | Direct Ozone Reduction Catalyst Temperature / Radiator Coolant Temperature Correlation (SIG) |
| **DTC P143E** | Direct Ozone Reduction Catalyst Temperature Sensor Gradient Too Low (PLAUS) |
| **DTC P1447** | Diagnostic Module Tank Leakage (DM-TL) Pump Current Too High during Switching Solenoid Test (PLAUS) |
| **DTC P1448** | Diagnostic Module Tank Leakage (DM-TL) Pump Current Too Low (MIN) |
| **DTC P1449** | Diagnostic Module Tank Leakage (DM-TL) Pump Current Too High (MAX) |
| **DTC P1453** | Secondary Air Injection Pump Relay Control Circuit Electrical (SIG) |
| **DTC P14C0** | Fan Mechanical or Hardware Defect (PLAUS) |
| **DTC P14C1** | Radiator Shutter Mechanical or Hardware Defect (PLAUS) |
| **DTC P14C2** | DISA (Differentiated Intake Manifold) Actuator 1 Mechanical or Hardware Defect (PLAUS) |
| **DTC P14C3** | DISA (Differentiated Intake Manifold) Actuator 2 Mechanical or Hardware Defect (PLAUS) |
| **DTC P14C4** | Radiator Shutter (Upper) Mechanical (MIN) |
| **DTC P14C5** | Radiator Shutter (Upper) Hardware Defect (MAX) |
| **DTC P14C6** | Radiator Shutter (Lower) Electrical (MAX) |
| **DTC P150A** | Battery Sensor BSD (Bit Serial Data Interface) Extended Communication Circuit (MAX) |
| **DTC P150B** | Battery Sensor BSD (Bit Serial Data Interface) Communication Circuit (SIG) |
| **DTC P150B** | Battery Sensor BSD (Bit Serial Data Interface) Communication Circuit (SIG) |
| **DTC P150C** | Battery Sensor Firmware Implausible (PLAUS) |
| **DTC P150D** | Battery Sensor Temperature Error (MAX) |
| **DTC P150E** | Battery Sensor Voltage Error (SIG) |

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| **DTC P150F** | Battery Sensor Current Error (PLAUS) |
| **DTC P1511** | DISA (Differentiated Intake Manifold) Control Circuit Electrical (MAX) |
| **DTC P1511** | DISA (Differentiated Intake Manifold) Control Circuit Electrical (MIN) |
| **DTC P1511** | DISA (Differentiated Intake Manifold) Control Circuit Electrical (SIG) |
| **DTC P1511** | DISA (Differentiated Intake Manifold) Control Circuit Electrical (SIG) |
| **DTC P1512** | DISA (Differentiated Intake Manifold) Control Circuit Signal Low (MIN) |
| **DTC P1512** | DISA (Differentiated Intake Manifold) Control Circuit Signal Low (MIN) |
| **DTC P1513** | DISA (Differentiated Intake Manifold) Control Circuit Signal High (MAX) |
| **DTC P1513** | DISA (Differentiated Intake Manifold) Control Circuit Signal High (MAX) |
| **DTC P1515** | Engine Off Timer Plausibility (PLAUS) |
| **DTC P151A** | Battery Sensor Terminal 15/30 Wakeup Circuit (MAX) |
| **DTC P151B** | Battery Sensor Wakeup Circuit (PLAUS) |
| **DTC P151C** | Battery Sensor System Error (SIG) |
| **DTC P1521** | Engine Oil Quality Sensor Communication Error (SIG) |
| **DTC P1540** | Driving Dynamics Control Switch High Input (MAX) |
| **DTC P1541** | Driving Dynamics Control Switch Low Input (MIN) |
| **DTC P1551** | Engine Off Timer Timeout (SIG) |
| **DTC P1553** | Engine Position System 'B' Performance (Bank 1) (MAX) |
| **DTC P1554** | Engine Position System 'A' Performance (Bank 1) (MAX) |
| **DTC P155A** | Multifunction Steering Wheel (MFL) Interface, Toggle-Bit Fault (MAX) |
| **DTC P155A** | Multifunction Steering Wheel (MFL) Interface, Toggle-Bit Fault (MIN) |
| **DTC P155A** | Multifunction Steering Wheel (MFL) Interface, Toggle-Bit Fault (PLAUS) |
| **DTC P1561** | Cold Start Idle Air Control System RPM Lower Than Expected (Bank 1) (MIN) |
| **DTC P1562** | Cold Start Idle Air Control System RPM Higher Than Expected (Bank 1) (MAX) |
| **DTC P1563** | Multifunction Steering Wheel (MFL) Rocker Switch Defective (PLAUS) |
| **DTC P1576** | Multifunction Steering Wheel (MFL) Interface, Bit Error (PLAUS) |
| **DTC P1582** | Oil Pump Circuit High (MAX) |
| **DTC P1583** | Oil Pump Circuit Low (MIN) |
| **DTC P1584** | Oil Pump Circuit Open (SIG) |
| **DTC P1586** | Engine Oil Quality Sensor Temperature Measurement (MAX) |
| **DTC P1587** | Engine Oil Quality Sensor Level Measurement (MIN) |
| **DTC P1588** | Engine Oil Quality Sensor Permeability Measurement (PLAUS) |
| **DTC P15A1** | Engine Oil Pressure Control, Mechanical, Solenoid Valve Sticking In Fully Energized Position (Minimum Oil Pressure) (MAX) |
| **DTC P15A2** | Engine Oil Pressure Control, Mechanical, Solenoid Valve Sticking In De-Energized Position (Maximum Oil Pressure) (MIN) |
| **DTC P15A3** | Engine Oil Pressure Too High (MAX) |
| **DTC P15A6** | Engine Oil Pressure Too High Before Start (MAX) |
| **DTC P15A7** | Engine Oil Pressure Too Low Before Start (MIN) |
| **DTC P15B0** | Terminal 15 Sense Circuit Input High (MAX) |
| **DTC P15B1** | Terminal 15 Sense Circuit Input Low (MIN) |

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| **DTC P15B2** | Terminal 15 Sense Circuit CAS Error (SIG) |
| **DTC P15B3** | Terminal 15 Sense Circuit Range/Performance (PLAUS) |
| **DTC P160A** | Powermanagement Exhaustive Discharge (MIN) |
| **DTC P160B** | Powermanagement Defective (PLAUS) |
| **DTC P160C** | Powermanagement Overvoltage (MAX) |
| **DTC P160D** | Powermanagement Undervoltage (MIN) |
| **DTC P160E** | Powermanagement Operation Without Battery (SIG) |
| **DTC P160F** | Powermanagement No-Load Current Error (PLAUS) |
| **DTC P1618** | Control Module Self-Test, AD-Converter Monitoring (PLAUS) |
| **DTC P1625** | Pedal Position Sensor Potentiometer Supply Channel 2 Electrical (PLAUS) |
| **DTC P1632** | Throttle Valve Adaptation Conditions Not Met (Bank 1) (MAX) |
| **DTC P1633** | Throttle Valve Adaptation Limp-Home Position Unknown (Bank 1) (MIN) |
| **DTC P1634** | Throttle Valve Adaptation Spring Test Failed (Bank 1) (MAX) |
| **DTC P1635** | Throttle Valve Adaptation Lower Mechanical Stop Not Adapted (Bank 1) (MAX) |
| **DTC P1636** | Throttle Valve Control Circuit (Bank 1) (SIG) |
| **DTC P1637** | Throttle Valve Position Control, Control Deviation (Bank 1) (MAX) |
| **DTC P1638** | Throttle Valve Position Control Throttle Stuck Temporarily (Bank 1) (MAX) |
| **DTC P1639** | Throttle Valve Position Control Throttle Stuck Permanently (Bank 1) (MAX) |
| **DTC P1644** | Throttle Valve Adaptation Stop Relearning Lower Mechanical Stop (Bank 1) (PLAUS) |
| **DTC P164C** | Pedal Position Sensor Potentiometer Supply Channel 1 Electrical (PLAUS) |
| **DTC P165A** | EWS (Electronic Immobilizer) Interface to ECM, Hardware Error (MAX) |
| **DTC P165B** | EWS (Electronic Immobilizer) Interface to ECM, Checksum Error (PLAUS) |
| **DTC P165C** | EWS (Electronic Immobilizer) Data, No Available Storage Possibility (MAX) |
| **DTC P165D** | EWS (Electronic Immobilizer) Data, Faulty Release Code Storage (MIN) |
| **DTC P165E** | EWS (Electronic Immobilizer) Data, Checksum Error (PLAUS) |
| **DTC P165F** | Internal Control Module Measurement Error Oxygen Sensor Heating (Bank 1, Sensor 1) (SIG) |
| **DTC P1660** | EWS (Electronic Immobilizer) Telegram Error (MIN) |
| **DTC P1661** | Timeout EWS (Electronic Immobilizer) - Telegram (SIG) |
| **DTC P1667** | EWS (Electronic Immobilizer) Start Value Not Yet Programmed (MIN) |
| **DTC P1667** | EWS (Electronic Immobilizer) Start Value Not Yet Programmed (PLAUS) |
| **DTC P1668** | EWS (Electronic Immobilizer) Start Value Destroyed (SIG) |
| **DTC P166A** | Control Module Self-Test, LDM (Longitudinal Dynamics Management) Monitoring (SIG) |
| **DTC P166B** | LDM (Longitudinal Dynamics Management) Torque Request In Spite of Brake Signal (MAX) |
| **DTC P166C** | LDM (Longitudinal Dynamics Management) Torque Request Implausible (PLAUS) |
| **DTC P166F** | Internal Control Module Measurement Error Oxygen Sensor Heating (Bank 2, Sensor 1) (SIG) |
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| **DTC P1675** | Throttle Valve Actuator Start Test Re-Adaptation Required (MAX) |
| **DTC P1694** | Throttle Valve Actuator Start Test Spring Test and Limp-Home Position Failed (SIG) |
| **DTC P169A** | Throttle Valve Actuator Start Test Limp-Home Position Failed (MIN) |
| **DTC P16A0** | Internal Control Module Memory Check Sum Error in Boot Software (MAX) |
| **DTC P16A1** | Internal Control Module Memory Check Sum Error in Application Software (MIN) |
| **DTC P16A2** | Internal Control Module Memory Check Sum Error in Data (SIG) |
| **DTC P16A3** | Internal Control Module Non-Volatile Memory (NVMY) Error (MAX) |
| **DTC P16A4** | Timeout Control Module Knock Sensor SPI-Bus (SIG) |
| **DTC P16A5** | Timeout Control Module Multiple Output Stage SPI-Bus (SIG) |
| **DTC P16A6** | Control Module Self-Test, Cruise Control Monitoring (MAX) |
| **DTC P16A7** | Control Module Self-Test, Hot Film Air Mass Meter Monitoring (MAX) |
| **DTC P16A8** | Control Module Self-Test, Throttle Position Monitoring (MIN) |
| **DTC P16A9** | Control Module Self-Test, Speed Monitoring Reset (PLAUS) |
| **DTC P16B0** | Control Module Self-Test, Pedal Position Sensor Monitoring (PLAUS) |
| **DTC P16B1** | Control Module Self-Test, Idle Air Control System Integrated Component Plausibility (MAX) |
| **DTC P16B2** | Control Module Self-Test, Idle Air Control System PD-Component Plausibility (MIN) |
| **DTC P16B3** | Control Module Self-Test, MSR (Engine-Drag-Torque Control) Monitoring (MAX) |
| **DTC P16B4** | Control Module Self-Test, DCC (Dynamic Cruise Control) Monitoring (MIN) |
| **DTC P16B5** | Control Module Self-Test, AMT (Automatic Manual Transmission) Monitoring (SIG) |
| **DTC P16B6** | Control Module Self-Test, ETC Monitoring (PLAUS) |
| **DTC P16B7** | Control Module Self-Test, Clutch Torque Monitoring Maximum Value Plausibility (MAX) |
| **DTC P16B8** | Control Module Self-Test, Clutch Torque Monitoring Minimum Value Plausibility (MIN) |
| **DTC P16B9** | Control Module Self-Test, Torque Loss Monitoring (SIG) |
| **DTC P16C0** | Control Module Self-Test, Driving Dynamics Control Switch Monitoring (PLAUS) |
| **DTC P16C1** | Control Module Self-Test, Torque Monitoring Current Indicated Value Plausibility (PLAUS) |
| **DTC P16C1** | Control Module Self-Test, Torque Monitoring Current Indicated Value Plausibility (PLAUS) |
| **DTC P16C2** | Control Module Self-Test, Speed Limitation Monitoring (PLAUS) |
| **DTC P16C5** | Main Relay Switching Delay (MIN) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (MAX) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (MAX) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (MAX) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (MIN) |

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| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (MIN) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (PLAUS) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (PLAUS) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (SIG) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (SIG) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (SIG) |
| **DTC P16C6** | CAN Timeout BSD (Bit Serial Data Interface) (SIG) |
| **DTC P16C8** | Serial Communication Link EKP (Electrical Fuel Pump) (SIG) |
| **DTC P2067** | Fuel Level Sensor 'B' Circuit Low (MIN) |
| **DTC P2068** | Fuel Level Sensor 'B' Circuit High (MAX) |
| **DTC P2088** | 'A' Camshaft Position Actuator Control Circuit Low (Bank 1) (MIN) |
| **DTC P2089** | 'A' Camshaft Position Actuator Control Circuit High (Bank 1) (MAX) |
| **DTC P2090** | 'B' Camshaft Position Actuator Control Circuit Low (Bank 1) (MIN) |
| **DTC P2091** | 'B' Camshaft Position Actuator Control Circuit High (Bank 1) (MAX) |
| **DTC P2096** | Post Catalyst Fuel Trim System Too Lean (Bank 1) (MIN) |
| **DTC P2097** | Post Catalyst Fuel Trim System Too Rich (Bank 1) (MAX) |
| **DTC P2098** | Post Catalyst Fuel Trim System Too Lean (Bank 2) (MIN) |
| **DTC P2099** | Post Catalyst Fuel Trim System Too Rich (Bank 2) (MAX) |
| **DTC P2120** | Throttle/Pedal Position Sensor/Switch 'D' Circuit (PLAUS) |
| **DTC P2122** | Throttle/Pedal Position Sensor/Switch 'D' Circuit Low (MIN) |
| **DTC P2123** | Throttle/Pedal Position Sensor/Switch 'D' Circuit High (MAX) |
| **DTC P2127** | Throttle/Pedal Position Sensor/Switch 'E' Circuit Low (MIN) |
| **DTC P2128** | Throttle/Pedal Position Sensor/Switch 'E' Circuit High (MAX) |
| **DTC P2138** | Throttle/Pedal Position Sensor/Switch 'D'/'E' Voltage Correlation (PLAUS) |
| **DTC P213F** | Fuel Pump System Fault - Forced Engine Shutdown (SIG) |
| **DTC P2183** | Engine Coolant Temperature Sensor 2 Circuit Range/Performance (PLAUS) |
| **DTC P2184** | Engine Coolant Temperature Sensor 2 Circuit Low (MIN) |
| **DTC P2185** | Engine Coolant Temperature Sensor 2 Circuit High (MAX) |
| **DTC P2195** | O2 Sensor Signal Biased/Stuck Lean (Bank 1 Sensor 1) (MAX) |
| **DTC P2196** | O2 Sensor Signal Biased/Stuck Rich (Bank 1 Sensor 1) (MAX) |
| **DTC P2197** | O2 Sensor Signal Biased/Stuck Lean (Bank 2 Sensor 1) (MAX) |
| **DTC P2198** | O2 Sensor Signal Biased/Stuck Rich (Bank 2 Sensor 1) (MAX) |
| **DTC P2228** | Barometric Pressure Circuit Low (MIN) |
| **DTC P2229** | Barometric Pressure Circuit High (MAX) |
| **DTC P2243** | O2 Sensor Reference Voltage Circuit/Open (Bank 1 Sensor 1) (MAX) |
| **DTC P2247** | O2 Sensor Reference Voltage Circuit/Open (Bank 2 Sensor 1) (MAX) |
| **DTC P2270** | O2 Sensor Signal Biased/Stuck Lean (Bank 1 Sensor 2) (MIN) |
| **DTC P2271** | O2 Sensor Signal Biased/Stuck Rich (Bank 1 Sensor 2) (MAX) |
| **DTC P2272** | O2 Sensor Signal Biased/Stuck Lean (Bank 2 Sensor 2) (MIN) |
| **DTC P2273** | O2 Sensor Signal Biased/Stuck Rich (Bank 2 Sensor 2) (MAX) |
| **DTC P2297** | O2 Sensor Out of Range During Deceleration (Bank 1 Sensor 1) (MAX) |
| **DTC P2298** | |

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| | O2 Sensor Out of Range During Deceleration (Bank 2 Sensor 1) (MAX) |
| **DTC P2299** | Brake Pedal Position/Accelerator Pedal Position Incompatible (PLAUS) |
| **DTC P2400** | Evaporative Emission System Leak Detection Pump Control Circuit/Open (SIG) |
| **DTC P2401** | Evaporative Emission System Leak Detection Pump Control Circuit Low (MIN) |
| **DTC P2402** | Evaporative Emission System Leak Detection Pump Control Circuit High (MAX) |
| **DTC P240A** | Evaporative Emission System Leak Detection Pump Heater Control Circuit/Open (SIG) |
| **DTC P240B** | Evaporative Emission System Leak Detection Pump Heater Control Circuit Low (MIN) |
| **DTC P240C** | Evaporative Emission System Leak Detection Pump Heater Control Circuit High (MAX) |
| **DTC P2414** | O2 Sensor Exhaust Sample Error (Bank 1 Sensor 1) (MAX) |
| **DTC P2415** | O2 Sensor Exhaust Sample Error (Bank 2 Sensor 1) (MAX) |
| **DTC P2418** | Evaporative Emission System Switching Valve Control Circuit/Open (SIG) |
| **DTC P2419** | Evaporative Emission System Switching Valve Control Circuit Low (MIN) |
| **DTC P2420** | Evaporative Emission System Switching Valve Control Circuit High (MAX) |
| **DTC P250A** | Engine Oil Level Sensor Circuit (SIG) |
| **DTC P250B** | Engine Oil Level Sensor Circuit Range/Performance (PLAUS) |
| **DTC P250F** | Engine Oil Level Too Low (MIN) |
| **DTC P252A** | Engine Oil Quality Sensor Circuit (MIN) |
| **DTC P252A** | Engine Oil Quality Sensor Circuit (PLAUS) |
| **DTC P252A** | Engine Oil Quality Sensor Circuit (SIG) |
| **DTC P252A** | Engine Oil Quality Sensor Circuit (SIG) |
| **DTC P2568** | Direct Ozone Reduction Catalyst Temperature Sensor Circuit Range/Performance (PLAUS) |
| **DTC P2569** | Direct Ozone Reduction Catalyst Temperature Sensor Circuit Low (MIN) |
| **DTC P2570** | Direct Ozone Reduction Catalyst Temperature Sensor Circuit High (MAX) |
| **DTC P2626** | O2 Sensor Pumping Current Trim Circuit/Open (Bank 1 Sensor 1) (PLAUS) |
| **DTC P2629** | O2 Sensor Pumping Current Trim Circuit/Open (Bank 2 Sensor 1) (PLAUS) |
| **DTC P300A** | Controlled Air Guiding Circuit High (MAX) |
| **DTC P300B** | Controlled Air Guiding Circuit Low (MIN) |
| **DTC P300C** | Controlled Air Guiding Circuit (SIG) |
| **DTC P3022** | O2 Sensor Disturbed SPI Communication To WRAF-IC (Bank 1 Sensor 1) (MIN) |
| **DTC P3023** | O2 Sensor Disturbed SPI Communication to WRAF-IC (Bank 2 Sensor 1) (MIN) |
| **DTC P3024** | O2 Sensor Initialization Error WRAF-IC (Bank 1 Sensor 1) (MAX) |
| **DTC P3025** | O2 Sensor Initialization Error WRAF-IC (Bank 2 Sensor 1) (MAX) |
| **DTC P316A** | Engine Coolant Temperature Signal Stuck High (PLAUS) |
| **DTC P3196** | Cold Start Radiator Coolant Temperature Sensor Signal High (MAX) |
| **DTC P3197** | Radiator Coolant Temperature Gradient Too High (PLAUS) |
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| **DTC P3198** | Engine Coolant Temperature 1 Gradient Too High (PLAUS) |
| **DTC P3199** | Engine Coolant Temperature Signal Stuck (PLAUS) |
| **DTC P3202** | Powertrain CAN, CAN Chip Cut-Off (SIG) |
| **DTC P3205** | Local CAN, CAN Chip Cut Off (SIG) |
| **DTC P321E** | Ambient Pressure Sensor Maximum Pressure Implausible (MAX) |
| **DTC P321F** | Ambient Pressure Sensor Minimum Pressure Implausible (MIN) |
| **DTC P3223** | Generator Mechanical (PLAUS) |
| **DTC P3226** | E-Box Control Circuit Fan High Input (MAX) |
| **DTC P3227** | E-Box Control Circuit Fan Low Input (MIN) |
| **DTC P3228** | E-Box Control Circuit Fan Open Circuit (SIG) |
| **DTC P3235** | Control Module Monitoring Version Coding Plausibility (PLAUS) |
| **DTC P324A** | Generator Type Implausible (MAX) |
| **DTC P324A** | Generator Type Implausible (MIN) |
| **DTC P324C** | Generator Over Temperature Calculated (MAX) |
| **DTC P324C** | Generator Over Temperature Calculated (MAX) |
| **DTC P324E** | Generator Regulator Type Implausible (MAX) |
| **DTC P3255** | Generator Voltage in Starting Phase above Threshold (MAX) |
| **DTC P325A** | Generator Electrical Error Calculated (MAX) |
| **DTC U0101** | Lost Communication With TCM (SIG) |
| **DTC U0126** | Lost Communication With Steering Angle Sensor Module (SIG) |
| **DTC U0137** | Lost Communication With Trailer Brake Control Module (SIG) |
| **DTC U0155** | Lost Communication With Instrument Panel Cluster (IPC) Control Module (SIG) |
| **DTC U0167** | Lost Communication With Vehicle Immobilizer Control Module (SIG) |
| **DTC U1100** | Lost Communication With ASC/DSC (SIG) |
| **DTC U1100** | Lost Communication With ASC/DSC (SIG) |
| **DTC U1100** | Lost Communication With ASC/DSC (SIG) |
| **DTC U1101** | Lost Communication With Ambient Temperature/Relative Time (SIG) |
| **DTC U1102** | Message Monitoring Actuation Cruise Control/ACC Alive Check (MIN) |
| **DTC U1103** | Lost Communication With Actuation Cruise Control/ACC (SIG) |
| **DTC U1104** | Message Monitoring Actuation Cruise Control/ACC Check Sum Error (PLAUS) |
| **DTC U1105** | Message Monitoring Torque Request ACC Alive Check (MIN) |
| **DTC U1106** | Lost Communication With Torque Request ACC (SIG) |
| **DTC U1107** | Message Monitoring Torque Request ACC Check Sum Error (PLAUS) |
| **DTC U1108** | Message Monitoring Torque Request Steering Alive Check (MIN) |
| **DTC U1108** | Message Monitoring Torque Request Steering Alive Check (MIN) |
| **DTC U1109** | Lost Communication With Torque Request Steering (SIG) |
| **DTC U1109** | Lost Communication With Torque Request Steering (SIG) |
| **DTC U110A** | Message Monitoring Torque Request Steering Check Sum Error (PLAUS) |
| **DTC U110A** | Message Monitoring Torque Request Steering Check Sum Error (PLAUS) |
| **DTC U110B** | Message Monitoring Torque Request DSC Alive Check (MIN) |
| **DTC U110C** | Lost Communication With Torque Request DSC (SIG) |
| **DTC U110D** | |

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| | Message Monitoring Torque Request DSC Check Sum Error (PLAUS) |
| **DTC U110E** | Message Monitoring Torque Request ETC Alive Check (MIN) |
| **DTC U110E** | Message Monitoring Torque Request ETC Alive Check (MIN) |
| **DTC U110F** | Lost Communication With Torque Request ETC (SIG) |
| **DTC U110F** | Lost Communication With Torque Request ETC (SIG) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (MIN) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (MIN) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (PLAUS) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (PLAUS) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (PLAUS) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (PLAUS) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (SIG) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (SIG) |
| **DTC U1110** | Message Monitoring Torque Request ETC Check Sum Error (SIG) |
| **DTC U1114** | Message Monitoring Vehicle Mode Status Alive Check (MIN) |
| **DTC U1115** | Lost Communication With Vehicle Mode Status (SIG) |
| **DTC U1116** | Message Monitoring Vehicle Mode Status Check Sum Error (PLAUS) |
| **DTC U1118** | Lost Communication With Speed (SIG) |
| **DTC U111A** | Lost Communication With Transmission Data (SIG) |
| **DTC U111B** | Lost Communication With Transmission Data2 (SIG) |
| **DTC U111C** | Lost Communication With Mileage/Range (SIG) |
| **DTC U111D** | Message Monitoring Terminal Status Alive Check (MIN) |
| **DTC U111E** | Lost Communication With Terminal Status (SIG) |
| **DTC U111F** | Message Monitoring Terminal Status Check Sum Error (PLAUS) |
| **DTC U1120** | Lost Communication With Steering Wheel Angle (SIG) |
| **DTC U1121** | Lost Communication With Power Management Battery Voltage (SIG) |
| **DTC U1122** | Lost Communication With Power Management Charge Voltage (SIG) |
| **DTC U1123** | Message Monitoring ARS-Module Status Alive Check (MIN) |
| **DTC U1124** | Lost Communication With ARS-Module Status (SIG) |
| **DTC U1126** | Lost Communication With DSC Status (SIG) |
| **DTC U1128** | Lost Communication With EKP (Electrical Fuel Pump) Status (SIG) |
| **DTC U1129** | Lost Communication With Reverse Status (SIG) |
| **DTC U112A** | Message Monitoring Instrument Pack Status Alive Check (MIN) |
| **DTC U112B** | Lost Communication With Instrument Pack Status (SIG) |
| **DTC U112B** | Lost Communication With Instrument Pack Status (SIG) |
| **DTC U112B** | Lost Communication With Instrument Pack Status (SIG) |
| **DTC U112C** | Lost Communication With Heat Flow/Load Moment A/C (SIG) |
| **DTC U112D** | Lost Communication With Control Crash Cut-Off EKP (Electrical Fuel Pump) (SIG) |
| **DTC U1130** | Lost Communication With Radiator Shutter (Upper) (PLAUS) |
| **DTC U1132** | Lost Communication With Generator via BSD (Bit Serial Data Interface) (MAX) |
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| **DTC U1132** | Lost Communication With Generator via BSD (Bit Serial Data Interface) (SIG) |
| **DTC U1134** | Lost Communication With Lamp Status (SIG) |
| **DTC U1135** | Lost Communication With Status Water Valve (SIG) |
| **DTC U113A** | Lost Communication With Central Locking System Status (SIG) |
| **DTC U113C** | Lost Communication With Time/Date (SIG) |
| **DTC U113D** | Lost Communication With Wheel Torque Management Request/Driveline (SIG) |
| **DTC U113E** | Lost Communication With Display Transmission Data (SIG) |
| **DTC U1154** | Lost Communication With Message 2 TCM (SIG) |
| **DTC U1155** | Message Monitoring 2 TCM Check Sum Error (PLAUS) |
| **DTC U1156** | Message Monitoring 2 TCM Alive Check (MIN) |
| **DTC U1160** | Lost Communication With Message 2 TCM (SIG) |
| **DTC U1161** | Message Monitoring 3 TCM Alive Check (MIN) |
| **DTC U1162** | Message Monitoring 3 TCM Check Sum Error (PLAUS) |
| **DTC U1166** | Message Monitoring EWS (Electronic Immobilizer) - Frame Error (MIN) |
| **DTC U1167** | Message Monitoring Direct Ozone Reduction Catalyst Temperature Sensor Frame Error (SIG) |
| **DTC U1168** | Message Monitoring Direct Ozone Reduction Catalyst Temperature Sensor Check Sum Error (PLAUS) |

## DTC P0010: 'A' CAMSHAFT POSITION - ACTUATOR CIRCUIT/OPEN (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A80

**BMW Fault Code (dez)**

10880

**BMW Fault Code Description VS-Text**

Intake VANOS, activation

**Component**

Camshaft Position Actuator

**Subcomponent**

Intake

**Monitoring criteria**

Monitoring of VANOS control. Engine speed > 500 RPM.

**Fault debouncing**

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none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0012: 'A' CAMSHAFT POSITION - TIMING OVER-RETARDED (BANK 1) (PLAUS)

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**BMW Fault Code (hex)**

0x2A82

**BMW Fault Code (dez)**

10882

**BMW Fault Code Description VS-Text**

VANOS intake

**Component**

Camshaft Position Timing

**Subcomponent**

Intake

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0013: 'B' CAMSHAFT POSITION - ACTUATOR CIRCUIT/OPEN (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A85

**BMW Fault Code (dez)**

10885

**BMW Fault Code Description VS-Text**

Exhaust VANOS, activation

**Component**

Camshaft Position Actuator

**Subcomponent**

Exhaust

**Monitoring criteria**

Monitoring of VANOS control. Engine speed > 500 RPM

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**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

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## DTC P0015: 'B' CAMSHAFT POSITION - TIMING OVER-RETARDED (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2A87

**BMW Fault Code (dez)**

10887

**BMW Fault Code Description VS-Text**

Exhaust VANOS, mechanism

**Component**

Camshaft Position Timing

**Subcomponent**

Exhaust

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0016: CRANKSHAFT POSITION - CAMSHAFT POSITION CORRELATION (BANK 1 SENSOR A) (MAX)

**BMW Fault Code (hex)**

0x2AA4

**BMW Fault Code (dez)**

10916

**BMW Fault Code Description VS-Text**

Camshaft sensor, inlet, tooth fault

**Component**

Crankshaft/Camshaft Position Sensor

**Subcomponent**

Intake

cardiagn.com

**Monitoring criteria**

NWE synchronous, adaptation enabled

**Fault debouncing**

On each camshaft tooth flank when the position is out of tolerance. Immediate entry without debounce.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Position of NWA outside tolerance range relative to crankshaft, with massive sudden change relative to last reference adaptation.

**Repair procedures (plant/service)**

1. Check position (valve timing setting) of camshaft and reluctor
2. Check torque on crankshaft center bolt

**MIL illumination/CC message/emergency program**

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MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Installation fault or mechanical malfunction in camshaft drive

## DTC P0017: CRANKSHAFT POSITION - CAMSHAFT POSITION CORRELATION (BANK 1 SENSOR B) (MAX)

**BMW Fault Code (hex)**

0x2AA5

**BMW Fault Code (dez)**

10917

**BMW Fault Code Description VS-Text**

Camshaft sensor, exhaust, tooth fault

**Component**

Crankshaft/Camshaft Position Sensor

**Subcomponent**

Exhaust

**Monitoring criteria**

NWA synchronized, adaptation enabled

**Fault debouncing**

On each camshaft tooth flank when the position is out of tolerance. Immediate entry without debounce.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Position of NWA outside tolerance range relative to crankshaft, with massive sudden change relative to last reference adaptation.

**Repair procedures (plant/service)**

1. Check position (valve timing setting) of camshaft and reluctor
2. Check torque on crankshaft center bolt

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Installation fault or mechanical malfunction in camshaft drive

## DTC P0030: HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 1) (SIG)

**BMW Fault Code (hex)**

0x2C9C

**BMW Fault Code (dez)**

11420

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter, activation

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**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater wire open

**Repair procedures (plant/service)**

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1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream O2 sensor forward of catalyst for Bank 1
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0031: HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C9C

**BMW Fault Code (dez)**

11420

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter, activation

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

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Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater has short to ground

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream O2 sensor forward of catalyst for Bank 1
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

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## DTC P0032: HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C9C

**BMW Fault Code (dez)**

11420

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter, activation

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater short circuit to positive

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream O2 sensor forward of catalyst for Bank 1
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0036: HO2S HEATER CONTROL CIRCUIT (BANK 1 SENSOR 2) (SIG)

**BMW Fault Code (hex)**

0x2C9E

**BMW Fault Code (dez)**

11422

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter, activation

**Component**

cardiagn.com

Oxygen Sensor, Rear

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater wire open

**Repair procedures (plant/service)**

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1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Downstream O2 sensor behind catalyst for Bank 1
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0037: HO2S HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 2) (MIN)

**BMW Fault Code (hex)**

0x2C9E

**BMW Fault Code (dez)**

11422

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter, activation

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

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Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater has short to ground

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Downstream O2 sensor behind catalyst for Bank 1
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

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## DTC P0038: HO2S HEATER CONTROL CIRCUIT HIGH (BANK 1 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

0x2C9E

**BMW Fault Code (dez)**

11422

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter, activation

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater short circuit to positive

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Downstream O2 sensor behind catalyst for Bank 1
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0040: O2 SENSOR SIGNALS SWAPPED BANK 1 SENSOR 1/BANK 2 SENSOR 1 (PLAUS)

**BMW Fault Code (hex)**

0x2C24

**BMW Fault Code (dez)**

11300

**BMW Fault Code Description VS-Text**

Oxygen sensors before catalytic converter mixed up

**Component**

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Oxygen Sensor, Front

**Subcomponent**

Sensors Swapped

**Monitoring criteria**

Monitoring of interchanged O2 sensors. Implausible O2 sensor signal at idle and during highway operation. Engine speed exceeds 288 RPM. No overrun cutoff. No fault memories.

**Fault debouncing**

Lambda control for both banks at control limit

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 50 sec.

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Oxygen sensor before catalytic converter for Banks 1 and 2 connections reversed.

**Repair procedures (plant/service)**

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Replace pre-cat O2 sensors.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0041: O2 SENSOR SIGNALS SWAPPED BANK 1 SENSOR 2 / BANK 2 SENSOR 2 (PLAUS)

**BMW Fault Code (hex)**

0x2C6A

**BMW Fault Code (dez)**

11370

**BMW Fault Code Description VS-Text**

Oxygen sensors behind catalytic converter, mixed up

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Sensors Swapped

**Monitoring criteria**

O2 sensor system check O2 sensor voltage too low = Signal sticks at lean on one bank and O2 sensor voltage too high = Signal sticks on rich on the other bank The trim controller diagnosis must have been executed, see trim controller diagnosis. Detection of faults during the trim control diagnosis triggers the active test. Engine running at idle is adequate for the active test;

**Fault debouncing**

Downstream (post-cat) O2 sensor voltage < 0.2 V with rich lambda specification in active test for one bank, and downstream (post-cat) O2 sensor voltage > 0.7 V with lean lambda specification in active test on the other bank

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

roughly 300s following completion of trim control diagnosis

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Downstream (post-cat) O2 sensors connected to wrong banks

**Repair procedures (plant/service)**

Replace downstream (post-cat) O2 sensors

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0050: HO2S HEATER CONTROL CIRCUIT (BANK 2 SENSOR 1) (SIG)

**BMW Fault Code (hex)**

0x2C9D

**BMW Fault Code (dez)**

cardiagn.com

11421

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter 2, activation

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Heater wire open

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream O2 sensor forward of catalyst for Bank 2
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0051: HO2S HEATER CONTROL CIRCUIT LOW (BANK 2 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C9D

**BMW Fault Code (dez)**

11421

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter 2, activation

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater Electrical

**Monitoring criteria**

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Driver circuit diagnosis for O2 sensor heater. UBatt > 10V. Sensors installed. No fault memories

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater has short to ground

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream O2 sensor forward of catalyst for Bank 2
4. Replace O2 sensor
5. Replace DME

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**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0052: HO2S HEATER CONTROL CIRCUIT HIGH (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C9D

**BMW Fault Code (dez)**

11421

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter 2, activation.

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V. Sensors installed. No fault memories

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

cardiagn.com

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater short circuit to positive

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream O2 sensor forward of catalyst for Bank 2
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0056: HO2S HEATER CONTROL CIRCUIT (BANK 2 SENSOR 2) (SIG)

**BMW Fault Code (hex)**

0x2C9F

**BMW Fault Code (dez)**

cardiagn.com

11423

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter 2, activation

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Heater wire open

**Repair procedures (plant/service)**

1. Visual inspection of wiring, DME plug and O2 sensor for damage
2. Inspect wiring
3. Check plug-in connections DME <=> Wiring harness <=> downstream (post-cat) O2 sensor for Bank 2 precatalyst
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0057: HO2S HEATER CONTROL CIRCUIT LOW (BANK 2 SENSOR 2) (MIN)

**BMW Fault Code (hex)**

0x2C9F

**BMW Fault Code (dez)**

11423

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter 2, activation

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Heater Electrical

**Monitoring criteria**

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Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V Sensors installed. No fault memories

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater has short to ground

**Repair procedures (plant/service)**

1. Visual inspection of wiring, DME plug and O2 sensor for damage
2. Inspect wiring
3. Check plug-in connections DME <=> Wiring harness <=> downstream (post-cat) O2 sensor for Bank 2 precatalyst
4. Replace O2 sensor
5. Replace DME

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**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0058: HO2S HEATER CONTROL CIRCUIT HIGH (BANK 2 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

0x2C9F

**BMW Fault Code (dez)**

11423

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter 2, activation

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Heater Electrical

**Monitoring criteria**

Driver circuit diagnosis for O2 sensor heater. UBatt > 10 V Sensors installed. No fault memories.

**Fault debouncing**

Active immediately after terminal 15 change; electr. faults entered within a few seconds

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

cardiagn.com

none

**Time conditions**

0.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Heater short circuit to positive

**Repair procedures (plant/service)**

1. Visual inspection of wiring, DME plug and O2 sensor for damage
2. Inspect wiring
3. Check plug-in connections DME <=> Wiring harness <=> downstream (post-cat) O2 sensor for Bank 2 precatalyst
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0070: AMBIENT AIR TEMPERATURE SENSOR CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2F9A

**BMW Fault Code (dez)**

cardiagn.com

12186

**BMW Fault Code Description VS-Text**

Ambient temperature sensor, communication

**Component**

Ambient Air Temperature Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Ambient temperature sensor signal communications monitor

**Fault debouncing**

22 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

Invalid data reading received from instrument cluster: Fault in wiring to sensor, sensor disconnected or defective

**Repair procedures (plant/service)**

1. Visual inspection of sensor
2. Electrical check on sensor wire and power wires
3. Sensor replacement

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

none

## DTC P0071: AMBIENT AIR TEMPERATURE SENSOR RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2F99

**BMW Fault Code (dez)**

12185

**BMW Fault Code Description VS-Text**

Ambient temperature sensor, plausibility

**Component**

Ambient Air Temperature Sensor

**Subcomponent**

Plausibility

**Monitoring criteria**

PLAUS

**Fault debouncing**

cardiagn.com

Plausibility monitoring of ambient temperature sensor with end of start phase recognized

**Terminal conditions**

no invariable debounce time, constant sensor data reading during engine warm-up produces entry

**Voltage conditions**

Terminal 15 ON

**Temperature conditions**

none

**Time conditions**

Outside temperature > 35°C or outside temperature < -7°C, Coolant temperature > -10°C

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

N

**Repair procedures (plant/service)**

Constant, invariable sensor signal: Sticking sensor, sensor manipulation

**MIL illumination/CC message/emergency program**

1. Visual inspection of sensor
2. Electrical check on sensor wire and power supply wire
3. Check sensor data response to motion
4. Replace sensor

**Remarks**

MIL ON in US versions only

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## DTC P0072: AMBIENT AIR TEMPERATURE SENSOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2F9A

**BMW Fault Code (dez)**

12186

**BMW Fault Code Description VS-Text**

Ambient temperature sensor, communication

**Component**

Ambient Air Temperature Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Ambient temperature sensor signal communications monitor

**Fault debouncing**

22 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Instrument cluster receives fault report and symptom: Fault in wiring to sensor, sensor disconnected or defective.

**Repair procedures (plant/service)**

1. Visual inspection of sensor
2. Electrical check on sensor wire and power wires.
3. Sensor replacement

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

none

## DTC P0073: AMBIENT AIR TEMPERATURE SENSOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2F9A

**BMW Fault Code (dez)**

12186

**BMW Fault Code Description VS-Text**

Ambient temperature sensor, communication

**Component**

Ambient Air Temperature Sensor

**Subcomponent**

cardiagn.com

Electrical

**Monitoring criteria**

Ambient temperature sensor signal communications monitor.

**Fault debouncing**

22 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Instrument cluster receives fault report and symptom: Fault in wiring to sensor, sensor disconnected or defective.

**Repair procedures (plant/service)**

1. Visual inspection of sensor
2. Electrical check on sensor wire and power wires
3. Sensor replacement

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**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

none

## DTC P00B2: RADIATOR COOLANT TEMPERATURE SENSOR CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2EEC

**BMW Fault Code (dez)**

12012

**BMW Fault Code Description VS-Text**

Temperature sensor cooler outlet, plausibility

**Component**

Radiator Coolant Temperature Sensor

**Subcomponent**

Plausibility

**Monitoring criteria**

Engine must be running

**Fault debouncing**

no invariable debounce time, constant sensor data reading during engine warm-up produces entry

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

11 V < electrical system voltage < 26 V

**Temperature conditions**

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-10°C < Coolant temperature at engine start < 65°C, -10°C < Induction air temperature at engine start < 69°C

**Time conditions**

600 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Temperature sensor seizing, sensor manipulation

**Repair procedures (plant/service)**

1. Visual inspection of sensor
2. Perform electrical check on sensor and power-supply wires
3. Test to determine whether the temperature really changes when the thermostat opens
4. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

temperature condition defined by data entry

## DTC P00B3: RADIATOR COOLANT TEMPERATURE SENSOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2EEA

**BMW Fault Code (dez)**

12010

**BMW Fault Code Description VS-Text**

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Temperature sensor cooler outlet, signal

**Component**

Radiator Coolant Temperature Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Radiator discharge temperature signal monitor

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Short to ground in sensor wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires.
2. Visual inspection of plug-in contacts (on component and DME ends).
3. Replace sensor.

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

Voltage range diagnosis

## DTC P00B4: RADIATOR COOLANT TEMPERATURE SENSOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2EEA

**BMW Fault Code (dez)**

12010

**BMW Fault Code Description VS-Text**

Temperature sensor cooler outlet, signal

**Component**

Radiator Coolant Temperature Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Radiator discharge temperature signal monitor

**Fault debouncing**

No compliance with temperature condition and time after end of start > 120 sec.

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

Intake air temperature >= -5.25°C or if less than -5.25°C, then time after end of start phase > 120 sec.

**Time conditions**

No compliance with temperature condition and time after end of start >120 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive or open circuit in wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

Voltage range diagnosis

## DTC P0100: MASS OR VOLUME AIR FLOW 'A' CIRCUIT (MAX)

**BMW Fault Code (hex)**

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0x2D16

**BMW Fault Code (dez)**

11542

**BMW Fault Code Description VS-Text**

Air-mass sensor, signal

**Component**

Mass Air Flow Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Engine start completed

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

OBD1 conditions met (voltage between 10 V and 16 V)

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire fallen off

**Repair procedures (plant/service)**

1. Visual inspection of plug-in terminals (at components and DME)
2. Perform electrical check on sensor wire, power supply and ground
3. Replace sensor

**MIL illumination/CC message/emergency program**

none

**Remarks**

Line break

## DTC P0111: INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT RANGE/PERFORMANCE (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2F09

**BMW Fault Code (dez)**

12041

**BMW Fault Code Description VS-Text**

Intake air temperature sensor, plausibility

**Component**

Intake Air Temperature Sensor

**Subcomponent**

Plausibility

**Monitoring criteria**

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Engine must be running, compliance with specified diagnosis conditions is mandatory (see Time conditions).

**Fault debouncing**

30 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

When the engine is started the ambient temperature must exceed -7.5°C and be lower than 35.3°C, engine temperature above 84.75°C

**Time conditions**

(Drive at 40 km/h for 120 sec., then allow to stand at idle for up to 60 sec.) x2 (run though routine twice) + debounce time 30 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Constant, invariable sensor signal: Sticking sensor, sensor manipulation

**Repair procedures (plant/service)**

1. Check sensor data
2. Carry out electrical check on sensor wire and power supply wires
3. Visual inspection of sensor
4. Replace sensor

**MIL illumination/CC message/emergency program**

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MIL ON in US versions only

**Remarks**

none

## DTC P0112: INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT LOW (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2F08

**BMW Fault Code (dez)**

12040

**BMW Fault Code Description VS-Text**

Intake-air temperature sensor, signal

**Component**

Intake Air Temperature Sensor

**Subcomponent**

1 Electrical

**Monitoring criteria**

Engine must be running

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Ambient temperature at engine start must be above -7°C, and should not drop below -7°C during subsequent driving

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**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground in sensor wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

Voltage range diagnosis

## DTC P0113: INTAKE AIR TEMPERATURE SENSOR 1 CIRCUIT HIGH (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2F08

**BMW Fault Code (dez)**

12040

**BMW Fault Code Description VS-Text**

Intake-air temperature sensor, signal

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**Component**

Intake Air Temperature Sensor

**Subcomponent**

1 Electrical

**Monitoring criteria**

Time after end of start phase > 120 sec. > 24 sec. (provisional data content definition), engine must be running

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Ambient temperature at engine start must be above -7°C, and should not drop below -7°C during subsequent driving

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive or open circuit in wire

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**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

Voltage range diagnosis Important: If the ground wire is open LV_ERR_MAF is before LV_ERR_TIA in the control module's fault memory.

## DTC P0117: ENGINE COOLANT TEMPERATURE SENSOR 1 CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2EE0

**BMW Fault Code (dez)**

12000

**BMW Fault Code Description VS-Text**

Coolant temperature sensor, signal

**Component**

Engine Coolant Temperature Sensor

**Subcomponent**

1 Electrical

**Monitoring criteria**

Coolant temperature signal monitor

**Fault debouncing**

1.5 sec.

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground in sensor wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON, electrical water pump and E fan at full power with engine running

**Remarks**

Voltage range diagnosis

## DTC P0118: ENGINE COOLANT TEMPERATURE SENSOR 1 CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2EE0

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**BMW Fault Code (dez)**

12000

**BMW Fault Code Description VS-Text**

Coolant temperature sensor, signal

**Component**

Engine Coolant Temperature Sensor

**Subcomponent**

1 Electrical

**Monitoring criteria**

Coolant temperature signal monitor

**Fault debouncing**

1.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

Intake air temperature >= -5.25°C

**Time conditions**

If compliance with temperature condition is not present, then time after start phase completion > 120 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Sensor wire shorted to positive or open circuit in wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON, electrical water pump and E fan at full power with engine running

**Remarks**

Voltage range diagnosis

## DTC P0121: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'A' CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2CF6

**BMW Fault Code (dez)**

11510

**BMW Fault Code Description VS-Text**

Throttle-valve potentiometer 1, plausibility to air mass

**Component**

Throttle Position Sensor

**Subcomponent**

A

**Monitoring criteria**

Plausibility check on throttle valve aperture angle as measured against modeled data

**Fault debouncing**

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0.25 sec.

**Terminal conditions**

Terminal 15 on, engine on

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

Aperture angle in percent

**Calculated value Y/N**

Y

**Possible Fault Causes**

Contact resistance in input wires or plug-in contacts at throttle valve, electrical problem with throttle valve

**Repair procedures (plant/service)**

1. Check: The sum of throttle valve voltages must equal 5 V
2. Perform electrical check on wiring from DME to throttle valve
3. Visual inspection of plug-in contacts (at component, wiring harness and DME)
4. Replace component

**MIL illumination/CC message/emergency program**

CC status report: WAL_1, reduced engine output!, MIL ON possible EMB + RPM limit at 1300 RPM

**Remarks**

none

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## DTC P0122: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'A' CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2CF9

**BMW Fault Code (dez)**

11513

**BMW Fault Code Description VS-Text**

Throttle-valve potentiometer

**Component**

Throttle Position Sensor

**Subcomponent**

A

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0123: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'A' CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2CF9

**BMW Fault Code (dez)**

11513

**BMW Fault Code Description VS-Text**

Throttle-valve potentiometer

**Component**

Throttle Position Sensor

**Subcomponent**

A

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**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

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none

## DTC P0128: COOLANT THERMOSTAT (COOLANT TEMPERATURE BELOW THERMOSTAT REGULATING TEMPERATURE) (PLAUS)

**BMW Fault Code (hex)**

0x2EF4

**BMW Fault Code (dez)**

12020

**BMW Fault Code Description VS-Text**

Map thermostat, mechanism

**Component**

Thermostat

**Subcomponent**

Functional Check

**Monitoring criteria**

Outside temperature > -10°C Start temperature (coolant temperature) < 65°C and > -10°C Speed > 30 and <130 km/h

**Fault debouncing**

Once release point is reached 25 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

-10°C < Coolant temperature at engine start < 65°C, -10°C < Induction air temperature at engine start < 69°C

**Time conditions**

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approximately 10 minutes

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

The thermostat seizes in open position (sticking in open position corresponds to a gap of roughly 1 mm!); Engine fails to warm to normal operating temperature.

**Repair procedures (plant/service)**

1. Check heating of engine
2. Check thermostat and replace as indicated

**MIL illumination/CC message/emergency program**

MIL on in 2nd driving cycle

**Remarks**

US only

## DTC P0131: O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C3F

**BMW Fault Code (dez)**

11327

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor, evaluation module

**Component**

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Oxygen Sensor, Front

**Subcomponent**

Electrical

**Monitoring criteria**

Monitoring of O2 sensor chip No fault memories

**Fault debouncing**

Short to ground in self-diagnosis processor chip

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground

**Repair procedures (plant/service)**

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1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 2
4. Check wiring harness for shorts to positive or ground and shorts/shunt to other bank (melted?) => Replace wiring harness
5. Replace O2 sensor
6. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0132: O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C3F

**BMW Fault Code (dez)**

11327

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor, evaluation module

**Component**

Oxygen Sensor, Front

**Subcomponent**

Electrical

**Monitoring criteria**

Monitoring of O2 sensor chip No fault memories

**Fault debouncing**

Self-diagnosis processor chip has short to positive

**Terminal conditions**

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Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 2
4. Check wiring harness for shorts to positive or ground and shorts/shunt to other bank (melted?) => Replace wiring harness
5. Replace O2 sensor
6. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

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## DTC P0133: O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C39

**BMW Fault Code (dez)**

11321

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, dynamics

**Component**

Oxygen Sensor, Front

**Subcomponent**

Slow Response

**Monitoring criteria**

O2 sensor dynamic test. No fault memories. Drive at 50 - 80 km/h and at moderate engine speed.

**Fault debouncing**

Reduced dynamic response from sensor

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 400 sec.

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Aging in O2 sensor. Poisoned O2 sensor. In isolated instances an open wire can produce these symptoms.

**Repair procedures (plant/service)**

Replace the suspect O2 sensor. If this fails to resolve the issue, inspect the wiring.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0135: O2 SENSOR HEATER CIRCUIT (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2CA6

**BMW Fault Code (dez)**

11430

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter, function

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater

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**Monitoring criteria**

Check O2 sensor heater; sensor too cold

**Fault debouncing**

O2 sensor temperature < 680°C for more than 5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Roughly 40 sec. after engine start; after approximately 15 sec. in standard operation

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Age effects on sensor heater. Higher contact resistance. Open circuit at Pin VN.

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires (including resistance)
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor on Bank 1 (water or corrosion in the plug? => Repeatedly disconnect the plug and then FIRMLY press it back in)
4. Replace O2 sensor

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5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0135: O2 SENSOR HEATER CIRCUIT (BANK 1 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2CA6

**BMW Fault Code (dez)**

11430

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter, function

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater

**Monitoring criteria**

Data content defined

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0137: O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 1 SENSOR 2) (MIN)

**BMW Fault Code (hex)**

0x2C75

**BMW Fault Code (dez)**

11381

**BMW Fault Code Description VS-Text**

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Oxygen sensor behind catalytic converter, signal

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Electrical

**Monitoring criteria**

O2 sensor signal check. No fault memories. Mass airflow exceeds 10 kg/h.

**Fault debouncing**

Bank 1 downstream (post-cat) O2 sensor voltage less than 0.02 V; internal resistance in circuit for downstream oxygen sensor less than 10 ohms

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 2 minutes

**System test**

none

**Signal information**

Voltage < 0.2 V

**Calculated value Y/N**

N

**Possible Fault Causes**

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Short to ground

**Repair procedures (plant/service)**

1. Check wiring
2. Check plugs
3. Resistance measurement
4. Measure voltage
5. Replace Bank 1 downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0138: O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 1 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

0x2C73

**BMW Fault Code (dez)**

11379

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, signal

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Electrical

**Monitoring criteria**

O2 sensor signal test. No fault memories

**Fault debouncing**

Voltage on Bank 1 O2 sensor behind catalytic converter greater than 4.6 V

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**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 15 sec.

**System test**

none

**Signal information**

Voltage > 4.6 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive

**Repair procedures (plant/service)**

1. Check wiring
2. Measure downstream (post-cat) O2 sensor voltage
3. Check plug
4. Replace Bank 1 downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0139: O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 1 SENSOR 2) (PLAUS)

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**BMW Fault Code (hex)**

0x2C7B

**BMW Fault Code (dez)**

11387

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, signal

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Slow Response

**Monitoring criteria**

O2 sensor behind catalytic converter voltage too high with overrun injection deactivation active; signal sticks at rich

**Fault debouncing**

Voltage > 0.2 V

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

Approximately 10s overrun injection deactivation

**System test**

none

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**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open wire; short to positive, O2 sensor sticking (with aid of a power source) at U > 0.2 V; sensor too cold in overrun fuel supply deactivation

**Repair procedures (plant/service)**

1. Check wiring
2. Check plugs
3. Measure wire resistance against positive and ground
4. Replace Bank 1 downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0140: O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 2) (SIG)

**BMW Fault Code (hex)**

0x2C77

**BMW Fault Code (dez)**

11383

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, signal

**Component**

Oxygen Sensor, Rear

**Subcomponent**

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Electrical

**Monitoring criteria**

O2 sensor signal test. No fault memories

**Fault debouncing**

O2 sensor voltage between 0.4 V and 0.5 V; internal resistance in downstream oxygen sensor's circuit exceeds 60 k Ohms

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 2 minutes

**System test**

none

**Signal information**

Voltage 0.4 ... 0.5 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

1. Visual inspection of wiring and plugs
2. Measure resistance
3. Replace affected wire

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4. Replace wiring harness
5. Replace O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0141: O2 SENSOR HEATER CIRCUIT (BANK 1 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

0x2CA8

**BMW Fault Code (dez)**

11432

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter, function

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Heater

**Monitoring criteria**

Check internal resistance of O2 sensor to check sensor heater => If the heater is too weak, the O2 sensor's internal resistance rises too high (= sensor too cold). No fault memories.

**Fault debouncing**

Internal resistance R > 12000 Ohm (US) or 15000 Ohm (ECE)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

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none

**Temperature conditions**

Exhaust-gas temperature less than 700°C

**Time conditions**

approximately 400 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

O2 sensor is too cool; contact resistance at terminals in heater wire too high; heater too weak owing to aging

**Repair procedures (plant/service)**

Was the temperature drop caused by external factors (driving into snow pile, ice on O2 sensor)? Thaw sensor, clear all fault memory, continue driving!

1. Check O2 sensor heater: Contact resistance on plugs and in wiring is excessive (DME-wiring harness-sensor)
2. Check wiring
3. Check O2 sensor plug (water or corrosion in the plug? Repeatedly disconnect the plug and then re-insert it FIRMLY)
4. Replace plug and/or wire as indicated
5. Replace the affected downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

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## DTC P0151: O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 2 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C40

**BMW Fault Code (dez)**

11328

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor 2, evaluation module

**Component**

Oxygen Sensor, Front

**Subcomponent**

Electrical

**Monitoring criteria**

Monitoring of O2 sensor chip. No fault memories.

**Fault debouncing**

Short to ground in self-diagnosis processor chip

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 5 sec.

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 2
4. Check wiring harness for shorts to positive or ground and shorts/shunt to other bank (melted?) => Replace wiring harness
5. Replace O2 sensor
6. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0152: O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C40

**BMW Fault Code (dez)**

11328

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor 2, evaluation module

**Component**

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Oxygen Sensor, Front

**Subcomponent**

Electrical

**Monitoring criteria**

Monitoring of O2 sensor chip. No fault memories.

**Fault debouncing**

Self-diagnosis processor chip has short to positive

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive

**Repair procedures (plant/service)**

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1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 2
4. Check wiring harness for shorts to positive or ground and shorts/shunt to other bank (melted?) => Replace wiring harness
5. Replace O2 sensor
6. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0153: O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C3A

**BMW Fault Code (dez)**

11322

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, dynamics

**Component**

Oxygen Sensor, Front

**Subcomponent**

Slow Response

**Monitoring criteria**

O2 sensor dynamic test. No fault memories. Drive at 50 - 80 km/h and at moderate engine speed.

**Fault debouncing**

Reduced dynamic response from sensor

**Terminal conditions**

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Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 400 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Aging in O2 sensor. Poisoned O2 sensor. In isolated instances an open wire can produce these symptoms.

**Repair procedures (plant/service)**

Replace the suspect O2 sensor. If this fails to resolve the issue, inspect the wiring.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0155: O2 SENSOR HEATER CIRCUIT (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2CA7

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**BMW Fault Code (dez)**

11431

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter 2, function

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater

**Monitoring criteria**

Check O2 sensor heater; sensor too cold

**Fault debouncing**

O2 sensor temperature < 680°C for more than 5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Roughly 40 sec. after engine start; after approximately 15 sec. in standard operation

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Age effects on sensor heater. Higher contact resistance. Open circuit at Pin VN.

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Check wires (including resistance)
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 2 (water or corrosion in the plug? => Repeatedly disconnect the plug and then FIRMLY press it back in)
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0155: O2 SENSOR HEATER CIRCUIT (BANK 2 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2CA7

**BMW Fault Code (dez)**

11431

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter 2, function

**Component**

Oxygen Sensor, Front

**Subcomponent**

Heater

**Monitoring criteria**

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Data content defined

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

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none

## DTC P0157: O2 SENSOR CIRCUIT LOW VOLTAGE (BANK 2 SENSOR 2) (MIN)

**BMW Fault Code (hex)**

0x2C76

**BMW Fault Code (dez)**

11382

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, signal

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Electrical

**Monitoring criteria**

O2 sensor signal check. No fault memories; Mass airflow exceeds 10 kg/h

**Fault debouncing**

Bank 2 downstream (post-cat) O2 sensor voltage less than 0.02 V; internal resistance in circuit for downstream oxygen sensor less than 10 ohms

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 2 minutes

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**System test**

none

**Signal information**

Voltage < 0.2 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground

**Repair procedures (plant/service)**

1. Check wiring
2. Check plugs
3. Resistance measurement
4. Measure voltage
5. Replace Bank 2 downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0158: O2 SENSOR CIRCUIT HIGH VOLTAGE (BANK 2 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

0x2C74

**BMW Fault Code (dez)**

11380

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, signal

**Component**

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Oxygen Sensor, Rear

**Subcomponent**

Electrical

**Monitoring criteria**

O2 sensor signal test. No fault memories

**Fault debouncing**

Voltage on Bank 2 O2 sensor behind catalytic converter greater than 4.6 V

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 15 sec.

**System test**

none

**Signal information**

Voltage > 4.6 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive

**Repair procedures (plant/service)**

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1. Check wiring
2. Measure downstream (post-cat) O2 sensor voltage
3. Check plug
4. Replace Bank 2 downstream (post-cat) O2 sensor.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0159: O2 SENSOR CIRCUIT SLOW RESPONSE (BANK 2 SENSOR 2) (PLAUS)

**BMW Fault Code (hex)**

0x2C7C

**BMW Fault Code (dez)**

11388

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, signal

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Slow Response

**Monitoring criteria**

O2 sensor behind catalytic converter voltage too high with overrun injection deactivation active; signal sticks at rich

**Fault debouncing**

Voltage > 0.2 V

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

Approximately 10s overrun injection deactivation

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open wire; short to positive, O2 sensor sticking (with aid of a power source) at U > 0.2 V; sensor too cold in overrun fuel supply deactivation.

**Repair procedures (plant/service)**

1. Check wiring
2. Check plugs
3. Measure wire resistance against positive and ground
4. Replace Bank 2 downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0160: O2 SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 2 SENSOR 2) (SIG)

**BMW Fault Code (hex)**

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0x2C78

**BMW Fault Code (dez)**

11384

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, signal

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Electrical

**Monitoring criteria**

O2 sensor signal test. No fault memories

**Fault debouncing**

O2 sensor voltage between 0.4 V and 0.5 V; internal resistance in downstream oxygen sensor's circuit exceeds 60 k Ohms

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 2 minutes

**System test**

none

**Signal information**

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Voltage 0.4 ... 0.5 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

1. Visual inspection of wiring and plugs
2. Measure resistance
3. Replace affected wire
4. Replace wiring harness
5. Replace O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0161: O2 SENSOR HEATER CIRCUIT (BANK 2 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

0x2CA9

**BMW Fault Code (dez)**

11433

**BMW Fault Code Description VS-Text**

Oxygen sensor heating behind catalytic converter 2, function

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Heater

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**Monitoring criteria**

Check internal resistance of O2 sensor to check sensor heater => If the heater is too weak, the O2 sensor's internal resistance rises too high (= sensor too cold). No fault memories

**Fault debouncing**

Internal resistance R > 12000 Ohm (US) or 15000 Ohm (ECE)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Exhaust-gas temperature less than 700°C

**Time conditions**

approximately 400 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

O2 sensor is too cool; contact resistance at terminals in heater wire too high; heater too weak owing to aging.

**Repair procedures (plant/service)**

Was the temperature drop caused by external factors (driving into snow pile, ice on O2 sensor)? Thaw sensor, clear all fault memory, continue driving!

1. Check O2 sensor heater: Contact resistance on plugs and in wiring is excessive (DME-wiring harness-sensor)

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2. Check wiring
3. Check O2 sensor plug (water or corrosion in the plug? Repeatedly disconnect the plug and then re-insert it FIRMLY)
4. Replace plug and/or wire as indicated
5. Replace the affected downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0171: SYSTEM TOO LEAN (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x29E0

**BMW Fault Code (dez)**

10720

**BMW Fault Code Description VS-Text**

Mixture control

**Component**

Fuel System

**Subcomponent**

All Load Ranges

**Monitoring criteria**

Closed-loop lambda mixture control = Active

**Fault debouncing**

65 sec. lambda controller + adaptation deviation in max. 1200 sec.

**Terminal conditions**

Engine must be running

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**Voltage conditions**

none

**Temperature conditions**

Tam > - 10°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

--Mixture too lean A. Air path

1. Leaks in induction tract (also in lines to brake booster)
2. Resonators obstructed
3. Leaks or malfunctions in positive crankcase ventilation
4. Leaks in crankcase (oil filler cap)
5. HFM malfunction
6. EVAP valve leaking

**Repair procedures (plant/service)**

- Visual inspection of affected components - Find and repair leaks - Mutual exchange of HFM or injector valves - Inspect HFM plug-in contacts and electrical wires - Check fuel pressure

**MIL illumination/CC message/emergency program**

MIL on in 2nd driving cycle

**Remarks**

none

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## DTC P0172: SYSTEM TOO RICH (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x29E0

**BMW Fault Code (dez)**

10720

**BMW Fault Code Description VS-Text**

Mixture control

**Component**

Fuel System

**Subcomponent**

All Load Ranges

**Monitoring criteria**

Closed-loop lambda mixture control = Active

**Fault debouncing**

75 sec. lambda controller + adaptation deviation in max. 1200 sec.

**Terminal conditions**

Engine must be running

**Voltage conditions**

none

**Temperature conditions**

Tam > -10°C

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

--Mixture too rich A. Air path

1. Resonators obstructed/sealed
2. Malfunction in positive crankcase ventilation
3. HFM malfunction
4. Tank EVAP valve is leaking (tank ventilation gases) - Collateral fault from incorrect DISA positioning - Collateral fault

**Repair procedures (plant/service)**

- Visual inspection of affected components - Reverse Mutual installation positions of HFM or injector valves - Check HFM plug contacts and electrical wiring - Check fuel pressure - Catalyst on one bank melted (Visual inspection through O2 sensor fittings)

**MIL illumination/CC message/emergency program**

MIL on in 2nd driving cycle

**Remarks**

none

## DTC P0174: SYSTEM TOO LEAN (BANK 2) (MAX)

**BMW Fault Code (hex)**

0x29E1

**BMW Fault Code (dez)**

10721

**BMW Fault Code Description VS-Text**

Mixture control 2

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**Component**

Fuel System

**Subcomponent**

All Load Ranges

**Monitoring criteria**

Closed-loop lambda mixture control = Active

**Fault debouncing**

65 sec. lambda controller + adaptation deviation in max. 1200 sec.

**Terminal conditions**

Engine must be running

**Voltage conditions**

none

**Temperature conditions**

Tam> -10°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

--Mixture too lean A. Air path

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1. Leaks in induction tract (also in lines to brake booster)
2. Resonators obstructed
3. Leaks or malfunctions in positive crankcase ventilation
4. Leaks in crankcase (oil filler cap)
5. HFM malfunction
6. EVAP valve leaking

**Repair procedures (plant/service)**

- Visual inspection of affected components - Find and repair leaks - Mutual exchange of HFM or injector valves - Inspect HFM plug-in contacts and electrical wires - Check fuel pressure

**MIL illumination/CC message/emergency program**

MIL on in 2nd driving cycle

**Remarks**

none

## DTC P0175: SYSTEM TOO RICH (BANK 2) (MIN)

**BMW Fault Code (hex)**

0x29E1

**BMW Fault Code (dez)**

10721

**BMW Fault Code Description VS-Text**

Mixture control 2

**Component**

Fuel System

**Subcomponent**

All Load Ranges

**Monitoring criteria**

Closed-loop lambda mixture control = Active

**Fault debouncing**

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75 sec. lambda controller + adaptation deviation in max. 1200 sec.

**Terminal conditions**

Engine must be running

**Voltage conditions**

none

**Temperature conditions**

Tam> -10°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

--Mixture too rich A. Air path

1. Resonators obstructed/sealed
2. Malfunction in positive crankcase ventilation
3. HFM malfunction
4. Tank EVAP valve is leaking (tank ventilation gases) - Collateral fault from incorrect DISA positioning - Collateral fault

**Repair procedures (plant/service)**

- Visual inspection of affected components - Reverse Mutual installation positions of HFM or injector valves - Check HFM plug contacts and electrical wiring - Check fuel pressure - Catalyst on one bank melted (Visual inspection through O2 sensor fittings)

**MIL illumination/CC message/emergency program**

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MIL on in 2nd driving cycle

**Remarks**

none

## DTC P0201: INJECTOR CIRCUIT/OPEN - CYLINDER 1 (SIG)

**BMW Fault Code (hex)**

0x2E30

**BMW Fault Code (dez)**

11824

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 1, activation

**Component**

Injector

**Subcomponent**

Open Circuit

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0202: INJECTOR CIRCUIT/OPEN - CYLINDER 2 (SIG)

**BMW Fault Code (hex)**

0x2E31

**BMW Fault Code (dez)**

11825

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 2, activation

**Component**

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Injector

**Subcomponent**

Open Circuit

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

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Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0203: INJECTOR CIRCUIT/OPEN - CYLINDER 3 (SIG)

**BMW Fault Code (hex)**

0x2E32

**BMW Fault Code (dez)**

11826

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 3, activation

**Component**

Injector

**Subcomponent**

Open Circuit

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0204: INJECTOR CIRCUIT/OPEN - CYLINDER 4 (SIG)

**BMW Fault Code (hex)**

0x2E33

**BMW Fault Code (dez)**

11827

**BMW Fault Code Description VS-Text**

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Fuel injector, cylinder 4, activation

**Component**

Injector

**Subcomponent**

Open Circuit

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0205: INJECTOR CIRCUIT/OPEN - CYLINDER 5 (SIG)

**BMW Fault Code (hex)**

0x2E34

**BMW Fault Code (dez)**

11828

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 5, activation

**Component**

Injector

**Subcomponent**

Open Circuit

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0206: INJECTOR CIRCUIT/OPEN - CYLINDER 6 (SIG)

**BMW Fault Code (hex)**

0x2E35

**BMW Fault Code (dez)**

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11829

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 6, activation

**Component**

Injector

**Subcomponent**

Open Circuit

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0221: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'B' CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2CF7

**BMW Fault Code (dez)**

11511

**BMW Fault Code Description VS-Text**

Throttle-valve potentiometer 2, plausibility to air mass

**Component**

Throttle Position Sensor

**Subcomponent**

B

**Monitoring criteria**

Plausibility check on throttle valve aperture angle as measured against modeled data

**Fault debouncing**

0.25 sec.

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**Terminal conditions**

Terminal 15 on, engine on

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

Aperture angle in percent

**Calculated value Y/N**

Y

**Possible Fault Causes**

Contact resistance in input wires or plug-in contacts at throttle valve, electrical problem with throttle valve

**Repair procedures (plant/service)**

1. Check: The sum of throttle valve voltages must equal 5 V
2. Perform electrical check on wiring from DME to throttle valve
3. Visual inspection of plug-in contacts (at component, wiring harness and DME)
4. Replace component

**MIL illumination/CC message/emergency program**

CC status report: WAL_1, reduced engine output!, MIL ON possible EMB + RPM limit at 1300 RPM

**Remarks**

none

## DTC P0222: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'B' CIRCUIT LOW (MIN)

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**BMW Fault Code (hex)**

0x2CFA

**BMW Fault Code (dez)**

11514

**BMW Fault Code Description VS-Text**

Throttle-valve potentiometer 2

**Component**

Throttle Position Sensor

**Subcomponent**

B

**Monitoring criteria**

Throttle valve test

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

50 ms

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Main relay response lag.
2. Short to ground in Channel 2 sensor wire or wire open.

**Repair procedures (plant/service)**

1. Check fault memory for faults related to ""power supply to pedal travel sensor"" and/or ""main relay;"" replace main relay as indicated
    1. Perform electrical check on sensor wire and power supply
    2. Visual inspection of plug contacts (on component and DME ends)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Voltage range diagnosis

**NOTE: This is the first fault entered in the control module's fault memory when the main relay is defective or a problem exists with the voltage supply to pedal-position sensor 1, as the debounce time is very short.**

## DTC P0223: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'B' CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2CFA

**BMW Fault Code (dez)**

11514

**BMW Fault Code Description VS-Text**

Throttle-valve potentiometer 2

**Component**

Throttle Position Sensor

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**Subcomponent**

B

**Monitoring criteria**

Throttle valve test

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

50 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Channel 2 sensor wire shorted to positive

**Repair procedures (plant/service)**

1. Electrical check on sensor wire and electrical power supply
2. Visual inspection of plug-in contacts (at component and DME ends)

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**MIL illumination/CC message/emergency program**

MIL control through lv_err_tps_obd

**Remarks**

Voltage range diagnosis

## DTC P0261: CYLINDER 1 INJECTOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2E30

**BMW Fault Code (dez)**

11824

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 1, activation

**Component**

Injector

**Subcomponent**

Short to Ground

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

cardiagn.com

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0262: CYLINDER 1 INJECTOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2E30

**BMW Fault Code (dez)**

11824

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 1, activation

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**Component**

Injector

**Subcomponent**

Short to Battery

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

cardiagn.com

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

Problem resolved only after terminal switch

## DTC P0264: CYLINDER 2 INJECTOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2E31

**BMW Fault Code (dez)**

11825

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 2, activation

**Component**

Injector

**Subcomponent**

Short to Ground

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0265: CYLINDER 2 INJECTOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2E31

**BMW Fault Code (dez)**

11825

**BMW Fault Code Description VS-Text**

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Fuel injector, cylinder 2, activation

**Component**

Injector

**Subcomponent**

Short to Battery

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

Wire is shorted to positive, or a short to positive is present in the component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

Problem resolved only after terminal switch

## DTC P0267: CYLINDER 3 INJECTOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2E32

**BMW Fault Code (dez)**

11826

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 3, activation

**Component**

Injector

**Subcomponent**

Short to Ground

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0268: CYLINDER 3 INJECTOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2E32

**BMW Fault Code (dez)**

cardiagn.com

11826

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 3, activation

**Component**

Injector

**Subcomponent**

Short to Battery

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

Problem resolved only after terminal switch

## DTC P0270: CYLINDER 4 INJECTOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2E33

**BMW Fault Code (dez)**

11827

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 4, activation

**Component**

Injector

**Subcomponent**

Short to Ground

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

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**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0271: CYLINDER 4 INJECTOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

cardiagn.com

0x2E33

**BMW Fault Code (dez)**

11827

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 4, activation

**Component**

Injector

**Subcomponent**

Short to Batt

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

Problem resolved only after terminal switch

## DTC P0273: CYLINDER 5 INJECTOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2E34

**BMW Fault Code (dez)**

11828

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 5, activation

**Component**

Injector

**Subcomponent**

Short to Ground

**Monitoring criteria**

Injector control monitor

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**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

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## DTC P0274: CYLINDER 5 INJECTOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2E34

**BMW Fault Code (dez)**

11828

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 5, activation

**Component**

Injector

**Subcomponent**

Short to Batt

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

Problem resolved only after terminal switch

## DTC P0276: CYLINDER 6 INJECTOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2E35

**BMW Fault Code (dez)**

11829

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 6, activation

**Component**

Injector

**Subcomponent**

Short to Ground

cardiagn.com

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

cardiagn.com

none

## DTC P0277: CYLINDER 6 INJECTOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2E35

**BMW Fault Code (dez)**

11829

**BMW Fault Code Description VS-Text**

Fuel injector, cylinder 6, activation

**Component**

Injector

**Subcomponent**

Short to Batt

**Monitoring criteria**

Injector control monitor

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1.5 sec.

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

Problem resolved only after terminal switch

## DTC P0300: RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED (MAX)

**BMW Fault Code (hex)**

0x29CC

**BMW Fault Code (dez)**

10700

**BMW Fault Code Description VS-Text**

Combustion misfires, several cylinders

**Component**

Misfire

**Subcomponent**

cardiagn.com

Multiple

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa. Combustion miss on at least two cylinders.

**Fault debouncing**

Combustion miss within 200 crankshaft rotations, weighted according to engine speed and load factor.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Ignition miss or fuel trim fault affecting at least two individual cylinders

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

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MIL ON

**Remarks**

Supplementary information always provided when combustion miss is detected on more than two cylinders.

## DTC P0300: RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED (MIN)

**BMW Fault Code (hex)**

0x29CC

**BMW Fault Code (dez)**

10700

**BMW Fault Code Description VS-Text**

Combustion misfires, several cylinders

**Component**

Misfire

**Subcomponent**

Multiple

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa. Combustion miss on at least two cylinders

**Fault debouncing**

Combustion miss within first 1000 crankshaft rotations after start

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8 °C

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**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Ignition miss or fuel trim fault affecting at least two individual cylinders

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Supplementary information always provided when combustion miss is detected on more than two cylinders.

## DTC P0300: RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED (PLAUS)

**BMW Fault Code (hex)**

0x29CC

**BMW Fault Code (dez)**

10700

**BMW Fault Code Description VS-Text**

Combustion misfires, several cylinders

**Component**

cardiagn.com

Misfire

**Subcomponent**

Multiple

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa. Combustion miss on at least two cylinders.

**Fault debouncing**

at least 2 bits from Symbol are set to 2

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Ignition miss or fuel trim fault affecting at least two individual cylinders.

**Repair procedures (plant/service)**

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Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Supplementary information always provided when combustion miss is detected on more than two cylinders.

## DTC P0300: RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED (SIG)

**BMW Fault Code (hex)**

0x29CC

**BMW Fault Code (dez)**

10700

**BMW Fault Code Description VS-Text**

Combustion misfires, several cylinders

**Component**

Misfire

**Subcomponent**

Multiple

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa Combustion miss on at least two cylinders

**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Ignition miss or fuel trim fault affecting at least two individual cylinders

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Supplementary information always provided when combustion miss is detected on more than two cylinders.

## DTC P0301: CYLINDER 1 MISFIRE DETECTED (MAX)

**BMW Fault Code (hex)**

0x29CD

**BMW Fault Code (dez)**

10701

**BMW Fault Code Description VS-Text**

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Combustion misfires, cylinder 1

**Component**

Misfire

**Subcomponent**

Cyl 1

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within 200 crankshaft rotations, weighted according to engine speed and load factor

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

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Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0301: CYLINDER 1 MISFIRE DETECTED (MIN)

**BMW Fault Code (hex)**

0x29CD

**BMW Fault Code (dez)**

10701

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 1

**Component**

Misfire

**Subcomponent**

Cyl 1

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa.

**Fault debouncing**

Combustion miss within first 1000 crankshaft rotations after start.

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

None

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0301: CYLINDER 1 MISFIRE DETECTED (SIG)

**BMW Fault Code (hex)**

0x29CD

**BMW Fault Code (dez)**

cardiagn.com

10701

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 1

**Component**

Misfire

**Subcomponent**

Cyl 1

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0302: CYLINDER 2 MISFIRE DETECTED (MAX)

**BMW Fault Code (hex)**

0x29CE

**BMW Fault Code (dez)**

10702

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 2

**Component**

Misfire

**Subcomponent**

Cyl 2

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within 200 crankshaft rotations, weighted according to engine speed and load factor.

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**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0302: CYLINDER 2 MISFIRE DETECTED (MIN)

**BMW Fault Code (hex)**

cardiagn.com

0x29CE

**BMW Fault Code (dez)**

10702

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 2

**Component**

Misfire

**Subcomponent**

Cyl 2

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within first 1000 crankshaft rotations after start

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > -6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0302: CYLINDER 2 MISFIRE DETECTED (SIG)

**BMW Fault Code (hex)**

0x29CE

**BMW Fault Code (dez)**

10702

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 2

**Component**

Misfire

**Subcomponent**

Cyl 2

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

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**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

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## DTC P0303: CYLINDER 3 MISFIRE DETECTED (MAX)

**BMW Fault Code (hex)**

0x29CF

**BMW Fault Code (dez)**

10703

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 3

**Component**

Misfire

**Subcomponent**

Cyl 3

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within 200 crankshaft rotations, weighted according to engine speed and load factor

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0303: CYLINDER 3 MISFIRE DETECTED (MIN)

**BMW Fault Code (hex)**

0x29CF

**BMW Fault Code (dez)**

10703

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 3

**Component**

Misfire

**Subcomponent**

Cyl 3

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**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa.

**Fault debouncing**

Combustion miss within first 1000 crankshaft rotations after start.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

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**Remarks**

none

## DTC P0303: CYLINDER 3 MISFIRE DETECTED (SIG)

**BMW Fault Code (hex)**

0x29CF

**BMW Fault Code (dez)**

10703

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 3

**Component**

Misfire

**Subcomponent**

Cyl 3

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

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6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0304: CYLINDER 4 MISFIRE DETECTED (MAX)

**BMW Fault Code (hex)**

0x29D0

**BMW Fault Code (dez)**

10704

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 4

**Component**

Misfire

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**Subcomponent**

Cyl 4

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within 200 crankshaft rotations, weighted according to engine speed and load factor

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

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**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0304: CYLINDER 4 MISFIRE DETECTED (MIN)

**BMW Fault Code (hex)**

0x29D0

**BMW Fault Code (dez)**

10704

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 4

**Component**

Misfire

**Subcomponent**

Cyl 4

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within first 1000 crankshaft rotations after start

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

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Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0304: CYLINDER 4 MISFIRE DETECTED (SIG)

**BMW Fault Code (hex)**

0x29D0

**BMW Fault Code (dez)**

10704

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 4

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**Component**

Misfire

**Subcomponent**

Cyl 4

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

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**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0305: CYLINDER 5 MISFIRE DETECTED (MAX)

**BMW Fault Code (hex)**

0x29D1

**BMW Fault Code (dez)**

10705

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 5

**Component**

Misfire

**Subcomponent**

Cyl 5

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within 200 crankshaft rotations, weighted according to engine speed and load factor

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

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Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0305: CYLINDER 5 MISFIRE DETECTED (MIN)

**BMW Fault Code (hex)**

0x29D1

**BMW Fault Code (dez)**

10705

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**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 5

**Component**

Misfire

**Subcomponent**

Cyl 5

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within first 1000 crankshaft rotations after start

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

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**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0305: CYLINDER 5 MISFIRE DETECTED (SIG)

**BMW Fault Code (hex)**

0x29D1

**BMW Fault Code (dez)**

10705

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 5

**Component**

Misfire

**Subcomponent**

Cyl 5

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations

**Terminal conditions**

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Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > -6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0306: CYLINDER 6 MISFIRE DETECTED (MAX)

**BMW Fault Code (hex)**

0x29D2

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**BMW Fault Code (dez)**

10706

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 6

**Component**

Misfire

**Subcomponent**

Cyl 6

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss within 200 crankshaft rotations, weighted according to engine speed and load factor

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > -6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

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**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0306: CYLINDER 6 MISFIRE DETECTED (MIN)

**BMW Fault Code (hex)**

0x29D2

**BMW Fault Code (dez)**

10706

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 6

**Component**

Misfire

**Subcomponent**

Cyl 6

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

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Combustion miss within first 1000 crankshaft rotations after start

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

**DTC P0306: CYLINDER 6 MISFIRE DETECTED (SIG)**

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**BMW Fault Code (hex)**

0x29D2

**BMW Fault Code (dez)**

10706

**BMW Fault Code Description VS-Text**

Combustion misfires, cylinder 6

**Component**

Misfire

**Subcomponent**

Cyl 6

**Monitoring criteria**

Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

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**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Combustion miss or problem with fuel trim

**Repair procedures (plant/service)**

Ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P0313: MISFIRE DETECTED WITH LOW FUEL (MIN)

**BMW Fault Code (hex)**

0x29D9

**BMW Fault Code (dez)**

10713

**BMW Fault Code Description VS-Text**

Misfire at low tank fill level

**Component**

Misfire

**Subcomponent**

Low Fuel

**Monitoring criteria**

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Combustion consistency measurement. Starting at engine speed n > 450 and n < 7000. Ambient pressure > 740 hPa

**Fault debouncing**

Combustion miss detected within four diagnosis windows consisting of 1000 crankshaft rotations

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Coolant temperature > - 6.8°C

**Time conditions**

6 crankshaft rotations after start

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Not enough fuel in tank

**Repair procedures (plant/service)**

Refuel, ignition coils, spark plugs, ignition cables, injectors, DME

**MIL illumination/CC message/emergency program**

according to the corresponding combustion miss fault

**Remarks**

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Supplementary information always provided when combustion miss of any kind is detected during operation in the fuel reserve range.

## DTC P0326: KNOCK SENSOR 1 CIRCUIT RANGE/PERFORMANCE (BANK 1 OR SINGLE SENSOR) (PLAUS)

**BMW Fault Code (hex)**

0x2E68

**BMW Fault Code (dez)**

11880

**BMW Fault Code Description VS-Text**

Knock-sensor signal 1

**Component**

Knock Sensor

**Subcomponent**

Sensor 1

**Monitoring criteria**

Knock sensor signal monitor. Vehicle road operation at > 2800 RPM (current data status, tends toward > 2560 RPM) and air mass > 180 mg/unit. It is not possible to clear fault by switching ignition terminals. Compliance with the activation conditions and absence of malfunction extending over several seconds are required before fault code can be cleared.

**Fault debouncing**

The debounce time is derived from assessment of statistical diagnosis

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

min 1 sec., max 3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Knock sensor signal too low. Threaded sensor connection is loose or wire connecting knock sensor 2 to engine-management ECU is open.

**Repair procedures (plant/service)**

1. Check knock sensor connection to verify that it is tight.
2. Check wire connecting knock sensor 1 and engine-management control module
3. Check for connection between knock sensor 1 and ground or positive
4. Replace knock sensor

**MIL illumination/CC message/emergency program**

No warning message. (No closed-loop knock control available. Power loss, as engine reverts to operation in safe range.)

**Remarks**

none

## DTC P0327: KNOCK SENSOR 1 CIRCUIT LOW (BANK 1 OR SINGLE SENSOR) (MIN)

**BMW Fault Code (hex)**

0x2E68

**BMW Fault Code (dez)**

11880

**BMW Fault Code Description VS-Text**

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Knock-sensor signal 1

**Component**

Knock Sensor

**Subcomponent**

Sensor 1

**Monitoring criteria**

Knock sensor signal monitor. Vehicle road operation at > 2800 1 RPM (current data status, tends toward > 2560 RPM) and air mass > 180 mg/unit. It is not possible to clear fault by switching ignition terminals. Compliance with the activation conditions and absence of malfunction extending over several seconds are required before fault code can be cleared.

**Fault debouncing**

Yes, by event counter. Knock signal sensor must lie below threshold (differential knock signal < 180 mV < 200 mV) for 1...3 sec., then fault code is registered

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

min 1 sec., max 3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

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N

**Possible Fault Causes**

Knock sensor signal too low. Threaded sensor connection is loose or wire connecting knock sensor 1 to engine-management ECU is open.

**Repair procedures (plant/service)**

1. Check knock sensor connection to verify that it is tight.
2. Check wire connecting knock sensor 1 and engine-management control module
3. Check for connection between knock sensor 1 and ground or positive
4. Replace knock sensor

**MIL illumination/CC message/emergency program**

No warning message. (No closed-loop knock control available. Power loss, as engine reverts to operation in safe range.)

**Remarks**

none

## DTC P0328: KNOCK SENSOR 1 CIRCUIT HIGH (BANK 1 OR SINGLE SENSOR) (MAX)

**BMW Fault Code (hex)**

0x2E68

**BMW Fault Code (dez)**

11880

**BMW Fault Code Description VS-Text**

Knock-sensor signal 1

**Component**

Knock Sensor

**Subcomponent**

Sensor 1

**Monitoring criteria**

Knock sensor signal monitor. Vehicle road operation at > 2800 RPM (current data status, tends toward > 2560

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RPM) and air mass > 180 mg/unit. It is not possible to clear fault by switching ignition terminals. Compliance with the activation conditions and absence of malfunction extending over several seconds are required before fault code can be cleared.

**Fault debouncing**

Yes, by event counter. If knock sensor signal remains below threshold (differential knock signal > 4.8 V) for 1...3 sec. fault code is stored.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

min 1 sec., max 3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Knock sensor signal too high. Threaded sensor connection is loose or wire connecting knock sensor 1 to the engine-management ECU is shorted to positive.

**Repair procedures (plant/service)**

1. Check knock sensor connection to verify that it is tight.
2. Check wire connecting knock sensor 1 and engine-management control module
3. Check for connection between knock sensor 1 and ground or positive
4. Replace knock sensor

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**MIL illumination/CC message/emergency program**

No warning message. (No closed-loop knock control available. Power loss, as engine reverts to operation in safe range.)

**Remarks**

none

## DTC P0335: CRANKSHAFT POSITION SENSOR 'A' CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2A94

**BMW Fault Code (dez)**

10900

**BMW Fault Code Description VS-Text**

Crankshaft sensor, signal

**Component**

Crankshaft Position Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Engine turns over, KW signals are not detected.

**Fault debouncing**

Application number of camshaft flanks detected and no crankshaft tooth has been recognized

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

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none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Crankshaft sensor signal missing, prior to engine start

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference signals
2. Replace crankshaft sensor

**MIL illumination/CC message/emergency program**

MIL 2nd DC CRK in emergency default mode

**Remarks**

none

## DTC P0335: CRANKSHAFT POSITION SENSOR 'A' CIRCUIT (MIN)

**BMW Fault Code (hex)**

0x2A94

**BMW Fault Code (dez)**

10900

**BMW Fault Code Description VS-Text**

Crankshaft sensor, signal

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**Component**

Crankshaft Position Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Engine turns over, crankshaft signals detected.

**Fault debouncing**

Application number of camshaft flanks detected and no crankshaft tooth has been recognized

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

KWG signal missing after engine start

**Repair procedures (plant/service)**

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1. Check signal wire for short to positive, ground, opens and interference signals
2. Replace crankshaft sensor

**MIL illumination/CC message/emergency program**

MIL 2nd DC CRK emergency default mode

**Remarks**

none

## DTC P0340: CAMSHAFT POSITION SENSOR 'A' CIRCUIT (BANK 1 OR SINGLE SENSOR) (MAX)

**BMW Fault Code (hex)**

0x2AA0

**BMW Fault Code (dez)**

10912

**BMW Fault Code Description VS-Text**

Camshaft sensor, inlet, signal

**Component**

Camshaft Position Sensor

**Subcomponent**

Intake Electrical

**Monitoring criteria**

NWE synchronous

**Fault debouncing**

On every engine cycle when no camshaft flank has been detected.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Intake camshaft sensor signal missing or implausible

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference pulses.
2. Replace camshaft exhaust side sensor.

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Sensor failure after synchronization or during start if NW is not the NW used for synchronization.

## DTC P0341: CAMSHAFT POSITION SENSOR 'A' CIRCUIT RANGE/PERFORMANCE (BANK 1 OR SINGLE SENSOR) (MAX)

**BMW Fault Code (hex)**

0x2A9A

**BMW Fault Code (dez)**

10906

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**BMW Fault Code Description VS-Text**

Camshaft sensor, inlet, signal

**Component**

Camshaft Position Sensor

**Subcomponent**

Intake Electrical

**Monitoring criteria**

Engine turning over

**Fault debouncing**

On every camshaft flank when the flank was outside tolerance. At engine start only.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

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No valid camshaft flank recognized for synchronization. VANOS not locked down at start.

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, open wire.
2. Replace camshaft sensor.
3. Check positions (valve timing setting) of camshaft reluctors
4. Check timing chain and chain tensioner assembly.
5. Check VANOS solenoids for dirt and contamination

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM emergency default mode, Synchronization via exhaust camshaft.

**Remarks**

No synchronization with NWE possible

## DTC P0344: CAMSHAFT POSITION SENSOR 'A' CIRCUIT INTERMITTENT (BANK 1 OR SINGLE SENSOR) (MAX)

**BMW Fault Code (hex)**

0x2A9E

**BMW Fault Code (dez)**

10910

**BMW Fault Code Description VS-Text**

Camshaft sensor, inlet, synchronization

**Component**

Camshaft Position Sensor

**Subcomponent**

Intake Electrical

**Monitoring criteria**

NWE synchronous

**Fault debouncing**

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On every camshaft flank if the flank ratio was not in tolerance.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Intake camshaft autonomous synchronization, incorrect tooth flank ratio.

**Repair procedures (plant/service)**

1. Replace camshaft reluctor, installation fault
2. Signal interference
3. Replace intake camshaft sensor, transmitting inverted signal

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Flank pattern does not match stored pattern.

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## DTC P0351: IGNITION COIL 'A' PRIMARY/SECONDARY CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2E24

**BMW Fault Code (dez)**

11812

**BMW Fault Code Description VS-Text**

Ignition coil, cylinder 1

**Component**

Ignition Coil

**Subcomponent**

A Primary/Secondary Circuit

**Monitoring criteria**

No dual ignition, secondary spark absent

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

none

**Time conditions**

t > 1 sec.

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system, ignition coil

**Repair procedures (plant/service)**

Check voltage supply, KBB/ZSP plug contact, measure KBB insulation resistance, replace ignition coil.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0352: IGNITION COIL 'B' PRIMARY/SECONDARY CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2E25

**BMW Fault Code (dez)**

11813

**BMW Fault Code Description VS-Text**

Ignition coil, cylinder 2

**Component**

Ignition Coil

**Subcomponent**

B Primary/Secondary Circuit

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**Monitoring criteria**

No dual ignition, secondary spark absent

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

none

**Time conditions**

t > 1 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system, ignition coil

**Repair procedures (plant/service)**

Check voltage supply, KBB/ZSP plug contact, measure KBB insulation resistance, replace ignition coil.

**MIL illumination/CC message/emergency program**

none

**Remarks**

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none

## DTC P0353: IGNITION COIL 'C' PRIMARY/SECONDARY CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2E26

**BMW Fault Code (dez)**

11814

**BMW Fault Code Description VS-Text**

Ignition coil, cylinder 3

**Component**

Ignition Coil

**Subcomponent**

C Primary/Secondary Circuit

**Monitoring criteria**

No dual ignition, secondary spark absent

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

none

**Time conditions**

t > 1 sec.

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system, ignition coil

**Repair procedures (plant/service)**

Check voltage supply, KBB/ZSP plug contact, measure KBB insulation resistance, replace ignition coil.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0354: IGNITION COIL 'D' PRIMARY/SECONDARY CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2E27

**BMW Fault Code (dez)**

11815

**BMW Fault Code Description VS-Text**

Ignition coil, cylinder 4

**Component**

Ignition Coil

**Subcomponent**

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D Primary/Secondary Circuit

**Monitoring criteria**

No dual ignition, secondary spark absent

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

none

**Time conditions**

t > 1 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system, ignition coil

**Repair procedures (plant/service)**

Check voltage supply, KBB/ZSP plug contact, measure KBB insulation resistance, replace ignition coil.

**MIL illumination/CC message/emergency program**

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none

**Remarks**

none

## DTC P0355: IGNITION COIL 'E' PRIMARY/SECONDARY CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2E28

**BMW Fault Code (dez)**

11816

**BMW Fault Code Description VS-Text**

Ignition coil, cylinder 5

**Component**

Ignition Coil

**Subcomponent**

E Primary/Secondary Circuit

**Monitoring criteria**

No dual ignition, secondary spark absent

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

none

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**Time conditions**

t > 1 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system, ignition coil.

**Repair procedures (plant/service)**

Check voltage supply, KBB/ZSP plug contact, measure KBB insulation resistance, replace ignition coil.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0356: IGNITION COIL 'F' PRIMARY/SECONDARY CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2E29

**BMW Fault Code (dez)**

11817

**BMW Fault Code Description VS-Text**

Ignition coil, cylinder 6

**Component**

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Ignition Coil

**Subcomponent**

F Primary/Secondary Circuit

**Monitoring criteria**

No dual ignition, secondary spark absent

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

none

**Time conditions**

t >1 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system, ignition coil

**Repair procedures (plant/service)**

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Check voltage supply, KBB/ZSP plug contact, measure KBB insulation resistance, replace ignition coil.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0365: CAMSHAFT POSITION SENSOR 'B' CIRCUIT (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2AA1

**BMW Fault Code (dez)**

10913

**BMW Fault Code Description VS-Text**

Camshaft sensor, exhaust, signal

**Component**

Camshaft Position Sensor

**Subcomponent**

Exhaust Electrical

**Monitoring criteria**

NWA synchronous

**Fault debouncing**

On every engine cycle when no camshaft flank has been detected.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Exhaust camshaft signal implausible or missing

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference pulses
2. Replace camshaft exhaust side sensor,

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Sensor failure after synchronization or during start if NW is not the NW used for synchronization.

## DTC P0366: CAMSHAFT POSITION SENSOR 'B' CIRCUIT RANGE/PERFORMANCE (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A9B

**BMW Fault Code (dez)**

10907

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**BMW Fault Code Description VS-Text**

Camshaft sensor, exhaust, signal

**Component**

Camshaft Position Sensor

**Subcomponent**

Exhaust Electrical

**Monitoring criteria**

Engine turns over, synchronization with NWE fails

**Fault debouncing**

On every camshaft flank when the flank was outside tolerance. At engine start only.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

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No valid camshaft flank recognized for synchronization. VANOS not locked down at start.

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, open wire.
2. Replace camshaft sensor.
3. Check positions (valve timing setting) of camshaft reluctors
4. Check timing chain and chain tensioner assembly.
5. Check VANOS solenoids for dirt and contamination

**MIL illumination/CC message/emergency program**

Nothing, as double fault is present

**Remarks**

No synchronization possible with any camshaft

## DTC P0369: CAMSHAFT POSITION SENSOR 'B' CIRCUIT INTERMITTENT (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A9F

**BMW Fault Code (dez)**

10911

**BMW Fault Code Description VS-Text**

Camshaft sensor, exhaust, synchronization

**Component**

Camshaft Position Sensor

**Subcomponent**

Exhaust Electrical

**Monitoring criteria**

NWA synchronous

**Fault debouncing**

On every camshaft flank if the flank ratio was not in tolerance.

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**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Exhaust camshaft autonomous synchronization, incorrect tooth flank ratio

**Repair procedures (plant/service)**

1. Replace camshaft reluctor, installation fault
2. Signal interference
3. Replace NWA sensor, transmitting inverted signal

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Flank pattern does not match stored pattern.

## DTC P0370: TIMING REFERENCE HIGH RESOLUTION SIGNAL 'A' (MAX)

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**BMW Fault Code (hex)**

0x2A96

**BMW Fault Code (dez)**

10902

**BMW Fault Code Description VS-Text**

Crankshaft sensor, tooth fault

**Component**

Crankshaft Position Sensor

**Subcomponent**

Signal

**Monitoring criteria**

Engine turns over, camshaft synchronized

**Fault debouncing**

On each synchronization gap, without loss of synchronization.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Number of teeth counted during one engine rotation incorrect by less than 3 teeth.

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference signals
2. Replace crankshaft sensor

**MIL illumination/CC message/emergency program**

MIL 2nd DC CRK emergency default mode

**Remarks**

Incorrect tooth number at gap without loss of synchronization

## DTC P0370: TIMING REFERENCE HIGH RESOLUTION SIGNAL 'A' (MAX)

**BMW Fault Code (hex)**

0x2A97

**BMW Fault Code (dez)**

10903

**BMW Fault Code Description VS-Text**

Crankshaft sensor, gap fault

**Component**

Crankshaft Position Sensor

**Subcomponent**

Signal

**Monitoring criteria**

Engine turns over, camshaft synchronized

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**Fault debouncing**

On each tooth if the tooth time was outside the expected window. Assessment at each synchro gap.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

At least one invalid tooth time during the last engine rotation.

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference signals
2. Replace crankshaft sensor

**MIL illumination/CC message/emergency program**

MIL 2nd DC CRK emergency default mode

**Remarks**

Tooth time outside expected window

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## DTC P0370: TIMING REFERENCE HIGH RESOLUTION SIGNAL 'A' (MIN)

**BMW Fault Code (hex)**

0x29DB

**BMW Fault Code (dez)**

10715

**BMW Fault Code Description VS-Text**

Smooth running, segment timing

**Component**

Crankshaft Position Sensor

**Subcomponent**

Signal

**Monitoring criteria**

Misfire diagnosis is deactivated in response to detected tooth jump and/or fault in tooth recognition at crankshaft reluctor rotor.

**Fault debouncing**

Jump by one or two teeth

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

Always active

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Crankshaft sensor, defective reluctor

**Repair procedures (plant/service)**

Check and replace as indicated: Crankshaft sensor, reluctor.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0373: TIMING REFERENCE HIGH RESOLUTION SIGNAL 'A' INTERMITTENT/ERRATIC PULSES (MAX)

**BMW Fault Code (hex)**

0x2A95

**BMW Fault Code (dez)**

10901

**BMW Fault Code Description VS-Text**

Crankshaft sensor, synchronization

**Component**

Crankshaft Position Sensor

**Subcomponent**

Signal

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**Monitoring criteria**

Engine turns over, camshaft synchronized

**Fault debouncing**

At each synchronization gap if synchronization has been lost.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Number of teeth counted during one engine rotation incorrect by more than 2 teeth.

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference signals
2. Replace crankshaft sensor

**MIL illumination/CC message/emergency program**

MIL 2nd DC CRK emergency default mode

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**Remarks**

Incorrect tooth number at gap with loss of synchronization

## DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x29F4

**BMW Fault Code (dez)**

10740

**BMW Fault Code Description VS-Text**

Catalytic-converter conversion

**Component**

Catalyst

**Subcomponent**

Efficiency

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

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none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x29F4

**BMW Fault Code (dez)**

10740

**BMW Fault Code Description VS-Text**

Catalytic-converter conversion

**Component**

Catalyst

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**Subcomponent**

Efficiency

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

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none

**Remarks**

none

## DTC P0430: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 2) (MAX)

**BMW Fault Code (hex)**

0x29F5

**BMW Fault Code (dez)**

10741

**BMW Fault Code Description VS-Text**

Catalytic-converter conversion 2

**Component**

Catalyst

**Subcomponent**

Efficiency

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0430: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (BANK 2) (MIN)

**BMW Fault Code (hex)**

0x29F5

**BMW Fault Code (dez)**

10741

**BMW Fault Code Description VS-Text**

Catalytic-converter conversion 2

**Component**

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Catalyst

**Subcomponent**

Efficiency

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

cardiagn.com

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0440: EVAPORATIVE EMISSION SYSTEM (PLAUS)

**BMW Fault Code (hex)**

0x2A1A

**BMW Fault Code (dez)**

10778

**BMW Fault Code Description VS-Text**

Tank-venting system, function

**Component**

EVAP System

**Subcomponent**

Flow Check

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

TEV Check

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

Symptom is not used

## DTC P0441: EVAPORATIVE EMISSION SYSTEM INCORRECT PURGE FLOW (SIG)

**BMW Fault Code (hex)**

0x2A1A

**BMW Fault Code (dez)**

10778

**BMW Fault Code Description VS-Text**

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Tank-venting system, function

**Component**

EVAP System

**Subcomponent**

Flow Check

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

TEV Check

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

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none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

Symptom is not used

## DTC P0442: EVAPORATIVE EMISSION SYSTEM LEAK DETECTED (SMALL LEAK) (MAX)

**BMW Fault Code (hex)**

0x2A15

**BMW Fault Code (dez)**

10773

**BMW Fault Code Description VS-Text**

DMTL, minor leak

**Component**

EVAP System

**Subcomponent**

Leak Detection

**Monitoring criteria**

Fuel tank system minute leakage monitor, after completion of DMTL diagnosis

**Fault debouncing**

After distance traveled > 200 m in driving cycle following diagnosis

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

10.95 < vehicle electrical system voltage < 14.5

**Temperature conditions**

1.5°C > Ambient temperature > 38°C

**Time conditions**

none

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Leak > 1 mm in the tank system

**Repair procedures (plant/service)**

Search for leak in tank system (remember DMTL/TEV)

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P0444: EVAPORATIVE EMISSION SYSTEM PURGE CONTROL VALVE CIRCUIT OPEN (SIG)

**BMW Fault Code (hex)**

0x2A19

**BMW Fault Code (dez)**

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10777

**BMW Fault Code Description VS-Text**

Tank-venting valve, activation

**Component**

EVAP System

**Subcomponent**

Valve

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0456: EVAPORATIVE EMISSION SYSTEM LEAK DETECTED (VERY SMALL LEAK) (MIN)

**BMW Fault Code (hex)**

0x2A16

**BMW Fault Code (dez)**

10774

**BMW Fault Code Description VS-Text**

DMTL, superfine leak

**Component**

EVAP System

**Subcomponent**

Leak Detection

**Monitoring criteria**

Tank system minute leakage monitor

**Fault debouncing**

Ignition on, in driving cycle following diagnosis

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

10.95 < vehicle electrical system voltage < 14.5

**Temperature conditions**

1.5°C > Ambient temperature > 38°C

**Time conditions**

none

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Leak > 0.5 mm in the tank system

**Repair procedures (plant/service)**

Search for leak in tank system/Check fuel filler cap

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P0458: EVAPORATIVE EMISSION SYSTEM PURGE CONTROL VALVE CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

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0x2A19

**BMW Fault Code (dez)**

10777

**BMW Fault Code Description VS-Text**

Tank-venting valve, activation

**Component**

EVAP System

**Subcomponent**

Valve

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0459: EVAPORATIVE EMISSION SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2A19

**BMW Fault Code (dez)**

10777

**BMW Fault Code Description VS-Text**

Tank-venting valve, activation

**Component**

EVAP System

**Subcomponent**

Valve

**Monitoring criteria**

none

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**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

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## DTC P0461: FUEL LEVEL SENSOR 'A' CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2A1C

**BMW Fault Code (dez)**

10780

**BMW Fault Code Description VS-Text**

Tank fill level, plausibility

**Component**

Fuel Level Sensor

**Subcomponent**

Plausibility

**Monitoring criteria**

Excess mechanical resistance in the level sensor causes the level signal to change too slowly relative to engine fuel consumption, leading to generation of a fault memory entry

**Fault debouncing**

20 liters of fuel consumption required

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Immediately after engine starts

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Mechanical seizure of level sensor in tank

**Repair procedures (plant/service)**

1. Check level sensor data directly at flange
2. Check variation in sensor data by rocking/knocking on the tank
3. Carefully open the tank flange, check for binding in the float lever
4. Replace the fuel level sensor only if binding is found in the float lever (distorted sensor lever, bearing resists motion)

**MIL illumination/CC message/emergency program**

NO

**Remarks**

none

## DTC P0462: FUEL LEVEL SENSOR 'A' CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2DE2

**BMW Fault Code (dez)**

11746

**BMW Fault Code Description VS-Text**

Tank fill level, right, signal

**Component**

Fuel Level Sensor

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**Subcomponent**

Electrical

**Monitoring criteria**

Right level sensor shorted, sensor resistance too low

**Fault debouncing**

90 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor value too low

**Repair procedures (plant/service)**

Check sensor resistance, determine location of open wire/short circuit (wiring harness, plug, cluster, junction box, tank)

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**MIL illumination/CC message/emergency program**

NO

**Remarks**

none

## DTC P0463: FUEL LEVEL SENSOR 'A' CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2DE2

**BMW Fault Code (dez)**

11746

**BMW Fault Code Description VS-Text**

Tank fill level, right, signal

**Component**

Fuel Level Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Open wire to right-side level sensor, sensor resistance too high

**Fault debouncing**

90 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

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none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor value too high

**Repair procedures (plant/service)**

Check sensor resistance, determine location of open wire/short circuit (wiring harness, plug, cluster, junction box, tank)

**MIL illumination/CC message/emergency program**

NO

**Remarks**

none

## DTC P0475: EXHAUST PRESSURE CONTROL VALVE (SIG)

**BMW Fault Code (hex)**

0x2F6C

**BMW Fault Code (dez)**

12140

**BMW Fault Code Description VS-Text**

Exhaust-gas flap, activation

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**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Exhaust valve control-activation monitor. Component must be installed. Tester must be used to trigger component for 10 sec.

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

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**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK proceed to check component (which and how?)

**MIL illumination/CC message/emergency program**

No display

**Remarks**

none

## DTC P0477: EXHAUST PRESSURE CONTROL VALVE LOW (MIN)

**BMW Fault Code (hex)**

0x2F6C

**BMW Fault Code (dez)**

12140

**BMW Fault Code Description VS-Text**

Exhaust-gas flap, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Exhaust valve control-activation monitor. Component must be installed. Tester must be used to trigger component for 10 sec.

**Fault debouncing**

2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

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Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK proceed to check component (which and how?)

**MIL illumination/CC message/emergency program**

No display

**Remarks**

none

## DTC P0478: EXHAUST PRESSURE CONTROL VALVE HIGH (MAX)

**BMW Fault Code (hex)**

0x2F6C

**BMW Fault Code (dez)**

12140

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**BMW Fault Code Description VS-Text**

Exhaust-gas flap, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Exhaust valve control-activation monitor. Component must be installed. Tester must be used to trigger component for 10 sec.

**Fault debouncing**

2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

cardiagn.com

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK proceed to check component (which and how?)

**MIL illumination/CC message/emergency program**

No display

**Remarks**

none

## DTC P0480: FAN 1 CONTROL CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2EFE

**BMW Fault Code (dez)**

12030

**BMW Fault Code Description VS-Text**

Electric fan, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

PWM > 10%

**Fault debouncing**

5 sec.

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Ambient temperature > -20°C

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

1. Check voltage supply to fan. (If there is no power to the fan, or the voltage supply is intermittent, this fault code will be entered in the fault memory.
2. Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

An inoperative E fan can also cause the engine to overheat.

## DTC P0491: SECONDARY AIR INJECTION SYSTEM INSUFFICIENT FLOW (BANK 1) (MAX)

**BMW Fault Code (hex)**

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0x2A00

**BMW Fault Code (dez)**

10752

**BMW Fault Code Description VS-Text**

Secondary-air system

**Component**

Secondary Air System

**Subcomponent**

Flow Check

**Monitoring criteria**

Activation conditions: - Engine start - Secondary air-injection must be active - Ambient temperature >3°C -3.8° C < Coolant temperature < 50.3°C

**Fault debouncing**

40 sec.

**Terminal conditions**

Terminal 15, engine start

**Voltage conditions**

Vehicle electrical system voltage (battery voltage between 7 & 15 V)

**Temperature conditions**

Ambient temperature > 3°C, coolant start temperature between 3.8°C & 50.3°C

**Time conditions**

none

**System test**

EOL test of secondary air-injection system. (Do not run more than 5 EOL tests in succession; the SA pump can overheat).

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Potential cause - Connection between secondary air-injection valve and exhaust bank 1 (in engine block) is obstructed.

**Repair procedures (plant/service)**

1. Remove secondary air-injection valve and clean the passage to Bank 1 (in engine block)
2. Install valve again and run through EOL test. If the malfunction is registered again, repeat steps 1 and 2.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P0492: SECONDARY AIR INJECTION SYSTEM INSUFFICIENT FLOW (BANK 2) (MIN)

**BMW Fault Code (hex)**

0x2A00

**BMW Fault Code (dez)**

10752

**BMW Fault Code Description VS-Text**

Secondary-air system

**Component**

Secondary Air System

**Subcomponent**

Flow Check

**Monitoring criteria**

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Activation conditions: - Engine start - Secondary air-injection must be active - Ambient temperature >3°C -3.8° C < Coolant temperature < 50.3°C

**Fault debouncing**

40 sec.

**Terminal conditions**

Terminal 15, engine start

**Voltage conditions**

Vehicle electrical system voltage (battery voltage between 7 & 15 V)

**Temperature conditions**

Ambient temperature > 3°C, coolant start temperature between 3.8°C & 50.3°C

**Time conditions**

none

**System test**

EOL test of secondary air-injection system (Do not run more than 5 EOL tests in succession; the SA pump can overheat)

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Potential cause - Connection between secondary air-injection valve and exhaust bank 2 (in engine block) is obstructed.

**Repair procedures (plant/service)**

1. Remove secondary air-injection valve and clean the passage to Bank 2 (in engine block)
2. Install valve again and run through EOL test. If the malfunction is registered again, repeat steps 1 and 2.

**MIL illumination/CC message/emergency program**

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MIL

**Remarks**

none

## DTC P0500: VEHICLE SPEED SENSOR 'A' (SIG)

**BMW Fault Code (hex)**

0x2F4E

**BMW Fault Code (dez)**

12110

**BMW Fault Code Description VS-Text**

Vehicle speed, signal

**Component**

Vehicle Speed Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Speed signal monitor

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

100 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Dual fault: No speed information available from hardware signal or from CAN

**Repair procedures (plant/service)**

Check CAN link between DSC and DME

**MIL illumination/CC message/emergency program**

US: MIL ON ECE: No MIL

**Remarks**

This defect location applies only to the CAN fault. Active only when an active hardware signal fault (12111) is present.

## DTC P0503: VEHICLE SPEED SENSOR 'A' INTERMITTENT/ERRATIC/HIGH (PLAUS)

**BMW Fault Code (hex)**

0x2F4F

**BMW Fault Code (dez)**

12111

**BMW Fault Code Description VS-Text**

Vehicle speed, plausibility

**Component**

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Vehicle Speed Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Speed signal monitor Mass airflow > 272 mg/stroke and N > 2400 rpm (manual trans) N > 2820 rpm (automatic) and speed = 0 km/h for 5.0 sec.

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5.0 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

no speed signal available! (defective rear right wheelspeed sensor)

**Repair procedures (plant/service)**

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Read diagnostic control module's fault memory from DSC (defective rear right wheelspeed sensor)

**MIL illumination/CC message/emergency program**

None Default value from CAN

**Remarks**

none

## DTC P0506: IDLE AIR CONTROL SYSTEM RPM LOWER THAN EXPECTED (MIN)

**BMW Fault Code (hex)**

0x2ADF

**BMW Fault Code (dez)**

10975

**BMW Fault Code Description VS-Text**

Idle air control, engine speed

**Component**

Idle Speed Control

**Subcomponent**

RPM

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0507: IDLE AIR CONTROL SYSTEM RPM HIGHER THAN EXPECTED (MAX)

**BMW Fault Code (hex)**

0x2ADF

**BMW Fault Code (dez)**

10975

**BMW Fault Code Description VS-Text**

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Idle air control, engine speed

**Component**

Idle Speed Control

**Subcomponent**

RPM

**Monitoring criteria**

Monitor for idle control Idle = ON Speed = 0 km/h. After roughly 120 sec., depends on start temperature

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

20 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Impossible to adjust idle speed to +-100 relative to specified RPM

**Repair procedures (plant/service)**

Note any other fault code entries and repair the associated problems! Check all load-responsive servo actuators such as Valvetronic and the throttle valve for stored control module fault memory entries and malfunctions! (check injection and induction system as indicated)

**MIL illumination/CC message/emergency program**

MIL on in 2nd driving cycle

**Remarks**

US only

## DTC P0512: STARTER REQUEST CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2F58

**BMW Fault Code (dez)**

12120

**BMW Fault Code Description VS-Text**

Automatic starting, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Automatic starter activation-control monitor. Convenience start relay initialized. Start relay installed.

**Fault debouncing**

1 sec.

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.25s at N=0.5 sec. at N > 750 rpm

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK, proceed to check component (start relay).

**MIL illumination/CC message/emergency program**

no external display

**Remarks**

none

## DTC P0512: STARTER REQUEST CIRCUIT (MIN)

**BMW Fault Code (hex)**

0x2F58

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**BMW Fault Code (dez)**

12120

**BMW Fault Code Description VS-Text**

Automatic starting, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Automatic starter activation-control monitor. Convenience start relay initialized. Start relay installed.

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.25s at N=0.5 sec. at N>750 RPM

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component (starter relay).

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

none

## DTC P0512: STARTER REQUEST CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2F58

**BMW Fault Code (dez)**

12120

**BMW Fault Code Description VS-Text**

Automatic starting, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Automatic starter activation-control monitor. Convenience start relay initialized. Start relay installed

**Fault debouncing**

1 sec.

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.25 s at N=0.5 sec. at N>750 rpm

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component (starter relay).

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

none

## DTC P0520: ENGINE OIL PRESSURE SENSOR/SWITCH CIRCUIT (SIG)

**BMW Fault Code (hex)**

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0x2F7B

**BMW Fault Code (dez)**

12155

**BMW Fault Code Description VS-Text**

Oil-pressure switch, plausibility

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Oil pressure switch monitor

**Fault debouncing**

Engine shutdown: continues roughly 8 sec. after engine is switched off.

**Terminal conditions**

Engine speed = 0 Control module in post-operational shutdown phase

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

60°C < engine temperature < 150°C

**Time conditions**

3 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open wire Switch seizes

**Repair procedures (plant/service)**

1. Check wire from oil pressure switch. If not OK --> Repair wire If OK -->
2. Replace switch
3. Switch should change position when engine is started and then shut down (ground connection)

**MIL illumination/CC message/emergency program**

Possible display in the MMI will vary according to whether the switch seizes while open or closed.

**Remarks**

Oil pressure cannot be monitored if switch is defective.

## DTC P0521: ENGINE OIL PRESSURE SENSOR/SWITCH RANGE/ PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x30C6

**BMW Fault Code (dez)**

12486

**BMW Fault Code Description VS-Text**

Engine-oil-pressure sensor, plausibility

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

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Commercial vehicle > 0

**Fault debouncing**

0.2

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

>-10°C

**Time conditions**

none

**System test**

Jump in specified pressure, specified pressure ramp

**Signal information**

Analogous to oil pressure signal

**Calculated value Y/N**

N

**Possible Fault Causes**

Oil pressure signal seized

**Repair procedures (plant/service)**

Replace oil pressure sensor

**MIL illumination/CC message/emergency program**

No

**Remarks**

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Implementation on at Prg. Version 500

## DTC P0522: ENGINE OIL PRESSURE SENSOR/SWITCH LOW (MIN)

**BMW Fault Code (hex)**

0x30C3

**BMW Fault Code (dez)**

12483

**BMW Fault Code Description VS-Text**

Engine-oil-pressure sensor, signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Signal monitoring, oil pressure data

**Fault debouncing**

2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to ground or open circuit in wire.

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires.
2. Visual inspection of plug-in contacts (on component and DME ends).
3. Replace sensor.

**MIL illumination/CC message/emergency program**

No message currently available!

**Remarks**

none

## DTC P0523: ENGINE OIL PRESSURE SENSOR/SWITCH HIGH (MAX)

**BMW Fault Code (hex)**

0x30C3

**BMW Fault Code (dez)**

12483

**BMW Fault Code Description VS-Text**

Engine-oil-pressure sensor, signal

**Component**

No Info

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**Subcomponent**

No Info

**Monitoring criteria**

Signal monitoring, oil pressure data

**Fault debouncing**

2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)

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3. Replace sensor

**MIL illumination/CC message/emergency program**

No message currently available!

**Remarks**

none

## DTC P0524: ENGINE OIL PRESSURE TOO LOW (MIN)

**BMW Fault Code (hex)**

0x30C5

**BMW Fault Code (dez)**

12485

**BMW Fault Code Description VS-Text**

Engine-oil pump, mechanical: engine-oil pressure

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Commercial vehicle >0 + Stored operating coordinate reached (depends on NKW+Tmot)

**Fault debouncing**

0.2

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

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**Temperature conditions**

>-10°C

**Time conditions**

none

**System test**

Jump in specified pressure, specified pressure ramp.

**Signal information**

Analogous to oil pressure signal

**Calculated value Y/N**

N

**Possible Fault Causes**

Pump control plunger is seizing

**Repair procedures (plant/service)**

Replace oil pump

**MIL illumination/CC message/emergency program**

Yes, if it allows oil pressure to drop to unacceptable level.

**Remarks**

Activation only in Prg. Version 500

## DTC P0571: BRAKE SWITCH 'A' CIRCUIT (PLAUS)

**BMW Fault Code (hex)**

0x2F63

**BMW Fault Code (dez)**

12131

**BMW Fault Code Description VS-Text**

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Brake-light switch, plausibility

**Component**

Brake Switch

**Subcomponent**

Electrical

**Monitoring criteria**

Brake light switch monitor. Depress brake pedal repeatedly

**Fault debouncing**

If the BTS is still OK the fault will be registered immediately when the brake pedal is depressed. If the plug is disconnected the fault will be registered after approximately 40 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

500 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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The brakelight switch is sticking or has an intermittent contact. Defective signal wire.

**Repair procedures (plant/service)**

1. Check to determine whether foreign matter or objects (dirt) are causing the switch to hang.
2. Electrical check on wire a. --> If not OK, repair wire. b. --> If OK, replace switch.
3. Check by depressing the brake pedal repeatedly. No fault should be stored.

**MIL illumination/CC message/emergency program**

If the switch is defective the cruise control or ACC will be deactivated. Display: - Defective speed control or distance control failure

**Remarks**

The switch is also evaluated by the other control modules. Messages are 'Gear selection possible without brake application' and 'Starting possible without brake application'

## DTC P0597: THERMOSTAT HEATER CONTROL CIRCUIT/OPEN (SIG)

**BMW Fault Code (hex)**

0x2EF5

**BMW Fault Code (dez)**

12021

**BMW Fault Code Description VS-Text**

Map thermostat, activation

**Component**

Thermostat

**Subcomponent**

Electrical

**Monitoring criteria**

Control-activation with 5% < PWM < 95%

**Fault debouncing**

10 sec.

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**Terminal conditions**

Terminal 15 ON Engine start

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK, proceed to check component (electrical check).

**MIL illumination/CC message/emergency program**

no external display

**Remarks**

none

## DTC P0598: THERMOSTAT HEATER CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

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0x2EF5

**BMW Fault Code (dez)**

12021

**BMW Fault Code Description VS-Text**

Map thermostat, activation

**Component**

Thermostat

**Subcomponent**

Electrical

**Monitoring criteria**

Control-activation with 5% < PWM < 95%

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON Engine start

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

3 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK, proceed to check component (electrical check).

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

none

## DTC P0599: THERMOSTAT HEATER CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2EF5

**BMW Fault Code (dez)**

12021

**BMW Fault Code Description VS-Text**

Map thermostat, activation

**Component**

Thermostat

**Subcomponent**

Electrical

**Monitoring criteria**

Control-activation with 5% < PWM < 95%

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**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON Engine start

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK, proceed to check component (electrical check).

**MIL illumination/CC message/emergency program**

no external display

**Remarks**

none

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## DTC P0604: INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR (MAX)

**BMW Fault Code (hex)**

0x2AB2

**BMW Fault Code (dez)**

10930

**BMW Fault Code Description VS-Text**

DME, internal fault: RAM

**Component**

ECM/TCM

**Subcomponent**

RAM

**Monitoring criteria**

RAM checksum test This test is executed once, while the control module is booting.

**Fault debouncing**

No debounce. Fault can be reset by clearing fault memory.

**Terminal conditions**

Immediately after wakeup in dormant control module

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal RAM in DME checksum fault.

**Repair procedures (plant/service)**

Determine whether fault is stored again after carrying out the following procedure. If yes: Replace DME.

1. Clear fault memory
2. Ignition off, allow vehicle to assume complete dormant status
3. Ignition on
4. Read out stored fault codes from fault memory

**MIL illumination/CC message/emergency program**

none

**Remarks**

Internal control module fault

## DTC P0604: INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR (MIN)

**BMW Fault Code (hex)**

0x2AB2

**BMW Fault Code (dez)**

10930

**BMW Fault Code Description VS-Text**

DME, internal fault: RAM

**Component**

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ECM/TCM

**Subcomponent**

RAM

**Monitoring criteria**

RAM checksum test

**Fault debouncing**

The checksum will be recalculated in response to data manipulation, leading to a deviation that causes fault code registration.

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Internal TPU-RAM checksum fault

**Repair procedures (plant/service)**

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none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0604: INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR (MIN)

**BMW Fault Code (hex)**

0x2D67

**BMW Fault Code (dez)**

11623

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, processors

**Component**

ECM/TCM

**Subcomponent**

RAM

**Monitoring criteria**

Internal control-module fault, RAM processor fault

**Fault debouncing**

immediately

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

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**Temperature conditions**

none

**Time conditions**

immediately

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Possible sources of this fault are: faults in the data request and response process between the main computer and the process-monitor computer in the control module (on both sides, main computer and monitor computer) - the level 2 ROM check detects an fault - the level 2 RAM check detects an fault - the level 2 program flow monitor detects an fault.

**Repair procedures (plant/service)**

Ensure that correct software and data have been flash-programmed; repeat flash-programming as indicated. If frequency > 3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF. EML ON. CC: Power loss, engine malfunction.

**Remarks**

none

## DTC P0605: INTERNAL CONTROL MODULE READ ONLY MEMORY (ROM) ERROR (MAX)

**BMW Fault Code (hex)**

0x2D67

**BMW Fault Code (dez)**

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11623

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, processors

**Component**

ECM/TCM

**Subcomponent**

ROM

**Monitoring criteria**

Internal control-module fault, read memory processor fault

**Fault debouncing**

immediately

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

Y

**Possible Fault Causes**

Possible sources of this fault are: faults in the data request and response process between the main computer and the process-monitor computer in the control module (on both sides, main computer and monitor computer) - the level 2 ROM check detects an fault - the level 2 RAM check detects an fault - the level 2 program flow monitor detects an fault

**Repair procedures (plant/service)**

Ensure that correct software and data have been flash-programmed; repeat flash-programming as indicated. If frequency > 3. Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF. EML ON CC: Power loss, engine malfunction.

**Remarks**

none

## DTC P0606: ECM/PCM PROCESSOR (SIG)

**BMW Fault Code (hex)**

0x2D67

**BMW Fault Code (dez)**

11623

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, processors

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Internal control-module fault, general processor fault

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**Fault debouncing**

immediately

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Possible sources of this fault are: faults in the data request and response process between the main computer and the process-monitor computer in the control module (on both sides, main computer and monitor computer) - the level 2 ROM check detects an fault - the level 2 RAM check detects an fault - the level 2 program flow monitor detects an fault.

**Repair procedures (plant/service)**

Ensure that correct software and data have been flash-programmed; repeat flash-programming as indicated. If frequency > 3. Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF. EML ON. CC: Power loss, engine malfunction.

**Remarks**

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none

## DTC P060C: INTERNAL CONTROL MODULE MAIN PROCESSOR PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2D67

**BMW Fault Code (dez)**

11623

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, processors

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Internal control-module fault, processor fault in monitor computer

**Fault debouncing**

immediately

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > = 10 V

**Temperature conditions**

none

**Time conditions**

immediately

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Possible sources of this fault are: faults in the data request and response process between the main computer and the process-monitor computer in the control module (on both sides, main computer and monitor computer) - the level 2 ROM check detects an fault - the level 2 RAM check detects an fault - the level 2 program flow monitor detects an fault

**Repair procedures (plant/service)**

Ensure that correct software and data have been flash-programmed; repeat flash-programming as indicated. If frequency > 3, Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Power loss, engine malfunction.

**Remarks**

none

## DTC P0620: GENERATOR CONTROL CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2ECD

**BMW Fault Code (dez)**

11981

**BMW Fault Code Description VS-Text**

Generator, electric

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

Commercial vehicle > 350 RPM, no BSD communications fault

**Fault debouncing**

25 sec.

**Terminal conditions**

Terminal 15 ON, no BSD fault

**Voltage conditions**

System voltage

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Phase or diode failure. Regulator control circuit failure ==> Undervoltage or overvoltage

**Repair procedures (plant/service)**

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With confirmation from restart ==> Replace alternator

**MIL illumination/CC message/emergency program**

Charge indicator lamp

**Remarks**

Can occur during vehicle servicing when external power source is connected, Etc.

## DTC P0620: GENERATOR CONTROL CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2E97

**BMW Fault Code (dez)**

11927

**BMW Fault Code Description VS-Text**

Generator

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

El. fault

**Fault debouncing**

Commercial vehicle >350 RPM, No communications fault

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

25 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Phase or diode failure. Regulator control circuit failure ==> Undervoltage or overvoltage

**Repair procedures (plant/service)**

With confirmation from restart ==> Replace alternator

**MIL illumination/CC message/emergency program**

Charge indicator lamp

**Remarks**

Can occur during vehicle servicing when external power source is connected, etc.

## DTC P062F: INTERNAL CONTROL MODULE EEPROM ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2FA3

**BMW Fault Code (dez)**

12195

**BMW Fault Code Description VS-Text**

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No coding

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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No code entry executed (after programming)

**Repair procedures (plant/service)**

Perform code entry

**MIL illumination/CC message/emergency program**

none

**Remarks**

Occurs after every programming session (data or program)

## DTC P062F: INTERNAL CONTROL MODULE EEPROM ERROR (SIG)

**BMW Fault Code (hex)**

0x2FA3

**BMW Fault Code (dez)**

12195

**BMW Fault Code Description VS-Text**

No coding

**Component**

ECM/TCM

**Subcomponent**

EEPROM

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Incorrect code data in EEPROM

**Repair procedures (plant/service)**

Recode DME and clear fault memory, replace DME if fault occurs more than once.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P062F: INTERNAL CONTROL MODULE EEPROM ERROR (SIG)

**BMW Fault Code (hex)**

0x2FA4

**BMW Fault Code (dez)**

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12196

**BMW Fault Code Description VS-Text**

Incorrect data record

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Timeout on VEHICLE VERSION message from CAS

**Repair procedures (plant/service)**

Check CAS and/or CAN link to CAS

**MIL illumination/CC message/emergency program**

Reduced output

**Remarks**

Occurs when vehicle version message from CAS is missing

## DTC P0645: A/C CLUTCH RELAY CONTROL CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2F12

**BMW Fault Code (dez)**

12050

**BMW Fault Code Description VS-Text**

Air-conditioning compressor, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Air conditioner relay control-activation monitor; air conditioning initialized. Briefly triggered by relay. Air conditioning installed and switched on.

**Fault debouncing**

1 sec.

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component, A/C compressor relay.

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

none

## DTC P0646: A/C CLUTCH RELAY CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

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0x2F12

**BMW Fault Code (dez)**

12050

**BMW Fault Code Description VS-Text**

Air-conditioning compressor, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Air conditioner relay control-activation monitor; air conditioning initialized. Briefly triggered by relay. Air conditioning installed and switched on.

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK, proceed to check component, A/C compressor relay.

**MIL illumination/CC message/emergency program**

no external display

**Remarks**

none

## DTC P0647: A/C CLUTCH RELAY CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2F12

**BMW Fault Code (dez)**

12050

**BMW Fault Code Description VS-Text**

Air-conditioning compressor, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Air conditioner relay control-activation monitor; air conditioning initialized. Briefly triggered by relay. Air conditioning installed and switched on.

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**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK proceed to check component, a/c compressor relay

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

none

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## DTC P0668: PCM/ECM/TCM INTERNAL TEMPERATURE SENSOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2F85

**BMW Fault Code (dez)**

12165

**BMW Fault Code Description VS-Text**

DME, internal fault: interior-temperature sensor, signal

**Component**

ECM/TCM

**Subcomponent**

Internal Temperature Sensor

**Monitoring criteria**

Control module internal temperature sensor monitor

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Time after end of start phase > 10 sec.

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground in sensor wire

**Repair procedures (plant/service)**

Replace DME, as sensor is internal component.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Voltage range diagnosis

## DTC P0669: PCM/ECM/TCM INTERNAL TEMPERATURE SENSOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2F85

**BMW Fault Code (dez)**

12165

**BMW Fault Code Description VS-Text**

DME, internal fault: interior-temperature sensor, signal

**Component**

ECM/TCM

**Subcomponent**

Internal Temperature Sensor

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**Monitoring criteria**

Control module internal temperature sensor monitor

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Time after end of start phase > 10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive or open circuit in wire

**Repair procedures (plant/service)**

Replace DME, as sensor is internal component

**MIL illumination/CC message/emergency program**

none

**Remarks**

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Voltage range diagnosis

## DTC P0686: ECM/PCM POWER RELAY CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2ACB

**BMW Fault Code (dez)**

10955

**BMW Fault Code Description VS-Text**

DME master relay, activation

**Component**

ECM/PCM Power Relay

**Subcomponent**

Electrical

**Monitoring criteria**

Main relay monitoring. Main relay must have opened.

**Fault debouncing**

none

**Terminal conditions**

First Terminal 15 OFF (wait until main relay opens) then Terminal 15 ON (and leave ON)

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

System responds to fault by storing fault code within approximately 1 sec.

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Main relay fails to make owing to mechanical problems. (or contacts close only with lag) Or the connecting wire to the DME has a short circuit to UBatt or is open.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

none

**Remarks**

When you encounter this fault, note that in all likelihood other diagnostic fault codes will also be entered in the fault memory (throttle plate potentiometer 1 and 2, voltage supply to pedal-position sensor, etc.), as the main relay's response lag or refusal to make will prevent the power supply from reaching these components.

## DTC P0687: ECM/PCM POWER RELAY CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2ACB

**BMW Fault Code (dez)**

10955

**BMW Fault Code Description VS-Text**

DME master relay, activation

**Component**

ECM/PCM Power Relay

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**Subcomponent**

Electrical

**Monitoring criteria**

Main relay monitoring Main relay is deactivated by DME (8 sec. after Terminal 15 off)

**Fault debouncing**

none

**Terminal conditions**

First Terminal 15 ON then OFF (then leave OFF)

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

System responds to fault by storing fault code within approximately 8.9 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Main relay fails to disengage owing to mechanical factors. (melted together) Or the wire to the DME is shorted to ground.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

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**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0691: FAN 1 CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2EFE

**BMW Fault Code (dez)**

12030

**BMW Fault Code Description VS-Text**

Electric fan, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

PWM > 10%

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

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Ambient temperature > -20°C

**Time conditions**

11 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK, proceed to check component (electrical check)

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

An inoperative E fan can also cause the engine to overheat.

## DTC P0692: FAN 1 CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2EFE

**BMW Fault Code (dez)**

12030

**BMW Fault Code Description VS-Text**

Electric fan, activation

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**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

PWM > 10%

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Ambient temperature > -20°C

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

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1. Check wiring. Repair if defective. If wiring is OK proceed to check component (electrical check)

**MIL illumination/CC message/emergency program**

no external display

**Remarks**

An inoperative E fan can also cause the engine to overheat.

## DTC P0703: BRAKE SWITCH 'B' CIRCUIT (PLAUS)

**BMW Fault Code (hex)**

0x2F64

**BMW Fault Code (dez)**

12132

**BMW Fault Code Description VS-Text**

Brake-light test switch, plausibility

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Brake light switch monitor. Depress brake pedal repeatedly

**Fault debouncing**

If the BLS is still OK, the fault will be stored immediately as soon as the brake pedal is depressed. If the plug is disconnected the BLS fault will be registered after approximately 40 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

500 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

The brakelight test switch is sticking or has an intermittent contact. Defective signal wire.

**Repair procedures (plant/service)**

1. Check to determine whether foreign matter or objects (dirt) are causing the switch to hang.
2. Electrical check on wire a. --> If not OK, repair wire. b. --> If OK, replace switch.
3. Check by depressing the brake pedal repeatedly. No fault should be stored.

**MIL illumination/CC message/emergency program**

If the switch is defective the cruise control or ACC will be deactivated. Display: - Defective speed control or distance control failure

**Remarks**

The switch is also evaluated by the other control modules. Messages are 'Gear selection possible without brake application' and 'Starting possible without brake application'

## DTC P0831: CLUTCH PEDAL SWITCH 'A' CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2F67

**BMW Fault Code (dez)**

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12135

**BMW Fault Code Description VS-Text**

Clutch switch, signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0832: CLUTCH PEDAL SWITCH 'A' CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2F67

**BMW Fault Code (dez)**

12135

**BMW Fault Code Description VS-Text**

Clutch switch, signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

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**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0A14: ENGINE MOUNT 'A' CONTROL CIRCUIT/OPEN (MAX)

**BMW Fault Code (hex)**

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0x2FC6

**BMW Fault Code (dez)**

12230

**BMW Fault Code Description VS-Text**

Energy-saving mode active

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0A14: ENGINE MOUNT 'A' CONTROL CIRCUIT/OPEN (MIN)

**BMW Fault Code (hex)**

0x2FC6

**BMW Fault Code (dez)**

12230

**BMW Fault Code Description VS-Text**

Energy-saving mode active

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

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**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

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## DTC P0A14: ENGINE MOUNT 'A' CONTROL CIRCUIT/OPEN (SIG)

**BMW Fault Code (hex)**

0x2FAB

**BMW Fault Code (dez)**

12203

**BMW Fault Code Description VS-Text**

Active engine mount, electric

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0A14: ENGINE MOUNT 'A' CONTROL CIRCUIT/OPEN (SIG)

**BMW Fault Code (hex)**

0x2FC6

**BMW Fault Code (dez)**

12230

**BMW Fault Code Description VS-Text**

Energy-saving mode active

**Component**

No Info

**Subcomponent**

No Info

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**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

cardiagn.com

none

## DTC P0A15: ENGINE MOUNT 'A' CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2FAB

**BMW Fault Code (dez)**

12203

**BMW Fault Code Description VS-Text**

Active engine mount, electric

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P0A16: ENGINE MOUNT 'A' CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2FAB

**BMW Fault Code (dez)**

12203

**BMW Fault Code Description VS-Text**

Active engine mount, electric

**Component**

No Info

**Subcomponent**

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No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

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none

**Remarks**

none

## DTC P0A3B: GENERATOR OVER TEMPERATURE (MAX)

**BMW Fault Code (hex)**

0x2E97

**BMW Fault Code (dez)**

11927

**BMW Fault Code Description VS-Text**

Generator

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Overtemperature fault

**Fault debouncing**

Commercial vehicle >350 RPM, No communications fault

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

25 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Air cooling obstructed by leaves, Etc. Overall thermal overload stemming from extremely negative operating profile possible.

**Repair procedures (plant/service)**

Inspect alternator for unobstructed air current.

**MIL illumination/CC message/emergency program**

No Info

**Remarks**

Important! Fault debounce leads to reduced availability of comfort and convenience accessories

## DTC P0A3B: GENERATOR OVER TEMPERATURE (MAX)

**BMW Fault Code (hex)**

0x2ECF

**BMW Fault Code (dez)**

11983

**BMW Fault Code Description VS-Text**

Generator, overtemperature

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

Commercial vehicle > 350 RPM, no BSD communications fault

**Fault debouncing**

25 sec.

**Terminal conditions**

Terminal 15 ON, no BSD fault

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Alternator airflow obstructed. Thermal overload from unfavorable driving profile possible.

**Repair procedures (plant/service)**

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Inspect alternator for unobstructed air current.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1004: VVT-GUIDING SENSOR SOLENOID LOSS (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A35

**BMW Fault Code (dez)**

10805

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: guide

**Component**

Valvetronic (VVT)

**Subcomponent**

Guiding Sensor

**Monitoring criteria**

No faults related to the sensor voltage supply should be present (fault code #10800) and there should be no faults or SPI parity faults related to the VVT sensor (fault code #10801) or (fault code #10802)

**Fault debouncing**

20 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

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**Temperature conditions**

none

**Time conditions**

20 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Missing reluctor on VVT sensor

**Repair procedures (plant/service)**

1. Inspect to determine whether VVT sensor reluctor is installed correctly.
2. Replace VVT sensor if Item 1 is OK

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1006: VVT-GUIDING SENSOR PARITY ERROR (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A31

**BMW Fault Code (dez)**

10801

**BMW Fault Code Description VS-Text**

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Valvetronic, eccentric shaft sensor: guide

**Component**

Valvetronic (VVT)

**Subcomponent**

Guiding Sensor

**Monitoring criteria**

VVT lead sensor monitor. No faults related to the sensor's voltage supply should be present (fault code 10800).

**Fault debouncing**

100 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

100 ms

**System test**

none

**Signal information**

analog, 0-5 V

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

Open circuit, or short to positive or ground, or signal wire between VVT lead sensor and DME. Open cable shield on VVT sensor wire (no ground connection).

**Repair procedures (plant/service)**

If fault codes (#10801) and (#10802) are simultaneously stored in the fault memory, proceed to check the following:

1. Dual fault is stored when VVT sensor is not connected to the DME. Is VVT sensor connected to the wiring harness? If not: Plug in and check wiring harness between DME and VVT sensor. Determine whether the VVT sensor wire shield is grounded at the DME (PIN 7-10) and sensor (PIN 4).

Replace VVT sensor. If only fault code (#10801) is entered:

1. Check signal wire (VVT sensor PIN 1, PIN 3) between VVT sensor and DME for breakage or short circuits and corroded plugs.
2. Determine whether a

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1012: VVT-REFERENCE SENSOR SOLENOID LOSS (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A36

**BMW Fault Code (dez)**

10806

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: reference

**Component**

Valvetronic (VVT)

**Subcomponent**

Reference Sensor

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**Monitoring criteria**

No faults related to the sensor voltage supply should be present (fault code #10800) and there should be no faults or SPI parity faults related to the VVT sensor (fault code #10801) or (fault code #10802).

**Fault debouncing**

20 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

20 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Missing reluctor on VVT sensor

**Repair procedures (plant/service)**

1. Inspect to determine whether VVT sensor reluctor is installed correctly.
2. Replace VVT sensor if Item 1 is OK

**MIL illumination/CC message/emergency program**

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ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN.

**Remarks**

none

## DTC P1014: VVT-REFERENCE SENSOR PARITY ERROR (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A32

**BMW Fault Code (dez)**

10802

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: reference

**Component**

Valvetronic (VVT)

**Subcomponent**

Reference Sensor

**Monitoring criteria**

VVT reference sensor monitor. No faults related to the sensor's voltage supply should be present (fault code 10800).

**Fault debouncing**

100 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

**Temperature conditions**

none

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**Time conditions**

100 ms

**System test**

none

**Signal information**

analog, 0-5 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit, or short to positive or ground, or signal wire between VVT reference sensor and DME. Open cable shield on VVT sensor wire (no ground connection)

**Repair procedures (plant/service)**

If faults (#10801) and (#10802) are simultaneously stored in the fault memory, proceed to check the following:

1. Dual fault is stored when VVT sensor is not connected to the DME. Is VVT sensor connected to the wiring harness? If not: Plug in and check wiring harness between DME and VVT sensor.

Replace VVT sensor. If only fault code (#10802) is entered:

1. Check signal wire (VVT sensor PIN 7, PIN 9) between VVT sensor and DME for breakage or short circuits and corroded plugs.
2. Determine whether a cycle signal is visible every 1 ms at sensor Pin
3. (Ignition on!). If yes, proceed to Item
4. If no, this signal wire is

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1017: VVT-SENSORS PLAUSIBILITY (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

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0x2A37

**BMW Fault Code (dez)**

10807

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: plausibility

**Component**

Valvetronic (VVT)

**Subcomponent**

Sensors

**Monitoring criteria**

VVT sensor plausibility monitor

1. No faults regarding the sensor voltage supply should be present (fault code #10800)
2. No sensor faults should be present (fault codes #10801 to #10806)

**Fault debouncing**

50 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

50 ms

**System test**

none

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**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

The VVT sensor signal is not plausible.

**Repair procedures (plant/service)**

1. Check reluctor on VVT sensor to ensure correct installation and firm seating.
2. Replace VVT sensor if Item 1 is OK

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1017: VVT-SENSORS PLAUSIBILITY (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2A47

**BMW Fault Code (dez)**

10823

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: plausibility

**Component**

Valvetronic (VVT)

**Subcomponent**

Sensors

**Monitoring criteria**

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Sensor signal monitor (cumulative sensor faults). Always active

**Fault debouncing**

20 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

100 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open sensor wire; reluctor missing; VVT sensor defective

**Repair procedures (plant/service)**

1. Examination of sensor plugs, sensor wiring.
2. If Item 1 is OK, inspect the reluctor.
3. If the reluctor is OK, replace VVT sensor.

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

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**Remarks**

none

## DTC P1019: VVT-SUPPLY VOLTAGE SENSORS HIGH INPUT (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A30

**BMW Fault Code (dez)**

10800

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: power supply

**Component**

Valvetronic (VVT)

**Subcomponent**

Power Supply Sensors

**Monitoring criteria**

Monitoring of voltage supply to eccentric shaft. Nominal value for voltage supply sensor = 5.0 V

**Fault debouncing**

Sensor power-supply voltage > 5.25 V

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

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10 ms

**System test**

none

**Signal information**

analog, 5 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive on VVT sensor power-supply wire

**Repair procedures (plant/service)**

1. Check sensor power supply voltage with multimeter. Supply voltage must lie between 4.75 V and 5.25 V.
2. If result is outside specified range: Check power-supply wire to VVT sensor and check plug.
3. If contact is stretched or corroded: Replace plug on VVT sensor
4. If wiring harness is defective: Replace wiring harness between DME and VVT sensor.

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P101A: VVT-SELF-LEARNING FUNCTION, STOPS NOT LEARNED (MAX)

**BMW Fault Code (hex)**

0x2A46

**BMW Fault Code (dez)**

10822

**BMW Fault Code Description VS-Text**

Valvetronic, adaptation

**Component**

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Valvetronic (VVT)

**Subcomponent**

Self-Learning Function

**Monitoring criteria**

Monitoring of VVT system for mechanical wear.

**Fault debouncing**

100 ms

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

Tmot > 60°C

**Time conditions**

100 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Mechanical wear

**Repair procedures (plant/service)**

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Remove the valve cover and inspect for indications of mechanical wear (such as rocker arm wear, etc.)

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P101A: VVT-SELF-LEARNING FUNCTION, STOPS NOT LEARNED (MIN)

**BMW Fault Code (hex)**

0x2A46

**BMW Fault Code (dez)**

10822

**BMW Fault Code Description VS-Text**

Valvetronic, adaptation

**Component**

Valvetronic (VVT)

**Subcomponent**

Self-Learning Function

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P101A: VVT-SELF-LEARNING FUNCTION, STOPS NOT LEARNED (SIG)

**BMW Fault Code (hex)**

0x2A39

**BMW Fault Code (dez)**

10809

**BMW Fault Code Description VS-Text**

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Valvetronic, adjustment range

**Component**

Valvetronic (VVT)

**Subcomponent**

Self-Learning Function

**Monitoring criteria**

Adjustment range monitor. When travel limit initialization routine is executed. (travel limit initialization routine is automatically executed in a 5 hour (engine operating hours) cycle or with 'initialize travel limits' tester request.

**Fault debouncing**

following renewed successful execution of the travel limit initialization routine

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage. Terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

Initialize for VVT travel limit

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

cardiagn.com

No travel stops initialized/present

**Repair procedures (plant/service)**

1. Use tester request to repeat the VVT travel limit initialization routine
2. If Item No. 1 is not OK, it will be necessary to check the VVT mechanical components/VVT servo motor

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1020: VVT-SUPPLY VOLTAGE SENSORS LOW INPUT (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A30

**BMW Fault Code (dez)**

10800

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: power supply

**Component**

Valvetronic (VVT)

**Subcomponent**

Power Supply Sensors

**Monitoring criteria**

Monitoring of voltage supply to eccentric shaft. Nominal value for voltage supply sensor = 5.0 V

**Fault debouncing**

Sensor power-supply voltage < 4.75 V

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

10 ms

**System test**

none

**Signal information**

analog, 5 V

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground on VVT sensor power wire

**Repair procedures (plant/service)**

1. Check sensor power supply voltage with multimeter. Supply voltage must lie between 4.75 V and 5.25 V.
2. If result is outside specified range: Check power-supply wire to VVT sensor and check plug.
3. If contact is stretched or corroded: Replace plug on VVT sensor
4. If wiring harness is defective: Replace wiring harness between DME and VVT sensor.

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1023: VVT-SELF-LEARNING FUNCTION FAULTY ADJUSTMENT RANGE (BANK 1) (MAX)

**BMW Fault Code (hex)**

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0x2A39

**BMW Fault Code (dez)**

10809

**BMW Fault Code Description VS-Text**

Valvetronic, adjustment range

**Component**

Valvetronic (VVT)

**Subcomponent**

Self-Learning Function

**Monitoring criteria**

Adjustment range monitor. When travel limit initialization routine is executed. (travel limit initialization routine is automatically executed in a 5 hour (engine operating hours) cycle or with 'initialize travel limits' tester request.

**Fault debouncing**

following renewed successful execution of the travel limit initialization routine

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage. Terminal 87 >10.0 V

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

Initialize for VVT travel limit

**Signal information**

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none

**Calculated value Y/N**

Y

**Possible Fault Causes**

The initialized range is outside the approved tolerance range.

**Repair procedures (plant/service)**

1. Use tester request to repeat the VVT travel limit initialization routine.
2. If Item No.1 is not OK, it will be necessary to check the VVT mechanical components/VVT servo motor.

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1024: VVT-SELF-LEARNING FUNCTION FAULTY LOWER LEARNING RANGE (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A39

**BMW Fault Code (dez)**

10809

**BMW Fault Code Description VS-Text**

Valvetronic, adjustment range

**Component**

Valvetronic (VVT)

**Subcomponent**

Self-Learning Function

**Monitoring criteria**

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Adjustment range monitor. When travel limit initialization routine is executed. (travel limit initialization routine is automatically executed in a 5 hour (engine operating hours) cycle or with 'initialize travel limits' tester request.

**Fault debouncing**

following renewed successful execution of the travel limit initialization routine

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage Terminal 87 >10.0 V

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

Initialize for VVT travel limit

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

No initialization for lower travel limit

**Repair procedures (plant/service)**

1. Use tester request to repeat the VVT travel limit initialization routine
2. If Item No.1 is not OK, it will be necessary to check the VVT mechanical components/VVT servo motor

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

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**Remarks**

none

## DTC P102B: VVT-GUIDING SENSOR DIAGNOSTIC ERROR (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A33

**BMW Fault Code (dez)**

10803

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: guide

**Component**

Valvetronic (VVT)

**Subcomponent**

Guiding Sensor

**Monitoring criteria**

Internal VVT lead sensor monitor No faults related to the sensor voltage supply should be present (fault code #10800) and there should be no faults or SPI parity faults related to the VVT sensor (fault code #10801) or (fault code #10802)

**Fault debouncing**

20 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 >10.0 V

**Temperature conditions**

none

**Time conditions**

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20 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal fault in VVT sensor

**Repair procedures (plant/service)**

Sensor replacement

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P102C: VVT-REFERENCE SENSOR DIAGNOSTIC ERROR (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A34

**BMW Fault Code (dez)**

10804

**BMW Fault Code Description VS-Text**

Valvetronic, eccentric shaft sensor: reference

**Component**

Valvetronic (VVT)

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**Subcomponent**

Reference Sensor

**Monitoring criteria**

Internal VVT reference sensor monitor. No faults related to the sensor voltage supply should be present (fault code #10800) and there should be no faults or SPI parity faults related to the VVT sensor (fault code #10801) or (fault code #10802)

**Fault debouncing**

20 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 >10.0 V

**Temperature conditions**

none

**Time conditions**

20 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal fault in VVT sensor

**Repair procedures (plant/service)**

Sensor replacement

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**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1030: VVT-ACTUATOR MONITORING POSITION CONTROL, CONTROL DEVIATION (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2A38

**BMW Fault Code (dez)**

10808

**BMW Fault Code Description VS-Text**

Valvetronic, monitoring, sluggish movement

**Component**

Valvetronic (VVT)

**Subcomponent**

Position Control

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

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none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1030: VVT-ACTUATOR MONITORING POSITION CONTROL, CONTROL DEVIATION (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A38

**BMW Fault Code (dez)**

10808

**BMW Fault Code Description VS-Text**

Valvetronic, monitoring, sluggish movement

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**Component**

Valvetronic (VVT)

**Subcomponent**

Position Control

**Monitoring criteria**

VVT system monitoring for binding and resistance to motion. Always active when no other VVT fault is present.

**Fault debouncing**

55 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 >10.0 V

**Temperature conditions**

none

**Time conditions**

55 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Specified sensor value is not reached (not quickly enough).

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**Repair procedures (plant/service)**

1. Use tester to request initialization of travel limits and note whether travel limit initialization routine executes without problems.
2. If Item 1 is not OK, replace VVT motor and repeat Item 1
3. If replacing VVT motor fails to resolve the problem: Open the valve cover and check the VVT for mechanical binding and seizure.

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P103A: VVT-SYSTEM CURRENT TOO HIGH (MAX)

**BMW Fault Code (hex)**

0x2A45

**BMW Fault Code (dez)**

10821

**BMW Fault Code Description VS-Text**

Valvetronic, actuator motor: plausibility

**Component**

Valvetronic (VVT)

**Subcomponent**

System Current

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

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none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1041: INTERNAL VVT-CONTROL MODULE EEPROM ERROR (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2A3A

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**BMW Fault Code (dez)**

10810

**BMW Fault Code Description VS-Text**

Valvetronic, internal fault

**Component**

Valvetronic (VVT)

**Subcomponent**

ECM

**Monitoring criteria**

E2PROM fault

**Fault debouncing**

Fault set immediate without debounce

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

Y

**Possible Fault Causes**

Malfunction in control module electronic circuitry

**Repair procedures (plant/service)**

Ignition off, wait for control module to return to dormant ""sleep"" state, run travel limit initialization routine again or trigger travel limit initialization routine manually

**MIL illumination/CC message/emergency program**

Limp-home operation 1

**Remarks**

none

## DTC P1047: VVT-CONTROL CIRCUIT HIGH INPUT (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A3D

**BMW Fault Code (dez)**

10813

**BMW Fault Code Description VS-Text**

Valvetronic, actuator motor: activation

**Component**

Valvetronic (VVT)

**Subcomponent**

Control Motor

**Monitoring criteria**

Short circuit to voltage supply

**Fault debouncing**

Fault set immediate without debounce

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Battery voltage > 6.99 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Malfunction in control module electronic circuitry

**Repair procedures (plant/service)**

1. Ignition off, let control module return to dormant state as indicated, restart
2. If Item 1 is not OK, it will be necessary to check the electronics in the control module

**MIL illumination/CC message/emergency program**

Emergency default mode 2

**Remarks**

none

## DTC P1048: VVT-CONTROL CIRCUIT LOW INPUT (BANK 1) (MIN)

**BMW Fault Code (hex)**

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0x2A3D

**BMW Fault Code (dez)**

10813

**BMW Fault Code Description VS-Text**

Valvetronic, actuator motor: activation

**Component**

Valvetronic (VVT)

**Subcomponent**

Control Motor

**Monitoring criteria**

Short to ground

**Fault debouncing**

Fault set immediate without debounce

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Battery voltage > 6.99 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Malfunction in control module electronic circuitry

**Repair procedures (plant/service)**

1. Ignition off, let control module return to dormant state as indicated, restart
2. If Item 1 is not OK, it will be necessary to check the electronics in the control module

**MIL illumination/CC message/emergency program**

Emergency default mode 2

**Remarks**

none

## DTC P1049: VVT-CONTROL CIRCUIT ENGINE CABLES SHORT CIRCUIT (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A3D

**BMW Fault Code (dez)**

10813

**BMW Fault Code Description VS-Text**

Valvetronic, actuator motor: activation

**Component**

Valvetronic (VVT)

**Subcomponent**

Control Motor

**Monitoring criteria**

Short circuit between motor wires

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**Fault debouncing**

Fault set immediate without debounce

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Battery voltage > 6.99 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

1. Disconnected VVL motor wires
2. Malfunction in control module electronics

**Repair procedures (plant/service)**

1. Check wiring to VVT motor
2. Ignition off, allow control module to assume dormant state as indicated, restart
3. If Items 1 and 2 are not OK, it will be necessary to inspect the control module's electronic circuitry

**MIL illumination/CC message/emergency program**

Emergency default mode 2

**Remarks**

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none

## DTC P1055: VVT-SUPPLY VOLTAGE CONTROL MOTOR HIGH INPUT (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A3F

**BMW Fault Code (dez)**

10815

**BMW Fault Code Description VS-Text**

Valvetronic, actuator motor: power supply

**Component**

Valvetronic (VVT)

**Subcomponent**

Power Supply Control Motor

**Monitoring criteria**

VVT servo motor power supply monitor

**Fault debouncing**

Power-supply voltage > 17 V

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 >10.0 V

**Temperature conditions**

none

**Time conditions**

Fault code is stored following detection of fault (10 ms)

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to positive in VVT power supply

**Repair procedures (plant/service)**

1. Check VVT power supply voltage with multimeter. Supply voltage must lie between 5.75 V and 17 V.
2. If result is outside specified range: Inspect the power-supply wire to the VVT pins and check the plug.
3. If contact is stretched or corroded: Replace plug
4. If wiring harness is defective: Replace wiring harness.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P1056: VVT-SUPPLY VOLTAGE CONTROL MOTOR LOW INPUT (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A3F

**BMW Fault Code (dez)**

10815

**BMW Fault Code Description VS-Text**

Valvetronic, actuator motor: power supply

**Component**

Valvetronic (VVT)

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**Subcomponent**

Power Supply Control Motor

**Monitoring criteria**

VVT servo motor power supply monitor

**Fault debouncing**

Power supply voltage < 5.75 V

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Electrical system voltage terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

Fault code is stored following detection of fault (10 ms)

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in VVT power supply.

**Repair procedures (plant/service)**

1. Check VVT power supply voltage with multimeter. Supply voltage must lie between 5.75 V and 17 V.
2. If result is outside specified range: Inspect the power-supply wire to the VVT pins and check the plug.

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3. If contact is stretched or corroded: Replace plug
4. If wiring harness is defective: Replace wiring harness.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P1057: VVT-SUPPLY VOLTAGE CONTROL MOTOR ELECTRICAL (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2A3C

**BMW Fault Code (dez)**

10812

**BMW Fault Code Description VS-Text**

Valvetronic relay, activation

**Component**

Valvetronic (VVT)

**Subcomponent**

Power Supply Control Motor

**Monitoring criteria**

The voltage at the capacitors is monitored. If this is below an offset of the battery voltage an fault symptom is registered

**Fault debouncing**

0.05

**Terminal conditions**

Main relay ON

**Voltage conditions**

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none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Malfunction in control module electronic circuitry

**Repair procedures (plant/service)**

1. Ignition off, let control module return to dormant state as indicated, restart
2. If Item 1 is not OK, it will be necessary to check the electronics in the control module

**MIL illumination/CC message/emergency program**

Emergency default mode 2

**Remarks**

none

## DTC P105A: INTERNAL CONTROL MODULE VVT ERROR, CURRENT TOO HIGH (MAX)

**BMW Fault Code (hex)**

0x2A77

**BMW Fault Code (dez)**

10871

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**BMW Fault Code Description VS-Text**

Control module, internal fault: Valvetronic output stage

**Component**

ECM

**Subcomponent**

Valvetronic (VVT) Current

**Monitoring criteria**

Excess current recognized on high side or low side transistors (ATIC61 diagnosis)

**Fault debouncing**

0.2

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Battery voltage > 9.953125 V and battery voltage < 25.898438 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Shorty circuit in the H-bridge (for additional information refer to possible fault code entries in short circuit diagnosis, 'DR_SC_VVL'.

**Repair procedures (plant/service)**

1. Ignition off, let control module return to dormant state as indicated, restart
2. If Item 1 is not OK, it will be necessary to check the electronics in the control module

**MIL illumination/CC message/emergency program**

Fault entry in info memory only

**Remarks**

none

## DTC P105B: INTERNAL CONTROL MODULE VVT ERROR, VOLTAGE TOO LOW (MIN)

**BMW Fault Code (hex)**

0x2A77

**BMW Fault Code (dez)**

10871

**BMW Fault Code Description VS-Text**

Control module, internal fault: Valvetronic output stage

**Component**

ECM

**Subcomponent**

Valvetronic (VVT) Voltage

**Monitoring criteria**

Undervoltage in power supply to driver circuit has been detected (ATIC61 diagnosis)

**Fault debouncing**

0.2

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Battery voltage > 9.953125 V and battery voltage < 25.898438 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

H bridge voltage supply owing to (for instance)

1. battery voltage too low
2. VVJL relay fails to make, or
3. other problems in the control module electronic circuitry

**Repair procedures (plant/service)**

1. Ignition off, let control module return to dormant state as indicated, restart
2. If Item 1 is not OK, it will be necessary to check the electronics in the control module.

**MIL illumination/CC message/emergency program**

Fault entry in info memory only

**Remarks**

none

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## DTC P1062: VVT-LIMP HOME REQUEST FULL STROKE POSITION NOT REACHED (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A44

**BMW Fault Code (dez)**

10820

**BMW Fault Code Description VS-Text**

Valvetronic, power limitation

**Component**

Valvetronic (VVT)

**Subcomponent**

Limp Home Request

**Monitoring criteria**

1. VVT must be in emergency operation mode (meaning that no VVT sensor signal is present) and unit travels to upper travel limit at 30% pulse-duty factor for VVT motor.
2. The mass induction airflow is employed as an index to determine whether the maximum VVT stroke has been reached.

**Fault debouncing**

after Terminal 15 switch and/or always active if DME is awake.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

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20 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

1. A dual VVT sensor fault must be entered in the fault memory.
2. Check for mechanical binding in mechanical components in VVT system (VVT servo motor, VVT gears, VVT eccentric shaft...)

**Repair procedures (plant/service)**

1. Check and repair the sensor defect using the correct repair instructions.
2. Check HFM mass airflow signal
3. Check VVT mechanical system (VVT servo motor, VVT gearset, VVT eccentric shaft...)

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1064: VVT-VALUE COMPARISON STARTING POSITION/PARKING POSITION PLAUSIBILITY (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A42

**BMW Fault Code (dez)**

10818

**BMW Fault Code Description VS-Text**

Valvetronic, position at new start: plausibility

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**Component**

Valvetronic (VVT)

**Subcomponent**

Value Comparison

**Monitoring criteria**

When the DME is activated (wake-up) it assesses the current VVT sensor angle based on the last VVT sensor angle prior to shutdown. If there is a substantial difference in the two angles, the operative assumption will that substantial repairs have been carried out on the cylinder head. The VVT travel limit positions must be re-initialized. No VVT sensor faults should be present (#10800, #10801,#10802).

**Fault debouncing**

Following successful travel limit initialization routine (can be initiated by tester), active only once at moment when system starts (DME wake-up).

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

Initialize for VVT travel limit

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Mechanical repairs may have been carried out on the cylinder head.

**Repair procedures (plant/service)**

Conduct travel limit initialization routine using tester for activation. Delete stored fault codes from DME fault memory and initiate dormant vehicle state. Repeat procedure in case of doubt.

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1075: VVT-OVERLOAD PROTECTION (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A41

**BMW Fault Code (dez)**

10817

**BMW Fault Code Description VS-Text**

Valvetronic, electrical overload protection

**Component**

Valvetronic (VVT)

**Subcomponent**

Overload Protection

**Monitoring criteria**

Electrical overload protection. The engine management monitors the VVT motor's current draw. If the monitored current draw exceeds a defined threshold for several seconds the VVT system is deactivated (VVT emergency operation mode), and the engine reverts to throttled operation. Always active provided that fault codes #10813,#10816, #10819 are not present.

**Fault debouncing**

Warning threshold: 112°C DME internal driver circuit temperature. Deactivation threshold: 126°C internal DME driver circuit temperature

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**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Loose reluctor on VVT sensor
2. Defective VVT servo motor (interturn short circuit causes low resistance in motor winding)
3. Short circuit in wiring harness (wire between VVT servo motor and DME)

**Repair procedures (plant/service)**

1. Check for correct reluctor attachment at VVT sensor.
2. Defective VVT servo motor (for instance, interturn short circuit) Check servo motor and replace as indicated (Clear fault memory/switch ignition terminals)
3. Check VVT motor wiring harness between VVT motor and DME for shorts between both VVT motor wires and vehicle ground.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

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none

## DTC P1076: VVT-OVERLOAD PROTECTION ECU-TEMPERATURE HIGH INPUT (BANK 1) (SIG)

**BMW Fault Code (hex)**

0x2A40

**BMW Fault Code (dez)**

10816

**BMW Fault Code Description VS-Text**

Valvetronic, thermal overload protection

**Component**

Valvetronic (VVT)

**Subcomponent**

Overload Protection

**Monitoring criteria**

Monitoring of maximum transistor temperature

**Fault debouncing**

0.03

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Maximum transistor temperature too high

**Repair procedures (plant/service)**

1. Repeat the diagnostic routine once the vehicle cools
2. If Item 1 is not OK, it will be necessary to proceed to an examination of the control module's electronic circuitry

**MIL illumination/CC message/emergency program**

Emergency default mode 2

**Remarks**

none

## DTC P1078: VVT-OVERLOAD PROTECTION CONTROL MOTOR CURRENT HIGH INPUT (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A3E

**BMW Fault Code (dez)**

10814

**BMW Fault Code Description VS-Text**

Valvetronic, actuator motor: overload

**Component**

Valvetronic (VVT)

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**Subcomponent**

Overload Protection

**Monitoring criteria**

Monitoring of servo motor overload; The VVT servo motor temperature is calculated in the DME using a model. The first stage occurs when it heats beyond a warning threshold (fault #10819, fault class 2). This is 190°C (VVT motor temperature) and causes the VVT to revert to operation in its emergency mode. If the VVT motor were to overheat even further, the VVT system would be completely deactivated upon reaching the deactivation threshold (200°C VVT motor temperature).

**Fault debouncing**

Warning threshold: 190°C VVT Servo motor temperature. Deactivation threshold: 200°C VVT servo motor temperature

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Fault code is entered immediately as soon as VVT motor reaches the critical level.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

A model is employed to calculate the VVT servo motor's temperature in the DME. The first stage occurs when it heats beyond a warning threshold (fault code #10819, fault class 2). This is 190°C (VVT motor temperature)

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and causes the VVT to revert to operation in its emergency mode. If the VVT motor were to overheat even further, the VVT system would be completely deactivated upon reaching the deactivation threshold (200°C VVT motor temperature). Overheated VVT motor (based on model calculations, no monitored figures). Defective VVT motor.

**Repair procedures (plant/service)**

1. Check VVT servo motor
2. Allow servo motor to cool, Clear fault memory and verify that DME software is the most recent version.
3. DO NOT replace DME!

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P107A: VVT-OVERLOAD PROTECTION CONTROL MOTOR CURRENT TOO HIGH (MAX)

**BMW Fault Code (hex)**

0x2A43

**BMW Fault Code (dez)**

10819

**BMW Fault Code Description VS-Text**

Valvetronic, thermal overload protection: warning threshold

**Component**

Valvetronic (VVT)

**Subcomponent**

Overload Protection

**Monitoring criteria**

The engine-management system monitors the VVT motor's current draw. If the monitored current draw exceeds a defined threshold for several seconds the VVT system is deactivated (VVT emergency operation mode), and the engine reverts to throttled operation.

**Fault debouncing**

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always active when DME is awake current threshold roughly 24A,

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

1. Loose reluctor on VVT sensor
2. Defective VVT servo motor (soft interturn short circuit makes resistance too low in motor winding)
3. Short circuit in wiring harness (wire between VVT servo motor and DME)
4. Abuse of accelerator pedal module. Brief, rapid repeated pressure on the accelerator pedal extending over a period of time increases current flow within the VVT system.

**Repair procedures (plant/service)**

1. Check for correct reluctor attachment at VVT sensor.
2. Defective VVT servo motor (for instance, interturn short circuit) Check servo motor and replace as indicated
3. Check wiring harness from VVT motor to DME for shorts between the two VVT wires and vehicle ground.
4. If abuse is suspected: Clear fault memory from DME

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**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P107B: VVT-OVERLOAD PROTECTION CONTROL MOTOR TEMPERATURE TOO HIGH (MIN)

**BMW Fault Code (hex)**

0x2A43

**BMW Fault Code (dez)**

10819

**BMW Fault Code Description VS-Text**

Valvetronic, thermal overload protection: warning threshold

**Component**

Valvetronic (VVT)

**Subcomponent**

Overload Protection

**Monitoring criteria**

A temperature model is employed to monitor the VVT servo motor. When the calculated VVT motor temperature rises beyond the warning threshold this fault code is entered.

**Fault debouncing**

Always active when DME is awake VVT motor temperature: Warning threshold 190°C

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

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none

**Time conditions**

immediately

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

A temperature model is employed to monitor the VVT servo motor. When the calculated VVT motor temperature rises beyond the warning threshold (190°C) this fault code is entered.

**Repair procedures (plant/service)**

1. Check VVT servo motor
2. Allow engine to cool, let vehicle return to dormant state, Clear fault memory and verify that DME has most recent software version.

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P107C: VVT-OVERLOAD PROTECTION TEMPERATURE TOO HIGH (MIN)

**BMW Fault Code (hex)**

0x2A44

**BMW Fault Code (dez)**

10820

**BMW Fault Code Description VS-Text**

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Valvetronic, power limitation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

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none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P107C: VVT-OVERLOAD PROTECTION TEMPERATURE TOO HIGH (SIG)

**BMW Fault Code (hex)**

0x2A43

**BMW Fault Code (dez)**

10819

**BMW Fault Code Description VS-Text**

Valvetronic, thermal overload protection: warning threshold

**Component**

Valvetronic (VVT)

**Subcomponent**

Overload Protection

**Monitoring criteria**

The temperature of the VVT driver circuit in the DME is monitored, and the system responds to overheating by reverting to VVT emergency mode operation - the vehicle continues to operate, but in throttled mode. Incorrect use of the pedal-position sensor, consisting of rapid, repeated pressure extending over several minutes heats up the VVT driver circuit in the DME, leading to its deactivation when it reaches a critical level.

**Fault debouncing**

after Terminal 15 switch and/or always active if DME is awake. VVT driver circuit in the DME: Warning threshold 112°C

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

immediately

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

1. Loose reluctor on VVT sensor. (vibrations in position determination lead to overheating of the VVT driver circuit within the DME)
2. EBOX fan fails owing to loose plug-in connection, open wire, defective EBOX fan.
3. Incorrect installation of DME in the EBOX (EBOX fan must be positioned to ventilate DME).
4. Air openings from vehicle interior to EBOX obstructed.
5. Short in wiring harness between VVT servo motor and DME.
6. Defective DME

**Repair procedures (plant/service)**

If no tampering/abuse can be detected the following tests should be carried out:

1. Check for correct reluctor attachment at VVT sensor.
2. Use tester to manually activate the E-box fan for acoustic check.
3. DME installed according to specification and check to verify installation of spacer plate (to guide airflow in E-Box).

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4. Check wiring harness between VVT motor and DME for soft shorts between the two VVT motor wires and vehicle ground
5. Defective VVT servo motor (for instance, interturn short circuit) - Replace servo motor and determine whether malfunction is still present (Clear fault

**MIL illumination/CC message/emergency program**

ECE: No warning message. Engine reverts to VVT emergency backup mode (throttled operation) US: OPEN

**Remarks**

none

## DTC P1104: DIFFERENTIAL PRESSURE SENSOR INTAKE MANIFOLD PRESSURE TOO LOW (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2D29

**BMW Fault Code (dez)**

11561

**BMW Fault Code Description VS-Text**

Differential-pressure sensor, intake manifold: plausibility

**Component**

Differential Pressure Sensor

**Subcomponent**

Pressure

**Monitoring criteria**

Differential pressure sensor monitor 6% <. Relative charge factor <120% -20° <. Induction air temperature sensor < 85°C 560 rpm <. Engine speed < 7200 rpm. Time after start > 30 sec. regardless of EVAP active/inactive.

**Fault debouncing**

0.2 sec.

**Terminal conditions**

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Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Coolant temperature > -10°C

**Time conditions**

4.4 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

MIN Fault (monitored intake manifold pressure (absolute) too low) - Incorrect throttle plate angle - Vacuum sensor fault

**Repair procedures (plant/service)**

1. Visual inspection of vacuum sensor plug contacts.
2. Check wiring between vacuum sensor and DME.
3. Check induction system/crankcase for leaks (crankcase vacuum control can allow excess air from the crankcase to flow into the intake manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking).

**MIL illumination/CC message/emergency program**

US: MIL ON

**Remarks**

US only

## DTC P1105: DIFFERENTIAL PRESSURE SENSOR INTAKE MANIFOLD PRESSURE TOO HIGH

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## (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2D29

**BMW Fault Code (dez)**

11561

**BMW Fault Code Description VS-Text**

Differential-pressure sensor, intake manifold: plausibility

**Component**

Differential Pressure Sensor

**Subcomponent**

Pressure

**Monitoring criteria**

Differential pressure sensor monitor 6% <. Relative charge factor <120% - 20° <. Induction air temperature sensor < 85°C 560 RPM. Engine speed < 7200 RPM. Time after start > 30 sec. regardless of EVAP active/inactive

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Coolant temperature > -10°C

**Time conditions**

4.4 sec.

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

MAX fault (intake manifold pressure (absolute) too high) - Induction system/crankcase vacuum leak - Incorrect throttle plate angle - Vacuum sensor malfunction

**Repair procedures (plant/service)**

1. Visual inspection of vacuum sensor plug contacts
2. Check wiring between vacuum sensor and DME
3. Check induction system/crankcase for leaks (crankcase vacuum control can allow excess air from the crankcase to flow into the intake manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking)

**MIL illumination/CC message/emergency program**

US: MIL ON

**Remarks**

US only

## DTC P110D: THROTTLE POSITION SENSOR A AND B RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2D07

**BMW Fault Code (dez)**

11527

**BMW Fault Code Description VS-Text**

Throttle

**Component**

Throttle Position Sensor

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**Subcomponent**

A and B

**Monitoring criteria**

Engine must be running

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

250 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Contact resistance in input wires or plug-in contacts at throttle valve, electrical problem with throttle valve

**Repair procedures (plant/service)**

1. Check: The sum of throttle valve voltages must equal 5 V
2. Perform electrical check on wiring from DME to throttle valve

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3. Visual inspection of plug-in contacts (at component, wiring harness and DME)
4. Replace component

**MIL illumination/CC message/emergency program**

MIL activation control. With previous fault, switches to MIN/MAX selection for throttle valve aperture definition

**Remarks**

Throttle valve voltages deviate by more than 0.6 V. Important: This malfunction can lead to an HFM fault; when throttle valve and HFM faults appear simultaneously there is no immediate need to proceed to an examination of the HFM.

## DTC P111E: INTAKE AIR TEMPERATURE SENSOR 1 MAXIMUM TEMPERATURE IMPLAUSIBLE (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2F09

**BMW Fault Code (dez)**

12041

**BMW Fault Code Description VS-Text**

Intake air temperature sensor, plausibility

**Component**

Intake Air Temperature Sensor

**Subcomponent**

1 Temperature

**Monitoring criteria**

Engine must be running, compliance with specified diagnosis conditions is mandatory (see Time conditions)

**Fault debouncing**

30 sec.

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

When the engine is started the ambient temperature must exceed -7.5°C and be less than 35.3°C

**Time conditions**

Drive over 40 km/h for 120 sec. + debounce time of 30 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Data readings from sensor too high: Sticking sensor, sensor manipulation

**Repair procedures (plant/service)**

1. Check sensor data
2. Carry out electrical check on sensor wire and power supply wires
3. Visual inspection of sensor
4. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

none

## DTC P111F: INTAKE AIR TEMPERATURE SENSOR 1 MINIMUM TEMPERATURE IMPLAUSIBLE (BANK 1) (MIN)

**BMW Fault Code (hex)**

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0x2F09

**BMW Fault Code (dez)**

12041

**BMW Fault Code Description VS-Text**

Intake air temperature sensor, plausibility

**Component**

Intake Air Temperature Sensor

**Subcomponent**

1 Temperature

**Monitoring criteria**

Engine must be running, compliance with specified diagnosis conditions is mandatory (see Time conditions)

**Fault debouncing**

30 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

When the engine is started the ambient temperature must exceed -7.5°C and be less than 35.3°C.

**Time conditions**

Drive over 40 km/h for 120 sec. + debounce time of 30 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Data readings from sensor are too low: Sticking sensor, sensor manipulation.

**Repair procedures (plant/service)**

1. Check sensor data
2. Check outside temperature data
3. Perform electrical check on sensor and supply wires
4. Visual inspection of sensor
5. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

ATTENTION: This fault can also be triggered by an implausibly high figure for outside temperature. Therefore: Always check outside temperature to ensure that it is plausible.

## DTC P1124: DIFFERENTIAL PRESSURE SENSOR INTAKE MANIFOLD OFFSET (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2D2A

**BMW Fault Code (dez)**

11562

**BMW Fault Code Description VS-Text**

Differential-pressure sensor, intake manifold: adaptation

**Component**

Differential Pressure Sensor

**Subcomponent**

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Offset

**Monitoring criteria**

Throttle valve open

**Fault debouncing**

1 sec.

**Terminal conditions**

in control module shutdown period

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Implausible signal from differential pressure sensor

**Repair procedures (plant/service)**

1. Determine whether throttle valve operation is trouble-free
2. Replace sensor

**MIL illumination/CC message/emergency program**

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US: MIL ON ECE: No MIL

**Remarks**

none

## DTC P112C: O2 SENSOR NEGATIVE CURRENT OR POSITIVE CURRENT CONTROL CIRCUIT/OPEN (BANK 1 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C3D

**BMW Fault Code (dez)**

11325

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, line fault

**Component**

Oxygen Sensor, Front

**Subcomponent**

Negative/Positive Current

**Monitoring criteria**

Not supported

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P112C: O2 SENSOR NEGATIVE CURRENT OR POSITIVE CURRENT CONTROL CIRCUIT/OPEN (BANK 1 SENSOR 1) (SIG)

**BMW Fault Code (hex)**

0x2C3D

**BMW Fault Code (dez)**

11325

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, line fault

**Component**

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Oxygen Sensor, Front

**Subcomponent**

Negative/Positive Current

**Monitoring criteria**

O2 sensor wiring monitor O2 sensor signal freezes. No fault memories. Drive at 50 - 80 km/h at moderate engine speed.

**Fault debouncing**

Voltage seizes at 2 V (Lambda = 1) OR voltage < 2.1 V with overrun injection deactivation active

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 9s with overrun injection deactivation active

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor inactive. Wire VG or IP is open. Catalyst is plugged (rich exhaust at O2 sensor in overrun cut-off); oil or gasoline in the exhaust gases during operation in overrun cut-off phase.

**Repair procedures (plant/service)**

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1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Inspect wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 1 (water or corrosion in plug?) => Repeatedly remove the plug and then reconnect it FIRMLY)
4. Check catalytic converter (is FSD lean fault entered for the other bank?)
5. Piston rings, injectors, positive crankcase ventilation OK? FSD fault? Then continue there!
6. Replace O2 sensor
7. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P112D: O2 SENSOR NEGATIVE CURRENT OR POSITIVE CURRENT CONTROL CIRCUIT/OPEN (BANK 2 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C3E

**BMW Fault Code (dez)**

11326

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, line fault

**Component**

Oxygen Sensor, Front

**Subcomponent**

Negative/Positive Current

**Monitoring criteria**

Not supported

**Fault debouncing**

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none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P112D: O2 SENSOR NEGATIVE CURRENT OR POSITIVE CURRENT CONTROL CIRCUIT/OPEN (BANK 2 SENSOR 1) (SIG)

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**BMW Fault Code (hex)**

0x2C3E

**BMW Fault Code (dez)**

11326

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, line fault

**Component**

Oxygen Sensor, Front

**Subcomponent**

Negative/Positive Current

**Monitoring criteria**

O2 sensor wiring monitor O2 sensor signal freezes. No fault memories. Drive at 50 - 80 km/h at moderate engine speed.

**Fault debouncing**

Voltage seizes at 2 V (Lambda = 1) or voltage < 2.1 V with overrun injection deactivation active

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 9s with overrun injection deactivation active

**System test**

O2 sensors reversed

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**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor inactive Wire VG or IP is open Catalyst is plugged (rich exhaust at O2 sensor in overrun cut-off); oil or gasoline in the exhaust gases during operation in overrun cut-off phase

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Inspect wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 1 (water or corrosion in plug?) => Repeatedly remove the plug and then reconnect it FIRMLY)
4. Check catalytic converter (is FSD lean fault entered for the other bank?)
5. Piston rings, injectors, positive crankcase ventilation OK? FSD fault? Then continue there!
6. Replace O2 sensor
7. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P1130: O2 SENSOR CIRCUIT DYNAMIC TEST (BANK 1 SENSOR 2) (PLAUS)

**BMW Fault Code (hex)**

0x2C6D

**BMW Fault Code (dez)**

11373

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, aging.

**Component**

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Oxygen Sensor, Rear

**Subcomponent**

Dynamic Test

**Monitoring criteria**

O2 sensor aging test. No secondary air injection, 0 < Speed < 150 km/h

**Fault debouncing**

Switching time counter > 1.5 (sensor transition from rich to lean too slow)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Coolant temperature > 50°C

**Time conditions**

Approximately 5 sec. after start of overrun cut-off

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Excessive lag in O2 signal change from rich to lean when overrun injection deactivation assumes operation; excessive sensor lag owing to cooling; sensor too slow owing to aging.

**Repair procedures (plant/service)**

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Was the temperature drop caused by external factors (driving into snow pile, ice on O2 sensor)? Thaw sensor, clear all fault memory, continue driving.

1. Check O2 sensor heater: Contact resistance on plugs and in wiring is excessive (DME-wiring harness-sensor)
2. Check wiring
3. Check O2 sensor plug (water or corrosion in the plug? Repeatedly disconnect the plug and then re-insert it FIRMLY)
4. Replace plug and/or wire as indicated
5. Replace the affected downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P1131: O2 SENSOR CIRCUIT DYNAMIC TEST (BANK 2 SENSOR 2) (PLAUS)

**BMW Fault Code (hex)**

0x2C6E

**BMW Fault Code (dez)**

11374

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, aging

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Dynamic Test

**Monitoring criteria**

O2 sensor aging test. No secondary air injection, 0 < Speed < 150 km/h

**Fault debouncing**

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Switching time counter > 1.5 (sensor transition from rich to lean too slow)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Coolant temperature > 50°C

**Time conditions**

Approximately 5 sec. after start of overrun cut-off

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Excessive lag in O2 signal change from rich to lean when overrun injection deactivation assumes operation; excessive sensor lag owing to cooling; sensor too slow owing to aging.

**Repair procedures (plant/service)**

Was the temperature drop caused by external factors (driving into snow pile, ice on O2 sensor)? Thaw sensor, clear all fault memory, continue driving!

1. Check O2 sensor heater: Contact resistance on plugs and in wiring is excessive (DME-wiring harness-sensor)
2. Check wiring
3. Check O2 sensor plug (water or corrosion in the plug? Repeatedly disconnect the plug and then re-insert it FIRMLY)
4. Replace plug and/or wire as indicated
5. Replace the affected downstream (post-cat) O2 sensor

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**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P114A: POST CATALYST FUEL TRIM VIA OXYGEN SENSOR SYSTEM TOO RICH (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2C7E

**BMW Fault Code (dez)**

11390

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, trim control

**Component**

Fuel System

**Subcomponent**

Post Catalyst via Oxygen Sensor

**Monitoring criteria**

O2 sensor trim control. No fault memories. Drive at 50 - 80 km/h and at moderate engine speed.

**Fault debouncing**

Excessive trim controller deviation; behind catalytic converter sensor voltage outside range around trim controller specification point with trim controller active (approximately < 0.2 V or approximately > 0.9 V)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

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Engine at operating temperature

**Time conditions**

approximately 4 minutes

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective wiring. Exhaust system leak. Pre-cat or downstream (post-cat) O2 sensor defective.

**Repair procedures (plant/service)**

This fault automatically triggers an active test (secondary fault stored in the control module's fault memory!).

1. Read out results of active test (are other fault codes still stored in the fault memory)? => Then continue at this point!)
2. Initiate system test for reversed O2 sensors. Follow instructions for system test.
3. If the system test fails to produce a result then
4. Visual inspection of wiring and plugs
5. Electrical check of wiring
6. Replace wiring or plugs as indicated
7. Check exhaust system forward of downstream (post-cat) O2 sensor for leaks
8. Replace downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P114B: POST CATALYST FUEL TRIM VIA OXYGEN SENSOR SYSTEM TOO LEAN (BANK 1) (MIN)

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**BMW Fault Code (hex)**

0x2C7E

**BMW Fault Code (dez)**

11390

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, trim control

**Component**

Fuel System

**Subcomponent**

Post Catalyst via Oxygen Sensor

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P114C: POST CATALYST FUEL TRIM VIA OXYGEN SENSOR SYSTEM TOO RICH (BANK 2) (MAX)

**BMW Fault Code (hex)**

0x2C7F

**BMW Fault Code (dez)**

11391

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, trim control

**Component**

Fuel System

**Subcomponent**

Post Catalyst via Oxygen Sensor

**Monitoring criteria**

O2 sensor trim control. No fault memories. Drive at 50 - 80 km/h and at moderate engine speed.

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**Fault debouncing**

Excessive trim controller deviation; behind catalytic converter sensor voltage outside range around trim controller specification point with trim controller active (approximately < 0.2 V or approximately > 0.9 V)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 4 minutes

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective wiring. Exhaust system leak. Pre-cat or downstream (post-cat) O2 sensor defective.

**Repair procedures (plant/service)**

This fault automatically triggers an active test (secondary fault stored in the control module's fault memory!).

1. Read out results of active test (are other fault codes still stored in the fault memory)? => Then continue at this point!)
2. Initiate system test for reversed O2 sensors. Follow instructions for system test.
3. If the system test fails to produce a result then
4. Visual inspection of wiring and plugs
5. Electrical check of wiring

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6. Replace wiring or plugs as indicated
7. Check exhaust system forward of downstream (post-cat) O2 sensor for leaks
8. Replace downstream (post-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P114D: POST CATALYST FUEL TRIM VIA OXYGEN SENSOR SYSTEM TOO LEAN (BANK 2) (MIN)

**BMW Fault Code (hex)**

0x2C7F

**BMW Fault Code (dez)**

11391

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, trim control

**Component**

Fuel System

**Subcomponent**

Post Catalyst via Oxygen Sensor

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

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none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P114F: AIR MASS FLOW SENSOR DEFECTIVE (MIN)

**BMW Fault Code (hex)**

0x2D16

**BMW Fault Code (dez)**

11542

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**BMW Fault Code Description VS-Text**

Air-mass sensor, signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Engine start completed

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

OBD1 conditions met (voltage between 10 V and 16 V)

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Sensor's self-diagnosis reports fault or range violation with period duration exceeding upper limit.

**Repair procedures (plant/service)**

1. Visual inspection of plug-in contacts (at both component and DME ends)
2. Measure sensor wire, power supply and ground (possible intermittent contact!)
3. Replace sensor

**MIL illumination/CC message/emergency program**

none

**Remarks**

If the ""air mass period duration"" displayed in the environmental data is > 4500 us this is an fault generated by the sensor's own self-diagnosis utility (sensor reports active problem). The response should be to replace the sensor. If the ""air mass period duration"" is < 4500 us, this is an upward range violation (period duration too high) that can be caused by defects in both the sensor and the wiring harness.

## DTC P115A: MASS OR VOLUME AIR FLOW 'A' MAXIMUM EXCEEDED (MAX)

**BMW Fault Code (hex)**

0x2D15

**BMW Fault Code (dez)**

11541

**BMW Fault Code Description VS-Text**

Air-mass sensor, measurement range

**Component**

Mass Air Flow

**Subcomponent**

General

**Monitoring criteria**

Engine start completed

**Fault debouncing**

0.2 sec.

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**Terminal conditions**

none

**Voltage conditions**

OBD1 conditions met (voltage between 10 V and 16 V)

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Range violation in frequency supplied by HFM, stimulation with frequency generator.

**Repair procedures (plant/service)**

1. Check frequency of HFM
2. Check sensor and replace as indicated

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P116C: AIR MASS FLOW SENSOR SIGNAL RANGE (MAX)

**BMW Fault Code (hex)**

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0x2D0F

**BMW Fault Code (dez)**

11535

**BMW Fault Code Description VS-Text**

Air-mass sensor, signal

**Component**

Mass Air Flow Sensor

**Subcomponent**

Signal

**Monitoring criteria**

Engine start completed

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

OBD1 conditions met (voltage between 10 V and 16 V)

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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Sum fault

**Calculated value Y/N**

N

**Possible Fault Causes**

Frequency outside valid range, stimulation with frequency generator

**Repair procedures (plant/service)**

1. Visual inspection of plug-in terminals (at components and DME)
2. Perform electrical check on sensor wire, power supply and ground
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

ATTENTION: If the ground wire is open an HFM fault will appear together with an intake air temperature fault in the fault memory

## DTC P116D: AIR MASS FLOW SENSOR SIGNAL GRADIENT ERROR (MIN)

**BMW Fault Code (hex)**

0x2D0F

**BMW Fault Code (dez)**

11535

**BMW Fault Code Description VS-Text**

Air-mass sensor, signal

**Component**

Mass Air Flow Sensor

**Subcomponent**

Signal

**Monitoring criteria**

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Data content defined for this fault

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

Data content defined for this fault

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

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none

## DTC P116E: AIR MASS FLOW SENSOR SIGNAL ELECTRICAL (SIG)

**BMW Fault Code (hex)**

0x2D0F

**BMW Fault Code (dez)**

11535

**BMW Fault Code Description VS-Text**

Air-mass sensor, signal

**Component**

Mass Air Flow Sensor

**Subcomponent**

Signal

**Monitoring criteria**

Engine start completed

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

OBD1 conditions met (voltage between 10 V and 16 V)

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

Sum fault

**Calculated value Y/N**

N

**Possible Fault Causes**

Range violation, defective sensor or signal wire has fallen off

**Repair procedures (plant/service)**

1. Visual inspection of plug-in contacts (at both component and DME ends)
2. Measure sensor wire, power supply and ground (possible intermittent contact!)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Refer to fault 'Mass airflow sensor, Signal', Symptom 1

## DTC P1197: DIFFERENTIAL PRESSURE SENSOR INTAKE MANIFOLD HIGH INPUT (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2D28

**BMW Fault Code (dez)**

11560

**BMW Fault Code Description VS-Text**

Differential-pressure sensor, intake manifold: signal

**Component**

Differential Pressure Sensor

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**Subcomponent**

Electrical

**Monitoring criteria**

Monitor for differential pressure sensor. Engine start ended.

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Pin 5 - 33 shorted to positive or open circuit

**Repair procedures (plant/service)**

1. Visual inspection of plug-in terminals (at components and DME)
2. Perform electrical check on sensor wire, power supply and ground

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3. Replace sensor

**MIL illumination/CC message/emergency program**

US: MIL ON ECE: No MIL

**Remarks**

none

## DTC P1198: DIFFERENTIAL PRESSURE SENSOR INTAKE MANIFOLD LOW INPUT (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2D28

**BMW Fault Code (dez)**

11560

**BMW Fault Code Description VS-Text**

Differential-pressure sensor, intake manifold: signal

**Component**

Differential Pressure Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Monitor for differential pressure sensor. Engine start ended

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Pin 5 - 33 shorted to ground

**Repair procedures (plant/service)**

1. Visual inspection of plug-in terminals (at components and DME)
2. Perform electrical check on sensor wire, power supply and ground
3. Replace sensor

**MIL illumination/CC message/emergency program**

US: MIL ON ECE: No MIL

**Remarks**

none

## DTC P1214: FUEL PUMP SPEED TOO HIGH (MAX)

**BMW Fault Code (hex)**

0x2AAE

**BMW Fault Code (dez)**

10926

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**BMW Fault Code Description VS-Text**

Fuel pump

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Self-diagnosis from EKP module fault memory entry via CAN

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

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none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1215: FUEL PUMP SPEED TOO LOW (MIN)

**BMW Fault Code (hex)**

0x2AAE

**BMW Fault Code (dez)**

10926

**BMW Fault Code Description VS-Text**

Fuel pump

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Self-diagnosis from EKP module fault memory entry via CAN

**Fault debouncing**

none

**Terminal conditions**

none

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**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1216: FUEL PUMP EMERGENCY OPERATION (SIG)

**BMW Fault Code (hex)**

0x2AAE

**BMW Fault Code (dez)**

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10926

**BMW Fault Code Description VS-Text**

Fuel pump

**Component**

Fuel Regulators/Valves/Sensors

**Subcomponent**

Fuel Pump

**Monitoring criteria**

Self-diagnosis from EKP module fault memory entry via CAN.

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

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none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1217: FUEL PUMP OVERTEMPERATURE CONDITION (PLAUS)

**BMW Fault Code (hex)**

0x2AAE

**BMW Fault Code (dez)**

10926

**BMW Fault Code Description VS-Text**

Fuel pump

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Self-diagnosis from EKP module fault memory entry via CAN

**Fault debouncing**

none

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**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1230: FUEL PUMP RELAY PRIMARY CIRCUIT (SIG)

**BMW Fault Code (hex)**

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0x2F94

**BMW Fault Code (dez)**

12180

**BMW Fault Code Description VS-Text**

Fuel-pump relay, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

SIG

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

Data content defined

## DTC P1234: FUEL PUMP RELAY PRIMARY CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2F94

**BMW Fault Code (dez)**

12180

**BMW Fault Code Description VS-Text**

Fuel-pump relay, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

min

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**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

Data content defined

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## DTC P1236: FUEL PUMP RELAY PRIMARY CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2F94

**BMW Fault Code (dez)**

12180

**BMW Fault Code Description VS-Text**

Fuel-pump relay, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

MAX

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

Data content defined

## DTC P1244: FUEL PUMP EMERGENCY CUT-OFF (SIG)

**BMW Fault Code (hex)**

0x2AAD

**BMW Fault Code (dez)**

10925

**BMW Fault Code Description VS-Text**

Fuel pump, emergency shutoff

**Component**

Fuel Regulators/Valves/Sensors

**Subcomponent**

Fuel Pump

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**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

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none

## DTC P1300: CAMSHAFT POSITION SENSOR 'A' SEGMENT TIMING ERROR (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2AA2

**BMW Fault Code (dez)**

10914

**BMW Fault Code Description VS-Text**

Camshaft sensor, inlet, gap loss

**Component**

Camshaft Position Sensor

**Subcomponent**

Intake Signal

**Monitoring criteria**

NWE synchronous

**Fault debouncing**

On every camshaft flank if the flank ratio is not in tolerance.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Interference on the sensor signal

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference pulses
2. Replace camshaft exhaust side sensor

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Signal interference

## DTC P1301: IGNITION MONITORING CYLINDER 1 SPARK DURATION TOO SHORT (MIN)

**BMW Fault Code (hex)**

0x2E18

**BMW Fault Code (dez)**

11800

**BMW Fault Code Description VS-Text**

Firing, cylinder 1

**Component**

No Info

**Subcomponent**

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No Info

**Monitoring criteria**

Engine on, start phase completed, crankshaft absolves 48 revolutions after start (corresponding to approximately 5 sec. at idle), dual ignition off, secondary sparks off

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

Outside temperature > -9.8°C

**Time conditions**

t >5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system spark plugs ignition coil.

**Repair procedures (plant/service)**

Check wiring harness, ground connection and plug-in contacts. Visual inspection of spark plug, ignition coil (replace if damaged). After excluding all of these faults from consideration replace the control module.

**MIL illumination/CC message/emergency program**

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none

**Remarks**

none

## DTC P1302: IGNITION MONITORING CYLINDER 2 SPARK DURATION TOO SHORT (MIN)

**BMW Fault Code (hex)**

0x2E19

**BMW Fault Code (dez)**

11801

**BMW Fault Code Description VS-Text**

Firing, cylinder 2

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Engine on, start phase completed, crankshaft absolves 48 revolutions after start (corresponding to approximately 5 sec. at idle), dual ignition off, secondary sparks off

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

Outside temperature > -9.8°C

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**Time conditions**

t > 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system spark plugs ignition coil

**Repair procedures (plant/service)**

Check wiring harness, ground connection and plug-in contacts. Visual inspection of spark plug, ignition coil (replace if damaged). After excluding all of these faults from consideration replace the control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1303: IGNITION MONITORING CYLINDER 3 SPARK DURATION TOO SHORT (MIN)

**BMW Fault Code (hex)**

0x2E1A

**BMW Fault Code (dez)**

11802

**BMW Fault Code Description VS-Text**

Firing, cylinder 3

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

Engine on, start phase completed, crankshaft absolves 48 revolutions after start (corresponding to approximately 5 sec. at idle), dual ignition off, secondary sparks off

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

Outside temperature > -9.8°C

**Time conditions**

t >5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system spark plugs ignition coil.

**Repair procedures (plant/service)**

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Check wiring harness, ground connection and plug-in contacts. Visual inspection of spark plug, ignition coil (replace if damaged). After excluding all of these faults from consideration replace the control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1304: IGNITION MONITORING CYLINDER 4 SPARK DURATION TOO SHORT (MIN)

**BMW Fault Code (hex)**

0x2E1B

**BMW Fault Code (dez)**

11803

**BMW Fault Code Description VS-Text**

Firing, cylinder 4

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Engine on, start phase completed, crankshaft absolves 48 revolutions after start (corresponding to approximately 5 sec. at idle), dual ignition off, secondary sparks off

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

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Voltage in onboard electrical system > 11 V

**Temperature conditions**

Outside temperature > -9.8°C

**Time conditions**

t > 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system spark plugs ignition coil

**Repair procedures (plant/service)**

Check wiring harness, ground connection and plug-in contacts. Visual inspection of spark plug, ignition coil (replace if damaged). After excluding all of these faults from consideration replace the control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1305: IGNITION MONITORING CYLINDER 5 SPARK DURATION TOO SHORT (MIN)

**BMW Fault Code (hex)**

0x2E1C

**BMW Fault Code (dez)**

11804

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**BMW Fault Code Description VS-Text**

Firing, cylinder 5

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Engine on, start phase completed, crankshaft absolves 48 revolutions after start (corresponding to approximately 5 sec. at idle), dual ignition off, secondary sparks off

**Fault debouncing**

Segment synchronization

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

Outside temperature > -9.8°C

**Time conditions**

t > 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

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**Possible Fault Causes**

Voltage supply and ground connection for ignition system spark plugs ignition coil.

**Repair procedures (plant/service)**

Check wiring harness, ground connection and plug-in contacts. Visual inspection of spark plug, ignition coil (replace if damaged). After excluding all of these faults from consideration replace the control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1306: IGNITION MONITORING CYLINDER 6 SPARK DURATION TOO SHORT (MIN)

**BMW Fault Code (hex)**

0x2E1D

**BMW Fault Code (dez)**

11805

**BMW Fault Code Description VS-Text**

Firing, cylinder 6

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Engine on, start phase completed, crankshaft absolves 48 revolutions after start (corresponding to approximately 5 sec. at idle), dual ignition off, secondary sparks off

**Fault debouncing**

Segment synchronization

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

Outside temperature > -9.8°C

**Time conditions**

t > 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Voltage supply and ground connection for ignition system spark plugs ignition coil.

**Repair procedures (plant/service)**

Check wiring harness, ground connection and plug-in contacts. Visual inspection of spark plug, ignition coil (replace if damaged). After excluding all of these faults from consideration replace the control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P130A: CAMSHAFT POSITION SENSOR 'B' SEGMENT TIMING ERROR (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2AA3

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**BMW Fault Code (dez)**

10915

**BMW Fault Code Description VS-Text**

Camshaft sensor, exhaust, space loss

**Component**

Camshaft Position Sensor

**Subcomponent**

Exhaust Signal

**Monitoring criteria**

NWA synchronous

**Fault debouncing**

On every camshaft flank if the flank ratio is not in tolerance.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

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Y

**Possible Fault Causes**

Interference on the sensor signal

**Repair procedures (plant/service)**

1. Check signal wire for short to positive, ground, opens and interference pulses
2. Replace camshaft exhaust side sensor

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Signal interference

## DTC P1327: KNOCK SENSOR 2 CIRCUIT LOW INPUT (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2E69

**BMW Fault Code (dez)**

11881

**BMW Fault Code Description VS-Text**

Knock-sensor signal 2

**Component**

Knock Sensor

**Subcomponent**

Sensor 2

**Monitoring criteria**

Knock sensor signal monitor. Vehicle road operation at > 2800 1 RPM (current data status, tends toward > 2560 RPM) and air mass > 180 mg/unit. It is not possible to clear fault by switching ignition terminals. Compliance with the activation conditions and absence of malfunction extending over several seconds are required before fault code can be cleared.

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**Fault debouncing**

Yes, by event counter. Knock signal sensor must lie below threshold (differential knock signal < 180 mV < 200 mV) for 1...3 sec., then fault code is registered

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

min 1 sec., max 3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Knock sensor signal too high. Threaded sensor connection is loose or wire connecting knock sensor 2 to the engine-management ECU is shorted to positive

**Repair procedures (plant/service)**

1. Check knock sensor connection to verify that it is tight.
2. Check wire connecting knock sensor 1 and engine-management control module
3. Check for connection between knock sensor 1 and ground or positive
4. Replace knock sensor

**MIL illumination/CC message/emergency program**

No warning message. (No closed-loop knock control available. Power loss, as engine reverts to operation in

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safe range.)

**Remarks**

none

## DTC P1328: KNOCK SENSOR 2 CIRCUIT HIGH INPUT (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2E69

**BMW Fault Code (dez)**

11881

**BMW Fault Code Description VS-Text**

Knock-sensor signal 2

**Component**

Knock Sensor

**Subcomponent**

Sensor 2

**Monitoring criteria**

Knock sensor signal monitor. Vehicle road operation at >2800 1 RPM (current data status, tends toward > 2560 RPM) and air mass > 180 mg/unit. It is not possible to clear fault by switching ignition terminals. Compliance with the activation conditions and absence of malfunction extending over several seconds are required before fault code can be cleared.

**Fault debouncing**

Yes, by event counter. If knock sensor signal remains below threshold (differential knock signal > 4.8 V) for 1...3 sec. fault code is stored.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

min 1 sec., max 3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Knock sensor signal too low. Threaded sensor connection is loose or wire connecting knock sensor 1 to engine-management ECU is open.

**Repair procedures (plant/service)**

1. Check knock sensor connection to verify that it is tight.
2. Check wire connecting knock sensor 1 and engine-management control module
3. Check for connection between knock sensor 1 and ground or positive
4. Replace knock sensor

**MIL illumination/CC message/emergency program**

No warning message. (No closed-loop knock control available. Power loss, as engine reverts to operation in safe range.)

**Remarks**

none

## DTC P135B: KNOCK SENSOR 2 CIRCUIT RANGE/PERFORMANCE (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2E69

**BMW Fault Code (dez)**

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11881

**BMW Fault Code Description VS-Text**

Knock-sensor signal 2

**Component**

Knock Sensor

**Subcomponent**

Sensor 2

**Monitoring criteria**

Knock sensor signal monitor. Vehicle road operation at > 2800 1 RPM (current data status, tends toward > 2560 RPM) and air mass > 180 mg/unit. It is not possible to clear fault by switching ignition terminals. Compliance with the activation conditions and absence of malfunction extending over several seconds are required before fault code can be cleared.

**Fault debouncing**

The debounce time is derived from assessment of statistical diagnosis

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

min 1 sec., max 3 sec.

**System test**

none

**Signal information**

none

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**Calculated value Y/N**

N

**Possible Fault Causes**

Knock sensor signal too low. Threaded sensor connection is loose or wire connecting knock sensor 2 to engine-management ECU is open.

**Repair procedures (plant/service)**

1. Check knock sensor connection to verify that it is tight.
2. Check wire connecting knock sensor 1 and engine-management control module
3. Check for connection between knock sensor 1 and ground or positive
4. Replace knock sensor

**MIL illumination/CC message/emergency program**

No warning message. (No closed-loop knock control available. Power loss, as engine reverts to operation in safe range.)

**Remarks**

none

## DTC P1383: IGNITION MONITORING MALFUNCTION (SIG)

**BMW Fault Code (hex)**

0x2E77

**BMW Fault Code (dez)**

11895

**BMW Fault Code Description VS-Text**

Firing, voltage supply

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

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Start process completed, ignition failure on all cylinders

**Fault debouncing**

Fault is detected when all combustion durations = 0 ms,

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

6 - 24 V

**Temperature conditions**

-40°C - 150°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defect in central voltage supply (voltage supply, ignition wiring loom)

**Repair procedures (plant/service)**

Check voltage supply and ignition wiring loom including interfaces

**MIL illumination/CC message/emergency program**

NO

**Remarks**

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Ignition failure encompassing all cylinders, fault detected when all combustion durations = 0 ms,

## DTC P1396: CRANKSHAFT POSITION SENSOR SEGMENT TIMING PLAUSIBILITY (MIN)

**BMW Fault Code (hex)**

0x29DA

**BMW Fault Code (dez)**

10714

**BMW Fault Code Description VS-Text**

Crankshaft sensor, segment adaptation

**Component**

Crankshaft Position Sensor

**Subcomponent**

Signal

**Monitoring criteria**

In the adaptation phases with active overrun injection deactivation

**Fault debouncing**

Violation of maximum approved adaptation range

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

Always active

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Crankshaft sensor, defective reluctor

**Repair procedures (plant/service)**

Check and replace as indicated: Crankshaft sensor, reluctor

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1407: FUEL LEVEL SIGNAL 1 (PLAUS)

**BMW Fault Code (hex)**

0x2DE2

**BMW Fault Code (dez)**

11746

**BMW Fault Code Description VS-Text**

Tank fill level, right, signal

**Component**

Fuel Level Sensor

**Subcomponent**

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Signal

**Monitoring criteria**

Short circuit or open circuit in left-side level sensor, sensor resistance too low/high

**Fault debouncing**

90 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor value too low/high

**Repair procedures (plant/service)**

Check sensor resistance, determine location of open wire/short circuit (wiring harness, plug, cluster, junction box, tank)

**MIL illumination/CC message/emergency program**

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NO

**Remarks**

none

## DTC P1408: FUEL LEVEL SIGNAL 2 (PLAUS)

**BMW Fault Code (hex)**

0x2DE1

**BMW Fault Code (dez)**

11745

**BMW Fault Code Description VS-Text**

Tank fill level, left, signal

**Component**

Fuel Level Sensor

**Subcomponent**

Signal

**Monitoring criteria**

Short circuit or open circuit in left-side level sensor, sensor resistance too low/high

**Fault debouncing**

90 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor value too low/high

**Repair procedures (plant/service)**

Check sensor resistance, determine location of open wire/short circuit (wiring harness, plug, cluster, junction box, tank)

**MIL illumination/CC message/emergency program**

NO

**Remarks**

none

## DTC P140A: SECONDARY AIR INJECTION SYSTEM INSUFFICIENT TOTAL FLOW (BANK 1 AND BANK 2) (SIG)

**BMW Fault Code (hex)**

0x2A00

**BMW Fault Code (dez)**

10752

**BMW Fault Code Description VS-Text**

Secondary-air system

**Component**

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Secondary Air System

**Subcomponent**

Flow Check, 1+2

**Monitoring criteria**

Activation conditions: - Engine start - Secondary air-injection must be active - Ambient temperature >3°C - 3.8° C < Coolant temperature < 50.3°C

**Fault debouncing**

40 sec.

**Terminal conditions**

Terminal 15, engine start

**Voltage conditions**

Vehicle electrical system voltage (battery voltage between 7 & 15 V)

**Temperature conditions**

Ambient temperature > 3°C, coolant start temperature between 3.8°C & 50.3°C

**Time conditions**

none

**System test**

EOL test of secondary air-injection system (Do not run more than 5 EOL tests in succession; the SA pump can overheat)

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Potential causes - Hose between SA pump and SA valve disconnected/damaged - Defective secondary air-injection pump - Defective secondary air-injection valve - Obstructed passage between secondary air injection

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valve and the exhaust banks (in engine block)

**Repair procedures (plant/service)**

1. Visual inspection from connecting hose between secondary air injection pump (SAP) and secondary air-injection valve (SAV). Replace the hose if it is damaged.
2. Determine whether hose is connected. - if not - connect hose. A click must be audible when the hose is connected.
3. Conduct EOL test and listen to determine whether SAP is running or not: - if yes - determine whether the pump is producing pressure (hold with hand), it should be possible to feel pressure - of not - check wiring to pump (plug, relay, wiring), conduct EOL test with pump supplied by separate 12 V power source.

**MIL illumination/CC message/emergency program**

MIL

**Remarks**

none

## DTC P140E: CYLINDER INJECTION CUT-OFF, FUEL LEVEL TOO LOW (PLAUS)

**BMW Fault Code (hex)**

0x29DC

**BMW Fault Code (dez)**

10716

**BMW Fault Code Description VS-Text**

Cylinder injection cutout

**Component**

Injection Deactivation

**Subcomponent**

Low Fuel

**Monitoring criteria**

none

**Fault debouncing**

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none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1413: SECONDARY AIR INJECTION PUMP RELAY CONTROL CIRCUIT SIGNAL LOW (MIN)

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**BMW Fault Code (hex)**

0x2A03

**BMW Fault Code (dez)**

10755

**BMW Fault Code Description VS-Text**

Secondary-air pump relay, activation

**Component**

Secondary Air System

**Subcomponent**

Pump

**Monitoring criteria**

Control activation monitor, in post-start phase when pump is triggered

**Fault debouncing**

0.5 sec. with pump active 5 sec. when inactive

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec. with pump active 5 sec. when inactive

**System test**

Secondary air-injection system check

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground in relay activation circuit

**Repair procedures (plant/service)**

1. Electrical check on wire
2. Visual inspection of plug-in connectors (at both component and DME ends)
3. Use tester to trigger components
4. Relay replacement

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Relay triggers secondary air-injection pump, initialization

## DTC P1414: SECONDARY AIR INJECTION PUMP RELAY CONTROL CIRCUIT SIGNAL HIGH (MAX)

**BMW Fault Code (hex)**

0x2A03

**BMW Fault Code (dez)**

10755

**BMW Fault Code Description VS-Text**

Secondary-air pump relay, activation

**Component**

Secondary Air System

**Subcomponent**

Pump

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**Monitoring criteria**

Control activation monitor, in post-start phase when pump is triggered

**Fault debouncing**

0.5 sec. with pump active 5 sec. when inactive

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec. with pump active 5 sec. when inactive

**System test**

Secondary air-injection system check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive in relay activation circuit

**Repair procedures (plant/service)**

1. Electrical check on wire
2. Visual inspection of plug-in connectors (at both component and DME ends)
3. Use tester to trigger components
4. Relay replacement

**MIL illumination/CC message/emergency program**

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MIL ON

**Remarks**

Relay triggers secondary air-injection pump, initialization

## DTC P1415: MASS OR VOLUME AIR FLOW TOO LOW (MIN)

**BMW Fault Code (hex)**

0x2D06

**BMW Fault Code (dez)**

11526

**BMW Fault Code Description VS-Text**

Air-mass system

**Component**

Mass Air Flow

**Subcomponent**

General

**Monitoring criteria**

Mass airflow data monitor 6% < relative charge <120% -20° < induction air temperature < 85°C 560 1 RPM < engine speed < 7200 RPM Time after start > 30 sec. Regardless of whether EVAP is active/inactive

**Fault debouncing**

0.2 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Coolant temperature > -10°C

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**Time conditions**

6.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

MIN fault (HFM monitored data too low) - HFM signal wire shunt - Vacuum leak induction system/crankcase - for instance, oil filler cap open - for instance, induction system leak - for instance, brake servo leak - HFM sensor fault - Collateral malfunction: DISA positioning - Collateral malfunction: incorrect stroke registration.

**Repair procedures (plant/service)**

1. Visual inspection of HFM plug contacts
2. Check wiring between HFM and DME
3. Check induction system/crankcase for leaks (the positive crankcase ventilation system can allow vacuum leaks with air from the crankcase entering the manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking)
4. Check for DISA diagnostic fault code entries and DISA control operation (DISA fault does not prevent HFM plausibility check)
5. Carry out VVT travel limit initialization routine

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P1417: THROTTLE CONTROL INCORRECT AIR SUPPLY (SIG)

**BMW Fault Code (hex)**

0x2D09

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**BMW Fault Code (dez)**

11529

**BMW Fault Code Description VS-Text**

THROTTLE

**Component**

Throttle Control

**Subcomponent**

Air Supply

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1424: MASS OR VOLUME AIR FLOW TOO HIGH (MAX)

**BMW Fault Code (hex)**

0x2D06

**BMW Fault Code (dez)**

11526

**BMW Fault Code Description VS-Text**

Air-mass system

**Component**

Mass Air Flow

**Subcomponent**

General

**Monitoring criteria**

Mass airflow data monitor 6% < relative charge <120% -20° < induction air temperature < 85°C 560 1 RPM < engine speed < 7200 RPM Time after start > 30 sec. Regardless of whether EVAP is active/inactive

**Fault debouncing**

0.2 sec.

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**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > = 10 V

**Temperature conditions**

Coolant temperature > -10°C

**Time conditions**

6.2 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

MAX fault (HFM monitored data too high) - HFM signal wire shunt - HFM sensor fault - Collateral fault from incorrect DISA positioning - Collateral fault from incorrect stroke measurement

**Repair procedures (plant/service)**

1. Visual inspection of HFM plug contacts
2. Check wiring between HFM and DME
3. Check induction system/crankcase for leaks (the positive crankcase ventilation system can allow vacuum leaks with air from the crankcase entering the manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking)
4. Check for DISA diagnostic fault code entries and DISA control operation (DISA fault does not prevent HFM plausibility check)
5. Carry out VVT travel limit initialization routine

**MIL illumination/CC message/emergency program**

MIL ON

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**Remarks**

none

## DTC P1434: DIAGNOSTIC MODULE TANK LEAKAGE (DM-TL) (SIG)

**BMW Fault Code (hex)**

0x2A17

**BMW Fault Code (dez)**

10775

**BMW Fault Code Description VS-Text**

DMTL, system fault

**Component**

EVAP System

**Subcomponent**

Pump Current

**Monitoring criteria**

DMTL component monitor

**Fault debouncing**

Following completion of DMTL check

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

10.95 < vehicle electrical system voltage < 14.5

**Temperature conditions**

1.5°C > Ambient temperature > 38°C

**Time conditions**

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Following completion of DMTL check

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Valve in DMTL defective

**Repair procedures (plant/service)**

Replace DMTL

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P143B: DIRECT OZONE REDUCTION CATALYST TEMPERATURE SENSOR WRONG CODE (PLAUS)

**BMW Fault Code (hex)**

0x2AD9

**BMW Fault Code (dez)**

10969

**BMW Fault Code Description VS-Text**

EAC sensor, coding

**Component**

Direct Ozone Reduction

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**Subcomponent**

Catalyst Temperature Sensor

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME

**Fault debouncing**

24 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

N

**Possible Fault Causes**

EAC sensor has been tampered with

**Repair procedures (plant/service)**

Replace EAC sensor

**MIL illumination/CC message/emergency program**

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MIL in second driving cycle

**Remarks**

none

## DTC P143C: DIRECT OZONE REDUCTION CATALYST TEMPERATURE/RADIATOR COOLANT TEMPERATURE CORRELATION (SIG)

**BMW Fault Code (hex)**

0x2AD8

**BMW Fault Code (dez)**

10968

**BMW Fault Code Description VS-Text**

EAC sensor, monitoring

**Component**

Direct Ozone Reduction

**Subcomponent**

Catalyst Temperature Sensor

**Monitoring criteria**

Coolant temperature > 86°C, Coolant temperature at radiator discharge >40°C --> meaning thermostat is certainly open and the EAC sensor in valid temperature range

**Fault debouncing**

At least twice (more often as required). Drive at least 30 sec. as during acceleration from rest in urban traffic.

**Terminal conditions**

none

**Voltage conditions**

UBatt >10 V

**Temperature conditions**

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> -7°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Sensor subjected to tampering has been installed, or sensor's installation location not as specified, or sensor is defective.

**Repair procedures (plant/service)**

Check temperature gradient (Service Test); install new sensor as indicated

**MIL illumination/CC message/emergency program**

MIL in 2nd DC

**Remarks**

none

## DTC P143E: DIRECT OZONE REDUCTION CATALYST TEMPERATURE SENSOR GRADIENT TOO LOW (PLAUS)

**BMW Fault Code (hex)**

0x2AD8

**BMW Fault Code (dez)**

10968

**BMW Fault Code Description VS-Text**

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EAC sensor, monitoring

**Component**

Direct Ozone Reduction

**Subcomponent**

Catalyst Temperature Sensor

**Monitoring criteria**

Coolant temperature > 86°C, Coolant temperature at radiator discharge > 40°C --> meaning thermostat is certainly open and the EAC sensor in valid temperature range

**Fault debouncing**

At least twice (more often as required). Drive at least 30 sec. as during acceleration from rest in urban traffic.

**Terminal conditions**

none

**Voltage conditions**

UBatt >10 V

**Temperature conditions**

>-7°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

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Sensor subjected to tampering has been installed, or sensor's installation location not as specified, or sensor is defective

**Repair procedures (plant/service)**

Check temperature gradient (Service Test); install new sensor as indicated

**MIL illumination/CC message/emergency program**

MIL in 2nd DC

**Remarks**

none

## DTC P1447: DIAGNOSTIC MODULE TANK LEAKAGE (DM-TL) PUMP CURRENT TOO HIGH DURING SWITCHING SOLENOID TEST (PLAUS)

**BMW Fault Code (hex)**

0x2A17

**BMW Fault Code (dez)**

10775

**BMW Fault Code Description VS-Text**

DMTL, system fault

**Component**

EVAP System

**Subcomponent**

Pump Current

**Monitoring criteria**

DMTL component monitor

**Fault debouncing**

After DMTL check is triggered 2 times

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

10.95 < vehicle electrical system voltage < 14.5

**Temperature conditions**

1.5°C > Ambient temperature > 38°C

**Time conditions**

After DMTL check is triggered 2 times

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Moisture in the DMTL/DMTL heater defective

**Repair procedures (plant/service)**

Replace DMTL

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P1448: DIAGNOSTIC MODULE TANK LEAKAGE (DM-TL) PUMP CURRENT TOO LOW (MIN)

**BMW Fault Code (hex)**

0x2A17

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**BMW Fault Code (dez)**

10775

**BMW Fault Code Description VS-Text**

DMTL, system fault

**Component**

EVAP System

**Subcomponent**

Pump Current

**Monitoring criteria**

DMTL component monitor

**Fault debouncing**

Roughly 1 minute after DMTL check is triggered

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

10.95< vehicle electrical system voltage<14.5

**Temperature conditions**

1.5°C > Ambient temperature > 38°C

**Time conditions**

Roughly 1 minute after DMTL check is triggered

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

Y

**Possible Fault Causes**

Pump motor current too low, pump defective

**Repair procedures (plant/service)**

Replace DMTL

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P1449: DIAGNOSTIC MODULE TANK LEAKAGE (DM-TL) PUMP CURRENT TOO HIGH (MAX)

**BMW Fault Code (hex)**

0x2A17

**BMW Fault Code (dez)**

10775

**BMW Fault Code Description VS-Text**

DMTL, system fault

**Component**

EVAP System

**Subcomponent**

Pump Current

**Monitoring criteria**

DMTL component monitor

**Fault debouncing**

Roughly 1 minute after DMTL check is triggered

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

10.95 < vehicle electrical system voltage < 14.5

**Temperature conditions**

1.5°C > Ambient temperature > 38°C

**Time conditions**

Roughly 1 minute after DMTL check is triggered

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Pump motor current too high, pump resistance, locks up

**Repair procedures (plant/service)**

Replace DMTL

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P1453: SECONDARY AIR INJECTION PUMP RELAY CONTROL CIRCUIT ELECTRICAL (SIG)

**BMW Fault Code (hex)**

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0x2A03

**BMW Fault Code (dez)**

10755

**BMW Fault Code Description VS-Text**

Secondary-air pump relay, activation

**Component**

Secondary Air System

**Subcomponent**

Pump

**Monitoring criteria**

Control activation monitor, in post-start phase when pump is triggered

**Fault debouncing**

0.5 sec. with pump active 5 sec. when inactive

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec. with pump active 5 sec. when inactive

**System test**

Secondary air-injection system check

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Interruption of relay activation current

**Repair procedures (plant/service)**

1. Electrical check on wire
2. Visual inspection of plug-in connectors (at both component and DME ends)
3. Use tester to trigger components
4. Relay replacement

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Relay triggers secondary air-injection pump, initialization

## DTC P14C0: FAN MECHANICAL OR HARDWARE DEFECT (PLAUS)

**BMW Fault Code (hex)**

0x2EFF

**BMW Fault Code (dez)**

12031

**BMW Fault Code Description VS-Text**

Electric fan, self-diagnosis

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

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PWM > 10%

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Ambient temperature > -20°C

**Time conditions**

Appears twice for 6 sec. each time; At ecfpwm (=pulse-duty factor?) > 10%. Roughly 115 sec. may elapse before fault code is registered in fault memory!

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Fault in fan's electronic control circuit. Binding in fan blade assembly. Fan blade assembly seized.

**Repair procedures (plant/service)**

1. Disconnect plug from fan assembly. (otherwise there is an injury hazard)
2. The fan moves freely Check and remove any foreign objects. --> Fan is mechanically seized: Replace fan --> Fan blades turn freely: Reconnect plug and use tester to activate fan at least 15%. --> Fan should start. --> Fan fails to start running: Replace fan assembly

**MIL illumination/CC message/emergency program**

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no external display;

**Remarks**

An inoperative E fan can also cause the engine to overheat.

## DTC P14C1: RADIATOR SHUTTER MECHANICAL OR HARDWARE DEFECT (PLAUS)

**BMW Fault Code (hex)**

0x2F0F

**BMW Fault Code (dez)**

12047

**BMW Fault Code Description VS-Text**

Radiator blind, self-diagnosis

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P14C2: DISA (DIFFERENTIATED INTAKE MANIFOLD) ACTUATOR 1 MECHANICAL OR HARDWARE DEFECT (PLAUS)

**BMW Fault Code (hex)**

0x2AAB

**BMW Fault Code (dez)**

10923

**BMW Fault Code Description VS-Text**

Variable intake system, self-diagnosis

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

Monitoring of DISA controller (large valve) Engine speed > 500 RPM

**Fault debouncing**

Valve must lock up mechanically 10 times in succession. (5x open and 5x closed)

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Ambient temperature > -20°C

**Time conditions**

none

**System test**

none

**Signal information**

PWM between 15% and 70%

**Calculated value Y/N**

N

**Possible Fault Causes**

Fault in electronic valve control. Physical seizure of valve; Valve binding.

**Repair procedures (plant/service)**

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Replace large DISA valve

**MIL illumination/CC message/emergency program**

none

**Remarks**

Reduced power in various rpm ranges; downward shift in torque curve

## DTC P14C3: DISA (DIFFERENTIATED INTAKE MANIFOLD) ACTUATOR 2 MECHANICAL OR HARDWARE DEFECT (PLAUS)

**BMW Fault Code (hex)**

0x2AAC

**BMW Fault Code (dez)**

10924

**BMW Fault Code Description VS-Text**

Variable intake system 2, self-diagnosis

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Monitoring of DISA controller (no valve) Engine speed > 500 rpm

**Fault debouncing**

Valve must lock up mechanically 10 times in succession. (5x open and 5x closed)

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

Ambient temperature > -20°C

**Time conditions**

none

**System test**

none

**Signal information**

PWM between 15% and 70%

**Calculated value Y/N**

N

**Possible Fault Causes**

Fault in electronic valve control. Physical seizure of valve; Valve binding;

**Repair procedures (plant/service)**

Replace small DISA valve

**MIL illumination/CC message/emergency program**

none

**Remarks**

Reduced power in various rpm ranges; downward shift in torque curve

## DTC P14C4: RADIATOR SHUTTER (UPPER) MECHANICAL (MIN)

**BMW Fault Code (hex)**

0x2F11

**BMW Fault Code (dez)**

12049

**BMW Fault Code Description VS-Text**

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Radiator blind, top

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. AKKS must be initialized. Operation of lower flap: 3 x open and 3 x closed or conduct the system test.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

In the SGBD

**Signal information**

PWM of 5-90%

**Calculated value Y/N**

N

**Possible Fault Causes**

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Mech. defect in valve. Possibly from ice cover in winter, or valve mechanism is defective (also: internal fault)
PVE: Hold valve on clamp

**Repair procedures (plant/service)**

1. Check AKKS for sticking and seizure. (may be iced up in winter)
2. Use the tester to trigger the valve repeatedly. If OK Clear fault memory, conduct system test --> No fault code entry. If not OK: Replace AKKS and conduct test for GLF --> No fault code entry

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

There is no danger with the AKKS provided the malfunction did not arise while it was closed.

## DTC P14C5: RADIATOR SHUTTER (UPPER) HARDWARE DEFECT (MAX)

**BMW Fault Code (hex)**

0x2F11

**BMW Fault Code (dez)**

12049

**BMW Fault Code Description VS-Text**

Radiator blind, top

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. AKKS must be initialized. Operation of lower flap: 3 x open and 3 x closed or conduct the system test.

**Fault debouncing**

none

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

In the SGBD

**Signal information**

PWM of 5-90%

**Calculated value Y/N**

N

**Possible Fault Causes**

Electrical defect in valve actuator. PVE: Not possible without destroying the controller.

**Repair procedures (plant/service)**

1. Replace AKKS

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

There is no danger with the AKKS provided the malfunction did not arise while it was closed.

## DTC P14C6: RADIATOR SHUTTER (LOWER) ELECTRICAL (MAX)

**BMW Fault Code (hex)**

0x2F10

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**BMW Fault Code (dez)**

12048

**BMW Fault Code Description VS-Text**

Radiator blind, bottom

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. PKKS must be initialized. Operation of lower flap: 3 x open and 3 x closed or conduct the system test

**Fault debouncing**

up to 20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

In the SGBD

**Signal information**

PWM of 5-90%

**Calculated value Y/N**

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N

**Possible Fault Causes**

1. Fault in wire from AKKS to PKKS (all 3 fault classes)
2. Fault in wire from PKKS to ground (open wire or short to UBatt)
3. Retention solenoid defective (internal short or burned through)

**Repair procedures (plant/service)**

1. Check wire from AKKS PIN 4 to PKKS (connection +)
2. Check ground connection to the PKKS
3. Check retention solenoid (internal short or burned through)

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

There is no danger with the PKKS provided the malfunction did not arise while it was closed.

## DTC P150A: BATTERY SENSOR BSD (BIT SERIAL DATA INTERFACE) EXTENDED COMMUNICATION CIRCUIT (MAX)

**BMW Fault Code (hex)**

0x2E8B

**BMW Fault Code (dez)**

11915

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

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IBS: Interference with extended communications on BSD bus

**Fault debouncing**

10 sec.

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Brief bus fault
2. Other defective BSD component interferes with BSD bus.
3. Intermittent short to positive or ground
4. Intermittent contact in BSD wire
5. Defective battery sensor.

**Repair procedures (plant/service)**

1. Check BSD wire for sporadic shorts to battery voltage and ground
2. Check for intermittent contacts
3. Systematically disconnect other BSD components one after the other and replace as indicated

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4. If fault persists after clearing fault memory, replace battery sensor
5. If fault memory entry is logged repeatedly, replace battery sensor

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P150B: BATTERY SENSOR BSD (BIT SERIAL DATA INTERFACE) COMMUNICATION CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2E8B

**BMW Fault Code (dez)**

11915

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

IBS: Interference in data communications on BSD bus

**Fault debouncing**

10 sec.

**Terminal conditions**

none

**Voltage conditions**

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none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. BSD wire open
2. Other defective BSD component interferes with traffic on BSD bus.
3. Intermittent short to positive or ground
4. Defective battery sensor.

**Repair procedures (plant/service)**

1. Check BSD wire for shorts to battery voltage and ground
2. Check for open wires
3. Disconnect other BSD components one after the other and replace as indicated
4. If fault persists after clearing fault memory, replace battery sensor
5. If fault memory entry is logged repeatedly, replace battery sensor

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P150B: BATTERY SENSOR BSD (BIT SERIAL DATA INTERFACE) COMMUNICATION

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## CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2E8E

**BMW Fault Code (dez)**

11918

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

IBS communications monitor

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Terminal 87 > 10.0 V

**Temperature conditions**

none

**Time conditions**

approximately 10 sec.

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Battery sensor not installed on battery, as optional equipment
2. Open circuit in wire (BSD_BUS) between battery sensor and DME.
3. Defective battery sensor.

**Repair procedures (plant/service)**

1. Determine whether battery sensor is installed. If not, use SGBD to delete all adaptation data and then switch ignition off/on.
2. Check continuity in wire connecting DME to battery sensor (BSD_BUS)
3. Ensure correct fit of battery sensor on battery ground terminal and check seating of all plugs
4. Replace battery sensor.

**MIL illumination/CC message/emergency program**

No warning message. The alternator responds to loss of the BSD_BUS signal by charging at a constant 14.4 V battery.

**Remarks**

none

## DTC P150C: BATTERY SENSOR FIRMWARE IMPLAUSIBLE (PLAUS)

**BMW Fault Code (hex)**

0x2E8B

**BMW Fault Code (dez)**

11915

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, signal

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**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

IBS: Implausible SW version

**Fault debouncing**

10 sec.

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Installed sensor incompatible or too old

**Repair procedures (plant/service)**

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Install sensor with current part number

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P150D: BATTERY SENSOR TEMPERATURE ERROR (MAX)

**BMW Fault Code (hex)**

0x2E8C

**BMW Fault Code (dez)**

11916

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, signal transmission

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Implausible battery temperature measurement

**Fault debouncing**

10 sec.

**Terminal conditions**

none

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Self-diagnosis has detected potential problem in its temperature measurement

**Repair procedures (plant/service)**

1. If fault persists after deletion of stored fault codes from log, replace battery sensor.
2. If fault code is entered repeatedly, replace battery sensor.

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P150E: BATTERY SENSOR VOLTAGE ERROR (SIG)

**BMW Fault Code (hex)**

0x2E8C

**BMW Fault Code (dez)**

11916

**BMW Fault Code Description VS-Text**

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Intelligent battery sensor, signal transmission

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Implausible battery voltage measurement

**Fault debouncing**

10 sec.

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Self-diagnosis has detected possible problem with its voltage measurement

**Repair procedures (plant/service)**

1. If fault persists after deletion of stored fault codes from log, replace battery sensor
2. If fault code is entered repeatedly, replace battery sensor

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P150F: BATTERY SENSOR CURRENT ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2E8C

**BMW Fault Code (dez)**

11916

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, signal transmission

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Implausible battery current measurement

**Fault debouncing**

10 sec.

**Terminal conditions**

none

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**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Self-diagnosis has detected possible problem with its battery current measurement

**Repair procedures (plant/service)**

1. Check electrical system/alternator for overvoltage
2. If fault remains after deleting stored fault codes from log, replace battery sensor
3. If fault is logged repeatedly, replace battery sensor

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P1511: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT ELECTRICAL (MAX)

**BMW Fault Code (hex)**

0x2AAA

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**BMW Fault Code (dez)**

10922

**BMW Fault Code Description VS-Text**

Variable intake system, plausibility

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

6% < Relative charge <120% 560 RPM < Engine speed < 7200 RPM. Time after start > 30s. Regardless of whether EVAP is active/inactive = High load demand. Additional induction air restriction Induction air temperature = +60°C maximum. Induction air temperature = +0°C minimum.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Coolant temperature > - 10°C 0 < Induction air temperature < 60°C

**Time conditions**

1.1 sec.

**System test**

none

**Signal information**

none

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**Calculated value Y/N**

Y

**Possible Fault Causes**

No pressure pulses in intake manifold prior to low switching speed (approximately 3200 1 rpm) or pulsation present after low switching speed. Valves fail to close completely or leak.

**Repair procedures (plant/service)**

Remove DISA valves (both, as individual assessment of DISA 1/2 is not possible) and inspect - valves present? - Are seals and gaskets present? - Are seals and gaskets OK? - Does valve open/close completely?

**MIL illumination/CC message/emergency program**

none

**Remarks**

Data content defined

## DTC P1511: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT ELECTRICAL (MIN)

**BMW Fault Code (hex)**

0x2AAA

**BMW Fault Code (dez)**

10922

**BMW Fault Code Description VS-Text**

Variable intake system, plausibility

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

6% < Relative charge <120% 560 rpm < Engine speed < 7200 rpm. Time after start > 30s Regardless of

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whether EVAP is active/inactive = High load demand. Additional induction air restriction. Induction air temperature = +60°C maximum. Induction air temperature = +0°C minimum.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Coolant temperature > - 10°C 0 < Induction air temperature < 60°C

**Time conditions**

1.1 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

No pressure pulses in intake manifold prior to high switching speed (approximately 4400 1 rpm) or pulsation present after high switching speed. Valves fail to close completely or leak.

**Repair procedures (plant/service)**

Remove DISA valves (both, as individual assessment of DISA 1/2 is not possible) and inspect - valves present? - Are seals and gaskets present? - Are seals and gaskets OK? - Does valve open/close completely?

**MIL illumination/CC message/emergency program**

none

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**Remarks**

Data content defined

## DTC P1511: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT ELECTRICAL (SIG)

**BMW Fault Code (hex)**

0x2AA8

**BMW Fault Code (dez)**

10920

**BMW Fault Code Description VS-Text**

Variable intake system, servomotor: activation

**Component**

DISA (Differentiated Intake Manifold)

**Subcomponent**

Electrical

**Monitoring criteria**

Monitoring of DISA controller. Engine speed > 500 rpm.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

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0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

1. Check voltage supply to valve. (If positive power to the valve is missing or intermittent this fault code will be stored.)
2. Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Not in B30UL_US reduced power in various engine speed ranges; low torque curve.

## DTC P1511: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT ELECTRICAL (SIG)

**BMW Fault Code (hex)**

0x2AA9

**BMW Fault Code (dez)**

10921

**BMW Fault Code Description VS-Text**

Variable intake system, servomotor 2: activation

**Component**

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DISA (Differentiated Intake Manifold)

**Subcomponent**

Electrical

**Monitoring criteria**

Monitoring of DISA controller 2 actuator. Engine speed > 500 rpm.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

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1. Check voltage supply to valve. (If positive power to the valve is missing or intermittent this fault code will be stored.)
2. Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

none

**Remarks**

Not in B25UL and B30UL_US reduced power in various engine speed ranges; low torque curve

## DTC P1512: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT SIGNAL LOW (MIN)

**BMW Fault Code (hex)**

0x2AA8

**BMW Fault Code (dez)**

10920

**BMW Fault Code Description VS-Text**

Variable intake system, servomotor: activation

**Component**

DISA (Differentiated Intake Manifold)

**Subcomponent**

Signal

**Monitoring criteria**

Monitoring of DISA controller. Engine speed > 500 rpm.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

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Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Not in B30UL_US reduced power in various engine speed ranges; low torque curve

## DTC P1512: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT SIGNAL LOW (MIN)

**BMW Fault Code (hex)**

0x2AA9

**BMW Fault Code (dez)**

10921

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**BMW Fault Code Description VS-Text**

Variable intake system, servomotor 2: activation

**Component**

DISA (Differentiated Intake Manifold)

**Subcomponent**

Signal

**Monitoring criteria**

Monitoring of DISA controller 2 actuator Engine speed > 500 rpm

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Not in B25UL and B30UL_US reduced power in various engine speed ranges; low torque curve

## DTC P1513: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT SIGNAL HIGH (MAX)

**BMW Fault Code (hex)**

0x2AA8

**BMW Fault Code (dez)**

10920

**BMW Fault Code Description VS-Text**

Variable intake system, servomotor: activation

**Component**

DISA (Differentiated Intake Manifold)

**Subcomponent**

Signal

**Monitoring criteria**

Monitoring of DISA controller Engine speed > 500 rpm

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

none

**Remarks**

Not in B30UL_US reduced power in various engine speed ranges; low torque curve

## DTC P1513: DISA (DIFFERENTIATED INTAKE MANIFOLD) CONTROL CIRCUIT SIGNAL HIGH (MAX)

**BMW Fault Code (hex)**

0x2AA9

**BMW Fault Code (dez)**

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10921

**BMW Fault Code Description VS-Text**

Variable intake system, servomotor 2: activation

**Component**

DISA (Differentiated Intake Manifold)

**Subcomponent**

Signal

**Monitoring criteria**

Monitoring of DISA controller 2 actuator. Engine speed > 500 RPM

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

none

**Remarks**

Not in B25UL and B30UL_US reduced power in various engine speed ranges; low torque curve

## DTC P1515: ENGINE OFF TIMER PLAUSIBILITY (PLAUS)

**BMW Fault Code (hex)**

0x2F80

**BMW Fault Code (dez)**

12160

**BMW Fault Code Description VS-Text**

System time, plausibility

**Component**

Engine Off Timer, External

**Subcomponent**

Electrical

**Monitoring criteria**

Terminal 15 on Engine running

**Fault debouncing**

2 Min

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**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Battery voltage > 10 V

**Temperature conditions**

Engine shutdown temperature > 85°C

**Time conditions**

Engine off time < 12 min or > 10 h

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Defective engine temperature sensor. Timer in instrument cluster is defective

**Repair procedures (plant/service)**

Check engine temperature sensor. Check instrument cluster.

**MIL illumination/CC message/emergency program**

Mil in 2nd driving cycle

**Remarks**

US only

## DTC P151A: BATTERY SENSOR TERMINAL 15/30 WAKEUP CIRCUIT (MAX)

**BMW Fault Code (hex)**

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0x2E8D

**BMW Fault Code (dez)**

11917

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, function

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

During Terminal 15/wakeup request from IBS and critical charge status. Short to ground in Terminal 15 wakeup wire.

**Fault debouncing**

10 sec.

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Terminal 15/wake-up wire shorted to ground
2. Defective driver circuit in battery sensor

**Repair procedures (plant/service)**

1. With battery sensor disconnected, check Terminal 15/wake-up wire for shorts to ground
2. Check for non-approved connection of supplementary electr. equipment to Terminal 15/wake-up wire
3. If fault code is stored, replace battery sensor

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P151B: BATTERY SENSOR WAKEUP CIRCUIT (PLAUS)

**BMW Fault Code (hex)**

0x2E8D

**BMW Fault Code (dez)**

11917

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, function

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

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Terminal 15-Wakeup wire signal level implausible

**Fault debouncing**

10 sec.

**Terminal conditions**

With each change in terminal-15 status, i.e., off or on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Terminal 15/wake-up wire open
2. Intermittent open in Terminal 15/wake-up wire
3. Terminal 15/wake-up wire shorted to ground or battery voltage
4. Defective driver circuit in battery sensor

**Repair procedures (plant/service)**

1. Check Terminal 15/wakeup wire for opens and intermittent contacts
2. With battery sensor removed and Terminal 15 off, check Terminal 15/wakeup wire for short to battery voltage -> Repair wire and/or check Terminal 15, control module wakeup
3. With battery sensor removed and Terminal 15 on, check Terminal 15/wakeup wire for short to ground

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4. With battery sensor connected and Terminal 15 off, check Terminal 15/wakeup wire for shorts to battery voltage - > Replace battery sensor
5. With battery sensor connected and Terminal 15 on, check Terminal 15/wakeup wire for shorts to ground - > Replace battery sensor

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P151C: BATTERY SENSOR SYSTEM ERROR (SIG)

**BMW Fault Code (hex)**

0x2E8D

**BMW Fault Code (dez)**

11917

**BMW Fault Code Description VS-Text**

Intelligent battery sensor, function

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

IBS system fault

**Fault debouncing**

10 sec.

**Terminal conditions**

none

**Voltage conditions**

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none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Self-diagnosis utility has detected internal IBS fault

**Repair procedures (plant/service)**

Replace battery sensor

**MIL illumination/CC message/emergency program**

No warning lamp or CC status report

**Remarks**

none

## DTC P1521: ENGINE OIL QUALITY SENSOR COMMUNICATION ERROR (SIG)

**BMW Fault Code (hex)**

0x2E9F

**BMW Fault Code (dez)**

11935

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**BMW Fault Code Description VS-Text**

Oil condition sensor

**Component**

Engine Oil Quality Sensor

**Subcomponent**

Communication

**Monitoring criteria**

The sensor fails to respond

**Fault debouncing**

30 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Defective oil sensor (no communications)

**Repair procedures (plant/service)**

Wiring harness check/sensor replacement

**MIL illumination/CC message/emergency program**

CC message 182 - suppressed starting with E90 with BN2000

**Remarks**

Engine must be between 900 rpm and 5000 rpm

## DTC P1540: DRIVING DYNAMICS CONTROL SWITCH HIGH INPUT (MAX)

**BMW Fault Code (hex)**

0x2AC6

**BMW Fault Code (dez)**

10950

**BMW Fault Code Description VS-Text**

Button, Dynamic Driving Control (SPORT button), signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

SPORT switch monitoring only with CAN-11 network

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

500 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive or open circuit in wire

**Repair procedures (plant/service)**

1. Electrical check on switch wire and power wires
2. Visual inspection of plug-in connections (on component and DME ends)
3. Switch replacement

**MIL illumination/CC message/emergency program**

none

**Remarks**

Voltage range diagnosis

## DTC P1541: DRIVING DYNAMICS CONTROL SWITCH LOW INPUT (MIN)

**BMW Fault Code (hex)**

0x2AC6

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**BMW Fault Code (dez)**

10950

**BMW Fault Code Description VS-Text**

Button, Dynamic Driving Control (SPORT button), signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

SPORT switch monitoring only with CAN-11 network

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

500 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Short to ground in switch wire

**Repair procedures (plant/service)**

1. Electrical check on switch wire and power wires
2. Visual inspection of plug-in connections (on component and DME ends)
3. Switch replacement

**MIL illumination/CC message/emergency program**

none

**Remarks**

Voltage range diagnosis

## DTC P1551: ENGINE OFF TIMER TIMEOUT (SIG)

**BMW Fault Code (hex)**

0x2F80

**BMW Fault Code (dez)**

12160

**BMW Fault Code Description VS-Text**

System time, plausibility

**Component**

Engine Off Timer, External

**Subcomponent**

Electrical

**Monitoring criteria**

Terminal 15 on Engine running

**Fault debouncing**

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2 Min

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Battery voltage > 10 V

**Temperature conditions**

Engine shutdown temperature > 85°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Yes

**Possible Fault Causes**

CAN signal incorrect or not present

**Repair procedures (plant/service)**

Check CAN signal

**MIL illumination/CC message/emergency program**

Mil in 2nd driving cycle

**Remarks**

US only

**DTC P1553: ENGINE POSITION SYSTEM 'B' PERFORMANCE (BANK 1) (MAX)**

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**BMW Fault Code (hex)**

0x2A99

**BMW Fault Code (dez)**

10905

**BMW Fault Code Description VS-Text**

Crankshaft - exhaust camshaft, correlation

**Component**

Crankshaft/Camshaft Position Sensor

**Subcomponent**

Exhaust

**Monitoring criteria**

NWA synchronized, adaptation enabled

**Fault debouncing**

On each camshaft tooth flank when the position is out of tolerance.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Position of NWA relative to crankshaft outside tolerance range.

**Repair procedures (plant/service)**

1. Check position (valve timing setting) of camshaft and reluctor
2. Check timing chain and tensioner mechanism.
3. Check VANOS solenoid for dirt and contamination
4. Check torque on crankshaft center bolt

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

**Remarks**

Installation fault or mechanical malfunction in camshaft drive

## DTC P1554: ENGINE POSITION SYSTEM 'A' PERFORMANCE (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A98

**BMW Fault Code (dez)**

10904

**BMW Fault Code Description VS-Text**

Crankshaft - inlet camshaft, correlation

**Component**

Crankshaft/Camshaft Position Sensor

**Subcomponent**

Intake

**Monitoring criteria**

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NWE synchronous, adaptation enabled

**Fault debouncing**

On each camshaft tooth flank when the position is out of tolerance.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Position of NWE relative to crankshaft outside tolerance range.

**Repair procedures (plant/service)**

1. Check position (valve timing setting) of camshaft and reluctor.
2. Check timing chain and tensioner mechanism.
3. Check VANOS solenoid for dirt and contamination.
4. Check torque on crankshaft center bolt.

**MIL illumination/CC message/emergency program**

MIL 2nd DC, CAM operates in emergency default mode

cardiagn.com

**Remarks**

Installation fault or mechanical malfunction in camshaft drive.

## DTC P155A: MULTIFUNCTION STEERING WHEEL (MFL) INTERFACE, TOGGLE-BIT FAULT (MAX)

**BMW Fault Code (hex)**

0x2DBE

**BMW Fault Code (dez)**

11710

**BMW Fault Code Description VS-Text**

Active cruise control, blocked for driving cycle

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Terminal 15 ON, ACC recognized

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

cardiagn.com

100 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Throttle valve fault, accelerator pedal fault, torque demand from ACC despite pressure on brake pedal.

**Repair procedures (plant/service)**

Check fault memory for stored faults related to internal fault sources within DME (see at left). Otherwise check ACC control module.

**MIL illumination/CC message/emergency program**

ACC operation locked out for entire driving cycle

**Remarks**

ACC interface deactivated for entire driving cycle

## DTC P155A: MULTIFUNCTION STEERING WHEEL (MFL) INTERFACE, TOGGLE-BIT FAULT (MIN)

**BMW Fault Code (hex)**

0x2DBE

**BMW Fault Code (dez)**

11710

**BMW Fault Code Description VS-Text**

Active cruise control, blocked for driving cycle

**Component**

cardiagn.com

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Terminal 15 ON, ACC recognized

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

100 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Crankshaft fault, clutch switch fault, brakelight switch fault, CAN timeout on DSC, ACC, instrument cluster or EGS.

**Repair procedures (plant/service)**

cardiagn.com

Check fault memory for stored faults related to internal fault sources within DME (see at left).

**MIL illumination/CC message/emergency program**

ACC operation cancelled while fault is active

**Remarks**

Temporary deactivation of ACC interface

## DTC P155A: MULTIFUNCTION STEERING WHEEL (MFL) INTERFACE, TOGGLE-BIT FAULT (PLAUS)

**BMW Fault Code (hex)**

0x2DB7

**BMW Fault Code (dez)**

11703

**BMW Fault Code Description VS-Text**

Cruise control, time limit of data transmission reached

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. Multifunction steering wheel installed
3. Any MF-wheel button pressed

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

cardiagn.com

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

1700 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Defective MFL module, open PIN 2--04 wire

**Repair procedures (plant/service)**

1. Visual inspection of plug contacts (component and DME ends)
2. Electrical check of wiring
3. Replace MFL module

**MIL illumination/CC message/emergency program**

Vehicle speed controller deactivated, no warning lamp

**Remarks**

No signal received from MFL module

## DTC P1561: COLD START IDLE AIR CONTROL SYSTEM RPM LOWER THAN EXPECTED (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2AE0

**BMW Fault Code (dez)**

cardiagn.com

10976

**BMW Fault Code Description VS-Text**

Idle speed control during cold start, plausibility

**Component**

Idle Speed Control

**Subcomponent**

Cold Start RPM

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1562: COLD START IDLE AIR CONTROL SYSTEM RPM HIGHER THAN EXPECTED (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2AE0

**BMW Fault Code (dez)**

10976

**BMW Fault Code Description VS-Text**

Idle speed control during cold start, plausibility

**Component**

Idle Speed Control

**Subcomponent**

Cold Start RPM

**Monitoring criteria**

Idle = ON VS = 0 km/h High idle for catalyst heating = On

**Fault debouncing**

20 sec.

cardiagn.com

**Terminal conditions**

Engine must be running

**Voltage conditions**

none

**Temperature conditions**

>-10°C

**Time conditions**

Roughly 120 seconds, varies according to start temperature

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Not possible to maintain idle speed at specified level including offset for catalyst heating

**Repair procedures (plant/service)**

Note any other fault code entries and repair the associated problems! Check all load-responsive servo actuators such as Valvetronic and the throttle valve for stored control module fault memory entries and malfunctions! (check injection and induction system as indicated).

**MIL illumination/CC message/emergency program**

MIL on in 2nd driving cycle

**Remarks**

US only

## DTC P1563: MULTIFUNCTION STEERING WHEEL (MFL) ROCKER SWITCH DEFECTIVE (PLAUS)

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**BMW Fault Code (hex)**

0x2DB6

**BMW Fault Code (dez)**

11702

**BMW Fault Code Description VS-Text**

Cruise control, switch, multifunction steering wheel

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Simultaneous recognition of pressure on '+' and '-' buttons

1. CAN 11 vehicle (E46, E85, E83)
2. Multifunction steering wheel present
3. MF wheel S/B button or VE pressed

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

800 ms

cardiagn.com

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Internal short circuit between '+' and '-' buttons in MFL module, or mechanical defect allowing simultaneous operation.

**Repair procedures (plant/service)**

1. Visual inspection of MFL module (buttons: '+' and '-')
2. Replace MFL module

**MIL illumination/CC message/emergency program**

Vehicle speed controller deactivated, no warning lamp

**Remarks**

Simultaneous pressure on '+' and '-' buttons detected

## DTC P1576: MULTIFUNCTION STEERING WHEEL (MFL) INTERFACE, BIT ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2DB5

**BMW Fault Code (dez)**

11701

**BMW Fault Code Description VS-Text**

Cruise control, signal

**Component**

No Info

cardiagn.com

**Subcomponent**

No Info

**Monitoring criteria**

Redundancy fault in transmitting cruise control user input

1. CAN 11 vehicle (E46, E85, E83)
2. Multifunction steering wheel present
3. MF-wheel button WA, S/B or OFF is pressed

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

800 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective MFL module

cardiagn.com

**Repair procedures (plant/service)**

Replace MFL module

**MIL illumination/CC message/emergency program**

Vehicle speed controller deactivated, no warning lamp

**Remarks**

not translated

## DTC P1582: OIL PUMP CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x30C2

**BMW Fault Code (dez)**

12482

**BMW Fault Code Description VS-Text**

Oil-pressure control valve, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Monitored at: 10% PWM < Control activation PWM to oil pump < 94% PWM (idle)

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

cardiagn.com

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

PWM of 0-100%

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1583: OIL PUMP CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x30C2

**BMW Fault Code (dez)**

12482

cardiagn.com

**BMW Fault Code Description VS-Text**

Oil-pressure control valve, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Monitored at: 10% PWM < Control activation PWM to oil pump < 94% PWM (idle)

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

PWM of 0-100%

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

1. Check wiring Repair if defective If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1584: OIL PUMP CIRCUIT OPEN (SIG)

**BMW Fault Code (hex)**

0x30C2

**BMW Fault Code (dez)**

12482

**BMW Fault Code Description VS-Text**

Oil-pressure control valve, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Monitored at: 10% PWM < Control activation PWM to oil pump < 94% PWM (idle)

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

PWM of 0-100%

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

1. Check wiring. Repair if defective. If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1586: ENGINE OIL QUALITY SENSOR TEMPERATURE MEASUREMENT (MAX)

**BMW Fault Code (hex)**

0x2E9F

**BMW Fault Code (dez)**

cardiagn.com

11935

**BMW Fault Code Description VS-Text**

Oil condition sensor

**Component**

Engine Oil Quality Sensor

**Subcomponent**

Temperature

**Monitoring criteria**

Incorrect level measurement

**Fault debouncing**

30 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Defective oil sensor (temperature sensor)

**Repair procedures (plant/service)**

Sensor replacement

**MIL illumination/CC message/emergency program**

CC message 182 - suppressed starting with E90 with BN2000

**Remarks**

Engine must be between 900 RPM and 5000 RPM

## DTC P1587: ENGINE OIL QUALITY SENSOR LEVEL MEASUREMENT (MIN)

**BMW Fault Code (hex)**

0x2E9F

**BMW Fault Code (dez)**

11935

**BMW Fault Code Description VS-Text**

Oil condition sensor

**Component**

Engine Oil Quality Sensor

**Subcomponent**

Level

**Monitoring criteria**

Incorrect temperature measurement

**Fault debouncing**

30 sec.

cardiagn.com

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective oil sensor (level sensor)

**Repair procedures (plant/service)**

Sensor replacement

**MIL illumination/CC message/emergency program**

CC message 182 - suppressed starting with E90 with BN2000

**Remarks**

Engine must be between 900 RPM and 5000 RPM

## DTC P1588: ENGINE OIL QUALITY SENSOR PERMEABILITY MEASUREMENT (PLAUS)

**BMW Fault Code (hex)**

cardiagn.com

0x2E9F

**BMW Fault Code (dez)**

11935

**BMW Fault Code Description VS-Text**

Oil condition sensor

**Component**

Engine Oil Quality Sensor

**Subcomponent**

Permeability

**Monitoring criteria**

Permittivity measurement defective

**Fault debouncing**

30 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective oil sensor (permittivity sensor)

**Repair procedures (plant/service)**

Sensor replacement

**MIL illumination/CC message/emergency program**

CC message 182 - suppressed starting with E90 with BN2000

**Remarks**

Engine must be between 900 rpm and 5000 rpm

## DTC P15A1: ENGINE OIL PRESSURE CONTROL, MECHANICAL, SOLENOID VALVE STICKING IN FULLY ENERGIZED POSITION (MINIMUM OIL PRESSURE) (MAX)

**BMW Fault Code (hex)**

0x30C4

**BMW Fault Code (dez)**

12484

**BMW Fault Code Description VS-Text**

Engine-oil-pressure control, mechanical

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

cardiagn.com

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

cardiagn.com

## DTC P15A2: ENGINE OIL PRESSURE CONTROL, MECHANICAL, SOLENOID VALVE STICKING IN DE-ENERGIZED POSITION (MAXIMUM OIL PRESSURE) (MIN)

**BMW Fault Code (hex)**

0x30C4

**BMW Fault Code (dez)**

12484

**BMW Fault Code Description VS-Text**

Engine-oil-pressure control, mechanical

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P15A3: ENGINE OIL PRESSURE TOO HIGH (MAX)

**BMW Fault Code (hex)**

0x30C5

**BMW Fault Code (dez)**

12485

**BMW Fault Code Description VS-Text**

Engine-oil pump, mechanical: engine-oil pressure

**Component**

No Info

**Subcomponent**

No Info

cardiagn.com

**Monitoring criteria**

Commercial vehicle >0 + Stored operating coordinate reached (depends on NKW+Tmot)

**Fault debouncing**

0.2

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

>-10°C

**Time conditions**

none

**System test**

Jump in specified pressure, specified pressure ramp

**Signal information**

Analogous to oil pressure signal

**Calculated value Y/N**

N

**Possible Fault Causes**

Pump control plunger is seizing

**Repair procedures (plant/service)**

Replace oil pump

**MIL illumination/CC message/emergency program**

NO

**Remarks**

cardiagn.com

Activation only in Prg. Version 500

## DTC P15A6: ENGINE OIL PRESSURE TOO HIGH BEFORE START (MAX)

**BMW Fault Code (hex)**

0x30C6

**BMW Fault Code (dez)**

12486

**BMW Fault Code Description VS-Text**

Engine-oil-pressure sensor, plausibility

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

NKW=0, Terminal 15, the barometric pressure sensor must not be malfunctioning

**Fault debouncing**

0.2

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Minimum deactivation time over Tmot

cardiagn.com

**System test**

Jump in specified pressure, specified pressure ramp

**Signal information**

Analogous to oil pressure signal

**Calculated value Y/N**

N

**Possible Fault Causes**

Pressure indicated by oil pressure sensor it too high

**Repair procedures (plant/service)**

Replace oil pressure sensor

**MIL illumination/CC message/emergency program**

NO

**Remarks**

Implementation on at Prg. Version 500

## DTC P15A7: ENGINE OIL PRESSURE TOO LOW BEFORE START (MIN)

**BMW Fault Code (hex)**

0x30C6

**BMW Fault Code (dez)**

12486

**BMW Fault Code Description VS-Text**

Engine-oil-pressure sensor, plausibility

**Component**

No Info

**Subcomponent**

cardiagn.com

No Info

**Monitoring criteria**

NKW=0, Terminal 15, the barometric pressure sensor must not be malfunctioning

**Fault debouncing**

0.2

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Minimum deactivation time over Tmot

**System test**

Jump in specified pressure, specified pressure ramp

**Signal information**

Analogous to oil pressure signal

**Calculated value Y/N**

N

**Possible Fault Causes**

Pressure indicated by oil pressure sensor is too low

**Repair procedures (plant/service)**

Replace oil pressure sensor

**MIL illumination/CC message/emergency program**

cardiagn.com

NO

**Remarks**

Implementation on at Prg. Version 500

## DTC P15B0: TERMINAL 15 SENSE CIRCUIT INPUT HIGH (MAX)

**BMW Fault Code (hex)**

0x2DC3

**BMW Fault Code (dez)**

11715

**BMW Fault Code Description VS-Text**

Monitoring, terminal 15

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

cardiagn.com

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P15B1: TERMINAL 15 SENSE CIRCUIT INPUT LOW (MIN)

**BMW Fault Code (hex)**

0x2DC3

**BMW Fault Code (dez)**

11715

**BMW Fault Code Description VS-Text**

Monitoring, terminal 15

**Component**

cardiagn.com

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

cardiagn.com

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P15B2: TERMINAL 15 SENSE CIRCUIT CAS ERROR (SIG)

**BMW Fault Code (hex)**

0x2DC3

**BMW Fault Code (dez)**

11715

**BMW Fault Code Description VS-Text**

Monitoring, terminal 15

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

cardiagn.com

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P15B3: TERMINAL 15 SENSE CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2DC3

**BMW Fault Code (dez)**

11715

**BMW Fault Code Description VS-Text**

cardiagn.com

Monitoring, terminal 15

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

cardiagn.com

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P160A: POWERMANAGEMENT EXHAUSTIVE DISCHARGE (MIN)

**BMW Fault Code (hex)**

0x2DEC

**BMW Fault Code (dez)**

11756

**BMW Fault Code Description VS-Text**

Power management, battery

**Component**

Powermanagement

**Subcomponent**

Electrical

**Monitoring criteria**

Deep discharge: Battery sensor data recognized under all conditions.

**Fault debouncing**

Deep discharge: 60 seconds below 9.52 V (debounced in SW)

**Terminal conditions**

none

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**Voltage conditions**

Onboard electrical system voltage < 9.52 V

**Temperature conditions**

none

**Time conditions**

60 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

High energy consumption in parked vehicle leads to battery damage.

**Repair procedures (plant/service)**

Conduct energy diagnosis: Check control modules for standby current faults. Check battery's suitability for use, recharge or replace as indicated.

**MIL illumination/CC message/emergency program**

No CC message

**Remarks**

none

## DTC P160B: POWERMANAGEMENT DEFECTIVE (PLAUS)

**BMW Fault Code (hex)**

0x2DEC

**BMW Fault Code (dez)**

cardiagn.com

11756

**BMW Fault Code Description VS-Text**

Power management, battery

**Component**

Powermanagement

**Subcomponent**

Electrical

**Monitoring criteria**

is not now used

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

No CC message

**Remarks**

none

## DTC P160C: POWERMANAGEMENT OVERVOLTAGE (MAX)

**BMW Fault Code (hex)**

0x2DEB

**BMW Fault Code (dez)**

11755

**BMW Fault Code Description VS-Text**

Power management, vehicle electrical system

**Component**

Powermanagement

**Subcomponent**

Electrical

**Monitoring criteria**

Overvoltage with engine running:

**Fault debouncing**

Voltage in onboard electrical system > K_OSPGAPP (16 V) for 10 sec. (debounced in SW)

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**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 16 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective alternator

**Repair procedures (plant/service)**

Perform alternator diagnosis.

**MIL illumination/CC message/emergency program**

No CC message

**Remarks**

none

## DTC P160D: POWERMANAGEMENT UNDERVOLTAGE (MIN)

**BMW Fault Code (hex)**

cardiagn.com

0x2DEB

**BMW Fault Code (dez)**

11755

**BMW Fault Code Description VS-Text**

Power management, vehicle electrical system

**Component**

Powermanagement

**Subcomponent**

Electrical

**Monitoring criteria**

Low voltage while engine is running

**Fault debouncing**

Vehicle electrical system voltage < K_USPGAPP (10.5 V) for 10 sec. (debounced in SW)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Onboard electrical system voltage < 10.5 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective alternator

**Repair procedures (plant/service)**

Perform alternator diagnosis.

**MIL illumination/CC message/emergency program**

No CC message

**Remarks**

none

## DTC P160E: POWERMANAGEMENT OPERATION WITHOUT BATTERY (SIG)

**BMW Fault Code (hex)**

0x2DEB

**BMW Fault Code (dez)**

11755

**BMW Fault Code Description VS-Text**

Power management, vehicle electrical system

**Component**

Powermanagement

**Subcomponent**

Electrical

**Monitoring criteria**

Operation without battery with engine running Voltage fluctuations caused by poor battery contacts

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**Fault debouncing**

Vehicle electrical system voltage < K_USPGAPP (10.5V) for 10 sec. (debounced in SW)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Substantial voltage fluctuations (10.5 V -14 V)

**Temperature conditions**

none

**Time conditions**

approximately 200 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Battery not correctly connected.

**Repair procedures (plant/service)**

Check battery terminals

**MIL illumination/CC message/emergency program**

CC message 'Check battery connections'

**Remarks**

none

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## DTC P160F: POWERMANAGEMENT NO-LOAD CURRENT ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2DED

**BMW Fault Code (dez)**

11757

**BMW Fault Code Description VS-Text**

Power management, closed-circuit current violation

**Component**

Powermanagement

**Subcomponent**

Electrical

**Monitoring criteria**

Standby current violation: Standby current draw exceeds approved level. Standby current is calculated only when ISD-BSD communications are not present - vehicle in sleep mode.

**Fault debouncing**

Vehicle in sleep mode

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

High energy draw when parked

**Repair procedures (plant/service)**

Conduct energy diagnosis:

**MIL illumination/CC message/emergency program**

CC message 'High battery discharge when parked'

**Remarks**

none

## DTC P1618: CONTROL MODULE SELF-TEST, AD-CONVERTER MONITORING (PLAUS)

**BMW Fault Code (hex)**

0x2D5C

**BMW Fault Code (dez)**

11612

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, hardware

**Component**

ECM Self-Test

**Subcomponent**

AD-Converter

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**Monitoring criteria**

AD converter monitor. Comparison of two AD converter results

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

**Remarks**

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AD converter monitor

## DTC P1625: PEDAL POSITION SENSOR POTENTIOMETER SUPPLY CHANNEL 2 ELECTRICAL (PLAUS)

**BMW Fault Code (hex)**

0x2D1E

**BMW Fault Code (dez)**

11550

**BMW Fault Code Description VS-Text**

Accelerator-pedal module, pedal-position sensor 2, voltage supply

**Component**

Pedal Position Sensor

**Subcomponent**

E Electrical

**Monitoring criteria**

Pedal-position sensor monitor

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

220 ms

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in voltage supply for Channel 2, defective voltage regulator, main relay activation lag

**Repair procedures (plant/service)**

1. Check fault memory for problem with throttle valve and/or main relay, replace main relay as indicated
2. Check power-supply wire for short to ground (also measure in PWG)
3. Replace DME

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine power! EML ON restricted PW gradient and PW limit via RPM

**Remarks**

When relay is defective the fault appears together with throttle valve fault, the symptom being 'short circuit to ground', and fault in voltage supply to pedal-position sensor Channel 2.

## DTC P1632: THROTTLE VALVE ADAPTATION CONDITIONS NOT MET (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2CFB

**BMW Fault Code (dez)**

11515

**BMW Fault Code Description VS-Text**

Throttle-valve adaptation value

**Component**

Throttle Actuator

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**Subcomponent**

Adaptation

**Monitoring criteria**

at time of adaptation request

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Intake air temperature > -10°C or Coolant temperature > - 10°C or Coolant temperature < 142°C

**Time conditions**

80 ms after Terminal 15 ON

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Violation of adaptation conditions prior to completion of adaptation routine: Terminal 15 off or Electr. system voltage < 10 V or RPM > 32 RPM or Speed > 2 km/h or Throttle valve fault or PWM throttle valve control fault

**Repair procedures (plant/service)**

1. Check adaptation conditions, following confirmation proceed to terminal switch

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**MIL illumination/CC message/emergency program**

CC status report: Reduction in engine performance!, MIL ON Throttle valve emergency default mode + speed governed to 1300 RPM

**Remarks**

Adaptation condition monitor

## DTC P1633: THROTTLE VALVE ADAPTATION LIMP-HOME POSITION UNKNOWN (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2CFB

**BMW Fault Code (dez)**

11515

**BMW Fault Code Description VS-Text**

Throttle-valve adaptation value

**Component**

Throttle Actuator

**Subcomponent**

Adaptation

**Monitoring criteria**

Terminal change and request for adaptation

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

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Intake air temperature > -10°C or Coolant temperature > -10°C or Coolant temperature < 142°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Not possible to initialize for emergency air position: Contact resistance in plug-in connection, throttle valve has electrical problem or mechanical seizure.

**Repair procedures (plant/service)**

1. Check: Sum of throttle valve voltages must equal 5 V
2. Perform electrical check on wires to throttle valve sensors, Visual inspection of plug-in terminals (on components, wiring harness and DME)
3. Component defect improbable, replace throttle valve only in emergency

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine performance!, MIL ON EMB + RPM limit 1300 RPM

**Remarks**

Emergency air position adaptation monitor

## DTC P1634: THROTTLE VALVE ADAPTATION SPRING TEST FAILED (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2CFC

**BMW Fault Code (dez)**

11516

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**BMW Fault Code Description VS-Text**

Throttle valve, start check

**Component**

Throttle Actuator

**Subcomponent**

Adaptation

**Monitoring criteria**

Switch terminals

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Intake air temperature > -10°C or Coolant temperature > - 10°C or Coolant temperature < 142°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

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System fails spring test: Problem with voltage supply, Throttle valve is physically seizing or throttle valve motor is defective.

**Repair procedures (plant/service)**

1. Check engine-management fuses (5-fuse holder in E-Box)
2. Perform electrical check on wiring to throttle valve sensors and throttle valve motor
3. Visual inspection of plug-in terminals (at components, wiring harness and DME)
4. Replace component

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine performance!, MIL ON EMB + RPM limit 1300 RPM

**Remarks**

Spring test, actually test to determine whether throttle valve is seizing

## DTC P1635: THROTTLE VALVE ADAPTATION LOWER MECHANICAL STOP NOT ADAPTED (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2CFE

**BMW Fault Code (dez)**

11518

**BMW Fault Code Description VS-Text**

Throttle valve, continuous adaptation

**Component**

Throttle Actuator

**Subcomponent**

Adaptation

**Monitoring criteria**

none

**Fault debouncing**

none

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**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1636: THROTTLE VALVE CONTROL CIRCUIT (BANK 1) (SIG)

**BMW Fault Code (hex)**

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0x2CEF

**BMW Fault Code (dez)**

11503

**BMW Fault Code Description VS-Text**

Throttle-valve actuator, activation

**Component**

Throttle Actuator

**Subcomponent**

Power Stage

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1637: THROTTLE VALVE POSITION CONTROL, CONTROL DEVIATION (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2CEE

**BMW Fault Code (dez)**

11502

**BMW Fault Code Description VS-Text**

Throttle-valve actuator, sluggish movement

**Component**

Throttle Actuator

**Subcomponent**

Position Control

**Monitoring criteria**

Throttle valve test. Engine must be running. Throttle valve adaptation must not be in progress. Throttle valve actuator must be under current. No emergency default mode operation.

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**Fault debouncing**

less than 1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Problem with voltage supply, Mechanical binding in throttle valve assembly

**Repair procedures (plant/service)**

1. Check engine-management fuses (5-position fuse box in E-module)
2. Visual examination of contacts on throttle valve plug
3. Check throttle valve for binding and replace component as indicated

**MIL illumination/CC message/emergency program**

CC status report: WAL_1, reduced engine power!, MIL None activation control via lv_err_tps_obd, operation in emergency default mode if trigger point reached otherwise EMB + engine speed governed to 1300 RPM

**Remarks**

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Control deviation TPS_SP to TPS_AV for longer than 1s in excess of 10°TPS

## DTC P1638: THROTTLE VALVE POSITION CONTROL THROTTLE STUCK TEMPORARILY (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2CEC

**BMW Fault Code (dez)**

11500

**BMW Fault Code Description VS-Text**

Throttle-valve actuator, jamming briefly

**Component**

Throttle Actuator

**Subcomponent**

Throttle Stuck

**Monitoring criteria**

Throttle valve test. Engine must be running. Throttle valve adaptation must not be in progress. Throttle valve actuator must be under current. No emergency default mode operation

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

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none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Problem with voltage supply, throttle valve physically seized

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

Pulse-duty factor for control activation of throttle valve motor at least 0.5 sec, but less than 1 sec. over 99%

## DTC P1639: THROTTLE VALVE POSITION CONTROL THROTTLE STUCK PERMANENTLY (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2CED

**BMW Fault Code (dez)**

11501

**BMW Fault Code Description VS-Text**

Throttle-valve actuator, jamming continuously

**Component**

Throttle Actuator

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**Subcomponent**

Throttle Stuck

**Monitoring criteria**

Throttle valve test. Engine must be running. Throttle valve adaptation must not be in progress. Throttle valve actuator must be under current. No emergency default mode operation

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Problem with voltage supply, throttle valve physically seized

**Repair procedures (plant/service)**

1. Check engine-management fuses (5-fuse holder in E module)

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2. Visual inspection of throttle valve plug contacts and electrical check on throttle valve motor wires
3. Check throttle valve for binding and replace component as indicated

**MIL illumination/CC message/emergency program**

CC status report: WAL_1, reduced engine power!, MIL None activation control via lv_err_tps_obd, operation in emergency default mode if trigger point reached otherwise EMB + engine speed governed to 1300 RPM

**Remarks**

Pulse-duty factor for control of throttle valve motor exceeds 1s over 99%

## DTC P1644: THROTTLE VALVE ADAPTATION STOP RELEARNING LOWER MECHANICAL STOP (BANK 1) (PLAUS)

**BMW Fault Code (hex)**

0x2CFB

**BMW Fault Code (dez)**

11515

**BMW Fault Code Description VS-Text**

Throttle-valve adaptation value

**Component**

Throttle Actuator

**Subcomponent**

Adaptation

**Monitoring criteria**

Terminal change and request for adaptation

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

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Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Intake air temperature > -10°C or Coolant temperature > - 10°C or Coolant temperature < 142°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

System unable to initialize for lower mechanical travel stop position: Contact resistance in plug-in connection. Throttle valve is contaminated, has electrical problem or mechanical seizure

**Repair procedures (plant/service)**

1. Check: Sum of throttle valve voltages must equal 5 V
2. Perform electrical check on wires to throttle valve sensors, visual inspection of plug-in terminals (at components, wiring harness and DME)
3. Check to determine whether objects that could physically prevent the throttle valve from closing are present in the intake manifold or throttle valve
4. Replace component

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine performance!, MIL ON EMB + RPM limit 1300 RPM

**Remarks**

Lower mechanical travel stop monitor

## DTC P164C: PEDAL POSITION SENSOR POTENTIOMETER SUPPLY CHANNEL 1 ELECTRICAL (PLAUS)

**BMW Fault Code (hex)**

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0x2D1D

**BMW Fault Code (dez)**

11549

**BMW Fault Code Description VS-Text**

Accelerator-pedal module, pedal-position sensor 1, voltage supply

**Component**

Pedal Position Sensor

**Subcomponent**

D Electrical

**Monitoring criteria**

Pedal-position sensor monitor

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

220 ms

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in voltage supply for Channel 1, defective voltage regulator, main relay activation lag

**Repair procedures (plant/service)**

1. Check fault memory for problem with throttle valve and/or main relay, replace main relay as indicated
2. Check power-supply wire for short to ground (also measure in PWG)
3. Replace DME

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine power! EML ON restricted PW gradient and PW limit via RPM

**Remarks**

ATTENTION: This fault can produce throttle valve fault and HFM fault with the symptom 'short to ground' as collateral fault. When relay is defective this fault appears together with throttle valve fault, the symptom being 'short circuit to ground', and fault in voltage supply to pedal-position sensor Channel 2.

## DTC P165A: EWS (ELECTRONIC IMMOBILIZER) INTERFACE TO ECM, HARDWARE ERROR (MAX)

**BMW Fault Code (hex)**

0x2F4A

**BMW Fault Code (dez)**

12106

**BMW Fault Code Description VS-Text**

Interface EWS-DME

**Component**

No Info

**Subcomponent**

No Info

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**Monitoring criteria**

EWS code request

**Fault debouncing**

2

**Terminal conditions**

Terminal 15 on without running engine

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

CAS bus telegram

**Calculated value Y/N**

N

**Possible Fault Causes**

Signal interference on D_EWS wire.

**Repair procedures (plant/service)**

Problem diagnosis on wire, then DME/DDE problem diagnosis.

**MIL illumination/CC message/emergency program**

none

**Remarks**

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none

## DTC P165B: EWS (ELECTRONIC IMMOBILIZER) INTERFACE TO ECM, CHECKSUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2F4A

**BMW Fault Code (dez)**

12106

**BMW Fault Code Description VS-Text**

Interface EWS-DME

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EWS code request

**Fault debouncing**

2

**Terminal conditions**

Terminal 15 on without running engine

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

CAS bus telegram

**Calculated value Y/N**

N

**Possible Fault Causes**

Telegram structure not as expected

**Repair procedures (plant/service)**

Continue problem diagnosis with CAS

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P165C: EWS (ELECTRONIC IMMOBILIZER) DATA, NO AVAILABLE STORAGE POSSIBILITY (MAX)

**BMW Fault Code (hex)**

0x2F4B

**BMW Fault Code (dez)**

12107

**BMW Fault Code Description VS-Text**

DME, internal fault: immobilizer data

**Component**

No Info

**Subcomponent**

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No Info

**Monitoring criteria**

Calibration procedure

**Fault debouncing**

1

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Storage for EWS calibration not available

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

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none

**Remarks**

none

## DTC P165D: EWS (ELECTRONIC IMMOBILIZER) DATA, FAULTY RELEASE CODE STORAGE (MIN)

**BMW Fault Code (hex)**

0x2F4B

**BMW Fault Code (dez)**

12107

**BMW Fault Code Description VS-Text**

DME, internal fault: immobilizer data

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Calibration procedure

**Fault debouncing**

1

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Enable code storage defective

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P165E: EWS (ELECTRONIC IMMOBILIZER) DATA, CHECKSUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2F4B

**BMW Fault Code (dez)**

12107

**BMW Fault Code Description VS-Text**

DME, internal fault: immobilizer data

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

Terminal 15

**Fault debouncing**

1

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Fault in checksum for EWS data content

**Repair procedures (plant/service)**

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Replace DME, if fault occurs repeatedly

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P165F: INTERNAL CONTROL MODULE MEASUREMENT ERROR OXYGEN SENSOR HEATING (BANK 1, SENSOR 1) (SIG)

**BMW Fault Code (hex)**

0x2CA6

**BMW Fault Code (dez)**

11430

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter, function

**Component**

Oxygen Sensor, Front

**Subcomponent**

ECM Self-Test

**Monitoring criteria**

Internal control-module fault, attempt to determine O2 sensor temperature failed. No fault memories.

**Fault debouncing**

Processor chip monitor, no valid temperature for more than 5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

Roughly 40 sec. after engine start; after approximately 15 sec. in standard operation.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Invalid sensor temperature. Defective processing chip in control module.

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1660: EWS (ELECTRONIC IMMOBILIZER) TELEGRAM ERROR (MIN)

**BMW Fault Code (hex)**

0x2F4A

**BMW Fault Code (dez)**

12106

**BMW Fault Code Description VS-Text**

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Interface EWS-DME

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EWS code request

**Fault debouncing**

2

**Terminal conditions**

Terminal 15 on without running engine

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

CAS bus telegram

**Calculated value Y/N**

N

**Possible Fault Causes**

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Telegram structure not as expected

**Repair procedures (plant/service)**

Continue problem diagnosis with CAS

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1661: TIMEOUT EWS (ELECTRONIC IMMOBILIZER) - TELEGRAM (SIG)

**BMW Fault Code (hex)**

0x2F4A

**BMW Fault Code (dez)**

12106

**BMW Fault Code Description VS-Text**

Interface EWS-DME

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EWS code request

**Fault debouncing**

2

**Terminal conditions**

Terminal 15 on without running engine

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**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

CAS bus telegram

**Calculated value Y/N**

N

**Possible Fault Causes**

Wiring harness defect in wire D_EWS; CAS defect; DME/DDE defect

**Repair procedures (plant/service)**

Check D_EWS wire

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1667: EWS (ELECTRONIC IMMOBILIZER) START VALUE NOT YET PROGRAMMED (MIN)

**BMW Fault Code (hex)**

0x2F49

**BMW Fault Code (dez)**

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12105

**BMW Fault Code Description VS-Text**

EWS preventing manipulation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

1

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

No start value yet programmed.

**Repair procedures (plant/service)**

Program start value

**MIL illumination/CC message/emergency program**

none

**Remarks**

Start data can only be programmed at the factory

## DTC P1667: EWS (ELECTRONIC IMMOBILIZER) START VALUE NOT YET PROGRAMMED (PLAUS)

**BMW Fault Code (hex)**

0x2F49

**BMW Fault Code (dez)**

12105

**BMW Fault Code Description VS-Text**

EWS preventing manipulation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

1

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**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Content of telegram transmitted by CAS is not as expected

**Repair procedures (plant/service)**

Replace CAS/EWS and DME/DDE

**MIL illumination/CC message/emergency program**

none

**Remarks**

New control modules can only be calibrated at the factory; the control modules were mutually switched.

## DTC P1668: EWS (ELECTRONIC IMMOBILIZER) START VALUE DESTROYED (SIG)

**BMW Fault Code (hex)**

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0x2F4B

**BMW Fault Code (dez)**

12107

**BMW Fault Code Description VS-Text**

DME, internal fault: immobilizer data

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Terminal 15

**Fault debouncing**

1

**Terminal conditions**

Terminal 15

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Secret Key storage defective

**Repair procedures (plant/service)**

Replace DME, if fault occurs repeatedly

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P166A: CONTROL MODULE SELF-TEST, LDM (LONGITUDINAL DYNAMICS MANAGEMENT) MONITORING (SIG)

**BMW Fault Code (hex)**

0x2D50

**BMW Fault Code (dez)**

11600

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, cruise control

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Control module monitoring. Throttle valve not without current, LDM initialized. Interface fails to detect

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implausible torque demand.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Unrecognized implausible torque demand, internal control-module fault.

**Repair procedures (plant/service)**

Check CAN, LDM control module If frequency is >=3. Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF EML OFF CC: Vehicle speed control. Vehicle speed controller is rejected.

**Remarks**

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LDM torque demand monitor

## DTC P166B: LDM (LONGITUDINAL DYNAMICS MANAGEMENT) TORQUE REQUEST IN SPITE OF BRAKE SIGNAL (MAX)

**BMW Fault Code (hex)**

0x2DC0

**BMW Fault Code (dez)**

11712

**BMW Fault Code Description VS-Text**

No message from LDM

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

LDM recognized

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

500 ms

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

LDM fails to deactivate despite pressure on brake pedal

**Repair procedures (plant/service)**

Check LDM and brakelight switch/wiring

**MIL illumination/CC message/emergency program**

none

**Remarks**

Breakpoint: Program version '600'

## DTC P166C: LDM (LONGITUDINAL DYNAMICS MANAGEMENT) TORQUE REQUEST IMPLAUSIBLE (PLAUS)

**BMW Fault Code (hex)**

0x2DC0

**BMW Fault Code (dez)**

11712

**BMW Fault Code Description VS-Text**

No message from LDM

**Component**

No Info

**Subcomponent**

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No Info

**Monitoring criteria**

LDM recognized

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

80 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

LDM transmits implausible request

**Repair procedures (plant/service)**

Check LDM and replace as indicated

**MIL illumination/CC message/emergency program**

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none

**Remarks**

Breakpoint: Program version '600'

## DTC P166F: INTERNAL CONTROL MODULE MEASUREMENT ERROR OXYGEN SENSOR HEATING (BANK 2, SENSOR 1) (SIG)

**BMW Fault Code (hex)**

0x2CA7

**BMW Fault Code (dez)**

11431

**BMW Fault Code Description VS-Text**

Oxygen sensor heating before catalytic converter 2, function

**Component**

Oxygen Sensor, Front

**Subcomponent**

ECM Self-Test

**Monitoring criteria**

Internal control-module fault, attempt to determine O2 sensor temperature failed. No fault memories

**Fault debouncing**

Processor chip monitor, no valid temperature for more than 5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

Roughly 40 sec. after engine start; after approximately 15 sec. in standard operation

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Invalid sensor temperature. Defective processing chip in control module

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P1675: THROTTLE VALVE ACTUATOR START TEST RE-ADAPTATION REQUIRED (MAX)

**BMW Fault Code (hex)**

0x2CFD

**BMW Fault Code (dez)**

11517

**BMW Fault Code Description VS-Text**

No throttle-valve adaptation value

**Component**

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Throttle Actuator

**Subcomponent**

Adaptation

**Monitoring criteria**

Switch terminals

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Intake air temperature > -10°C or Coolant temperature > -10°C or Coolant temperature < 142°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Not possible to initialize for emergency air position: Contact resistance in plug-in connection, throttle valve has electrical problem or mechanical seizure.

**Repair procedures (plant/service)**

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1. Note collateral issues related to initial adaptation
2. Check: The sum of throttle valve voltages must equal 5 V
3. Perform electrical check on wiring to throttle valve sensors and throttle valve motor, visual inspection of plug-in contacts (at component, wiring harness and DME)
4. Replace component

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine performance!, MIL ON EMB + RPM limit 1300 RPM

**Remarks**

Not possible to initialize for emergency air position, leading to demand for basic adaptation

## DTC P1694: THROTTLE VALVE ACTUATOR START TEST SPRING TEST AND LIMP-HOME POSITION FAILED (SIG)

**BMW Fault Code (hex)**

0x2CFB

**BMW Fault Code (dez)**

11515

**BMW Fault Code Description VS-Text**

Throttle-valve adaptation value

**Component**

Throttle Actuator

**Subcomponent**

Spring Test

**Monitoring criteria**

Terminal change and request for adaptation

**Fault debouncing**

none

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Intake air temperature > -10°C or Coolant temperature > -10°C or Coolant temperature < 142°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Emergency air position outside tolerance range or spring test failed: Problem with voltage supply. Contact resistance in plug-in connection. Throttle valve is physically seizing or electrical problem.

**Repair procedures (plant/service)**

1. Check engine-management fuses (5-fuse holder in EBOX)
2. Check: The sum of throttle valve voltages must equal 5 V
3. Perform electrical check on wiring to throttle valve sensors and throttle valve motor
4. Visual inspection of plug-in contacts (at component, wiring harness and DME)
5. Replace component

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine performance!, MIL ON EMB + RPM limit 1300 RPM

**Remarks**

Spring test and check on emergency air position

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## DTC P169A: THROTTLE VALVE ACTUATOR START TEST LIMP-HOME POSITION FAILED (MIN)

**BMW Fault Code (hex)**

0x2CFC

**BMW Fault Code (dez)**

11516

**BMW Fault Code Description VS-Text**

Throttle valve, start check

**Component**

Throttle Actuator

**Subcomponent**

Adaptation

**Monitoring criteria**

Switch terminals

**Fault debouncing**

1 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

Intake air temperature > -10°C or Coolant temperature > - 10°C or Coolant temperature < 142°C

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Emergency air position outside approved tolerance range: Contact resistance in plug connector, throttle valve with electrical problem or seizing mechanically.

**Repair procedures (plant/service)**

1. Check: Sum of throttle valve voltages must equal 5 V
2. Perform electrical check on wires to throttle valve sensors
3. Visual inspection of plug-in terminals (at components, wiring harness and DME)
4. Component defect is unlikely, replace throttle valve only in an emergency

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine performance!, MIL ON EMB + RPM limit 1300 RPM

**Remarks**

Check emergency air position

## DTC P16A0: INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR IN BOOT SOFTWARE (MAX)

**BMW Fault Code (hex)**

0x2AB3

**BMW Fault Code (dez)**

10931

**BMW Fault Code Description VS-Text**

DME, internal fault: checksum

**Component**

ECM/TCM

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**Subcomponent**

Checksum

**Monitoring criteria**

Monitoring of boot software. After system start with ignition on

**Fault debouncing**

No debounce. Fault can be reset by clearing fault memory. However, a successful diagnostic cycle must be completed before the fault can be deleted. This can take several minutes.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Fault in boot software (program code). Incorrect program version flash-programmed.

**Repair procedures (plant/service)**

Flash program correct program version.

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**MIL illumination/CC message/emergency program**

none

**Remarks**

Engine operation no longer possible

## DTC P16A1: INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR IN APPLICATION SOFTWARE (MIN)

**BMW Fault Code (hex)**

0x2AB3

**BMW Fault Code (dez)**

10931

**BMW Fault Code Description VS-Text**

DME, internal fault: checksum

**Component**

ECM/TCM

**Subcomponent**

Checksum

**Monitoring criteria**

Application software program monitor (development only)

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

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none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Fault in application software (program code). Incorrect program version flash-programmed.

**Repair procedures (plant/service)**

Flash program correct program version.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Engine operation no longer possible

## DTC P16A2: INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR IN DATA (SIG)

**BMW Fault Code (hex)**

0x2AB3

**BMW Fault Code (dez)**

10931

**BMW Fault Code Description VS-Text**

DME, internal fault: checksum

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**Component**

ECM/TCM

**Subcomponent**

Checksum

**Monitoring criteria**

Application software data monitor (development only)

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Fault in application data (data file) The wrong data version has been flash-programmed

**Repair procedures (plant/service)**

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Flash program correct software revision.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Engine operation no longer possible

## DTC P16A3: INTERNAL CONTROL MODULE NON-VOLATILE MEMORY (NVMY) ERROR (MAX)

**BMW Fault Code (hex)**

0x2AB4

**BMW Fault Code (dez)**

10932

**BMW Fault Code Description VS-Text**

DME, internal fault: RAM checksum

**Component**

ECM/TCM

**Subcomponent**

NVMY

**Monitoring criteria**

RAM checksum test. This test is executed once, while the control module is booting.

**Fault debouncing**

No debounce. Fault can be reset by clearing fault memory.

**Terminal conditions**

Immediately after wakeup in dormant control module.

**Voltage conditions**

none

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Defective data sector in DME's internal EEPROM. Poor or loose ground connections for the ignition coils.

**Repair procedures (plant/service)**

Start by checking ground connections on the ignition coils. If these are OK, proceed with the following steps. Check to determine whether the diagnostic fault code is stored again after proceeding through the following routine. If yes: Replace DME.

1. Clear fault memory
2. Ignition off, allow vehicle to assume complete dormant status
3. Ignition on
4. Read out stored fault codes from fault memory

**MIL illumination/CC message/emergency program**

none

**Remarks**

Possible loss of adaptation data. The following procedure can be used to reprogram the adaptation data:

1. Delete all adaptation data
2. Ignition off and then on
3. Brief drive. Adaptation data are reprogrammed automatically.

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## DTC P16A4: TIMEOUT CONTROL MODULE KNOCK SENSOR SPI-BUS (SIG)

**BMW Fault Code (hex)**

0x2AB5

**BMW Fault Code (dez)**

10933

**BMW Fault Code Description VS-Text**

DME, internal fault: knock-sensor module

**Component**

ECM

**Subcomponent**

Knock Sensor

**Monitoring criteria**

Monitoring of knock sensor chip Engine speed >320 rpm

**Fault debouncing**

Yes, by event counter. Fault must occur ten times before a fault memory entry is made.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Interference at internal DME data bus (SPI_BUS) for processing chip for the knock sensors.

**Repair procedures (plant/service)**

Determine whether fault is stored again after carrying out the following procedure. If yes: Replace DME.

1. Clear fault memory
2. Ignition off, allow vehicle to assume complete dormant status
3. Ignition on
4. Read out stored fault codes from fault memory

**MIL illumination/CC message/emergency program**

none

**Remarks**

No warning message. No closed-loop knock control available. Performance loss as engine reverts to operation in safe range.

## DTC P16A5: TIMEOUT CONTROL MODULE MULTIPLE OUTPUT STAGE SPI-BUS (SIG)

**BMW Fault Code (hex)**

0x2AB6

**BMW Fault Code (dez)**

10934

**BMW Fault Code Description VS-Text**

DME, internal fault: multiple output-stage module

**Component**

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ECM

**Subcomponent**

Multiple Output Stage

**Monitoring criteria**

Driver circuit monitor

**Fault debouncing**

Yes, by event counter. Fault must occur ten times before a fault memory entry is made.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Interference at internal DME data bus (SPI_BUS) for activation of driver circuits.

**Repair procedures (plant/service)**

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Determine whether fault is stored again after carrying out the following procedure. If yes: Replace DME.

1. Clear fault memory
2. Ignition off, allow vehicle to assume complete dormant status
3. Ignition on
4. Read out stored fault codes from fault memory

**MIL illumination/CC message/emergency program**

No warning message. No control activation possible from some DME output terminals.

**Remarks**

none

## DTC P16A6: CONTROL MODULE SELF-TEST, CRUISE CONTROL MONITORING (MAX)

**BMW Fault Code (hex)**

0x2D50

**BMW Fault Code (dez)**

11600

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, cruise control

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Control module monitoring. Throttle valve not without current; Failure to comply with activation conditions for internal vehicle speed controller

**Fault debouncing**

480 ms

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Malfunction symptoms: No deactivation possible; Speed too low, brake activation, main switch operation

**Repair procedures (plant/service)**

Check speed signal, brake light switch, main cruise control switch. If frequency is >=3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF EML OFF CC: Vehicle speed control Vehicle speed controller is rejected

**Remarks**

Internal cruise control monitor

## DTC P16A7: CONTROL MODULE SELF-TEST, HOT FILM AIR MASS METER MONITORING (MAX)

**BMW Fault Code (hex)**

0x2D51

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**BMW Fault Code (dez)**

11601

**BMW Fault Code Description VS-Text**

Monitoring, air path

**Component**

ECM Self-Test

**Subcomponent**

HFM

**Monitoring criteria**

Control module monitoring. Throttle valve not without current; Air mass is implausible relative to injected fuel volume

**Fault debouncing**

4 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

4 sec.

**System test**

none

**Signal information**

none

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**Calculated value Y/N**

Y

**Possible Fault Causes**

HFM fault or fuel path fault not detected by diagnosis utility, internal control-module fault.

**Repair procedures (plant/service)**

Check air and fuel path. If frequency is > 3 Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 RPM.

**Remarks**

Mass airflow monitor

## DTC P16A8: CONTROL MODULE SELF-TEST, THROTTLE POSITION MONITORING (MIN)

**BMW Fault Code (hex)**

0x2D51

**BMW Fault Code (dez)**

11601

**BMW Fault Code Description VS-Text**

Monitoring, air path

**Component**

ECM Self-Test

**Subcomponent**

Throttle Valve

**Monitoring criteria**

Control module monitoring. Throttle valve is not without current; Throttle valve sensor fault not detected by standard diagnosis.

**Fault debouncing**

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480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Throttle valve sensor fault not detected by diagnosis, internal control-module fault.

**Repair procedures (plant/service)**

Check throttle-valve potentiometer. At frequency > 3. Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF. EML ON. CC: Reduced power, engine malfunction RPM limited to 1300 RPM.

**Remarks**

TPS sensor monitor

**DTC P16A9: CONTROL MODULE SELF-TEST, SPEED MONITORING RESET (PLAUS)**

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**BMW Fault Code (hex)**

0x2D52

**BMW Fault Code (dez)**

11602

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, engine speed

**Component**

ECM Self-Test

**Subcomponent**

RPM

**Monitoring criteria**

Control module monitor. Modeled RPM from segment time is compared with crankshaft RPM.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault

**Repair procedures (plant/service)**

If frequency >=3. Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF. EML ON. CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

**Remarks**

RPM monitor

## DTC P16B0: CONTROL MODULE SELF-TEST, PEDAL POSITION SENSOR MONITORING (PLAUS)

**BMW Fault Code (hex)**

0x2D55

**BMW Fault Code (dez)**

11605

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, accelerator-pedal module

**Component**

ECM Self-Test

**Subcomponent**

Pedal Position Sensor

**Monitoring criteria**

Control module monitor Comparison PWG sensor voltage above threshold

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**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

PWG fault not detected by diagnosis, internal control-module fault

**Repair procedures (plant/service)**

If frequency >=3, Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

**Remarks**

Accelerator pedal module monitor

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## DTC P16B1: CONTROL MODULE SELF-TEST, IDLE AIR CONTROL SYSTEM INTEGRATED COMPONENT PLAUSIBILITY (MAX)

**BMW Fault Code (hex)**

0x2D56

**BMW Fault Code (dez)**

11606

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, idle air control

**Component**

ECM Self-Test

**Subcomponent**

Idle Speed Control

**Monitoring criteria**

Control module monitor. Throttle valve not without current. With I component LL controller implausible or specified LL RPM is too high.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault

**Repair procedures (plant/service)**

If frequency >=3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction RPM limited to 1300 RPM.

**Remarks**

Idle controller I element monitor

## DTC P16B2: CONTROL MODULE SELF-TEST, IDLE AIR CONTROL SYSTEM PD-COMPONENT PLAUSIBILITY (MIN)

**BMW Fault Code (hex)**

0x2D56

**BMW Fault Code (dez)**

11606

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, idle air control

**Component**

ECM Self-Test

**Subcomponent**

Idle Speed Control

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**Monitoring criteria**

Control module monitor. Throttle valve not without current With PD component LL controller implausible or specified LL RPM is too high.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault

**Repair procedures (plant/service)**

If frequency >=3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

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**Remarks**

Idle controller PD element monitor

## DTC P16B3: CONTROL MODULE SELF-TEST, MSR (ENGINE-DRAG-TORQUE CONTROL) MONITORING (MAX)

**BMW Fault Code (hex)**

0x2D57

**BMW Fault Code (dez)**

11607

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, external torque request

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Control module monitor. Throttle valve not without current. Interface fails to detect implausible torque demand.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

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480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Unrecognized implausible torque demand, internal control-module fault.

**Repair procedures (plant/service)**

Check CAN, MSR control module If frequency is >= 3, Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF, EML OFF, CC: ??? DSC cancelled.

**Remarks**

MSR demand monitor

## DTC P16B4: CONTROL MODULE SELF-TEST, DCC (DYNAMIC CRUISE CONTROL) MONITORING (MIN)

**BMW Fault Code (hex)**

0x2D50

**BMW Fault Code (dez)**

11600

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, cruise control

**Component**

No Info

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**Subcomponent**

No Info

**Monitoring criteria**

Control module monitoring. Throttle valve not without current ACC/DCC initialized; Interface fails to detect implausible torque demand.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Unrecognized implausible torque demand, internal control-module fault

**Repair procedures (plant/service)**

Check CAN, ACC/DCC control module. If frequency is >=3 Replace DME

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**MIL illumination/CC message/emergency program**

MIL OFF, EML OFF, CC: Vehicle speed control. Vehicle speed controller is rejected.

**Remarks**

ACC/DCC torque demand monitor

## DTC P16B5: CONTROL MODULE SELF-TEST, AMT (AUTOMATIC MANUAL TRANSMISSION) MONITORING (SIG)

**BMW Fault Code (hex)**

0x2D57

**BMW Fault Code (dez)**

11607

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, external torque request

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Control module monitor Interface fails to detect implausible torque demand

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

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none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Unrecognized implausible torque demand, internal control-module fault.

**Repair procedures (plant/service)**

Check CAN, SMG control module. If frequency is >= 3 Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF EML OFF CC: ??? SMG cancelled.

**Remarks**

SMG demand monitor

## DTC P16B6: CONTROL MODULE SELF-TEST, ETC MONITORING (PLAUS)

**BMW Fault Code (hex)**

0x2D57

**BMW Fault Code (dez)**

11607

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, external torque request

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**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Control module monitor. Interface fails to detect implausible torque demand

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Unrecognized implausible torque demand, internal control-module fault

**Repair procedures (plant/service)**

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Check CAN, EGS control module If frequency is >=3 Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF EML OFF CC: ??? EGS cancelled.

**Remarks**

EGS demand monitor

## DTC P16B7: CONTROL MODULE SELF-TEST, CLUTCH TORQUE MONITORING MAXIMUM VALUE PLAUSIBILITY (MAX)

**BMW Fault Code (hex)**

0x2D58

**BMW Fault Code (dez)**

11608

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, nominal torque

**Component**

ECM Self-Test

**Subcomponent**

Clutch Torque

**Monitoring criteria**

Control module monitor. Throttle valve not without current. Calculated maximum clutch torque too high

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

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**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault

**Repair procedures (plant/service)**

If frequency >=3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

**Remarks**

Maximum clutch torque monitor

## DTC P16B8: CONTROL MODULE SELF-TEST, CLUTCH TORQUE MONITORING MINIMUM VALUE PLAUSIBILITY (MIN)

**BMW Fault Code (hex)**

0x2D58

**BMW Fault Code (dez)**

11608

**BMW Fault Code Description VS-Text**

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DME, internal fault: monitoring, nominal torque

**Component**

ECM Self-Test

**Subcomponent**

Clutch Torque

**Monitoring criteria**

Control module monitor. Throttle valve not without current. Calculated minimum clutch torque too high.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

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Internal control-module fault

**Repair procedures (plant/service)**

If frequency >=3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

**Remarks**

Minimum clutch torque monitor

## DTC P16B9: CONTROL MODULE SELF-TEST, TORQUE LOSS MONITORING (SIG)

**BMW Fault Code (hex)**

0x2D58

**BMW Fault Code (dez)**

11608

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, nominal torque

**Component**

ECM Self-Test

**Subcomponent**

Torque Loss

**Monitoring criteria**

Control module monitor. Throttle valve not without current. Calculation fault, calculated torque loss too high.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault, implausible thermal conditions.

**Repair procedures (plant/service)**

Check temperature sensors (oil/coolant). If frequency is >=3 Replace DME.

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

**Remarks**

Torque loss monitor

## DTC P16C0: CONTROL MODULE SELF-TEST, DRIVING DYNAMICS CONTROL SWITCH MONITORING (PLAUS)

**BMW Fault Code (hex)**

0x2D58

**BMW Fault Code (dez)**

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11608

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, nominal torque

**Component**

ECM Self-Test

**Subcomponent**

Driving Dynamics

**Monitoring criteria**

Always SPORT switch monitor. Sport switch voltages are not plausible and not detected by diagnosis utility.

**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

Y

**Possible Fault Causes**

Internal control-module fault

**Repair procedures (plant/service)**

If frequency >=3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 rpm

**Remarks**

Sport button monitor

## DTC P16C1: CONTROL MODULE SELF-TEST, TORQUE MONITORING CURRENT INDICATED VALUE PLAUSIBILITY (PLAUS)

**BMW Fault Code (hex)**

0x2D59

**BMW Fault Code (dez)**

11609

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, actual torque

**Component**

ECM Self-Test

**Subcomponent**

Engine Torque

**Monitoring criteria**

Throttle valve not without current. Driver torque demand is being exceeded.

**Fault debouncing**

480 ms

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault, major variation between specified and actual mass airflow

**Repair procedures (plant/service)**

Check mass airflow system (vacuum leaks, VVT, VANOS, throttle valve...). If frequency is >=3 Replace DME

**MIL illumination/CC message/emergency program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction RPM limited to 1300 rpm.

**Remarks**

Current induced engine torque monitor

## DTC P16C1: CONTROL MODULE SELF-TEST, TORQUE MONITORING CURRENT INDICATED VALUE PLAUSIBILITY (PLAUS)

**BMW Fault Code (hex)**

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0x2D5A

**BMW Fault Code (dez)**

11610

**BMW Fault Code Description VS-Text**

Monitoring engine torque limiting

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

No interruption of current to throttle valve

**Fault debouncing**

Driver torque demand is exceeded => Torque limitation; fault entry after 7s

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

7 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault, major variation between specified and actual mass airflow

**Repair procedures (plant/service)**

Check mass airflow system (HFM, vacuum leak, VVT, VANOS, throttle valve...)

**MIL illumination/CC message/emergency program**

MIL OFF, EML OFF, Brief torque restriction.

**Remarks**

Limit on current induced engine torque

## DTC P16C2: CONTROL MODULE SELF-TEST, SPEED LIMITATION MONITORING (PLAUS)

**BMW Fault Code (hex)**

0x2D53

**BMW Fault Code (dez)**

11603

**BMW Fault Code Description VS-Text**

DME, internal fault: monitoring, engine speed limitation

**Component**

ECM Self-Test

**Subcomponent**

RPM Limitation

**Monitoring criteria**

Control module monitor. Currently defined RPM limit is exceeded and injection is still active.

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**Fault debouncing**

480 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

480 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Internal control-module fault

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC Message/Emergency Program**

MIL OFF, EML ON, CC: Reduced power, engine malfunction Reset, RPM limited to 1300 RPM.

**Remarks**

RPM governor monitor

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## DTC P16C5: MAIN RELAY SWITCHING DELAY (MIN)

**BMW Fault Code (hex)**

0x2ACC

**BMW Fault Code (dez)**

10956

**BMW Fault Code Description VS-Text**

DME master relay, shift delay

**Component**

ECM/PCM Power Relay

**Subcomponent**

Switching Delay

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (MAX)

**BMW Fault Code (hex)**

0x2E81

**BMW Fault Code (dez)**

11905

**BMW Fault Code Description VS-Text**

Electrical coolant pump, speed deviation

**Component**

No Info

**Subcomponent**

No Info

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**Monitoring criteria**

Comparison of specified/actual RPM. No BSD fault.

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

Engine temperature above 20°C

**Time conditions**

8 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

a. Wiring
b. Binding

**Repair procedures (plant/service)**

1. Problem diagnosis with wiring check
2. Plug corrosion
3. EWP component fault

**MIL illumination/CC message/emergency program**

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CC status report: none EWP fails to reach specified rotation rate

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (MAX)

**BMW Fault Code (hex)**

0x2E82

**BMW Fault Code (dez)**

11906

**BMW Fault Code Description VS-Text**

Electric coolant pump, cutoff

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Comparison of specified/actual RPM. No BSD fault

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

EWP component fault

**Repair procedures (plant/service)**

EWP component fault

**MIL illumination/CC message/emergency program**

CC status report: none EWP not operating. Heat management initiates emergency cooling action

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (MAX)

**BMW Fault Code (hex)**

0x2E83

**BMW Fault Code (dez)**

11907

**BMW Fault Code Description VS-Text**

Electric coolant pump, power-reduced operation

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

Comparison of specified/actual RPM. No BSD fault

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Air in system

**Repair procedures (plant/service)**

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Bleed cooling system/leak check

**MIL illumination/CC message/emergency program**

CC status report: None Limit on EWP rotation rate

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (MIN)

**BMW Fault Code (hex)**

0x2E82

**BMW Fault Code (dez)**

11906

**BMW Fault Code Description VS-Text**

Electric coolant pump, cutoff

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Comparison of specified/actual RPM. No BSD fault

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Jump start with truck battery

**Repair procedures (plant/service)**

Clear fault memory or, if fault is permanent, replace EWP components without jump starting.

**MIL illumination/CC message/emergency program**

CC status report. No EWP inoperative during power supply. Heat management initiates emergency cooling action.

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (MIN)

**BMW Fault Code (hex)**

0x2E83

**BMW Fault Code (dez)**

11907

**BMW Fault Code Description VS-Text**

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Electric coolant pump, power-reduced operation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Comparison of specified/actual RPM. No BSD fault

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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a. Wiring
b. Battery charge status

**Repair procedures (plant/service)**

1. Charge battery
2. Problem diagnosis with wiring check
3. Plug corrosion
4. Component fault in EWP

**MIL illumination/CC message/emergency program**

CC status report: none. EWP fails to reach specified rotation rate.

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (PLAUS)

**BMW Fault Code (hex)**

0x2E83

**BMW Fault Code (dez)**

11907

**BMW Fault Code Description VS-Text**

Electric coolant pump, power-reduced operation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Comparison of specified/actual RPM. No BSD fault

**Fault debouncing**

10 sec.

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

EWP component fault

**Repair procedures (plant/service)**

EWP component fault

**MIL illumination/CC message/emergency program**

CC status report: None Limit on EWP rotation rate

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (PLAUS)

**BMW Fault Code (hex)**

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0x2E85

**BMW Fault Code (dez)**

11909

**BMW Fault Code Description VS-Text**

Electric coolant pump, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Compare EWP status report with main relay activation. No BSD fault.

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Terminal 87 to EWP shorted to positive or ground, or open

**Repair procedures (plant/service)**

Problem diagnosis wiring check

**MIL illumination/CC message/emergency program**

CC status report: none. EWP runs based on BSD request.

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (SIG)

**BMW Fault Code (hex)**

0x2E7C

**BMW Fault Code (dez)**

11900

**BMW Fault Code Description VS-Text**

Bit-serial data interface, signal

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

BSD bus monitor

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**Fault debouncing**

Via event counter. Total failure between BSD bus and all components (water pump, oil sensor, alternator, battery sensor over approximately 3 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Terminal 87 >10.0 V

**Temperature conditions**

none

**Time conditions**

approximately 3 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit on the BSD_BUS. Either to ground or positive, rendering communications impossible. Or no BSD_components connected to the DME.

**Repair procedures (plant/service)**

1. Disconnect all BSD_components (alternator, battery sensor, water pump) except for the oil sensor. Clear fault memory. Ignition off/on. If fault code is stored again: QLT is defective and must be replaced. Repeat test.
2. If fault code is entered again after QLT replacement: -> Check wiring harness (BSD_BUS) and all plug-in connections for corrosion and shorts to ground/UBatt.
3. If fault code no longer appears after QLT replacement: -> QLT was defective.
4. If no fault code is stored after all components (except QLT, as in 1.) are disconnected: -> The fault lies with one of the

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**MIL illumination/CC message/emergency program**

No oil level display/no oil temperature display available. Service interval calculations for next visit are based on model. Water pump runs at 100% cooling capacity and draws continuous current of approximately 15A. Power management fails to operate correctly because it is not possible to read battery sensor.

**Remarks**

ATTENTION: Simply switching the ignition on/off is enough for problem diagnosis. Because the water pump may not be connected, and the engine could overheat, you should avoid starting the engine. Fault status can be reset by clearing fault memory.

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (SIG)

**BMW Fault Code (hex)**

0x2E82

**BMW Fault Code (dez)**

11906

**BMW Fault Code Description VS-Text**

Electric coolant pump, cutoff

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Comparison of specified/actual rpm. No BSD fault.

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

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Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Contamination, Binding, Incorrect coolant mixture ratio.

**Repair procedures (plant/service)**

Respond to intermittent fault by triggering actuators for operational test and by checking concentration of coolant. Permanent fault indicates foreign objects or EWP component fault.

**MIL illumination/CC message/emergency program**

CC status report none EWP briefly/continuously without function. Heat management initiates emergency cooling strategy.

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (SIG)

**BMW Fault Code (hex)**

0x2E83

**BMW Fault Code (dez)**

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11907

**BMW Fault Code Description VS-Text**

Electric coolant pump, power-reduced operation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Comparison of specified/actual RPM. No BSD fault.

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

Y

**Possible Fault Causes**

EWP component fault

**Repair procedures (plant/service)**

EWP component fault

**MIL illumination/CC message/emergency program**

CC status report: None. Limit on EWP rotation rate.

**Remarks**

none

## DTC P16C6: CAN TIMEOUT BSD (BIT SERIAL DATA INTERFACE) (SIG)

**BMW Fault Code (hex)**

0x2E84

**BMW Fault Code (dez)**

11908

**BMW Fault Code Description VS-Text**

Electric coolant pump, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

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**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P16C8: SERIAL COMMUNICATION LINK EKP (ELECTRICAL FUEL PUMP) (SIG)

**BMW Fault Code (hex)**

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0x2DE0

**BMW Fault Code (dez)**

11744

**BMW Fault Code Description VS-Text**

No message from electric fuel pump

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EKP recognized

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

40 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between EKP and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC P2067: FUEL LEVEL SENSOR 'B' CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2DE1

**BMW Fault Code (dez)**

11745

**BMW Fault Code Description VS-Text**

Tank fill level, left, signal

**Component**

Fuel Level Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Left-side level sensor shorted, sensor resistance too low.

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**Fault debouncing**

90 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor value too low

**Repair procedures (plant/service)**

Check sensor resistance, determine location of open wire/short circuit (wiring harness, plug, cluster, junction box, tank)

**MIL illumination/CC message/emergency program**

NO

**Remarks**

none

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## DTC P2068: FUEL LEVEL SENSOR 'B' CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2DE1

**BMW Fault Code (dez)**

11745

**BMW Fault Code Description VS-Text**

Tank fill level, left, signal

**Component**

Fuel Level Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Open circuit in wire to left-side level sensor, sensor resistance too high.

**Fault debouncing**

90 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor value too high

**Repair procedures (plant/service)**

Check sensor resistance, determine location of open wire/short circuit (wiring harness, plug, cluster, junction box, tank)

**MIL illumination/CC message/emergency program**

NO

**Remarks**

none

## DTC P2088: 'A' CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A80

**BMW Fault Code (dez)**

10880

**BMW Fault Code Description VS-Text**

Intake VANOS, activation

**Component**

Camshaft Position Actuator

**Subcomponent**

Intake

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**Monitoring criteria**

Monitoring of VANOS control Engine. speed > 500 rpm

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring, repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

cardiagn.com

none

## DTC P2089: 'A' CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A80

**BMW Fault Code (dez)**

10880

**BMW Fault Code Description VS-Text**

Intake VANOS, activation

**Component**

Camshaft Position Actuator

**Subcomponent**

Intake

**Monitoring criteria**

Monitoring of VANOS control, Engine speed > 500 rpm,

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2090: 'B' CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT LOW (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2A85

**BMW Fault Code (dez)**

10885

**BMW Fault Code Description VS-Text**

Exhaust VANOS, activation

**Component**

Camshaft Position Actuator

**Subcomponent**

cardiagn.com

Exhaust

**Monitoring criteria**

Monitoring of VANOS control. Engine speed > 500 rpm.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK, proceed to check component.

**MIL illumination/CC message/emergency program**

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MIL ON

**Remarks**

none

## DTC P2091: 'B' CAMSHAFT POSITION ACTUATOR CONTROL CIRCUIT HIGH (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2A85

**BMW Fault Code (dez)**

10885

**BMW Fault Code Description VS-Text**

Exhaust VANOS, activation

**Component**

Camshaft Position Actuator

**Subcomponent**

Exhaust

**Monitoring criteria**

Monitoring of VANOS control Engine speed > 500 rpm

**Fault debouncing**

none

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

0.5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK proceed to check component.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2096: POST CATALYST FUEL TRIM SYSTEM TOO LEAN (BANK 1) (MIN)

**BMW Fault Code (hex)**

0x2C31

**BMW Fault Code (dez)**

11313

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, trim control

**Component**

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Fuel System

**Subcomponent**

Post Catalyst

**Monitoring criteria**

O2 sensor trim control. No fault memories. Drive at 50 - 80 km/h and at moderate engine speed..

**Fault debouncing**

Trim controller pegged

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

1 - 2 h steady-state operation; otherwise #11390 may occur

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective wiring. Exhaust system leak. Pre-cat or downstream (post-cat) O2 sensor defective.

**Repair procedures (plant/service)**

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This malfunction automatically triggers an active test (collateral fault stored in the control module's fault memory!).

1. Read out results of active test (are other faults still stored in the control module's fault memory)? => Then continue at this point!)
2. Initiate system test for reversed O2 sensors. Follow instructions for system test.
3. If the system test fails to produce a result then
4. Visual inspection of wiring and plugs
5. Electrical check of wiring
6. Replace wiring or plugs as indicated
7. Check exhaust system forward of downstream (post-cat) O2 sensor for leaks
8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2097: POST CATALYST FUEL TRIM SYSTEM TOO RICH (BANK 1) (MAX)

**BMW Fault Code (hex)**

0x2C31

**BMW Fault Code (dez)**

11313

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, trim control

**Component**

Fuel System

**Subcomponent**

Post Catalyst

**Monitoring criteria**

O2 sensor trim control. No fault memories. Drive at 50 - 80 km/h and at moderate engine speed.

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**Fault debouncing**

Trim controller pegged

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

1 - 2 h steady-state operation; otherwise #11390 may occur

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Drift in upsteam (pre-cat) O2 sensor - Fault in wiring to downstream (post-cat) O2 sensor - Leakage in exhaust system - Defective pre-cat or downstream (post-cat) O2 sensor

**Repair procedures (plant/service)**

This malfunction automatically triggers an active test (collateral fault stored in the control module's fault memory!).

1. Read out results of active test (are other faults still stored in the control module's fault memory)? => Then continue at this point!)
2. Initiate system test for reversed O2 sensors. Follow instructions for system test.
3. If the system test fails to produce a result then
4. Visual inspection of wiring and plugs

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5. Electrical check of wiring
6. Replace wiring or plugs as indicated
7. Check exhaust system forward of downstream (post-cat) O2 sensor for leaks
8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2098: POST CATALYST FUEL TRIM SYSTEM TOO LEAN (BANK 2) (MIN)

**BMW Fault Code (hex)**

0x2C32

**BMW Fault Code (dez)**

11314

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, trim control

**Component**

Fuel System

**Subcomponent**

Post Catalyst

**Monitoring criteria**

O2 sensor trim control No fault memories Drive at 50 - 80 km/h and at moderate engine speed.

**Fault debouncing**

Trim controller pegged

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

1 - 2 h steady-state operation; otherwise #11391 may occur

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective wiring. Exhaust system leak. Pre-cat or downstream (post-cat) O2 sensor defective.

**Repair procedures (plant/service)**

This malfunction automatically triggers an active test (collateral fault stored in the control module's fault memory!).

1. Read out results of active test (are other faults still stored in the control module's fault memory)? => Then continue at this point!)
2. Initiate system test for reversed O2 sensors. Follow instructions for system test.
3. If the system test fails to produce a result then
4. Visual inspection of wiring and plugs
5. Electrical check of wiring
6. Replace wiring or plugs as indicated
7. Check exhaust system forward of downstream (post-cat) O2 sensor for leaks
8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

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**Remarks**

none

## DTC P2099: POST CATALYST FUEL TRIM SYSTEM TOO RICH (BANK 2) (MAX)

**BMW Fault Code (hex)**

0x2C32

**BMW Fault Code (dez)**

11314

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, trim control

**Component**

Fuel System

**Subcomponent**

Post Catalyst

**Monitoring criteria**

O2 sensor trim control. No fault memories. Drive at 50 - 80 km/h and at moderate engine speed.

**Fault debouncing**

Trim controller pegged

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

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1 - 2 h steady-state operation; otherwise #11391 may occur

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective wiring. Exhaust system leak. Pre-cat or downstream (post-cat) O2 sensor defective.

**Repair procedures (plant/service)**

This malfunction automatically triggers an active test (collateral fault stored in the control module's fault memory!).

1. Read out results of active test (are other faults still stored in the control module's fault memory)? => Then continue at this point!)
2. Initiate system test for reversed O2 sensors. Follow instructions for system test.
3. If the system test fails to produce a result then
4. Visual inspection of wiring and plugs
5. Electrical check of wiring
6. Replace wiring or plugs as indicated
7. Check exhaust system forward of downstream (post-cat) O2 sensor for leaks
8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2120: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'D' CIRCUIT (PLAUS)

**BMW Fault Code (hex)**

0x2D1F

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**BMW Fault Code (dez)**

11551

**BMW Fault Code Description VS-Text**

Accelerator-pedal module, pedal-position sensor potentiometer, signal

**Component**

Pedal Position Sensor

**Subcomponent**

D Electrical

**Monitoring criteria**

Pedal-position sensor monitor

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

220 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Dual fault in pedal-position sensor

**Repair procedures (plant/service)**

1. Read out the two root faults from the control module's fault memory
2. Process using prescribed test plan
3. Check main relay and overall vehicle electrical system voltage supply
4. Replace DME

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine power! EML ON, MIL ON, PW = 0, fast idle when brake pedal is not depressed.

**Remarks**

Pedal reading 0, slightly high idle if brake pedal is not depressed

## DTC P2122: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'D' CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2D1B

**BMW Fault Code (dez)**

11547

**BMW Fault Code Description VS-Text**

Accelerator pedal module, pedal-position sensor, signal 1

**Component**

Pedal Position Sensor

**Subcomponent**

D Electrical

**Monitoring criteria**

Pedal-position sensor monitor. No fault code currently registered.

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**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

240 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to ground or open circuit in wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace PWG

**MIL illumination/CC message/emergency program**

CC status report: ??? EML ON, restricted PW gradient, and PW limit via rpm.

**Remarks**

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Voltage range diagnosis

## DTC P2123: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'D' CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2D1B

**BMW Fault Code (dez)**

11547

**BMW Fault Code Description VS-Text**

Accelerator pedal module, pedal-position sensor, signal 1

**Component**

Pedal Position Sensor

**Subcomponent**

D Electrical

**Monitoring criteria**

Pedal-position sensor monitor. No fault code currently registered

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > = 10 V

**Temperature conditions**

none

**Time conditions**

240 ms

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace PWG

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine power! EML ON restricted PW gradient and PW limit via rpm

**Remarks**

Voltage range diagnosis

## DTC P2127: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'E' CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2D1C

**BMW Fault Code (dez)**

11548

**BMW Fault Code Description VS-Text**

Accelerator pedal module, pedal-position sensor, signal 2

**Component**

Pedal Position Sensor

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**Subcomponent**

E Electrical

**Monitoring criteria**

Pedal-position sensor monitor. No fault code currently registered.

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > = 10 V

**Temperature conditions**

none

**Time conditions**

240 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to ground or open circuit in wire.

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)

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3. Replace PWG

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine power! EML ON restricted PW gradient and PW limit via rpm.

**Remarks**

Voltage range diagnosis

## DTC P2128: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'E' CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2D1C

**BMW Fault Code (dez)**

11548

**BMW Fault Code Description VS-Text**

Accelerator pedal module, pedal-position sensor, signal 2

**Component**

Pedal Position Sensor

**Subcomponent**

E Electrical

**Monitoring criteria**

Pedal-position sensor monitor. No fault code currently registered

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

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**Temperature conditions**

none

**Time conditions**

240 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires.
2. Visual inspection of plug-in contacts (on component and DME ends).
3. Replace PWG.

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine power! EML ON, restricted PW gradient, and PW limit via RPM.

**Remarks**

Voltage range diagnosis

## DTC P2138: THROTTLE/PEDAL POSITION SENSOR/SWITCH 'D'/'E' VOLTAGE CORRELATION (PLAUS)

**BMW Fault Code (hex)**

0x2D20

**BMW Fault Code (dez)**

11552

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**BMW Fault Code Description VS-Text**

Accelerator-pedal module, pedal-position sensor, plausibility between signal 1 and signal 2

**Component**

Pedal Position Sensor

**Subcomponent**

D/E Correlation

**Monitoring criteria**

Pedal-position sensor monitor

**Fault debouncing**

0.02 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system >= 10 V

**Temperature conditions**

none

**Time conditions**

340 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Contact resistance in wiring or plug-in connections for PWG, electrical PWG problem (defective Hall-effect sensor).

**Repair procedures (plant/service)**

1. Check: Pedal-position sensor voltages [Pot voltage 2 = (Pot voltage1)/2]
2. Check wires from DME to PWG
3. Visual inspection of plug terminals (on components, wiring harness and DME)
4. Replace PWG

**MIL illumination/CC message/emergency program**

CC status report: Reduced engine power! EML ON restricted PW gradient and PW limit via rpm.

**Remarks**

Implausible spread between the two PWG voltages.

## DTC P213F: FUEL PUMP SYSTEM FAULT - FORCED ENGINE SHUTDOWN (SIG)

**BMW Fault Code (hex)**

0x2AAD

**BMW Fault Code (dez)**

10925

**BMW Fault Code Description VS-Text**

Fuel pump, emergency shutoff

**Component**

Fuel Regulators/Valves/Sensors

**Subcomponent**

Fuel Pump

**Monitoring criteria**

none

**Fault debouncing**

none

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**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P2183: ENGINE COOLANT TEMPERATURE SENSOR 2 CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

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0x2EEC

**BMW Fault Code (dez)**

12012

**BMW Fault Code Description VS-Text**

Temperature sensor cooler outlet, plausibility

**Component**

Engine Coolant Temperature Sensor

**Subcomponent**

2 Plausibility

**Monitoring criteria**

Engine must be running

**Fault debouncing**

no invariable debounce time, constant sensor data reading during engine warm-up produces entry

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

11 V < electrical system voltage < 26 V

**Temperature conditions**

-10°C < Coolant temperature at engine start < 65°C, -10°C < Induction air temperature at engine start < 69°C

**Time conditions**

600 ms

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Temperature sensor seizing, sensor manipulation

**Repair procedures (plant/service)**

1. Visual inspection of sensor
2. Perform electrical check on sensor and power-supply wires 2) Test to determine whether the temperature really changes when the thermostat opens
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

temperature condition defined by data entry

## DTC P2184: ENGINE COOLANT TEMPERATURE SENSOR 2 CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2EEA

**BMW Fault Code (dez)**

12010

**BMW Fault Code Description VS-Text**

Temperature sensor cooler outlet, signal

**Component**

Engine Coolant Temperature Sensor

**Subcomponent**

2 Electrical

**Monitoring criteria**

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Radiator discharge temperature signal monitor

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground in sensor wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

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**Remarks**

Voltage range diagnosis

## DTC P2185: ENGINE COOLANT TEMPERATURE SENSOR 2 CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2EEA

**BMW Fault Code (dez)**

12010

**BMW Fault Code Description VS-Text**

Temperature sensor cooler outlet, signal

**Component**

Engine Coolant Temperature Sensor

**Subcomponent**

2 Electrical

**Monitoring criteria**

Radiator discharge temperature signal monitor

**Fault debouncing**

No compliance with temperature condition and time after end of start > 120 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

Intake air temperature >= -5.25°C OR if less than -5.25°C, then time after end of start phase > 120 sec.

**Time conditions**

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No compliance with temperature condition and time after end of start >120 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor wire shorted to positive or open circuit in wire

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

Voltage range diagnosis

## DTC P2195: O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C27

**BMW Fault Code (dez)**

11303

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, system check

**Component**

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Oxygen Sensor, Front

**Subcomponent**

Signal Check

**Monitoring criteria**

After trim control fault; sensor indicates more than 18% too lean

**Fault debouncing**

Terminal 15, engine on

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

Approximately 300s after trim control fault

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Sensor contamination, hole in sensor, short circuit to positive or ground

**Repair procedures (plant/service)**

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Check sensor wiring for short circuit; otherwise replace the suspect sensor.

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2196: O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C2B

**BMW Fault Code (dez)**

11307

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, system check

**Component**

Oxygen Sensor, Front

**Subcomponent**

Signal Check

**Monitoring criteria**

After trim control fault; sensor indicates more than 18% too rich

**Fault debouncing**

Terminal 15, engine on

**Terminal conditions**

none

**Voltage conditions**

none

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**Temperature conditions**

Approximately 300s after trim control fault

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Hole in sensor, short circuit to positive or ground

**Repair procedures (plant/service)**

Check sensor wiring for short circuit; otherwise replace the suspect sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2197: O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C28

**BMW Fault Code (dez)**

11304

**BMW Fault Code Description VS-Text**

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Oxygen sensor before catalytic converter 2, system check

**Component**

Oxygen Sensor, Front

**Subcomponent**

Signal Check

**Monitoring criteria**

After trim control fault; sensor indicates more than 18% too lean.

**Fault debouncing**

Terminal 15, engine on

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

Approximately 300s after trim control fault

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

cardiagn.com

Sensor contamination, hole in sensor, short circuit to positive or ground

**Repair procedures (plant/service)**

Check sensor wiring for short circuit; otherwise replace the suspect sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2198: O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C2C

**BMW Fault Code (dez)**

11308

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, system check

**Component**

Oxygen Sensor, Front

**Subcomponent**

Signal Check

**Monitoring criteria**

Oxygen sensor before catalytic converter 2, system check End of start phase O2 sensor drifts toward rich

**Fault debouncing**

After trim control fault; sensor indicates more than 18% too rich

**Terminal conditions**

Terminal 15, engine on

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**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

Approximately 300s after trim control fault

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Hole in sensor, short circuit to positive or ground

**Repair procedures (plant/service)**

Check sensor wiring for short circuit; otherwise replace the suspect sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2228: BAROMETRIC PRESSURE CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2F76

**BMW Fault Code (dez)**

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12150

**BMW Fault Code Description VS-Text**

Ambient-pressure sensor, signal

**Component**

Ambient Pressure Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Ambient pressure sensor signal monitor

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

500 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Short-circuit with respect to ground

**Repair procedures (plant/service)**

Replace DME; this is an internal component

**MIL illumination/CC message/emergency program**

MIL on

**Remarks**

none

## DTC P2229: BAROMETRIC PRESSURE CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2F76

**BMW Fault Code (dez)**

12150

**BMW Fault Code Description VS-Text**

Ambient-pressure sensor, signal

**Component**

Ambient Pressure Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Ambient pressure sensor signal monitor

**Fault debouncing**

0.5 sec.

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**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

500 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive or open circuit

**Repair procedures (plant/service)**

Replace DME; this is an internal component

**MIL illumination/CC message/emergency program**

MIL on

**Remarks**

none

## DTC P2243: O2 SENSOR REFERENCE VOLTAGE CIRCUIT/OPEN (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

cardiagn.com

0x2C3D

**BMW Fault Code (dez)**

11325

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, line fault

**Component**

Oxygen Sensor, Front

**Subcomponent**

Reference Voltage

**Monitoring criteria**

O2 sensor wiring monitor (heater) O2 sensor temperature is too low and the sensor signal is implausible No fault memories

**Fault debouncing**

Sensor temperature < 680°C and sensor voltage < 0.2 V with oscillator deactivated

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 15 sec.

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor not active - Open UN wire

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Inspect wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 1 (water or corrosion in plug?) => Repeatedly disconnect the plug and then FIRMLY press it back in)
4. Replace O2 sensor
5. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2247: O2 SENSOR REFERENCE VOLTAGE CIRCUIT/OPEN (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C3E

**BMW Fault Code (dez)**

11326

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, line fault

**Component**

Oxygen Sensor, Front

**Subcomponent**

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Reference Voltage

**Monitoring criteria**

O2 sensor wiring monitor O2 sensor signal freezes. No fault memories - Drive at 50 - 80 km/h at moderate engine speed

**Fault debouncing**

Voltage seizes at 2 V (Lambda = 1) OR voltage < 2.1 V with overrun injection deactivation active

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

approximately 9s with overrun injection deactivation active

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor inactive Wire VG or IP is open Catalyst is plugged (rich exhaust at O2 sensor in overrun cut-off); oil or gasoline in the exhaust gases during operation in overrun cut-off phase

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Inspect wires

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3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 1 (water or corrosion in plug?) => Repeatedly remove the plug and then reconnect it FIRMLY)
4. Check catalytic converter (is FSD lean fault entered for the other bank?)
5. Piston rings, injectors, positive crankcase ventilation OK? FSD fault? Then continue there!
6. Replace O2 sensor
7. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2270: O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 1 SENSOR 2) (MIN)

**BMW Fault Code (hex)**

0x2C6B

**BMW Fault Code (dez)**

11371

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, system check

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Signal Check

**Monitoring criteria**

O2 sensor system check O2 sensor voltage too high = Signal sticks at rich Trim controller diagnosis must have been executed, see Trim controller diagnosis. Detection of malfunctions during the trim control diagnosis triggers the active test. Engine running at idle is adequate for the active test;

**Fault debouncing**

O2 sensor behind catalytic converter voltage > 0.7 V with lean O2 data specification in active test

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**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

roughly 300 s following completion of trim control diagnosis

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Downstream (post-cat) O2 sensor aged or downstream (post-cat) O2 sensor poisoned or downstream (post-cat) O2 sensor wire defective, pegging trim controller -> Trim controller diagnosis entry -> Activation of active test, entry of fault code #11371

**Repair procedures (plant/service)**

This malfunction is detected during the active test. The active test is triggered by the trim control diagnosis function (trim controller fault code stored in the control module's fault memory!)

1. Initiate system test for reversed O2 sensors. Follow instructions for system test.
2. If the system test fails to produce a result then
3. Visual inspection of wiring and plugs
4. Electrical check of wiring
5. Replace wires or plugs as indicated
6. Check exhaust system upstream from downstream (post-cat) O2 sensor for leaks
7. Replace downstream (post-cat) O2 sensor

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8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P2271: O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 1 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

0x2C6B

**BMW Fault Code (dez)**

11371

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter, system check

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Signal Check

**Monitoring criteria**

O2 sensor system check O2 sensor voltage too low = Signal sticks on lean Trim controller diagnosis must have been executed, see Trim controller diagnosis. Detection of faults during the trim control diagnosis triggers the active test. Engine running at idle is adequate for the active test.

**Fault debouncing**

O2 sensor behind catalytic converter voltage < 0.2 V with rich data specification for active test

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

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none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

roughly 300 s following completion of trim control diagnosis

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Downstream (post-cat) O2 sensor aged or downstream (post-cat) O2 sensor poisoned or downstream (post-cat) O2 sensor wire defective or exhaust system forward of downstream (post-cat) O2 sensor is leaking, pegging trim controller -> Trim controller diagnosis entry -> Activation of active test, entry of fault code #11371

**Repair procedures (plant/service)**

This malfunction is detected during the active test. The active test is triggered by the trim control diagnosis function (trim controller fault code stored in the control module's fault memory!)

1. Initiate system test for reversed O2 sensors. Follow instructions for system test.
2. If the system test fails to produce a result then
3. Visual inspection of wiring and plugs
4. Electrical check of wiring
5. Replace wires or plugs as indicated
6. Check exhaust system upstream from downstream (post-cat) O2 sensor for leaks
7. Replace downstream (post-cat) O2 sensor
8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

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**Remarks**

none

## DTC P2272: O2 SENSOR SIGNAL BIASED/STUCK LEAN (BANK 2 SENSOR 2) (MIN)

**BMW Fault Code (hex)**

0x2C6C

**BMW Fault Code (dez)**

11372

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, system check

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Signal Check

**Monitoring criteria**

O2 sensor system check O2 sensor voltage too high = Signal sticks at rich Trim controller diagnosis must have been executed, see Trim controller diagnosis. Detection of malfunctions during the trim control diagnosis triggers the active test. Engine running at idle is adequate for the active test;

**Fault debouncing**

O2 sensor behind catalytic converter voltage > 0.7 V with lean O2 data specification in active test

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

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roughly 300s following completion of trim control diagnosis

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Downstream (post-cat) O2 sensor aged or downstream (post-cat) O2 sensor poisoned or downstream (post-cat) O2 sensor wire defective, pegging trim controller at limit -> Trim controller diagnosis entry -> Activation of active test, entry of fault code #11372

**Repair procedures (plant/service)**

This malfunction is detected during the active test. The active test is triggered by the trim control diagnosis function (trim controller fault code stored in the control module's fault memory!)

1. Initiate system test for reversed O2 sensors. Follow instructions for system test.
2. If the system test fails to produce a result then
3. Visual inspection of wiring and plugs
4. Electrical check of wiring
5. Replace wires or plugs as indicated
6. Check exhaust system upstream from downstream (post-cat) O2 sensor for leaks
7. Replace downstream (post-cat) O2 sensor
8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P2273: O2 SENSOR SIGNAL BIASED/STUCK RICH (BANK 2 SENSOR 2) (MAX)

**BMW Fault Code (hex)**

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0x2C6C

**BMW Fault Code (dez)**

11372

**BMW Fault Code Description VS-Text**

Oxygen sensor behind catalytic converter 2, system check

**Component**

Oxygen Sensor, Rear

**Subcomponent**

Signal Check

**Monitoring criteria**

O2 sensor system check O2 sensor voltage too low = Signal sticks on lean - Trim controller diagnosis must have been executed, see Trim controller diagnosis. Detection of faults during the trim control diagnosis triggers the active test. Engine running at idle is adequate for the active test;

**Fault debouncing**

O2 sensor behind catalytic converter voltage < 0.2 V with rich data specification for active test

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

roughly 300s following completion of trim control diagnosis

**System test**

O2 sensors reversed

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Downstream (post-cat) O2 sensor aged or downstream (post-cat) O2 sensor poisoned or downstream (post-cat) O2 sensor wire defective or exhaust system forward of cat-back O2 sensor is leaking, pegging trim controller -> Trim controller diagnosis entry -> Activation of active test, entry of fault code #11372

**Repair procedures (plant/service)**

This malfunction is detected during the active test. The active test is triggered by the trim control diagnosis function (trim controller fault code stored in the control module's fault memory!)

1. Initiate system test for reversed O2 sensors. Follow instructions for system test.
2. If the system test fails to produce a result then
3. Visual inspection of wiring and plugs
4. Electrical check of wiring
5. Replace wires or plugs as indicated
6. Check exhaust system upstream from downstream (post-cat) O2 sensor for leaks
7. Replace downstream (post-cat) O2 sensor
8. Replace upstream (pre-cat) O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2297: O2 SENSOR OUT OF RANGE DURING DECELERATION (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C2D

**BMW Fault Code (dez)**

11309

**BMW Fault Code Description VS-Text**

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Oxygen sensor before catalytic converter, overrun check

**Component**

Oxygen Sensor, Front

**Subcomponent**

Deceleration

**Monitoring criteria**

Implausible O2 sensor signal in overrun cutoff phase, no fault memories

**Fault debouncing**

Bank 1 O2 sensor before catalytic converter voltage less than 3.1 V or greater than 2.1 V with overrun injection deactivation active

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine warm (exhaust-gas temperature > 380°C)

**Time conditions**

approximately 9 sec. with overrun cutoff active

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

Catalytic converter obstructed (rich exhaust gas on O2 sensor during overrun cutoff); oil or gasoline in exhaust gas during overrun cutoff; defective wiring; Defective pre-cat O2 sensor;

**Repair procedures (plant/service)**

1. Visual inspection of wiring and plugs (water or corrosion in plug?)
    a. Repeatedly remove the plug and then FIRMLY insert it again
2. Electrical check of wiring
3. Check catalytic converter (FSD lean fault may be entered for the other bank)
4. Piston rings, injector valves, positive crankcase ventilation OK? FSD fault? Then continue there!
5. Replace wires or plugs on O2 sensors as indicated
6. Replace O2 sensor

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2298: O2 SENSOR OUT OF RANGE DURING DECELERATION (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C2E

**BMW Fault Code (dez)**

11310

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, overrun check

**Component**

Oxygen Sensor, Front

**Subcomponent**

Deceleration

**Monitoring criteria**

Implausible O2 sensor signal in overrun cutoff phase, no fault memories

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**Fault debouncing**

Bank 2 O2 sensor before catalytic converter voltage less than 3.1 V or greater than 2.1 V with overrun injection deactivation active

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine warm (exhaust-gas temperature > 380°C)

**Time conditions**

approximately 9 sec. with overrun cutoff active

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Catalytic converter obstructed (rich exhaust gas on O2 sensor during overrun cutoff); oil or gasoline in exhaust gas during overrun cutoff; defective wiring; Defective pre-cat O2 sensor;

**Repair procedures (plant/service)**

1. Visual inspection of wiring and plugs (water or corrosion in plug?)
    a. Repeatedly remove the plug and then FIRMLY insert it again
2. Electrical check of wiring
3. Check catalytic converter (FSD lean fault may be entered for the other bank)
4. Piston rings, injector valves, positive crankcase ventilation OK? FSD fault? Then continue there!
5. Replace wires or plugs on O2 sensors as indicated
6. Replace O2 sensor

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**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2299: BRAKE PEDAL POSITION/ACCELERATOR PEDAL POSITION INCOMPATIBLE (PLAUS)

**BMW Fault Code (hex)**

0x2F8F

**BMW Fault Code (dez)**

12175

**BMW Fault Code Description VS-Text**

Accelerator pedal module and brake pedal, plausibility

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Accelerator pedal module and brake pedal plausibility monitor

**Fault debouncing**

1.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

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none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Continuous simultaneous pressure on accelerator and brake, seizing accelerator pedal

**Repair procedures (plant/service)**

1. Discuss driving habits with customer (driving with both feet)
2. Visual and operational check on PWG

**MIL illumination/CC message/emergency program**

none

**Remarks**

Can lead to substantial reductions in vehicle throttle response

## DTC P2400: EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT/OPEN (SIG)

**BMW Fault Code (hex)**

0x2A13

**BMW Fault Code (dez)**

10771

**BMW Fault Code Description VS-Text**

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DMTL leak diagnosis pump, activation

**Component**

EVAP System

**Subcomponent**

Pump

**Monitoring criteria**

Monitoring of control activation when pump is triggered

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

Open circuit

**Repair procedures (plant/service)**

Check wiring - Repair if defective - If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P2401: EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2A13

**BMW Fault Code (dez)**

10771

**BMW Fault Code Description VS-Text**

DMTL leak diagnosis pump, activation

**Component**

EVAP System

**Subcomponent**

Pump

**Monitoring criteria**

Monitoring of control activation when pump is triggered

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground

**Repair procedures (plant/service)**

Check wiring - Repair if defective - If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P2402: EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2A13

**BMW Fault Code (dez)**

cardiagn.com

10771

**BMW Fault Code Description VS-Text**

DMTL leak diagnosis pump, activation

**Component**

EVAP System

**Subcomponent**

Pump

**Monitoring criteria**

Monitoring of control activation when pump is triggered

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

Short to positive

**Repair procedures (plant/service)**

Check wiring - Repair if defective - If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P240A: EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP HEATER CONTROL CIRCUIT/OPEN (SIG)

**BMW Fault Code (hex)**

0x2A18

**BMW Fault Code (dez)**

10776

**BMW Fault Code Description VS-Text**

DMTL, heater: activation

**Component**

EVAP System

**Subcomponent**

DMTL Heater

**Monitoring criteria**

Control monitoring when DMTL heater is being triggered.

**Fault debouncing**

5 sec.

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring - Repair if defective - If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P240B: EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP HEATER CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

cardiagn.com

0x2A18

**BMW Fault Code (dez)**

10776

**BMW Fault Code Description VS-Text**

DMTL, heater: activation

**Component**

EVAP System

**Subcomponent**

DMTL Heater

**Monitoring criteria**

Control monitoring when DMTL heater is being triggered.

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

DMTL Check

**Signal information**

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none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground

**Repair procedures (plant/service)**

Check wiring - Repair if defective - If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P240C: EVAPORATIVE EMISSION SYSTEM LEAK DETECTION PUMP HEATER CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2A18

**BMW Fault Code (dez)**

10776

**BMW Fault Code Description VS-Text**

DMTL, heater: activation

**Component**

EVAP System

**Subcomponent**

DMTL Heater

**Monitoring criteria**

Control monitoring when DMTL heater is being triggered.

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**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive

**Repair procedures (plant/service)**

Check wiring - Repair if defective - If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

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## DTC P2414: O2 SENSOR EXHAUST SAMPLE ERROR (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C3B

**BMW Fault Code (dez)**

11323

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, not connected

**Component**

Oxygen Sensor, Front

**Subcomponent**

Exhaust Sample Error

**Monitoring criteria**

O2 sensor test O2 sensor indicates lean mixture although engine operates at part or full load

**Fault debouncing**

O2 sensor voltage >4.8 V at part-load (sensor registers air)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

25 sec.

**System test**

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none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

O2 sensor not screwed in

**Repair procedures (plant/service)**

Determine whether sensor is corrected threaded into place - Check exhaust system for leaks - Check the plug-in connection

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P2415: O2 SENSOR EXHAUST SAMPLE ERROR (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C3C

**BMW Fault Code (dez)**

11324

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, not connected

**Component**

Oxygen Sensor, Front

**Subcomponent**

Exhaust Sample Error

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**Monitoring criteria**

O2 sensor test O2 sensor indicates lean mixture although engine operates at part or full load

**Fault debouncing**

O2 sensor voltage >4.8 V at part-load (sensor registers air)

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

25 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

O2 sensor not screwed in

**Repair procedures (plant/service)**

Determine whether sensor is corrected threaded into place Check exhaust system for leaks Check the plug-in connection

**MIL illumination/CC message/emergency program**

MIL ON

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**Remarks**

none

## DTC P2418: EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT/OPEN (SIG)

**BMW Fault Code (hex)**

0x2A12

**BMW Fault Code (dez)**

10770

**BMW Fault Code Description VS-Text**

DMTL solenoid valve, activation

**Component**

EVAP System

**Subcomponent**

Switching Valve

**Monitoring criteria**

Monitoring of control activation when solenoid is triggered

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

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0.5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring - Repair if defective - If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P2419: EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2A12

**BMW Fault Code (dez)**

10770

**BMW Fault Code Description VS-Text**

DMTL solenoid valve, activation

**Component**

EVAP System

cardiagn.com

**Subcomponent**

Switching Valve

**Monitoring criteria**

Monitoring of control activation when solenoid is triggered

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

0.5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to ground

**Repair procedures (plant/service)**

1Check wiring Repair if defective If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

cardiagn.com

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P2420: EVAPORATIVE EMISSION SYSTEM SWITCHING VALVE CONTROL CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2A12

**BMW Fault Code (dez)**

10770

**BMW Fault Code Description VS-Text**

DMTL solenoid valve, activation

**Component**

EVAP System

**Subcomponent**

Switching Valve

**Monitoring criteria**

Monitoring of control activation when solenoid is triggered

**Fault debouncing**

0.5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

0.5 sec.

**System test**

DMTL Check

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short to positive

**Repair procedures (plant/service)**

1Check wiring Repair if defective If wiring is OK proceed to check component

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Installed in US only (initialization version)

## DTC P250A: ENGINE OIL LEVEL SENSOR CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2F9E

**BMW Fault Code (dez)**

12190

**BMW Fault Code Description VS-Text**

Thermal oil-level sensor

**Component**

cardiagn.com

Engine Oil Level Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

No communications with sensor

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective oil sensor (no communications)

**Repair procedures (plant/service)**

cardiagn.com

Wiring harness check/sensor replacement

**MIL illumination/CC message/emergency program**

CC message 182 - suppressed starting with E90 with BN2000

**Remarks**

not used

## DTC P250B: ENGINE OIL LEVEL SENSOR CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2F9E

**BMW Fault Code (dez)**

12190

**BMW Fault Code Description VS-Text**

Thermal oil-level sensor

**Component**

Engine Oil Level Sensor

**Subcomponent**

Plausibility

**Monitoring criteria**

Implausible sensor signal

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Interference in oil sensor signal

**Repair procedures (plant/service)**

Wiring harness check/sensor replacement

**MIL illumination/CC message/emergency program**

CC message 182 - suppressed starting with E90 with BN2000

**Remarks**

not used

## DTC P250F: ENGINE OIL LEVEL TOO LOW (MIN)

**BMW Fault Code (hex)**

0x2F9E

**BMW Fault Code (dez)**

12190

**BMW Fault Code Description VS-Text**

cardiagn.com

Thermal oil-level sensor

**Component**

Engine Oil Level

**Subcomponent**

Level

**Monitoring criteria**

Oil level below 5 liters

**Fault debouncing**

10 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

Oil temperature > 0

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

Oil level too low (substantially below MIN)

**Repair procedures (plant/service)**

Add 1l engine oil

**MIL illumination/CC message/emergency program**

CC message 28

**Remarks**

not used

## DTC P252A: ENGINE OIL QUALITY SENSOR CIRCUIT (MIN)

**BMW Fault Code (hex)**

0x2EC2

**BMW Fault Code (dez)**

11970

**BMW Fault Code Description VS-Text**

LIN bus, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME

**Fault debouncing**

2.4 sec.

**Terminal conditions**

Terminal 15

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**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

none

**Possible Fault Causes**

1. Incident electromagnetic radiation
2. Internal driver chip in DME defective

**Repair procedures (plant/service)**

1. Check routing of wiring and exclude electromagnetic interference problem as possible cause
2. Replace DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P252A: ENGINE OIL QUALITY SENSOR CIRCUIT (PLAUS)

**BMW Fault Code (hex)**

0x2EC2

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**BMW Fault Code (dez)**

11970

**BMW Fault Code Description VS-Text**

LIN bus, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME

**Fault debouncing**

2.4 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

1. Incident electromagnetic radiation
2. Internal driver chip in DME defective

**Repair procedures (plant/service)**

1. Check routing of wiring and exclude electromagnetic interference problem as possible cause
2. Replace DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P252A: ENGINE OIL QUALITY SENSOR CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2EA1

**BMW Fault Code (dez)**

11937

**BMW Fault Code Description VS-Text**

Oil condition sensor, communication

**Component**

Engine Oil Quality Sensor

**Subcomponent**

Electrical

**Monitoring criteria**

Oil status sensor communications monitor

**Fault debouncing**

cardiagn.com

20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

approximately 10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Oil sensor (BSD BUS) not connected
2. Open wire (BSD BUS) between oil sensor and DME
3. Defective oil sensor

**Repair procedures (plant/service)**

1. Check wire (BSD_BUS) connecting oil sensor (QLT) and DME.
2. Check plug-in connection at QLT.
3. Replace QLT

**MIL illumination/CC message/emergency program**

No warning message. No oil level display or oil temperature measurement is possible without the BSD_BUS signal.

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**Remarks**

none

## DTC P252A: ENGINE OIL QUALITY SENSOR CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2EC2

**BMW Fault Code (dez)**

11970

**BMW Fault Code Description VS-Text**

LIN bus, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME

**Fault debouncing**

2.4 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

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none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

none

**Possible Fault Causes**

1. Incident electromagnetic radiation
2. Internal driver chip in DME defective

**Repair procedures (plant/service)**

1. Check routing of wiring and exclude electromagnetic interference problem as possible cause
2. Replace DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P2568: DIRECT OZONE REDUCTION CATALYST TEMPERATURE SENSOR CIRCUIT RANGE/PERFORMANCE (PLAUS)

**BMW Fault Code (hex)**

0x2ADA

**BMW Fault Code (dez)**

10970

**BMW Fault Code Description VS-Text**

EAC sensor, electrical fault

**Component**

cardiagn.com

Direct Ozone Reduction

**Subcomponent**

Catalyst Temperature Sensor

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME

**Fault debouncing**

2.5 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

none

**Possible Fault Causes**

Fault in temperature measurement within sensor

**Repair procedures (plant/service)**

cardiagn.com

Replace EAC sensor

**MIL illumination/CC message/emergency program**

MIL in second driving cycle

**Remarks**

none

## DTC P2569: DIRECT OZONE REDUCTION CATALYST TEMPERATURE SENSOR CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2ADA

**BMW Fault Code (dez)**

10970

**BMW Fault Code Description VS-Text**

EAC sensor, electrical fault

**Component**

Direct Ozone Reduction

**Subcomponent**

Catalyst Temperature Sensor

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME.

**Fault debouncing**

2.5 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

none

**Possible Fault Causes**

Short to ground

**Repair procedures (plant/service)**

Replace EAC sensor

**MIL illumination/CC message/emergency program**

MIL in second driving cycle

**Remarks**

none

## DTC P2570: DIRECT OZONE REDUCTION CATALYST TEMPERATURE SENSOR CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2ADA

**BMW Fault Code (dez)**

10970

**BMW Fault Code Description VS-Text**

cardiagn.com

EAC sensor, electrical fault

**Component**

Direct Ozone Reduction

**Subcomponent**

Catalyst Temperature Sensor

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME.

**Fault debouncing**

2.5 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

none

**Possible Fault Causes**

cardiagn.com

Short to positive

**Repair procedures (plant/service)**

Replace EAC sensor

**MIL illumination/CC message/emergency program**

MIL in second driving cycle

**Remarks**

none

## DTC P2626: O2 SENSOR PUMPING CURRENT TRIM CIRCUIT/OPEN (BANK 1 SENSOR 1) (PLAUS)

**BMW Fault Code (hex)**

0x2C3D

**BMW Fault Code (dez)**

11325

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter, line fault

**Component**

Oxygen Sensor, Front

**Subcomponent**

Pumping Current

**Monitoring criteria**

O2 sensor wire monitoring. Voltage of O2 sensor signal is too high during overrun cut-off phase, overrun injection deactivation.

**Fault debouncing**

Voltage >5.8 V during overrun injection deactivation

**Terminal conditions**

cardiagn.com

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature.

**Time conditions**

approximately 9s with overrun injection deactivation active

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor inactive. Wire IA is open. Catalyst is plugged (rich exhaust at O2 sensor in overrun cut-off); oil or gasoline in the exhaust gases during operation in overrun cut-off phase.

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage
2. Inspect wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 1 (water or corrosion in plug?) => Repeatedly remove the plug and then reconnect it FIRMLY)
4. Check catalytic converter (is FSD lean fault entered for the other bank?)
5. Piston rings, injectors, positive crankcase ventilation OK? FSD fault? Then continue there!
6. Replace O2 sensor
7. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

cardiagn.com

none

## DTC P2629: O2 SENSOR PUMPING CURRENT TRIM CIRCUIT/OPEN (BANK 2 SENSOR 1) (PLAUS)

**BMW Fault Code (hex)**

0x2C3E

**BMW Fault Code (dez)**

11326

**BMW Fault Code Description VS-Text**

Oxygen sensor before catalytic converter 2, line fault

**Component**

Oxygen Sensor, Front

**Subcomponent**

Pumping Current

**Monitoring criteria**

O2 sensor wire monitoring. Voltage of O2 sensor signal is too high during overrun cut-off phase, overrun injection deactivation

**Fault debouncing**

Voltage > 5.8 V during overrun injection deactivation

**Terminal conditions**

Terminal 15, engine on

**Voltage conditions**

none

**Temperature conditions**

Engine at operating temperature

**Time conditions**

cardiagn.com

approximately 9s with overrun injection deactivation active

**System test**

O2 sensors reversed

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Sensor inactive Wire IA is open Catalyst is plugged (rich exhaust at O2 sensor in overrun cut-off); oil or gasoline in the exhaust gases during operation in overrun cut-off phase

**Repair procedures (plant/service)**

1. Visual inspection of wires, DME plug and O2 sensor for damage.
2. Inspect wires
3. Check plug-in connections DME <=> Wiring harness <=> Upstream (pre-cat) O2 sensor for Bank 1 (water or corrosion in plug?) => Repeatedly remove the plug and then reconnect it FIRMLY)
4. Check catalytic converter (is FSD lean fault entered for the other bank?)
5. Piston rings, injectors, positive crankcase ventilation OK? FSD fault? Then continue there!
6. Replace O2 sensor
7. Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P300A: CONTROLLED AIR GUIDING CIRCUIT HIGH (MAX)

**BMW Fault Code (hex)**

0x2F0D

**BMW Fault Code (dez)**

12045

cardiagn.com

**BMW Fault Code Description VS-Text**

Radiator blind, activation, (GLF)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

AKKS must be initialized.

**Fault debouncing**

up to 20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

In the SGBD

**Signal information**

PWM of 5-90%

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

1. Wire from the DME to the AKKS is shorted to UBatt. PVE: Connect wire from DME to AKKS to UBatt.

**Repair procedures (plant/service)**

1. Check wire from the DME to the AKKS.

**MIL illumination/CC message/emergency program**

no external display

**Remarks**

There is no hazard provided that the voltage supply to the AKKS is OK. (Failsafe circuit in the AKKS is active: both flaps remain open.)

## DTC P300B: CONTROLLED AIR GUIDING CIRCUIT LOW (MIN)

**BMW Fault Code (hex)**

0x2F0D

**BMW Fault Code (dez)**

12045

**BMW Fault Code Description VS-Text**

Radiator blind, activation, (GLF)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

AKKS must be initialized.

**Fault debouncing**

up to 20 sec.

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

No info.

**Signal information**

PWM of 5-90%

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Wire from the DME to the AKKS is shorted to ground.
2. No voltage supply to the AKKS. PVE: Ground the wire from the DME to the AKKS.

**Repair procedures (plant/service)**

1. Determine whether a possible self-diagnosis fault at the AKKS or PKKS is stored as an fault in the fault memory. (If yes, start by repairing this.)
2. Check wire from the DME to the AKKS
3. Check voltage supply at the AKKS

**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

There is no hazard provided that the voltage supply to the AKKS is OK. (Failsafe circuit in the AKKS is active: both flaps remain open.)

## DTC P300C: CONTROLLED AIR GUIDING CIRCUIT (SIG)

**BMW Fault Code (hex)**

cardiagn.com

0x2F0D

**BMW Fault Code (dez)**

12045

**BMW Fault Code Description VS-Text**

Radiator blind, activation, (GLF)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

AKKS must be initialized.

**Fault debouncing**

up to 20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

No info.

**Signal information**

cardiagn.com

PWM of 5-90%

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Wire from the DME to the AKKS is open. PVE: Open the wire from the DME to the AKKS.

**Repair procedures (plant/service)**

1. Check wire from the DME to the AKKS.

**MIL illumination/CC message/emergency program**

no external display

**Remarks**

There is no hazard provided that the voltage supply to the AKKS is OK. (Fail-safe circuit in the AKKS is active: both flaps remain open.)

## DTC P3022: O2 SENSOR DISTURBED SPI COMMUNICATION TO WRAF-IC (BANK 1 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C41

**BMW Fault Code (dez)**

11329

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor

**Component**

Oxygen Sensor, Front

**Subcomponent**

ECM Self-Test

**Monitoring criteria**

cardiagn.com

Monitoring of O2 sensor chip. No fault memories.

**Fault debouncing**

Self-diagnosis processor chip: Communications fault with $mUC.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Communication fault between processor chip and microcontroller.

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

cardiagn.com

none

## DTC P3023: O2 SENSOR DISTURBED SPI COMMUNICATION TO WRAF-IC (BANK 2 SENSOR 1) (MIN)

**BMW Fault Code (hex)**

0x2C42

**BMW Fault Code (dez)**

11330

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor 2

**Component**

Oxygen Sensor, Front

**Subcomponent**

ECM Self-Test

**Monitoring criteria**

Monitoring of O2 sensor chip. No fault memories.

**Fault debouncing**

Self-diagnosis processor chip: Communications fault with $mUC.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 5 sec.

cardiagn.com

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Communication fault between processor chip and microcontroller.

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P3024: O2 SENSOR INITIALIZATION ERROR WRAF-IC (BANK 1 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C41

**BMW Fault Code (dez)**

11329

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor

**Component**

Oxygen Sensor, Front

**Subcomponent**

cardiagn.com

ECM Self-Test

**Monitoring criteria**

Monitoring of O2 sensor chip. No fault memories.

**Fault debouncing**

Self-diagnosis processor chip: Communications fault with $mUC

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

approximately 100 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Initialization fault

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

cardiagn.com

MIL ON

**Remarks**

none

## DTC P3025: O2 SENSOR INITIALIZATION ERROR WRAF-IC (BANK 2 SENSOR 1) (MAX)

**BMW Fault Code (hex)**

0x2C42

**BMW Fault Code (dez)**

11330

**BMW Fault Code Description VS-Text**

DME, internal fault: oxygen sensor 2.

**Component**

Oxygen Sensor, Front

**Subcomponent**

ECM Self-Test

**Monitoring criteria**

Monitoring of O2 sensor chip. No fault memories.

**Fault debouncing**

Self-diagnosis processor chip: Communications fault with $mUC

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

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**Time conditions**

approximately 100 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Initialization fault

**Repair procedures (plant/service)**

Replace DME

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC P316A: ENGINE COOLANT TEMPERATURE SIGNAL STUCK HIGH (PLAUS)

**BMW Fault Code (hex)**

0x2EE6

**BMW Fault Code (dez)**

12006

**BMW Fault Code Description VS-Text**

Coolant-temperature sensor, measurement range

**Component**

cardiagn.com

Engine Coolant

**Subcomponent**

Temperature

**Monitoring criteria**

Engine must be running, T_ES > 360 min, UBatt > 11 V, TIA at start between - 10°C and 60°C, TAM_ST > -10°C, cold start

**Fault debouncing**

immediately

**Terminal conditions**

Terminal 15 on and engine running

**Voltage conditions**

Voltage in onboard electrical system > 11 V

**Temperature conditions**

Induction air temperature at start between -10 and 60°C, ambient temperature > -10°C

**Time conditions**

Time parked > 360 min, time after start > 10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Temperature sensor sticks at upper end of temperature range, sensor tampering.

**Repair procedures (plant/service)**

cardiagn.com

1. Visual inspection of sensor and wiring
2. Determine whether coolant temperature really remains constant while the engine warms up
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON, electrical water pump and E fan at full power with engine running

**Remarks**

none

## DTC P3196: COLD START RADIATOR COOLANT TEMPERATURE SENSOR SIGNAL HIGH (MAX)

**BMW Fault Code (hex)**

0x2EEC

**BMW Fault Code (dez)**

12012

**BMW Fault Code Description VS-Text**

Temperature sensor cooler outlet, plausibility

**Component**

Radiator Coolant Temperature Sensor

**Subcomponent**

Cold Start

**Monitoring criteria**

Engine must be running

**Fault debouncing**

no debounce, fault code entered when engine is extremely cold (coolant temperature < -10°C) with excessively high sensor data reading immediately after engine start

**Terminal conditions**

Terminal 15 ON

cardiagn.com

**Voltage conditions**

11 V < electrical system voltage < 26 V

**Temperature conditions**

Coolant temperature < -10°C, induction air temperature < -10°C

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Readings transmitted by temperature sensor too high (coolant temperature_2 > coolant temperature just after start in cold environment): Sticking sensor, sensor manipulation.

**Repair procedures (plant/service)**

1. Visual inspection of sensor
2. Perform electrical check on sensor and power-supply wires
3. Test to determine whether the temperature really changes when the thermostat opens
4. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

temperature condition defined by data entry

## DTC P3197: RADIATOR COOLANT TEMPERATURE GRADIENT TOO HIGH (PLAUS)

**BMW Fault Code (hex)**

cardiagn.com

0x2EEB

**BMW Fault Code (dez)**

12011

**BMW Fault Code Description VS-Text**

Temperature sensor, radiator outlet, plausibility: gradient

**Component**

Radiator Coolant

**Subcomponent**

Temperature

**Monitoring criteria**

Radiator discharge temperature plausibility monitor

**Fault debouncing**

600 msec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

Coolant temperature > -10°C, induction air temperature > -10°C OBD test conditions??

**Time conditions**

10 Min ?? OBD DC?

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Creeping contact resistance or intermittent contact in sensor/power wires

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

none

## DTC P3198: ENGINE COOLANT TEMPERATURE 1 GRADIENT TOO HIGH (PLAUS)

**BMW Fault Code (hex)**

0x2EE3

**BMW Fault Code (dez)**

12003

**BMW Fault Code Description VS-Text**

Coolant temperature sensor, plausibility: gradient

**Component**

Engine Coolant

**Subcomponent**

Temperature

**Monitoring criteria**

cardiagn.com

UBatt > 9.15 V Terminal 15 on

**Fault debouncing**

600 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Creeping contact resistance or intermittent contact in sensor/power wires.

**Repair procedures (plant/service)**

1. Perform electrical check on sensor wire and power-supply wires
2. Visual inspection of plug-in contacts (on component and DME ends)
3. Replace sensor

**MIL illumination/CC message/emergency program**

MIL ON, electrical water pump and E fan at full power with engine running

cardiagn.com

**Remarks**

none

## DTC P3199: ENGINE COOLANT TEMPERATURE SIGNAL STUCK (PLAUS)

**BMW Fault Code (hex)**

0x2EE2

**BMW Fault Code (dez)**

12002

**BMW Fault Code Description VS-Text**

Coolant temperature sensor, plausibility: signal constant

**Component**

Engine Coolant

**Subcomponent**

Temperature

**Monitoring criteria**

Engine must be running

**Fault debouncing**

immediately

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 9.15 V

**Temperature conditions**

Coolant temperature at start < 65°C

**Time conditions**

cardiagn.com

Entry registered when sensor reading remains constant during engine warm-up phase (up to 10 min)

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Temperature sensor seizing, sensor manipulation

**Repair procedures (plant/service)**

1. Visual inspection of sensor
2. Test to determine whether coolant temperature really remains constant as engine warms
3. Sensor replacement

**MIL illumination/CC message/emergency program**

MIL ON, electrical water pump and E fan at full power with engine running.

**Remarks**

Temperature condition defined indirectly by data entry

## DTC P3202: POWERTRAIN CAN, CAN CHIP CUT-OFF (SIG)

**BMW Fault Code (hex)**

0xCD87

**BMW Fault Code (dez)**

52615

**BMW Fault Code Description VS-Text**

PT-CAN communication fault

**Component**

cardiagn.com

Communication

**Subcomponent**

Powertrain

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

cardiagn.com

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P3205: LOCAL CAN, CAN CHIP CUTOFF (SIG)

**BMW Fault Code (hex)**

0xCD8B

**BMW Fault Code (dez)**

52619

**BMW Fault Code Description VS-Text**

PT CAN bus communication fault

**Component**

Communication

**Subcomponent**

Local

**Monitoring criteria**

Terminal 15 on and EKP control module connected to LoCan

**Fault debouncing**

Currently deactivated

**Terminal conditions**

none

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Short circuit in CAN bus

**Repair procedures (plant/service)**

1. Check CAN wires
2. Check plugs to all CAN stations

**MIL illumination/CC message/emergency program**

none

**Remarks**

CAN BUS OFF

## DTC P321E: AMBIENT PRESSURE SENSOR MAXIMUM PRESSURE IMPLAUSIBLE (MAX)

**BMW Fault Code (hex)**

0x2F77

**BMW Fault Code (dez)**

12151

**BMW Fault Code Description VS-Text**

cardiagn.com

Ambient-pressure sensor, plausibility

**Component**

Ambient Pressure Sensor

**Subcomponent**

Pressure

**Monitoring criteria**

Ambient pressure sensor monitor

**Fault debouncing**

Because an excessively steep ambient pressure gradient must be detected, no precise statements regarding debounce time are possible.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

cardiagn.com

ambient pressure rises too rapidly

**Repair procedures (plant/service)**

1. Plausibility check on barometric pressure (data range and sensor travel during mountain ascent and descent)
2. Replace DME only if barometric pressure data are implausible (internal component)

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

none

## DTC P321F: AMBIENT PRESSURE SENSOR MINIMUM PRESSURE IMPLAUSIBLE (MIN)

**BMW Fault Code (hex)**

0x2F77

**BMW Fault Code (dez)**

12151

**BMW Fault Code Description VS-Text**

Ambient-pressure sensor, plausibility

**Component**

Ambient Pressure Sensor

**Subcomponent**

Pressure

**Monitoring criteria**

Ambient pressure sensor monitor

**Fault debouncing**

Because an excessively steep ambient pressure gradient must be detected, no precise statements regarding debounce time are possible.

**Terminal conditions**

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Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

excessively rapid decline in ambient pressure

**Repair procedures (plant/service)**

1. Plausibility check on barometric pressure (data range and sensor travel during mountain ascent and descent)
2. Replace DME only if barometric pressure data are implausible (internal component)

**MIL illumination/CC message/emergency program**

MIL ON in US versions only

**Remarks**

none

## DTC P3223: GENERATOR MECHANICAL (PLAUS)

**BMW Fault Code (hex)**

cardiagn.com

0x2E97

**BMW Fault Code (dez)**

11927

**BMW Fault Code Description VS-Text**

Generator

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Mech. fault

**Fault debouncing**

Commercial vehicle >350 rpm, No communications fault

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

25 sec.

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Alternator fails to turn => bearing damage, belt torn

**Repair procedures (plant/service)**

Check bearings, replace belt

**MIL illumination/CC message/emergency program**

Charge indicator lamp

**Remarks**

Can occur during vehicle servicing when external power source is connected, etc.

## DTC P3226: E-BOX CONTROL CIRCUIT FAN HIGH INPUT (MAX)

**BMW Fault Code (hex)**

0x2F71

**BMW Fault Code (dez)**

12145

**BMW Fault Code Description VS-Text**

Electronics-box fan, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

E-module fan activation-control monitor. Component must be installed. Tester must be used to trigger component for at least 15 sec.

cardiagn.com

**Fault debouncing**

2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Wire is shorted to positive, or a short to positive is present in the component

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK proceed to check component.

**MIL illumination/CC message/emergency program**

No display

**Remarks**

none

cardiagn.com

## DTC P3227: E-BOX CONTROL CIRCUIT FAN LOW INPUT (MIN)

**BMW Fault Code (hex)**

0x2F71

**BMW Fault Code (dez)**

12145

**BMW Fault Code Description VS-Text**

Electronics-box fan, activation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

E-module fan activation-control monitor. Component must be installed. Tester must be used to trigger component for at least 15 sec.

**Fault debouncing**

2 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Short circuit to ground in wire or component.

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK proceed to check component.

**MIL illumination/CC message/emergency program**

No display

**Remarks**

none

## DTC P3228: E-BOX CONTROL CIRCUIT FAN OPEN CIRCUIT (SIG)

**BMW Fault Code (hex)**

0x2F71

**BMW Fault Code (dez)**

12145

**BMW Fault Code Description VS-Text**

Electronics-box fan, activation

**Component**

No Info

**Subcomponent**

No Info

cardiagn.com

**Monitoring criteria**

E-module fan activation-control monitor. Component must be installed. Tester must be used to trigger component for at least 15 sec.

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Open circuit

**Repair procedures (plant/service)**

Check wiring. Repair if defective. If wiring is OK proceed to check component.

**MIL illumination/CC message/emergency program**

No display

cardiagn.com

**Remarks**

none

## DTC P3235: CONTROL MODULE MONITORING VERSION CODING PLAUSIBILITY (PLAUS)

**BMW Fault Code (hex)**

0x2FA4

**BMW Fault Code (dez)**

12196

**BMW Fault Code Description VS-Text**

Incorrect data record

**Component**

ECM Monitoring

**Subcomponent**

Coding

**Monitoring criteria**

Always active

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

cardiagn.com

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Incorrect data set in DME or incorrect code entered in DME

**Repair procedures (plant/service)**

Data programming, of fault remains active re-enter DME code, if then still active replace the DME.

**MIL illumination/CC message/emergency program**

Reduced output

**Remarks**

OL/UL code: Codes for CAS and/or code in data set and/or DME code do not match.

## DTC P324A: GENERATOR TYPE IMPLAUSIBLE (MAX)

**BMW Fault Code (hex)**

0x2ED3

**BMW Fault Code (dez)**

11987

**BMW Fault Code Description VS-Text**

Generator, type incorrect

**Component**

No Info

cardiagn.com

**Subcomponent**

No Info

**Monitoring criteria**

Commercial vehicle > 350 rpm, No communications fault

**Fault debouncing**

25 sec.

**Terminal conditions**

Terminal 15 ON, no BSD fault

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Alternator not approved for use in this vehicle installed

**Repair procedures (plant/service)**

Install alternator with approved detail number

**MIL illumination/CC message/emergency program**

cardiagn.com

none

**Remarks**

If detail number is identical to approved number, information through VS to EA

## DTC P324A: GENERATOR TYPE IMPLAUSIBLE (MIN)

**BMW Fault Code (hex)**

0x2E97

**BMW Fault Code (dez)**

11927

**BMW Fault Code Description VS-Text**

Generator

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Implausible alternator version

**Fault debouncing**

Commercial vehicle >350 rpm, No communications fault

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

cardiagn.com

**Time conditions**

25 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Alternator not approved for use in this vehicle installed

**Repair procedures (plant/service)**

Install alternator with approved detail number

**MIL illumination/CC message/emergency program**

none

**Remarks**

If detail number is identical to approved number, information through VS to EA

## DTC P324C: GENERATOR OVER TEMPERATURE CALCULATED (MAX)

**BMW Fault Code (hex)**

0x2ED0

**BMW Fault Code (dez)**

11984

**BMW Fault Code Description VS-Text**

Generator, plausibility: temperature

**Component**

cardiagn.com

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Diagnosis not active, specific to application

**Fault debouncing**

Never, diagnosis not active

**Terminal conditions**

Terminal 15 ON, no BSD fault

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Alternator airflow obstructed. Thermal overload from unfavorable driving profile possible.

**Repair procedures (plant/service)**

cardiagn.com

Inspect alternator for unobstructed air current.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC P324C: GENERATOR OVER TEMPERATURE CALCULATED (MAX)

**BMW Fault Code (hex)**

0x2ED1

**BMW Fault Code (dez)**

11985

**BMW Fault Code Description VS-Text**

Generator, mechanical

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Commercial vehicle >350 rpm, No communications fault.

**Fault debouncing**

25 sec.

**Terminal conditions**

Terminal 15 ON, no BSD fault

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Alternator fails to turn; bearing defect, belt slips or ruptures

**Repair procedures (plant/service)**

Check alternator shaft for resistance to motion, replace belt

**MIL illumination/CC message/emergency program**

Charge indicator lamp

**Remarks**

Can occur during vehicle servicing when external power source is connected, etc.

## DTC P324E: GENERATOR REGULATOR TYPE IMPLAUSIBLE (MAX)

**BMW Fault Code (hex)**

0x2ED2

**BMW Fault Code (dez)**

11986

**BMW Fault Code Description VS-Text**

cardiagn.com

Generator, regulator incorrect

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

25 sec.

**Terminal conditions**

Terminal 15 ON, no BSD fault

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

cardiagn.com

Installed regulator was not approved for this vehicle/this alternator.

**Repair procedures (plant/service)**

Install regulator with approved detail number

**MIL illumination/CC message/emergency program**

none

**Remarks**

If detail number is identical to approved number, information through VS to EA

## DTC P3255: GENERATOR VOLTAGE IN STARTING PHASE ABOVE THRESHOLD (MAX)

**BMW Fault Code (hex)**

0x2E96

**BMW Fault Code (dez)**

11926

**BMW Fault Code Description VS-Text**

Generator, under-excitation

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Commercial vehicle > 350 rpm, alternator underexcitation requested

**Fault debouncing**

Never, diagnosis not active

**Terminal conditions**

Terminal 15 ON

cardiagn.com

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

Communications fault on BSD bus while PM is requesting alternator underexcitation.

1. Alternator (BSD-BUS) not connected
2. Open wire (BSD-BUS) between alternator and DME
3. Alternator defect

**Repair procedures (plant/service)**

1. Check wire (BSD_BUS) connecting alternator and DME.
2. Check plug-in connection at alternator.
3. Replace alternator.

**MIL illumination/CC message/emergency program**

MIL relevance not yet defined

**Remarks**

none

## DTC P325A: GENERATOR ELECTRICAL ERROR CALCULATED (MAX)

cardiagn.com

**BMW Fault Code (hex)**

0x2ECE

**BMW Fault Code (dez)**

11982

**BMW Fault Code Description VS-Text**

Generator, plausibility: electric

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Specified alternator voltage > Application threshold 1 AND battery voltage < Application threshold 2; no electrical, mechanical or overheating faults, no active excitation current

**Fault debouncing**

Never, diagnosis not active

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

cardiagn.com

**Signal information**

none

**Calculated value Y/N**

Y

**Possible Fault Causes**

B+ - Wire: Open or high contact resistance; Alternator defect. Battery defect.

**Repair procedures (plant/service)**

Repair B+ wire Check alternator, repair as indicated Check battery, repair as indicated

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U0101: LOST COMMUNICATION WITH TCM (SIG)

**BMW Fault Code (hex)**

0x2DC8

**BMW Fault Code (dez)**

11720

**BMW Fault Code Description VS-Text**

No message from EGS, EGS 1

**Component**

Communication

**Subcomponent**

TCM

**Monitoring criteria**

cardiagn.com

EGS detected

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

Timeout on EGS message

**Repair procedures (plant/service)**

Check CAN link to EGS control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

cardiagn.com

none

## DTC U0126: LOST COMMUNICATION WITH STEERING ANGLE SENSOR MODULE (SIG)

**BMW Fault Code (hex)**

0x2DD2

**BMW Fault Code (dez)**

11730

**BMW Fault Code Description VS-Text**

No message from SAS control module, SAS

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. No short circuit on the PT CAN
3. LWS1 message initialized

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

cardiagn.com

400 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

No reception of CAN message LWS1 possible.

**Repair procedures (plant/service)**

Check CAN link between LWS and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

LWS1-CAN message timeout

## DTC U0137: LOST COMMUNICATION WITH TRAILER BRAKE CONTROL MODULE (SIG)

**BMW Fault Code (hex)**

0xCDAF

**BMW Fault Code (dez)**

52655

**BMW Fault Code Description VS-Text**

Message (status, trailer, 2E4)

**Component**

No Info

cardiagn.com

**Subcomponent**

No Info

**Monitoring criteria**

Trailer module recognized

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between trailer module and DME

**MIL illumination/CC message/emergency program**

cardiagn.com

none

**Remarks**

Timeout on CAN message

## DTC U0155: LOST COMMUNICATION WITH INSTRUMENT PANEL CLUSTER (IPC) CONTROL MODULE (SIG)

**BMW Fault Code (hex)**

0x2DE3

**BMW Fault Code (dez)**

11747

**BMW Fault Code Description VS-Text**

No message from instrument cluster, instrument cluster 7

**Component**

Communication

**Subcomponent**

Instrument Pack

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. No short circuit on the PT CAN
3. INSTR7 message initialized

**Fault debouncing**

500 sec.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

cardiagn.com

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check instrument cluster/CAN link to instrument cluster control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout message 'INSTR_7 '

## DTC U0167: LOST COMMUNICATION WITH VEHICLE IMMOBILIZER CONTROL MODULE (SIG)

**BMW Fault Code (hex)**

0x2F4C

**BMW Fault Code (dez)**

12108

**BMW Fault Code Description VS-Text**

Message EWS-DME incorrect

cardiagn.com

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EWS code request

**Fault debouncing**

2

**Terminal conditions**

Terminal 15 on without running engine

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

CAN bus telegrams

**Calculated value Y/N**

N

**Possible Fault Causes**

Messages are not received

**Repair procedures (plant/service)**

cardiagn.com

Problem diagnosis through CAS and/or gateway.

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1100: LOST COMMUNICATION WITH ASC/DSC (SIG)

**BMW Fault Code (hex)**

0x2DCC

**BMW Fault Code (dez)**

11724

**BMW Fault Code Description VS-Text**

No message from ASC/DSC, ASC 1

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. No short circuit on the PT CAN
3. ASR_1 Message initialized

**Fault debouncing**

0.8 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

cardiagn.com

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

400 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

No reception of CAN message ASC1 possible.

**Repair procedures (plant/service)**

Check CAN link between DSC and DME.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on ASC1 CAN message

## DTC U1100: LOST COMMUNICATION WITH ASC/DSC (SIG)

**BMW Fault Code (hex)**

0x2DCD

**BMW Fault Code (dez)**

11725

cardiagn.com

**BMW Fault Code Description VS-Text**

No message from ASC/DSC, ASC 3

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. No short circuit on the PT CAN
3. ASR_3 Message initialized

**Fault debouncing**

0.8 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

400 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

N

**Possible Fault Causes**

No reception of CAN message ASC3 possible.

**Repair procedures (plant/service)**

Check CAN link between DSC and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on ASC3 CAN message

## DTC U1100: LOST COMMUNICATION WITH ASC/DSC (SIG)

**BMW Fault Code (hex)**

0x2DCE

**BMW Fault Code (dez)**

11726

**BMW Fault Code Description VS-Text**

No message from ASC/DSC, ASC 4

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. No short circuit on the PT CAN
3. ASR_4 Message initialized

**Fault debouncing**

cardiagn.com

0.8 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

400 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

No reception of CAN message ASC4 possible.

**Repair procedures (plant/service)**

Check CAN link between DSC and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on ASC4 CAN message

## DTC U1101: LOST COMMUNICATION WITH AMBIENT TEMPERATURE/RELATIVE TIME (SIG)

cardiagn.com

**BMW Fault Code (hex)**

0xCD94

**BMW Fault Code (dez)**

52628

**BMW Fault Code Description VS-Text**

Message (outside temperature/relative time, 310)

**Component**

Communication

**Subcomponent**

Ambient Temperature/Relative Time

**Monitoring criteria**

Instrument cluster recognized

**Fault debouncing**

20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN links between instrument cluster and DME.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1102: MESSAGE MONITORING ACTUATION CRUISE CONTROL/ACC ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCD95

**BMW Fault Code (dez)**

52629

**BMW Fault Code Description VS-Text**

Message (operation, vehicle-speed controller/ACC, 194)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Cruise control lever recognized

cardiagn.com

**Fault debouncing**

1000 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check SZL control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect alive counter transmission from SZL

cardiagn.com

## DTC U1103: LOST COMMUNICATION WITH ACTUATION CRUISE CONTROL/ACC (SIG)

**BMW Fault Code (hex)**

0xCD95

**BMW Fault Code (dez)**

52629

**BMW Fault Code Description VS-Text**

Message (operation, vehicle-speed controller/ACC, 194)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Cruise control lever recognized

**Fault debouncing**

1000 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between SZL and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1104: MESSAGE MONITORING ACTUATION CRUISE CONTROL/ACC CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCD95

**BMW Fault Code (dez)**

52629

**BMW Fault Code Description VS-Text**

Message (operation, vehicle-speed controller/ACC, 194)

**Component**

No Info

**Subcomponent**

No Info

cardiagn.com

**Monitoring criteria**

Cruise control lever recognized

**Fault debouncing**

1000 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check SZL control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

cardiagn.com

Incorrect check sum transmitted by SZL

## DTC U1105: MESSAGE MONITORING TORQUE REQUEST ACC ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCD96

**BMW Fault Code (dez)**

52630

**BMW Fault Code Description VS-Text**

Message (torque request ACC, B7)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

ACC recognized

**Fault debouncing**

80 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

cardiagn.com

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check ACC control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect alive counter transmission from ACC.

## DTC U1106: LOST COMMUNICATION WITH TORQUE REQUEST ACC (SIG)

**BMW Fault Code (hex)**

0xCD96

**BMW Fault Code (dez)**

52630

**BMW Fault Code Description VS-Text**

Message (torque request ACC, B7)

**Component**

No Info

**Subcomponent**

cardiagn.com

No Info

**Monitoring criteria**

ACC recognized

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between ACC and DME

**MIL illumination/CC message/emergency program**

cardiagn.com

none

**Remarks**

Timeout on CAN message

## DTC U1107: MESSAGE MONITORING TORQUE REQUEST ACC CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCD96

**BMW Fault Code (dez)**

52630

**BMW Fault Code Description VS-Text**

Message (torque request ACC, B7)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

ACC recognized

**Fault debouncing**

80 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

cardiagn.com

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check ACC control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect check sum transmitted by ACC

## DTC U1108: MESSAGE MONITORING TORQUE REQUEST STEERING ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCD97

**BMW Fault Code (dez)**

52631

**BMW Fault Code Description VS-Text**

Message (torque request AFS, B9)

**Component**

cardiagn.com

No Info

**Subcomponent**

No Info

**Monitoring criteria**

AFS recognized

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message.

**Repair procedures (plant/service)**

cardiagn.com

Check AFS control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect alive counter transmission from AFS

## DTC U1108: MESSAGE MONITORING TORQUE REQUEST STEERING ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCDB3

**BMW Fault Code (dez)**

52659

**BMW Fault Code Description VS-Text**

Message (torque request, steering, B1h)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EHB3 recognized

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

cardiagn.com

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check EHB3 control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Alive counter transmission fault in message from EHB3

## DTC U1109: LOST COMMUNICATION WITH TORQUE REQUEST STEERING (SIG)

**BMW Fault Code (hex)**

0xCD97

**BMW Fault Code (dez)**

52631

**BMW Fault Code Description VS-Text**

cardiagn.com

Message (torque request AFS, B9)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

AFS recognized

**Fault debouncing**

800 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

cardiagn.com

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between AFS and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1109: LOST COMMUNICATION WITH TORQUE REQUEST STEERING (SIG)

**BMW Fault Code (hex)**

0xCDB3

**BMW Fault Code (dez)**

52659

**BMW Fault Code Description VS-Text**

Message (torque request, steering, B1h)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EHB3 recognized

**Fault debouncing**

800 ms

**Terminal conditions**

Terminal 15 ON

cardiagn.com

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between EHB3 and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U110A: MESSAGE MONITORING TORQUE REQUEST STEERING CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCD97

**BMW Fault Code (dez)**

cardiagn.com

52631

**BMW Fault Code Description VS-Text**

Message (torque request AFS, B9)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

AFS recognized

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check AFS control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect check sum transmitted by AFS

## DTC U110A: MESSAGE MONITORING TORQUE REQUEST STEERING CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCDB3

**BMW Fault Code (dez)**

52659

**BMW Fault Code Description VS-Text**

Message (torque request, steering, B1h)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EHB3 recognized

**Fault debouncing**

400 ms

cardiagn.com

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check EHB3 control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

EHB3 has transmitted incorrect checksum

## DTC U110B: MESSAGE MONITORING TORQUE REQUEST DSC ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

cardiagn.com

0xCD98

**BMW Fault Code (dez)**

52632

**BMW Fault Code Description VS-Text**

Message (torque request DSC, B6)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check DSC control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect DSC alive counter transmission

## DTC U110C: LOST COMMUNICATION WITH TORQUE REQUEST DSC (SIG)

**BMW Fault Code (hex)**

0xCD98

**BMW Fault Code (dez)**

52632

**BMW Fault Code Description VS-Text**

Message (torque request DSC, B6)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

cardiagn.com

**Fault debouncing**

800 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between DSC and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

cardiagn.com

## DTC U110D: MESSAGE MONITORING TORQUE REQUEST DSC CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCD98

**BMW Fault Code (dez)**

52632

**BMW Fault Code Description VS-Text**

Message (torque request DSC, B6)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check DSC control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect check sum transmission from DSC

## DTC U110E: MESSAGE MONITORING TORQUE REQUEST ETC ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCD99

**BMW Fault Code (dez)**

52633

**BMW Fault Code Description VS-Text**

Message (torque request EGS, B5)

**Component**

Communication

**Subcomponent**

Torque Request AT

cardiagn.com

**Monitoring criteria**

EGS detected

**Fault debouncing**

200 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check EGS and replace as indicated (fault in EGS control module).

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

cardiagn.com

Incorrect alive counter transmission from EGS

## DTC U110E: MESSAGE MONITORING TORQUE REQUEST ETC ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCDB8

**BMW Fault Code (dez)**

52664

**BMW Fault Code Description VS-Text**

not translated

**Component**

Communication

**Subcomponent**

Torque Request AT

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

cardiagn.com

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U110F: LOST COMMUNICATION WITH TORQUE REQUEST ETC (SIG)

**BMW Fault Code (hex)**

0xCD99

**BMW Fault Code (dez)**

52633

**BMW Fault Code Description VS-Text**

Message (torque request EGS, B5)

**Component**

Communication

**Subcomponent**

cardiagn.com

Torque Request AT

**Monitoring criteria**

EGS detected

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check EGS/CAN link to EGS control module

**MIL illumination/CC message/emergency program**

cardiagn.com

MIL ON

**Remarks**

Timeout on EGS message

## DTC U110F: LOST COMMUNICATION WITH TORQUE REQUEST ETC (SIG)

**BMW Fault Code (hex)**

0xCDB8

**BMW Fault Code (dez)**

52664

**BMW Fault Code Description VS-Text**

not translated

**Component**

Communication

**Subcomponent**

Torque Request AT

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

cardiagn.com

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (MIN)

**BMW Fault Code (hex)**

0xCDB9

**BMW Fault Code (dez)**

52665

**BMW Fault Code Description VS-Text**

Message (status EMF, 201)

**Component**

cardiagn.com

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Message 'STATUS_EMF ' recognized

**Fault debouncing**

2.2 sec.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

cardiagn.com

Check EHB3 and replace as indicated (fault in EHB3 control module)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Alive counter fault in transmission from EHB control module

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (MIN)

**BMW Fault Code (hex)**

0xCDBA

**BMW Fault Code (dez)**

52666

**BMW Fault Code Description VS-Text**

Message (positioning request EMF, 1A7)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Message 'STAT_ZV_KLAPPEN ' recognized

**Fault debouncing**

11 sec.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

cardiagn.com

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check EHB3 and replace as indicated (fault in EHB3 control module)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Alive counter fault in transmission from EHB control module

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCD99

**BMW Fault Code (dez)**

52633

**BMW Fault Code Description VS-Text**

cardiagn.com

Message (torque request EGS, B5)

**Component**

Communication

**Subcomponent**

Torque Request AT

**Monitoring criteria**

EGS detected

**Fault debouncing**

200 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

cardiagn.com

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check EGS and replace as indicated (fault in EGS control module)

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

Incorrect check sum transmission from EGS

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCDB8

**BMW Fault Code (dez)**

52664

**BMW Fault Code Description VS-Text**

not translated

**Component**

Communication

**Subcomponent**

Torque Request AT

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

cardiagn.com

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCDB9

**BMW Fault Code (dez)**

cardiagn.com

52665

**BMW Fault Code Description VS-Text**

Message (status EMF, 201)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Message 'STATUS_EMF ' recognized

**Fault debouncing**

2.2 sec.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check EHB3 and replace as indicated (fault in EHB3 control module)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Checksum from EHB control module not transmitted correctly

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCDBA

**BMW Fault Code (dez)**

52666

**BMW Fault Code Description VS-Text**

Message (positioning request EMF, 1A7)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Message 'STAT_ZV_KLAPPEN ' recognized

**Fault debouncing**

11 sec.

cardiagn.com

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check EHB3 and replace as indicated (fault in EHB3 control module)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Checksum from EHB control module not transmitted correctly

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (SIG)

**BMW Fault Code (hex)**

cardiagn.com

0xCDB9

**BMW Fault Code (dez)**

52665

**BMW Fault Code Description VS-Text**

Message (status EMF, 201)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Message 'STATUS_EMF ' recognized

**Fault debouncing**

2.2 sec.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check EHB3 or CAN link to EHB3 control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout message 'STATUS_EMF '

## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (SIG)

**BMW Fault Code (hex)**

0xCDBA

**BMW Fault Code (dez)**

52666

**BMW Fault Code Description VS-Text**

Message (positioning request EMF, 1A7)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Message 'STAT_ZV_KLAPPEN ' recognized

cardiagn.com

**Fault debouncing**

11 sec.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check EHB3 or CAN link to EHB3 control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout message 'EMF control request'

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## DTC U1110: MESSAGE MONITORING TORQUE REQUEST ETC CHECK SUM ERROR (SIG)

**BMW Fault Code (hex)**

0xCDBE

**BMW Fault Code (dez)**

52670

**BMW Fault Code Description VS-Text**

not translated

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1114: MESSAGE MONITORING VEHICLE MODE STATUS ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCD9B

**BMW Fault Code (dez)**

52635

**BMW Fault Code Description VS-Text**

Message (vehicle mode, 315)

**Component**

No Info

**Subcomponent**

No Info

cardiagn.com

**Monitoring criteria**

Sport switch recognized

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check SZM control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

cardiagn.com

Alive counter from SZM transmitted incorrectly.

## DTC U1115: LOST COMMUNICATION WITH VEHICLE MODE STATUS (SIG)

**BMW Fault Code (hex)**

0xCD9B

**BMW Fault Code (dez)**

52635

**BMW Fault Code Description VS-Text**

Message (vehicle mode, 315)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Sport switch recognized

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

cardiagn.com

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between SZM and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1116: MESSAGE MONITORING VEHICLE MODE STATUS CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCD9B

**BMW Fault Code (dez)**

52635

**BMW Fault Code Description VS-Text**

Message (vehicle mode, 315)

**Component**

No Info

**Subcomponent**

cardiagn.com

No Info

**Monitoring criteria**

Sport switch recognized

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check SZM control module

**MIL illumination/CC message/emergency program**

cardiagn.com

none

**Remarks**

SZM has transmitted incorrect check sum

## DTC U1118: LOST COMMUNICATION WITH SPEED (SIG)

**BMW Fault Code (hex)**

0xCD9C

**BMW Fault Code (dez)**

52636

**BMW Fault Code Description VS-Text**

Message (speed, 1A0)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

800 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between DSC and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U111A: LOST COMMUNICATION WITH TRANSMISSION DATA (SIG)

**BMW Fault Code (hex)**

0xCD9D

**BMW Fault Code (dez)**

52637

**BMW Fault Code Description VS-Text**

Message (transmission data, BA)

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

EGS/SMG recognized

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Timeout on transmission data message

**Repair procedures (plant/service)**

cardiagn.com

Check EGS/SMG control module and CAN links

**MIL illumination/CC message/emergency program**

MIL ON

**Remarks**

none

## DTC U111B: LOST COMMUNICATION WITH TRANSMISSION DATA2 (SIG)

**BMW Fault Code (hex)**

0xCD9E

**BMW Fault Code (dez)**

52638

**BMW Fault Code Description VS-Text**

Message (transmission data 2, 1A2)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EGS detected

**Fault debouncing**

800 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check EGS and/or CAN link to EGS control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on EGS message

## DTC U111C: LOST COMMUNICATION WITH MILEAGE/RANGE (SIG)

**BMW Fault Code (hex)**

0xCD9F

**BMW Fault Code (dez)**

52639

**BMW Fault Code Description VS-Text**

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Message (mileage/range, 330)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Instrument cluster recognized

**Fault debouncing**

120 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

cardiagn.com

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN links between instrument cluster and DME.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U111D: MESSAGE MONITORING TERMINAL STATUS ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCDA0

**BMW Fault Code (dez)**

52640

**BMW Fault Code Description VS-Text**

Message (terminal status, 130)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

100 ms

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check CAS and replace as indicated (fault in CAS control module)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect alive counter transmission from CAS

## DTC U111E: LOST COMMUNICATION WITH TERMINAL STATUS (SIG)

**BMW Fault Code (hex)**

0xCDA0

**BMW Fault Code (dez)**

cardiagn.com

52640

**BMW Fault Code Description VS-Text**

Message (terminal status, 130)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

200 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

cardiagn.com

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAS and/or CAN link to CAS control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAS terminal status message

## DTC U111F: MESSAGE MONITORING TERMINAL STATUS CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCDA0

**BMW Fault Code (dez)**

52640

**BMW Fault Code Description VS-Text**

Message (terminal status, 130)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

100 ms

cardiagn.com

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect checksum in CAN message

**Repair procedures (plant/service)**

Check CAS and replace as indicated (fault in CAS control module)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect checksum transmitted by CAS

## DTC U1120: LOST COMMUNICATION WITH STEERING WHEEL ANGLE (SIG)

**BMW Fault Code (hex)**

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0xCDA1

**BMW Fault Code (dez)**

52641

**BMW Fault Code Description VS-Text**

Message (steering wheel angle, C4)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Steering wheel angle message recognized at least once

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

cardiagn.com

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between DSC and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1121: LOST COMMUNICATION WITH POWER MANAGEMENT BATTERY VOLTAGE (SIG)

**BMW Fault Code (hex)**

0xCDA2

**BMW Fault Code (dez)**

52642

**BMW Fault Code Description VS-Text**

Message (power management, battery voltage, 3B4)

**Component**

Communication

**Subcomponent**

Powermanagement

**Monitoring criteria**

Vehicle version is E65

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**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between power module and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

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## DTC U1122: LOST COMMUNICATION WITH POWER MANAGEMENT CHARGE VOLTAGE (SIG)

**BMW Fault Code (hex)**

0xCDA3

**BMW Fault Code (dez)**

52643

**BMW Fault Code Description VS-Text**

Message (power management, charging voltage, 334)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Vehicle version is E65

**Fault debouncing**

20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between power module and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1123: MESSAGE MONITORING ARS-MODULE STATUS ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCDA4

**BMW Fault Code (dez)**

52644

**BMW Fault Code Description VS-Text**

Message (status ARS module, 1AC)

**Component**

No Info

**Subcomponent**

No Info

cardiagn.com

**Monitoring criteria**

ARS recognized

**Fault debouncing**

400 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message

**Repair procedures (plant/service)**

Check ARS control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

cardiagn.com

Incorrect alive counter transmission from ARS

## DTC U1124: LOST COMMUNICATION WITH ARS-MODULE STATUS (SIG)

**BMW Fault Code (hex)**

0xCDA4

**BMW Fault Code (dez)**

52644

**BMW Fault Code Description VS-Text**

Message (status ARS module, 1AC)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

ARS recognized

**Fault debouncing**

800 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between ARS and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1126: LOST COMMUNICATION WITH DSC STATUS (SIG)

**BMW Fault Code (hex)**

0xCDA5

**BMW Fault Code (dez)**

52645

**BMW Fault Code Description VS-Text**

Message (status DSC, 19E)

**Component**

No Info

**Subcomponent**

cardiagn.com

No Info

**Monitoring criteria**

Always active

**Fault debouncing**

800 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between DSC and DME

**MIL illumination/CC message/emergency program**

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none

**Remarks**

Timeout on CAN message

## DTC U1128: LOST COMMUNICATION WITH EKP (ELECTRICAL FUEL PUMP) STATUS (SIG)

**BMW Fault Code (hex)**

0xCDA6

**BMW Fault Code (dez)**

52646

**BMW Fault Code Description VS-Text**

Message (status el. fuel pump, 335)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EKP recognized

**Fault debouncing**

40 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between EKP and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1129: LOST COMMUNICATION WITH REVERSE STATUS (SIG)

**BMW Fault Code (hex)**

0xCDA7

**BMW Fault Code (dez)**

52647

**BMW Fault Code Description VS-Text**

Message (status, reverse gear, 3B0)

**Component**

cardiagn.com

No Info

**Subcomponent**

No Info

**Monitoring criteria**

'Reverse gear status' recognized at least once

**Fault debouncing**

40 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

1. With manual transmission: Not possible to receive CAN message.
2. With automatic/SMG: Light module periodically transmits 'Reverse gear status' (owing to incorrect code entry, etc.)

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**Repair procedures (plant/service)**

1. With manual transmission: Check CAN link between light module and DME.
2. With automatic/SMG: Check code entry in light module, delete version in DME and re-initialize (Terminal 15 switch)

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message or (temporary) incorrect light module code entry

## DTC U112A: MESSAGE MONITORING INSTRUMENT PACK STATUS ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0xCDA8

**BMW Fault Code (dez)**

52648

**BMW Fault Code Description VS-Text**

Message (status, instrument cluster, 1B4)

**Component**

Communication

**Subcomponent**

Instrument Pack

**Monitoring criteria**

Instrument cluster recognized

**Fault debouncing**

500 ms

**Terminal conditions**

Terminal 15 ON

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**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Incorrect alive counter in CAN message.

**Repair procedures (plant/service)**

Check instrument cluster control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Incorrect alive counter transmission from instrument cluster.

## DTC U112B: LOST COMMUNICATION WITH INSTRUMENT PACK STATUS (SIG)

**BMW Fault Code (hex)**

0x2DD0

**BMW Fault Code (dez)**

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11728

**BMW Fault Code Description VS-Text**

No message from instrument cluster, instrument cluster 2

**Component**

Communication

**Subcomponent**

Instrument Pack

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. No short circuit on the PT CAN
3. INSTR2 message initialized

**Fault debouncing**

20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

400 ms

**System test**

none

**Signal information**

none

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**Calculated value Y/N**

N

**Possible Fault Causes**

No reception of CAN message INSTR2 possible.

**Repair procedures (plant/service)**

Check CAN links between instrument cluster and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on INSTR2 CAN message

## DTC U112B: LOST COMMUNICATION WITH INSTRUMENT PACK STATUS (SIG)

**BMW Fault Code (hex)**

0x2DD1

**BMW Fault Code (dez)**

11729

**BMW Fault Code Description VS-Text**

No message from instrument cluster, instrument cluster 3

**Component**

Communication

**Subcomponent**

Instrument Pack

**Monitoring criteria**

1. CAN 11 vehicle (E46, E85, E83)
2. No short circuit on the PT CAN
3. INSTR3 message initialized

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**Fault debouncing**

20 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

400 ms

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

No reception of CAN message INSTR3 possible.

**Repair procedures (plant/service)**

Check CAN links between instrument cluster and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout INSTR3 CAN message

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## DTC U112B: LOST COMMUNICATION WITH INSTRUMENT PACK STATUS (SIG)

**BMW Fault Code (hex)**

0xCDA8

**BMW Fault Code (dez)**

52648

**BMW Fault Code Description VS-Text**

Message (status, instrument cluster, 1B4)

**Component**

Communication

**Subcomponent**

Instrument Pack

**Monitoring criteria**

Instrument cluster recognized

**Fault debouncing**

700 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

cardiagn.com

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN links between instrument cluster and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U112C: LOST COMMUNICATION WITH HEAT FLOW/LOAD MOMENT A/C (SIG)

**BMW Fault Code (hex)**

0xCDA9

**BMW Fault Code (dez)**

52649

**BMW Fault Code Description VS-Text**

Message (A/C request, 1B5)

**Component**

No Info

**Subcomponent**

No Info

cardiagn.com

**Monitoring criteria**

Air conditioner recognized

**Fault debouncing**

40 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between IHKA and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

cardiagn.com

Timeout on CAN message

## DTC U112D: LOST COMMUNICATION WITH CONTROL CRASH CUT-OFF EKP (ELECTRICAL FUEL PUMP) (SIG)

**BMW Fault Code (hex)**

0xCDAA

**BMW Fault Code (dez)**

52650

**BMW Fault Code Description VS-Text**

Message (status, crash deactivation, el. fuel pump, 135)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EKP recognized

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between EKP and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1130: LOST COMMUNICATION WITH RADIATOR SHUTTER (UPPER) (PLAUS)

**BMW Fault Code (hex)**

0x2F11

**BMW Fault Code (dez)**

12049

**BMW Fault Code Description VS-Text**

Radiator blind, top

**Component**

No Info

**Subcomponent**

cardiagn.com

No Info

**Monitoring criteria**

1. AKKS must be initialized. Operation of lower flap: 3 x open and 3 x closed. Or conduct the system test.

**Fault debouncing**

none

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

No info.

**Signal information**

PWM of 5-90 %

**Calculated value Y/N**

N

**Possible Fault Causes**

Defective in valve control's electronic circuitry. PVE: Insert a 1K resistor in front of Terminal 87 at DME PIN 1--09.

**Repair procedures (plant/service)**

1. Check voltage supply to AKKS (focus especially on GND [PIN 2] at the valve)
2. If OK, then replace AKKS

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**MIL illumination/CC message/emergency program**

no external display;

**Remarks**

There is no danger with the AKKS provided the malfunction did not arise while it was closed.

## DTC U1132: LOST COMMUNICATION WITH GENERATOR VIA BSD (BIT SERIAL DATA INTERFACE) (MAX)

**BMW Fault Code (hex)**

0x2ECC

**BMW Fault Code (dez)**

11980

**BMW Fault Code Description VS-Text**

Generator, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Commercial vehicle >350 rpm, No communications fault.

**Fault debouncing**

25 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

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none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

1. Alternator (BSD-BUS) not connected
2. Open wire (BSD-BUS) between alternator and DME
3. Alternator defect

**Repair procedures (plant/service)**

1. Check wire (BSD_BUS) connecting alternator and DME.
2. Check plug-in connection at alternator.
3. Replace alternator.

**MIL illumination/CC message/emergency program**

No warning message. The alternator responds to loss of the BSD_BUS signal by charging at a constant 14.4 V battery.

**Remarks**

none

## DTC U1132: LOST COMMUNICATION WITH GENERATOR VIA BSD (BIT SERIAL DATA INTERFACE) (SIG)

**BMW Fault Code (hex)**

0x2E98

**BMW Fault Code (dez)**

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11928

**BMW Fault Code Description VS-Text**

Generator, communication

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Alternator communications monitor

**Fault debouncing**

Commercial vehicle >350 rpm, No communications fault.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

approximately 10 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

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N

**Possible Fault Causes**

1. Alternator (BSD-BUS) not connected
2. Open wire (BSD-BUS) between alternator and DME
3. Alternator defect

**Repair procedures (plant/service)**

1. Check wire (BSD_BUS) connecting alternator and DME.
2. Check plug-in connection at alternator.
3. Replace alternator.

**MIL illumination/CC message/emergency program**

No warning message. The alternator responds to loss of the BSD_BUS signal by charging at a constant 14.4 V battery.

**Remarks**

none

## DTC U1134: LOST COMMUNICATION WITH LAMP STATUS (SIG)

**BMW Fault Code (hex)**

0xCDAB

**BMW Fault Code (dez)**

52651

**BMW Fault Code Description VS-Text**

Message (lamp status, 21A)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

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'Lamp status' message recognized at least once

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between light module and DME.

**MIL illumination/CC message/emergency program**

none

**Remarks**

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Timeout on CAN message

## DTC U1135: LOST COMMUNICATION WITH STATUS WATER VALVE (SIG)

**BMW Fault Code (hex)**

0xCDAC

**BMW Fault Code (dez)**

52652

**BMW Fault Code Description VS-Text**

Message (status, water valve, 3B5)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

'Water valve' status message recognized at least once

**Fault debouncing**

200 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

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**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between IHKA and DME

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U113A: LOST COMMUNICATION WITH CENTRAL LOCKING SYSTEM STATUS (SIG)

**BMW Fault Code (hex)**

0xCDB1

**BMW Fault Code (dez)**

52657

**BMW Fault Code Description VS-Text**

Message (status, central locking, 2FC)

**Component**

No Info

**Subcomponent**

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No Info

**Monitoring criteria**

Message 'STAT_ZV_KLAPPEN ' recognized

**Fault debouncing**

4 sec.

**Terminal conditions**

Terminal 15 on

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAS/CAN link to CAS control module

**MIL illumination/CC message/emergency program**

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none

**Remarks**

Timeout message 'STAT_ZV_KLAPPEN '

## DTC U113C: LOST COMMUNICATION WITH TIME/DATE (SIG)

**BMW Fault Code (hex)**

0xCDAE

**BMW Fault Code (dez)**

52654

**BMW Fault Code Description VS-Text**

Message (time/date, 2F8)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Instrument cluster recognized

**Fault debouncing**

240 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN links between instrument cluster and DME.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U113D: LOST COMMUNICATION WITH WHEEL TORQUE MANAGEMENT REQUEST/DRIVELINE (SIG)

**BMW Fault Code (hex)**

0xCDAD

**BMW Fault Code (dez)**

52653

**BMW Fault Code Description VS-Text**

Message (request, wheel torque, drivetrain, BF)

**Component**

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No Info

**Subcomponent**

No Info

**Monitoring criteria**

LDM recognized

**Fault debouncing**

80 ms

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

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Check LDM and CAN link to LDM control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U113E: LOST COMMUNICATION WITH DISPLAY TRANSMISSION DATA (SIG)

**BMW Fault Code (hex)**

0xCDB0

**BMW Fault Code (dez)**

52656

**BMW Fault Code Description VS-Text**

Message (display, transmission data)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EGS detected

**Fault debouncing**

8 sec

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

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**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check EGS and/or CAN link to EGS control module.

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on EGS message

## DTC U1154: LOST COMMUNICATION WITH MESSAGE 2 TCM (SIG)

**BMW Fault Code (hex)**

0x2DC9

**BMW Fault Code (dez)**

11721

**BMW Fault Code Description VS-Text**

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No message from EGS, EGS 2

**Component**

Communication

**Subcomponent**

TCM

**Monitoring criteria**

EGS detected

**Fault debouncing**

5 sec.

**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

5 sec.

**System test**

none

**Signal information**

none

**Calculated value Y/N**

N

**Possible Fault Causes**

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Timeout on EGS message

**Repair procedures (plant/service)**

Check CAN link to EGS control module

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1155: MESSAGE MONITORING 2 TCM CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2DC9

**BMW Fault Code (dez)**

11721

**BMW Fault Code Description VS-Text**

No message from EGS, EGS 2

**Component**

Communication

**Subcomponent**

TCM

**Monitoring criteria**

Symptom is not used

**Fault debouncing**

none

**Terminal conditions**

none

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**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1156: MESSAGE MONITORING 2 TCM ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

0x2DC9

**BMW Fault Code (dez)**

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11721

**BMW Fault Code Description VS-Text**

No message from EGS, EGS 2

**Component**

Communication

**Subcomponent**

TCM

**Monitoring criteria**

Symptom is not used

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

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none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1160: LOST COMMUNICATION WITH MESSAGE 2 TCM (SIG)

**BMW Fault Code (hex)**

0xCDB4

**BMW Fault Code (dez)**

52660

**BMW Fault Code Description VS-Text**

Message (gearbox data, 3B1)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

Message 'Transmission data 3 ' recognized

**Fault debouncing**

Currently data content defined (pending)

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**Terminal conditions**

Terminal 15 ON

**Voltage conditions**

Voltage in onboard electrical system > 10 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

Unable to receive CAN message.

**Repair procedures (plant/service)**

Check CAN link between DME and EGS/DKG

**MIL illumination/CC message/emergency program**

none

**Remarks**

Timeout on CAN message

## DTC U1161: MESSAGE MONITORING 3 TCM ALIVE CHECK (MIN)

**BMW Fault Code (hex)**

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0xCDB4

**BMW Fault Code (dez)**

52660

**BMW Fault Code Description VS-Text**

Message (gearbox data, 3B1)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

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none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1162: MESSAGE MONITORING 3 TCM CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0xCDB4

**BMW Fault Code (dez)**

52660

**BMW Fault Code Description VS-Text**

Message (gearbox data, 3B1)

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

none

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**Fault debouncing**

none

**Terminal conditions**

none

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

none

**Calculated value Y/N**

none

**Possible Fault Causes**

none

**Repair procedures (plant/service)**

none

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

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## DTC U1166: MESSAGE MONITORING EWS (ELECTRONIC IMMOBILIZER) - FRAME ERROR (MIN)

**BMW Fault Code (hex)**

0x2F4C

**BMW Fault Code (dez)**

12108

**BMW Fault Code Description VS-Text**

Message EWS-DME incorrect

**Component**

No Info

**Subcomponent**

No Info

**Monitoring criteria**

EWS code request

**Fault debouncing**

2

**Terminal conditions**

Terminal 15 on without running engine

**Voltage conditions**

none

**Temperature conditions**

none

**Time conditions**

none

**System test**

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none

**Signal information**

CAN bus telegrams

**Calculated value Y/N**

N

**Possible Fault Causes**

Telegram structure not as expected

**Repair procedures (plant/service)**

Continue problem diagnosis with CAS

**MIL illumination/CC message/emergency program**

none

**Remarks**

none

## DTC U1167: MESSAGE MONITORING DIRECT OZONE REDUCTION CATALYST TEMPERATURE SENSOR FRAME ERROR (SIG)

**BMW Fault Code (hex)**

0x2ADB

**BMW Fault Code (dez)**

10971

**BMW Fault Code Description VS-Text**

EAC sensor, communication

**Component**

Communication

**Subcomponent**

Direct Ozone Reduction Catalyst Temp. Sensor

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**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME.

**Fault debouncing**

2.5 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

N

**Possible Fault Causes**

Open wire from ground, Terminal 87 or LIN bus from the DME to the EAC sensor. Defective EAC sensor.

**Repair procedures (plant/service)**

1. Check ground wire from DME to EAC sensor
2. Check positive wire from DME to EAC sensor
3. Check bus wire from DME to EAC sensor
4. Replace sensor

**MIL illumination/CC message/emergency program**

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MIL comes on after 2nd driving cycle

**Remarks**

none

## DTC U1168: MESSAGE MONITORING DIRECT OZONE REDUCTION CATALYST TEMPERATURE SENSOR CHECK SUM ERROR (PLAUS)

**BMW Fault Code (hex)**

0x2ADB

**BMW Fault Code (dez)**

10971

**BMW Fault Code Description VS-Text**

EAC sensor, communication

**Component**

Communication

**Subcomponent**

Direct Ozone Reduction Catalyst Temp. Sensor

**Monitoring criteria**

EAC sensor must be installed, and the correct data set (SULEV) must be programmed in the DME.

**Fault debouncing**

2.5 sec.

**Terminal conditions**

Terminal 15

**Voltage conditions**

Voltage in onboard electrical system > 9 V

**Temperature conditions**

none

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**Time conditions**

none

**System test**

none

**Signal information**

LIN bus signal

**Calculated value Y/N**

N

**Possible Fault Causes**

Open wire from ground, Terminal 87 or LIN bus from the DME to the EAC sensor. Defective EAC sensor.

**Repair procedures (plant/service)**

1. Check ground wire from DME to EAC sensor
2. Check positive wire from DME to EAC sensor
3. Check bus wire from DME to EAC sensor
4. Replace sensor

**MIL illumination/CC message/emergency program**

MIL comes on after 2nd driving cycle

**Remarks**

none

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# 2007 ENGINE PERFORMANCE

## Emission Applications - BMW X3

## EMISSION APPLICATIONS

**X3**

| Engine & Fuel System | (1)Emission Control Systems & Devices |
|---|---|
| **2007** | |
| 3.0L (182") 6-Cyl. SFI | **PCV, EVAP, TWC, FR, SPK, AP, HO2S, CEC, MIL,** EVAP-CPCS, EVAP-VC, EVAP-LDP, ROV, SPK |

(1) Major emission control systems and devices are listed in bold type. Components and other related devices are listed in light type.

## ABBREVIATIONS

**CEC**

Computerized Engine Controls

**EVAP**

Fuel Evaporative System

**EVAP-CPCS**

EVAP Canister Purge Control Solenoid

**EVAP-LDP**

EVAP Leak Detection Pump

**EVAP-VC**

EVAP Vapor Canister

**FR**

Fill Pipe Restrictor

**HO2S**

Heated Oxygen Sensor

**MIL**

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Malfunction Indicator Light

**PCV**

Positive Crankcase Ventilation

**SFI**

Sequential Fuel Injection

**SPK**

Spark Controls

**SPK-CC**

SPK Computer Controlled

**TWC**

Three-Way Catalytic Converter

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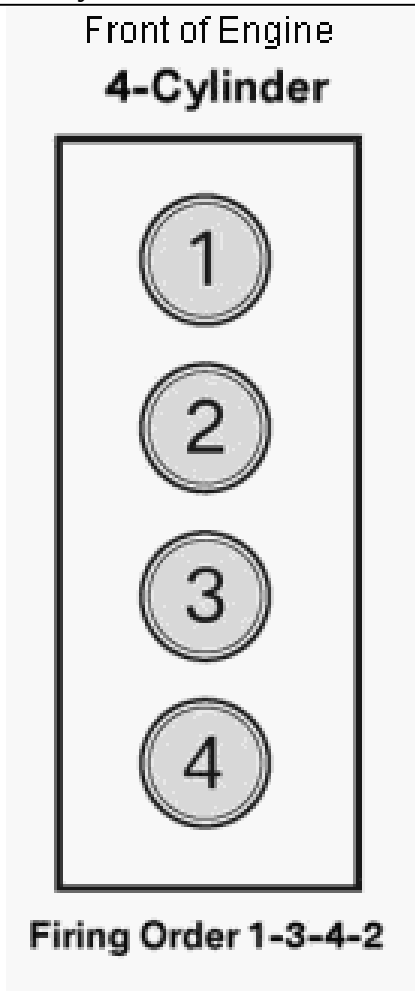
**ENGINE PERFORMANCE**

**Firing Order & Cylinder Identification - BMW - All Models**

# FIRING ORDER & CYLINDER IDENTIFICATION

**NOTE:** **This information is intended as a quick reference for firing order and cylinder identification only. The information provided covers many vehicles and may include some information that does not apply to the vehicle you have currently selected.**

**4 CYLINDER ENGINE**

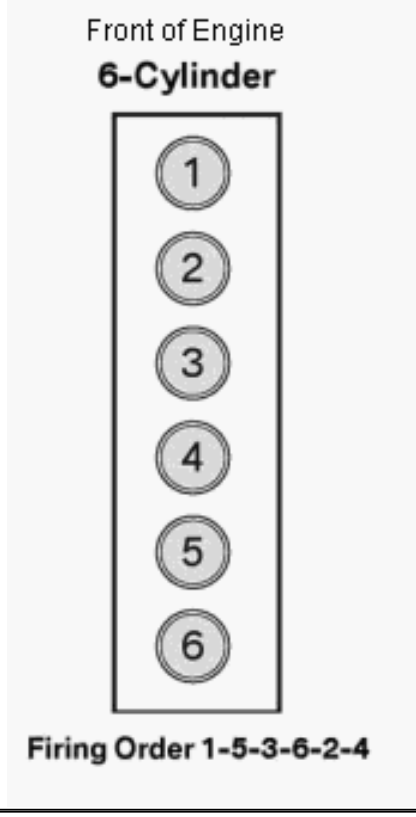
| Engine Configuation | Firing Order | Cylinder Identification |
|---|---|---|
| In-Line 4 | 1-3-4-2 |  |



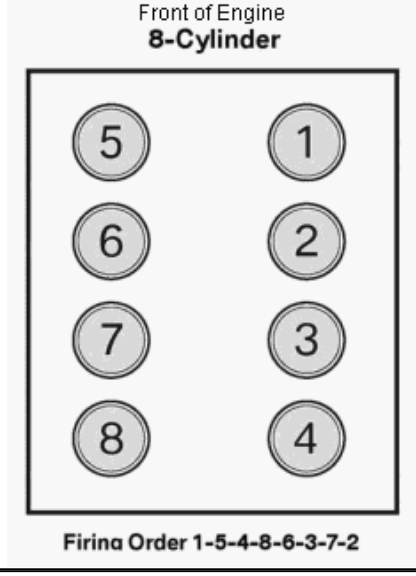
**6 CYLINDER ENGINE**

| Engine Configuation | Firing Order | Cylinder Identification |
|---|---|---|

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| | | |
|---|---|---|
| In-Line 6 | 1-5-3-6-2-4 |  |

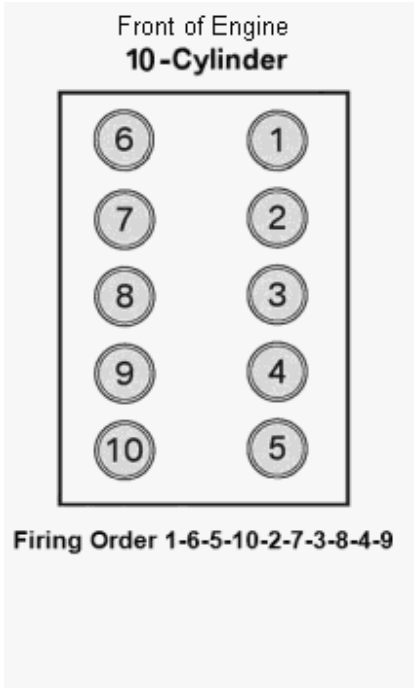
**V8 ENGINE**

| Engine Configuation | Firing Order | Cylinder Identification |
|---|---|---|
| V8 | 1-5-4-8-6-3-7-2 |  |

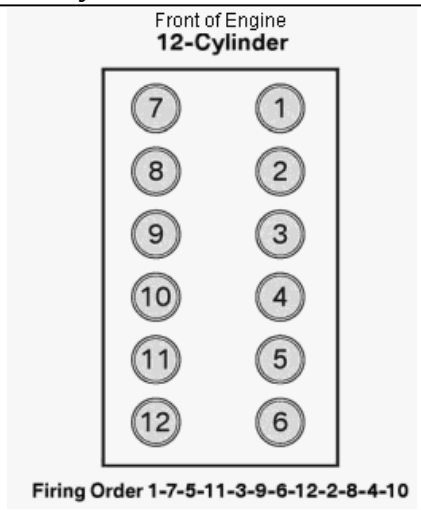
**V10 ENGINE**

| Engine Configuation | Firing Order | Cylinder Identification |
|---|---|---|

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| | | |
|---|---|---|
| V10 | 1-6-5-10-2-7-3-8-4-9 |  |

**V12 ENGINE**

| Engine Configuation | Firing Order | Cylinder Identification |
|---|---|---|
| V12 | 1-7-5-11-3-9-6-12-2-8-4-10 |  |

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## ENGINE PERFORMANCE

## Fuel System - Repair Instructions - X3

# 31 FUEL PUMP WITH DRIVE AND LINE

### 13 31 ... NOTES ON FUEL PRESSURE CHECK (REFERENCE PRESSURE: ENVIRONMENT)

**Feature of this version with ambient pressure:**

The connection for the vacuum hose of the fuel pressure regulator is located between the throttle and the air cleaner or on the air cleaner.

**Test precondition:**

The correct fuel pressure regulator is fitted.

- Using the EPC, check whether the fuel pressure regulator suitable for the car is fitted:

  Connect test adapter.

**Description of operation:**

The control function of the fuel pressure regulator must be guaranteed under all operating conditions. The fuel pump must always be able to generate a higher fuel pressure than the pressure regulated by the pressure regulator.

The injection rate is adjusted by means of the injection time; the injection time is controlled by the DME.

**Description of operation: fuel return line**

When the engine is at a standstill and the ignition key is in position 0, the fuel return line after the pressure regulator is at zero pressure.

**Description of operation: pressure retaining function**

The pressure regulator closes when the engine is at a standstill and the ignition key is in position 0. The fuel pressure in the delivery line is retained over an extended period. A non-return valve closes in the fuel pump. These measures help to retain the fuel pressure in the fuel system. Extended starting times are thus avoided.

**Complaint: drive characteristic faults, lack of power**

- Run engine at idle speed and measure fuel pressure.

**If the measured value is less than the nominal value - 0.2 bar:**

- Line cross-sections in fuel feed are constricted or fuel filter is clogged,

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or

- Fuel pump voltage supply is not O.K.: e.g. as a result of high contact resistance (corrosion) in plug connection between wiring harness and fuel pump.

**If the measured value is greater than the nominal value + 0.2 bar:**

- Turn off engine stop and then observe measured value.
- If measured value drops to nominal value, then line cross-sections in fuel return are constricted or clogged.
- Check the fuel lines for kinks.

If no kinks are visible:

- Replace return lines

If measured value remains too high, then pressure regulator is in all probability faulty.

**IMPORTANT: With less likelihood, the return line may be completely blocked. When the pressure regulator is removed, fuel could escape under pressure!**

- Have a cleaning cloth ready and catch and dispose of escaping fuel.
- Replace the return line but not the pressure regulator.

**Complaint: starting problems**

- Run engine briefly at idle speed and switch off.
- Note down measured value while engine is stopped.
- Read off measured value again after approx. 20 to 30 minutes while engine is stopped.

Special tool 13 3 010 (hose clamp) is required for the following test.

**If the measured value has dropped by more than 0.5 bar:**

- Start engine and wait briefly for a stable pressure increase.
- Switch off the engine and immediately pinch off the delivery line just before the pressure gauge with the special tool 13 3 010.
- Note down measured value
- Read off measured value again after approx. 20 to 30 minutes while engine is stopped

**If the measured value has now dropped by less than 0.5 bar, the following faults can be present:**

- Fault in delivery lines
- Fault in in-tank delivery hose

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- Faulty pressure-holding non-return valve in fuel pump

Check components. Replace faulty components.

**If the measured value has dropped by more than 0.5 bar again:**

- Replace pressure regulator

**NOTE:**

- **All the fuel hoses and hose clips which were detached within the framework of the checks must be replaced.**
- **Interrogate fault memory of DME control unit. Check stored fault messages. Rectify faults. Now clear the fault memory.**

**13 31 029 CHECKING FUEL PUMP DELIVERY PRESSURE (N52)**

**Special tools required:**

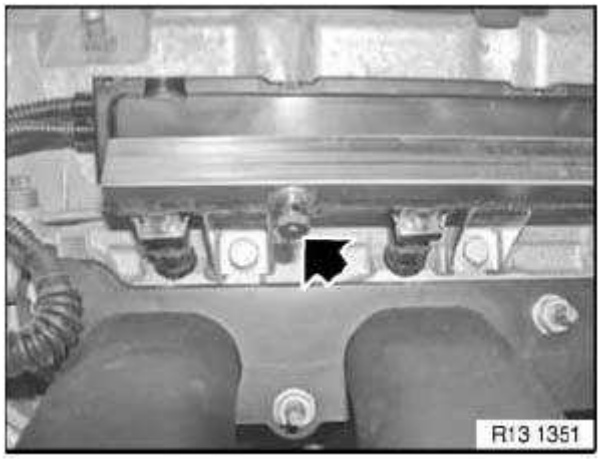
- 13 5 220
- 13 5 221
- 13 5 222

**IMPORTANT: The fuel in the fuel lines is under pressure (approx. 5 bar)! Catch and dispose of escaping fuel.**

*Necessary preliminary tasks:*

- Switch off ignition.
- Remove acoustic cover, see **11 00 REMOVING AND INSTALLING/REPLACING IGNITION COIL COVER (N52K)** .

Remove dust cap (1).




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**Fig. 1: Dust Cap**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Connect special tool kit 13 5 220 (comprising 13 5 221 and 13 5 222 ) to pressure sensor of DIS Tester.

Connect pressure sensor to DIS Tester.

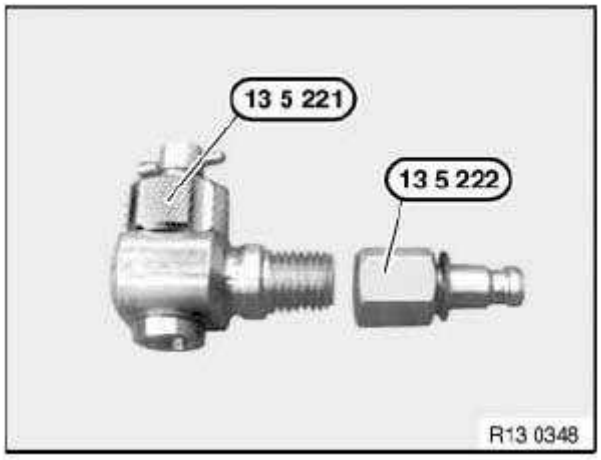



**Fig. 2: Special Tool 13 5 221 And 13 5 222**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**IMPORTANT: Do not under any circumstances screw in the check valve up to the mechanical stop.**
**This could damage the valve in the pressure regulator housing.**

Mount special tool kit 13 5 220 to injection tube and tighten knurled nut hand-tight.

Screw out check valve (1) so that valve in pressure regulator housing is closed.

Start engine.

Screw in check valve (1) until a pressure reading is indicated on DIS Tester.

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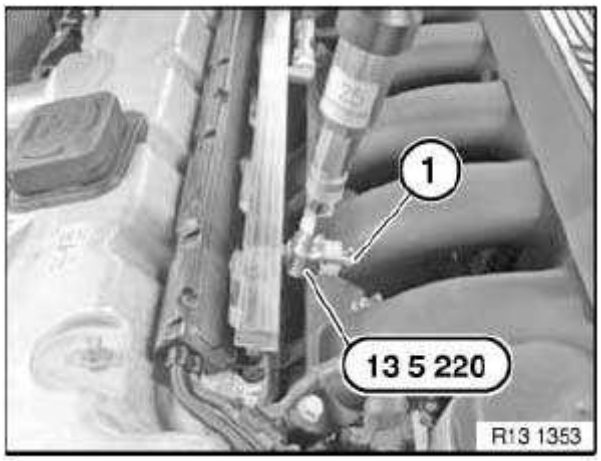



**Fig. 3: Check Valve And Special Tool Kit 13 5 220**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Measuring fuel pressure.

- Select Measurement.
- Multimeter function appears
- Select Pressure test
- Read off value of fuel pressure.

Compare actual value of test pressure with specified value, see **13 53 INJECTORS AND LINES, FUEL PRESSURE REGULATOR N52 / N52K / N51** .

Switch off engine.

**NOTE: Removing special tool kit 13 5 220 :**

- Switch off engine
- Screw out check valve fully again.

- Remove special tool kit 13 5 220 from pressure regulator housing.
- Catch and dispose of escaping fuel.

**NOTE: Read out fault memory of DME control unit.**
**Check stored fault messages.**
**Now clear the fault memory.**

## 53 INJECTION NOZZLE AND LINES

**13 53 240 REPLACING COMPLETE INJECTION PIPE (N52/ N52K)**

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**Special tools required:**

- 13 5 281

*Necessary preliminary tasks:*

- Read out fault memory of DME control unit
- Switch off ignition
- Remove clean air pipe
- Remove ignition coil cover, see **11 00 REMOVING AND INSTALLING/REPLACING IGNITION COIL COVER (N52K)**

**Recycling**

Fuel escapes when fuel line is detached. Catch and dispose of escaping fuel.

Observe country-specific waste-disposal regulations.

**N52K only:**

Unclip plug connection (1) from holder (2) and disconnect.

Unclip wiring harnesses from holder (2) and connector strip (3).

Disconnect holder (2) from injection pipe.

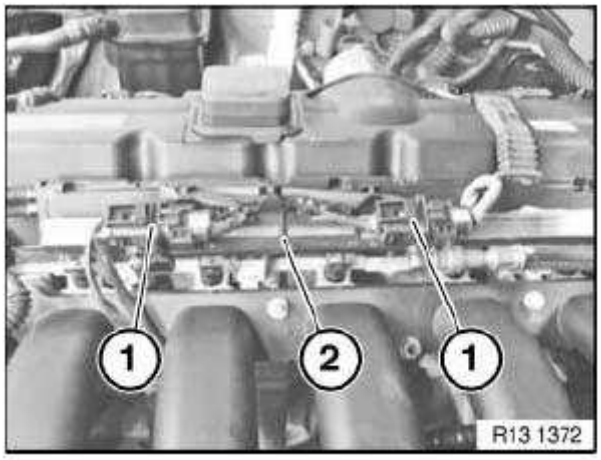



**Fig. 4: Plug Connection And Holder**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Remove protective cap from compressed air valve.

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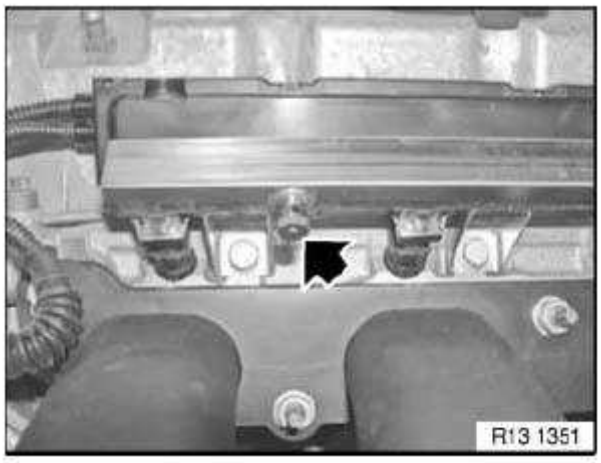



**Fig. 5: Dust Cap**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Connect compressed air line (1) to compressed air valve.

Blow fuel back into tank with a short blast of compressed air (max. 3 bar).

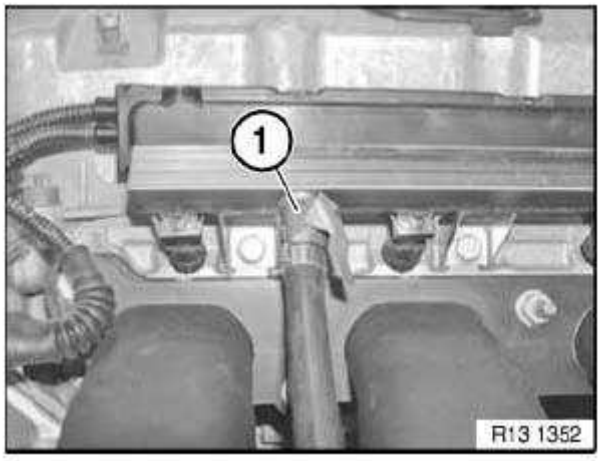



**Fig. 6: Compressed Air Line**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Unlock and detach fuel line (1).

Detach connector strip (2) in direction of arrow.

Release screws.

Tightening torque: 1AZ, see **13 53 FUEL INJECTION NOZZLES AND PIPES** .

Remove injection pipe (3).

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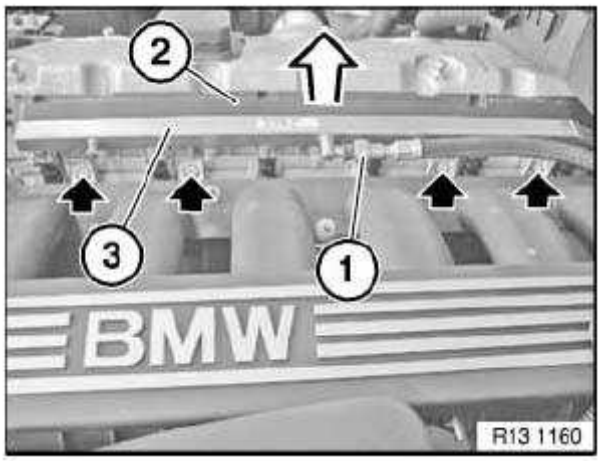



**Fig. 7: Detaching Connector Strip**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Seal fuel hose with special tool 13 5 281 .

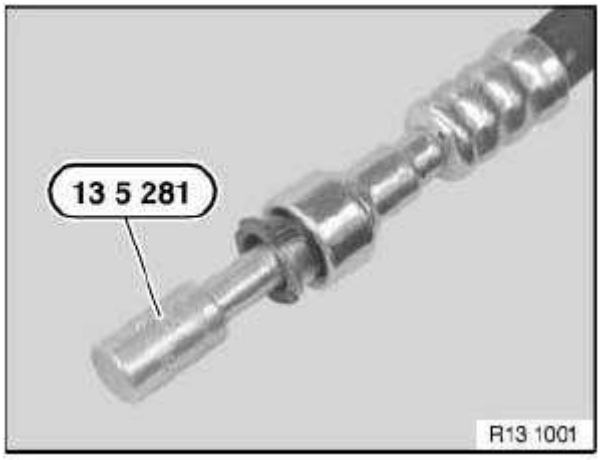



**Fig. 8: Special Tool 13 5 281**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Lever out retainers (1).

Pull fuel injectors out of injection pipe.

**Installation:**

Replace sealing rings on fuel injectors and coat with anti - friction rubber coating.

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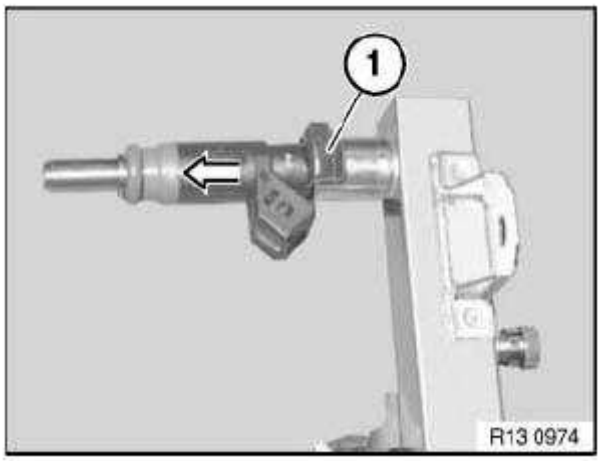



**Fig. 9: Retainers**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**NOTE: Check stored fault messages.**
**Now clear the fault memory.**

**13 64 501 REMOVING AND INSTALLING/REPLACING A FUEL INJECTOR (N52, N52K, N51)**

This work step is described in the section **13 53 240 Replacing complete injection pipe (N52/ N52K)**.

## 54 THROTTLE AND OPERATION

**13 54 030 REMOVING AND INSTALLING/SEALING THROTTLE VALVE ASSEMBLY (N52 / N52K / N51 / N53)**

Read and comply with **61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE)** .

*Necessary preliminary tasks:*

- Switch off ignition
- Remove air intake hose, see **13 54 250 Removing and installing/replacing intake hose (on air cleaner housing) (N52K)**.

Unlock plug (1) and remove.

Release screws.

Tightening torque: 1AZ, see **13 54 THROTTLE AND ACTUATOR** .

Remove throttle assembly (2).

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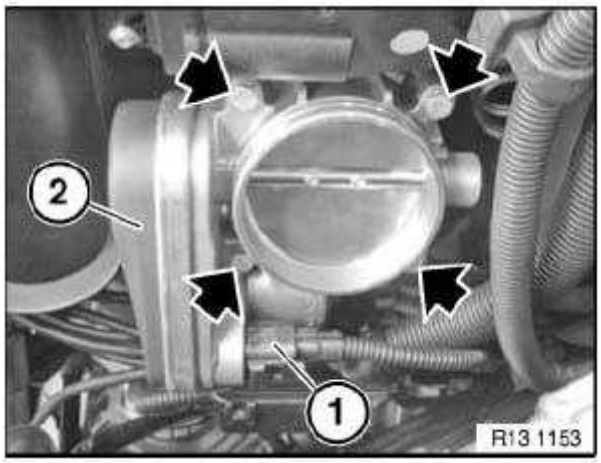



**Fig. 10: Plug And Throttle Assembly**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**Installation:**

Replace sealing ring (1) of throttle assembly (2).

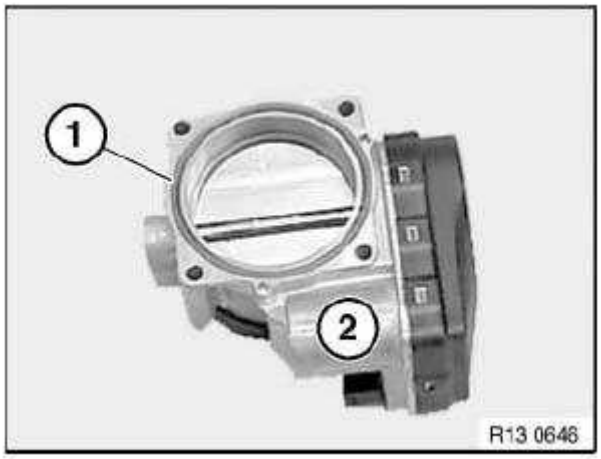



**Fig. 11: Sealing Ring Of Throttle Assembly**
**Courtesy of BMW OF NORTH AMERICA, INC.**

*Installation:*

Check stored fault messages.

Now clear the fault memory.

**13 54 250 REMOVING AND INSTALLING/REPLACING INTAKE HOSE (ON AIR CLEANER HOUSING) (N52K)**

*Necessary preliminary tasks:*

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- Switch off ignition
- Remove intake filter housing, see **13 71 000 Removing and installing/replacing intake filter housing (N52K)**

Unfasten clip.

Feed out intake hose (1) and remove.

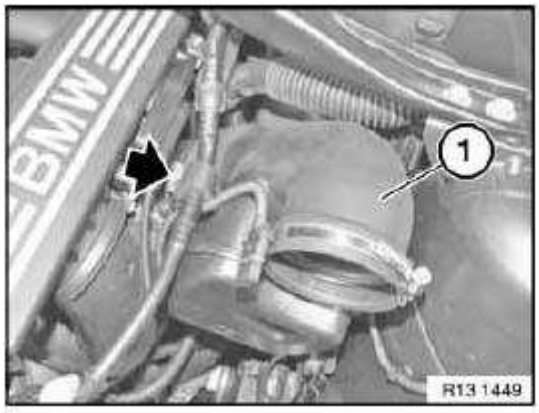



**Fig. 12: Intake Hose**
**Courtesy of BMW OF NORTH AMERICA, INC.**

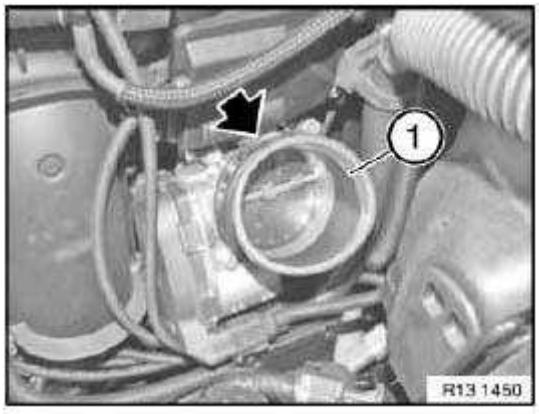
**13 54 251 REMOVING AND INSTALLING/REPLACING INTAKE HOSE (ON THROTTLE VALVE ASSEMBLY) (N52K)**

*Necessary preliminary tasks:*

- Remove intake hose

Unfasten clip.

Detach intake hose (1) from throttle valve assembly and remove.




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**Fig. 13: Intake Hose**
**Courtesy of BMW OF NORTH AMERICA, INC.**

## 62 SENSOR FOR CONTROL UNIT

### 13 62 010 REMOVING AND INSTALLING/REPLACING DIFFERENTIAL PRESSURE SENSOR (N52 / N52K / N51)

*Necessary preliminary tasks:*

- **E90 / E91 / E92 / E93 / E87:**

  Remove lower section of microfilter housing, see **31 MICROFILTER** .

- **E85 / E86 E90 / E91 / E92 / E93:**

  Remove left tension strut on suspension strut dome

- E70:

  Remove intake filter housing, see **13 71 000 Removing and installing/replacing intake filter housing (N52K)**.

**IMPORTANT: Read and comply with 61 35 ... NOTES ON ESD PROTECTION (ELECTRO STATIC DISCHARGE) .**

Release screws.

Unlock plug (1) and remove.

Pull differential pressure sensor (2) out of intake air manifold.

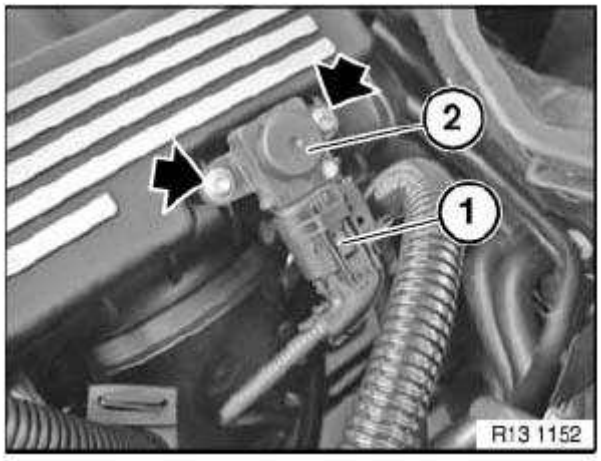



**Fig. 14: Plug And Differential Pressure Sensor**

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**Courtesy of BMW OF NORTH AMERICA, INC.**

*Installation:*

Read out fault memory of control unit of Digital Engine Electronics (DME).

Check stored fault messages.

Now clear the fault memory.

**13 62 531 REPLACING COOLANT TEMPERATURE SENSOR (N52/ N52K/ N53)**

> **WARNING: Danger of scalding!**
> **Only perform these tasks on an engine that has cooled down.**

**Recycling**

Catch and dispose of escaping coolant.

Observe country-specific waste-disposal regulations.

*Necessary preliminary tasks:*

- Read out fault memory of DME control unit
- Switch off ignition
- Remove intake duct

Coolant temperature sensor is mounted on cylinder head at front.

Unlock plug (1) and remove.

Release temperature sensor (2).

*Installation:*

Tightening torque: 2AZ, see **13 62 SENDERS FOR CONTROL UNIT** .

If necessary, top up coolant.

Check cooling system for leaks, see **17 00 009 CHECKING COOLING SYSTEM FOR LEAKS (M54, N46, N52)** .

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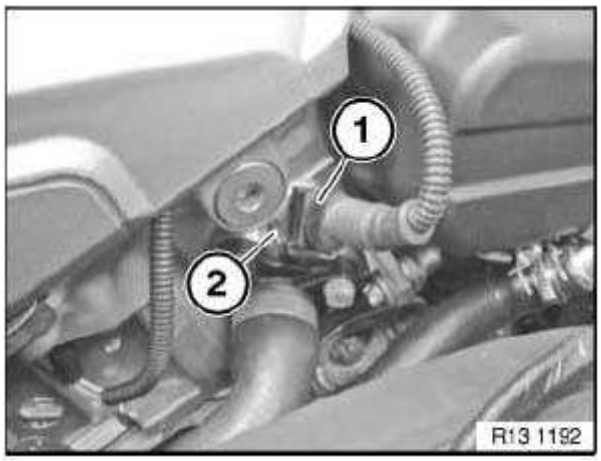



**Fig. 15: Plug And Temperature Sensor**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**NOTE: Now clear the fault memory.**

**13 62 560 REMOVING AND INSTALLING/REPLACING AIR - MASS FLOW SENSOR (N52 / N52K / N53)**

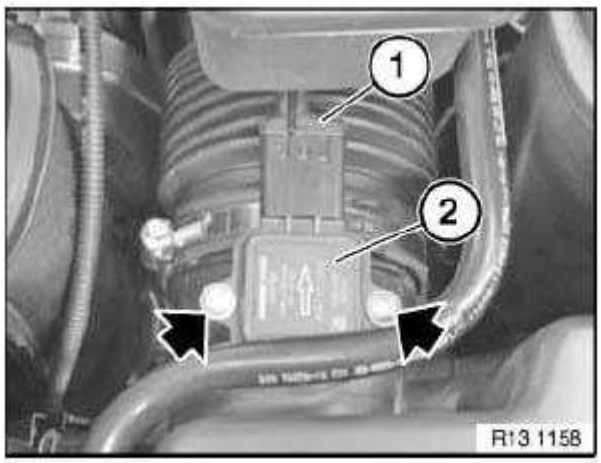
*Necessary preliminary tasks:*

- Read out fault memory of DME control unit
- Switch off ignition

Release bolts.

Unlock plug (1) and remove.

Pull air-mass flow sensor (2) out of upper section of intake filter housing.




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**Fig. 16: Plug And Air-Mass Flow Sensor**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**NOTE: Check stored fault messages.**
**Now clear the fault memory.**

**13 62 560 REMOVING AND INSTALLING/REPLACING AIR - MASS FLOW SENSOR (N52)**

*Necessary preliminary tasks:*

- Switch off ignition
- Read out fault memory of DME control unit.

Unlock plug (1) and remove.

Release screws.

Pull air-mass flow sensor (2) out of upper section of intake filter housing.

*Installation:*

Check sealing ring for damage.

Replace if necessary.

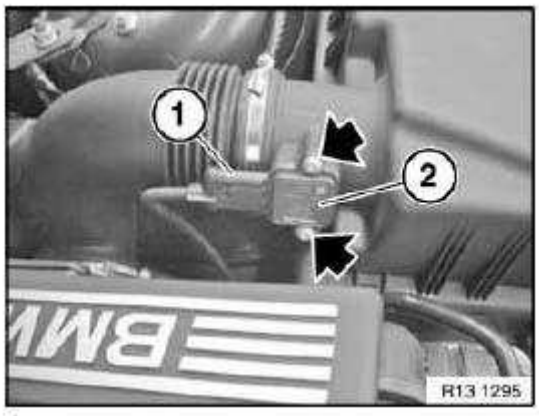



**Fig. 17: Plug And Air-Mass Flow Sensor**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**NOTE: Check stored fault messages.**
**Now clear the fault memory.**

## 64 START VALVES

**13 64 501 REMOVING AND INSTALLING/REPLACING A FUEL INJECTOR (N52, N52K, N51)**

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This work step is described in the section **13 53 240 Replacing complete injection pipe (N52/ N52K)**.

**13 64 541 REPLACING ALL FUEL INJECTORS**

This work step is described in the section **13 53 240 Replacing complete injection pipe (N52/ N52K)**.

# 71 INTAKE SILENCER

**13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N52K)**

*Necessary preliminary tasks:*

- Switch off ignition
- Read out fault memory of DME control unit.

Unlock and remove gaiter (1).

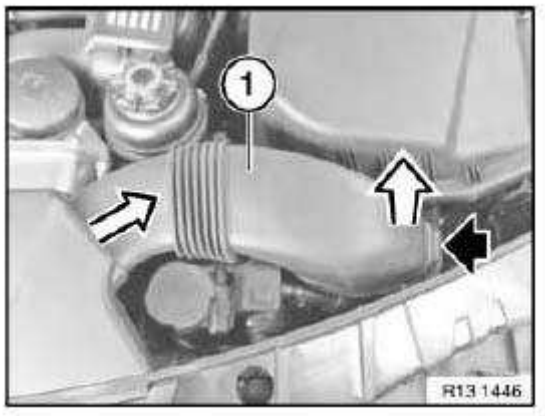



**Fig. 18: Removing Gaiter**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Unlock plug (1) and remove.

Release clamp and detach air intake hose.

Detach intake filter housing (2) from bearings pins of rubber mounts in upward direction and remove.

*Installation:*

Make sure bearing pins are correctly seated in rubber mounts.

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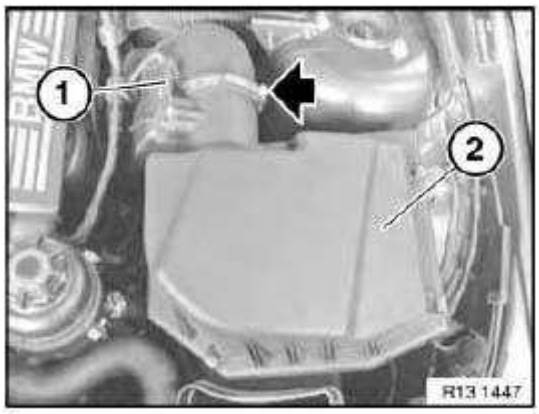



**Fig. 19: Plug And Intake Filter Housing**
**Courtesy of BMW OF NORTH AMERICA, INC.**

*Installation:*

Position holder (1) of intake filter housing on rubber mount (2).

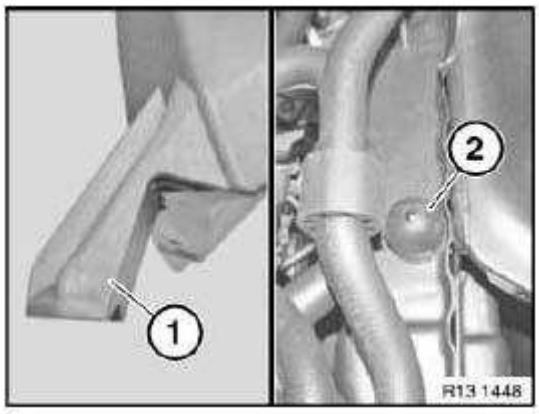



**Fig. 20: Holder Of Intake Filter Housing On Rubber Mount**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**NOTE: Check stored fault messages.**

Now clear the fault memory.

## 72 AIR CLEANER

### 13 72 001 REPLACING AIR CLEANER ELEMENT (N52K)

*Necessary preliminary tasks:*

- Read out fault memory of DME control unit
- Switch off ignition

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Unlock plug (1) and remove.

Unfasten clip.

Open clips (2).

Remove top section (3) of intake filter housing.

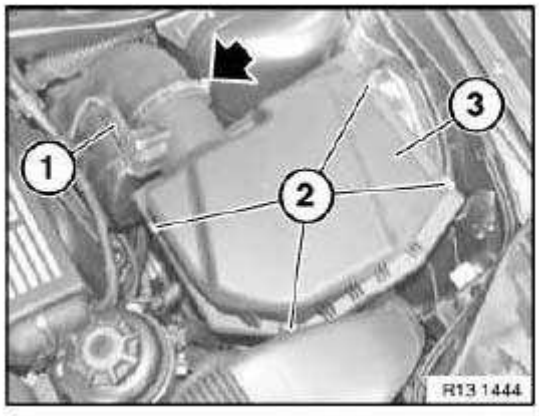



**Fig. 21: Plug And Clips**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Remove air cleaner element (1).

**Installation:**

Clean upper and lower sections of intake filter housing from inside.

Install new air cleaner element.

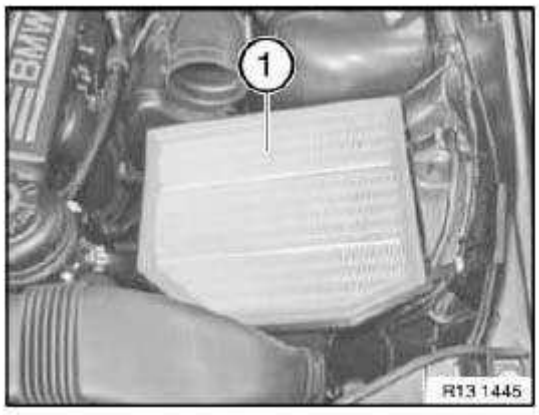



**Fig. 22: Air Cleaner Element**
**Courtesy of BMW OF NORTH AMERICA, INC.**

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**NOTE: Check stored fault messages.**
**Now clear the fault memory.**

## 90 CARBON CANISTER VENTILATION

### 13 90 500 REPLACING TANK VENT VALVE (N52 / N52K / N51 / N53)

*Necessary preliminary tasks:*

- Check stored fault messages
- Switch off ignition
- Remove throttle valve assembly, see **13 54 030 Removing and installing/sealing throttle valve assembly (N52 / N52K / N51 / N53)**.

Installation location:

Tank vent valve is fitted at bottom on intake air manifold.

Unlock plug (1) and remove.

Unlock hose (2) and detach.

Unlock hose (3) on intake manifold and detach.

Detach tank vent valve (4) from bracket and remove.

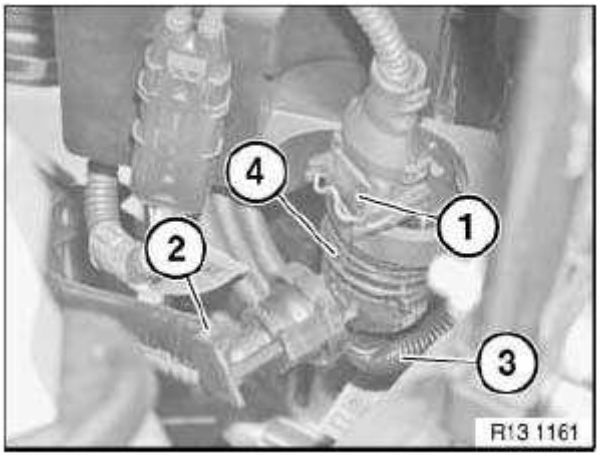



**Fig. 23: Plug, Hose And Tank Vent Valve**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**NOTE: Read out fault memory of DME control unit.**
**Now clear the fault memory.**

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## 2004-08 ENGINE PERFORMANCE

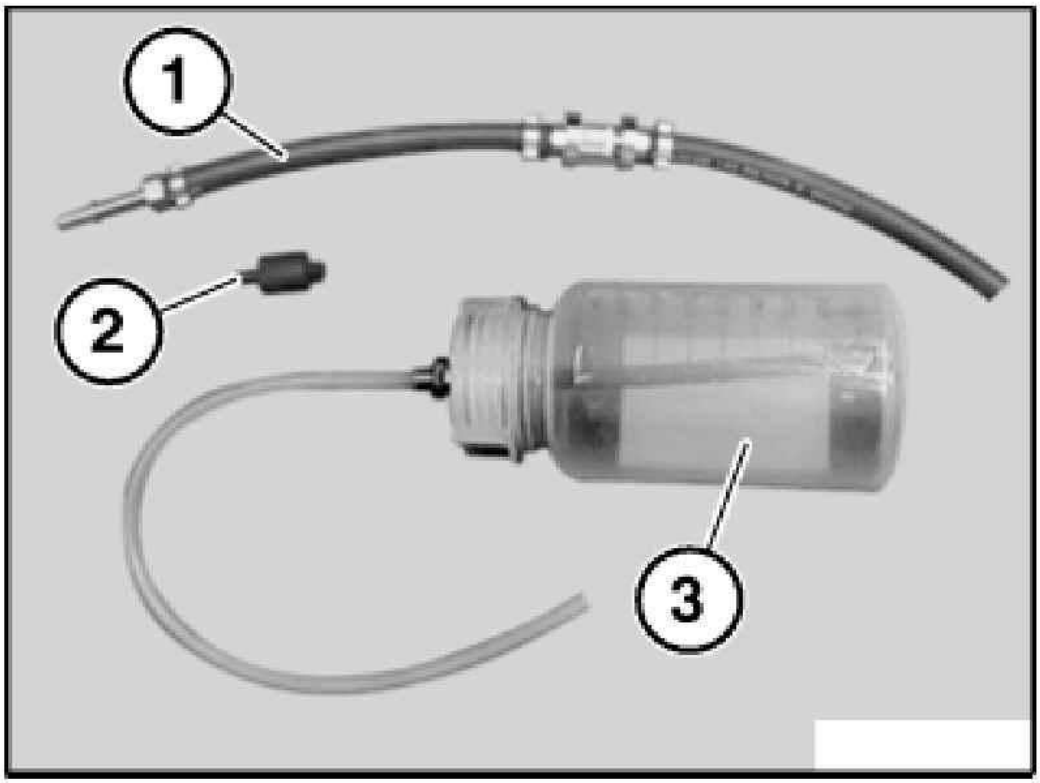
## Fuel System - Special Tools - X3 & X5 (M54)

# FUEL SYSTEM

### 13 0 131 COMPRESSED AIR HOSE WITH FILTER

Order number: 13 0 131

Compressed air hose with filter




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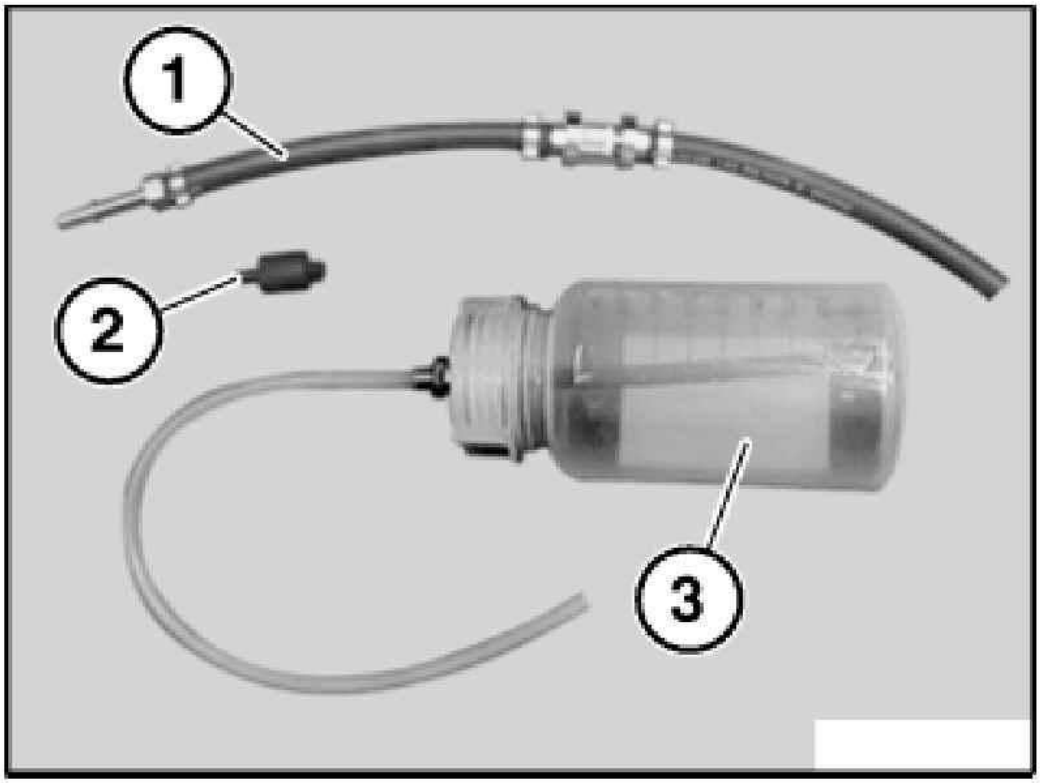
**Fig. 1: Identifying Compressed Air Hose With Filter**
**Courtesy of BMW OF NORTH AMERICA, INC.**

### 13 0 132 ADAPTER

Order number: 13 0 132

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Adapter




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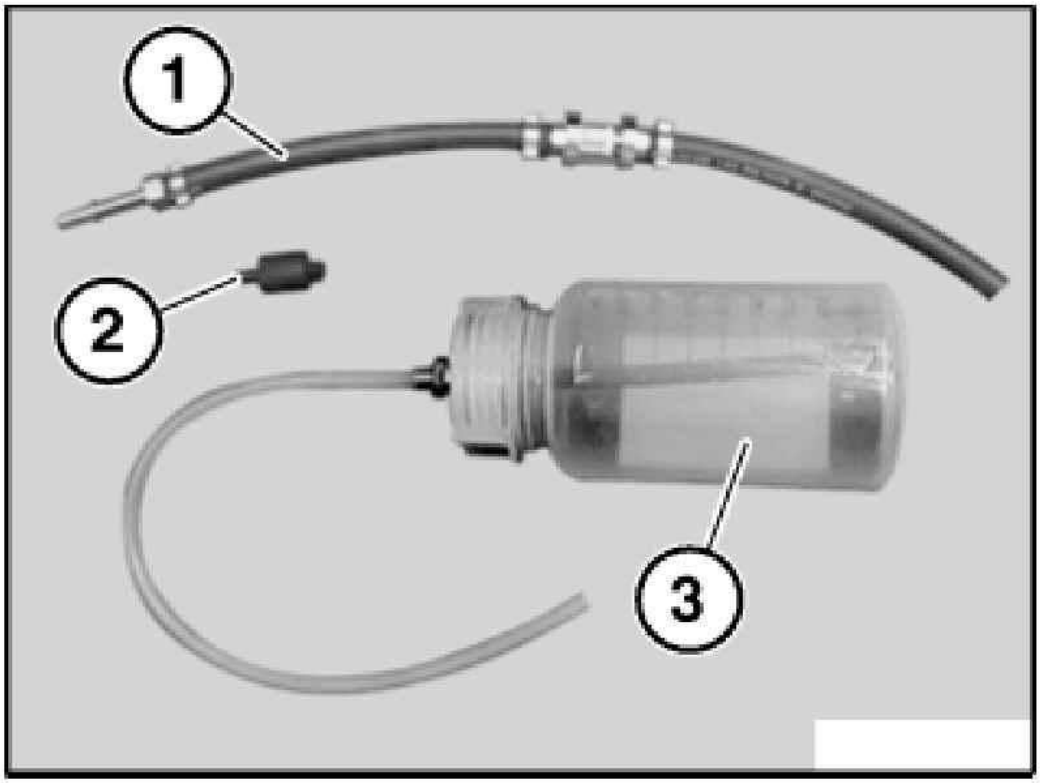
**Fig. 2: Identifying Adapter**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**13 0 133 CONTAINER**

Order number: 13 0 133

Container

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**Fig. 3: Identifying Container**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**13 3 010 HOSE CLIP**

**Minimum set: Mechanical tools**

Note: For disconnecting a hose for repair work

Series: E12, E21, E23, E24, E28, E30, E30/C, E30tou, E31, E32, E32/3, E34, E34tou, E36, E36/2, E36/3, E36/5, E36/7, E36/C, E36tou, E38, E38/3, E39, E39PL, E39tou, E46, E46/16, E46/2, E46/3, E46/5, E46/C, E52, E53, E60, E61, E63, E64, E65, E66, E67, E83, E85, E87, E90, E91, R50, R52, R53, RR1

Storage location: A22

Order number: 13 3 010

Hose clip

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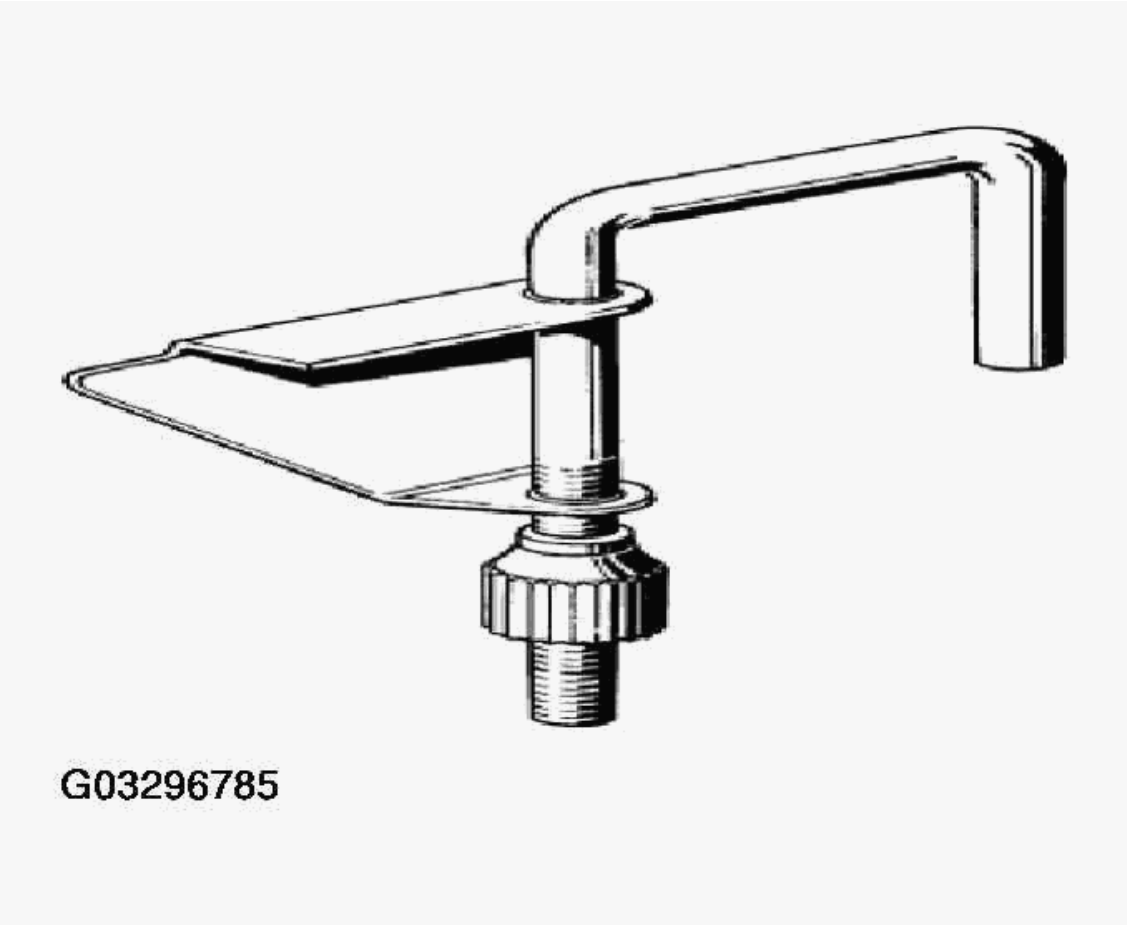



**Fig. 4: Identifying Hose Clip**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**13 3 060 FIXTURE**

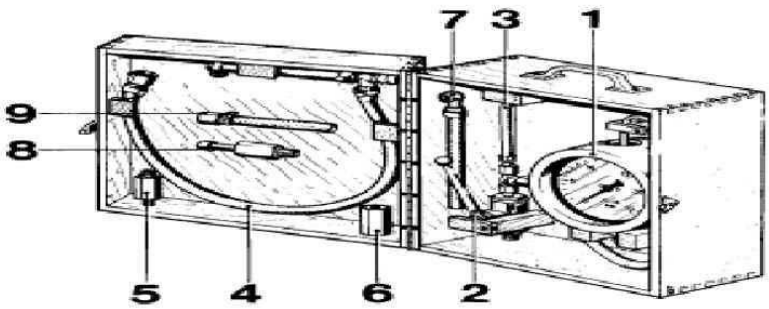
Note: For checking fuel pressure on K-Jetronic and L-Jetronic as well as oil pressure

Engine: M10, M20, M20B25, M20B27, M21, M30, M30B34, M30Tur, M40, M41, M42, M43, M43TU, M44, M47, M47T2, M47TU, M50, M51, M52, M52TU, M54, M56, M57, M57D25, M57D30, M57TU, M60, M62, M62VAN, M67, M70, M73, M88, N40, N42, N45, N46, N62, N73, S14, S38, S50B30, S50B32, S50US, S52US, S54, S62, W10, W11, W17

Order number: 13 3 060

Fixture

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| | | |
|---|---|---|
| 1 | = 13 3 061 | Pressure gauge 0...25 bar |
| 2 | = 13 3 062 | 2-way cock |
| 3 | = 13 3 063 | Connecting lines (2 x) |
| 4 | = 13 3 064 | Connecting line |
| 5 | = 13 3 065 | Connecting piece distributor |
| 6 | = 13 3 066 | Connecting piece warm-up sensor |
| 7 | = 13 3 067 | Connecting hose |
| 8 | = 13 3 068 | Connecting piece distributor |
| 9 | = 13 3 069 | Connecting piece |

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**Fig. 5: Identifying Fixture**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Consisting of:

1 = 13 3 061 Pressure gauge 0...25 bar

2 = 13 3 062 2-way cock

Note: Engine: All, except S50, S54, N73

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3 = 13 3 063 Connecting lines (2 x)

Note: For fuel and oil pressure testing

4 = 13 3 064 Connecting line

Note: Mit T-piece for L-Jetronic All except N73

5 = 13 3 065 Connecting piece distributor

Note: All except N73

6 = 13 3 066 Connecting piece warm-up sensor

Note: All except N73

7 = 13 3 067 Connecting hose

Note: For checking fuel pump delivery All except N73

In conjunction with: 13 3 020

8 = 13 3 068 Connecting piece distributor

Note: All except N73

In conjunction with: BMW SERVICE TESTER

9 = 13 3 069 Connecting piece

Note: For warm-up sensor with hose all except N73

In conjunction with: BMW SERVICE TESTER

**13 5 220 ADAPTER**

**Minimum set: Mechanical tools**

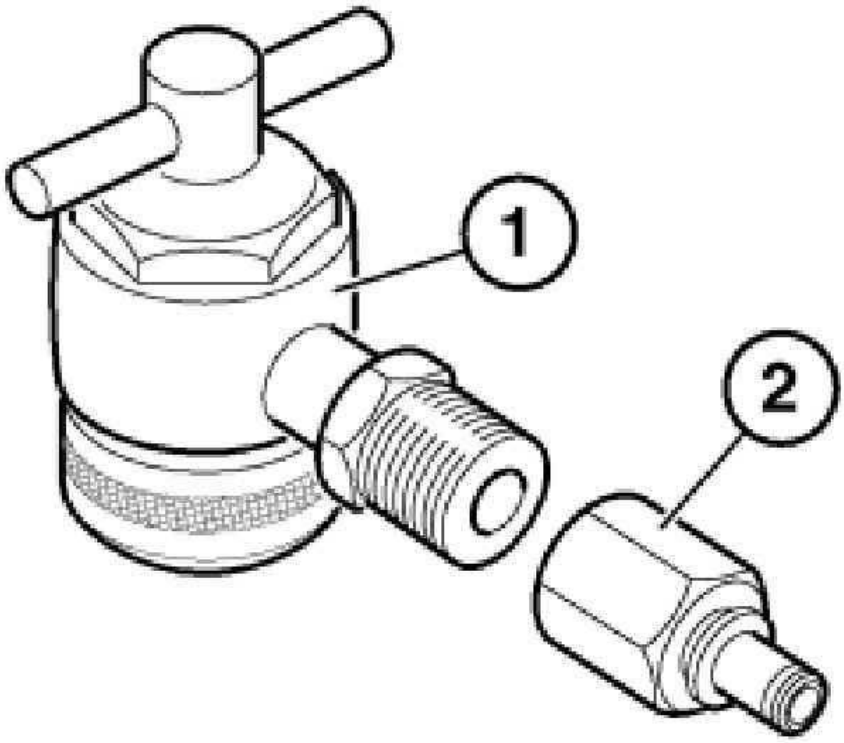
In conjunction with: 13 3 063 or 13 6 051

Note: For pressure gauge 13 3 061 or BMW DIS for measuring fuel pressure at injection rail

Engine: M10, M20, M20B25, M20B27, M21, M30, M30B34, M30Tur, M40, M41, M42, M43, M43TU, M44, M47, M47TU, M50, M51, M52, M52TU, M54, M56, M57, M57D25, M57D30, M57TU, M60, M62, M62VAN, M67, M70, M73, M88, N40, N42, N62, S14, S38, S50B30, S50B32, S50US, S52US, S54, S62, W10, W11, W17

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Storage location: C16




1 = 13 5 221 Adapter

2 = 13 5 222 Coupling connector

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**Fig. 6: Identifying Adapter**
**Courtesy of BMW OF NORTH AMERICA, INC.**

SI number: 1 06 95 (963)

Order number: 13 5 220

Adapter

Consisting of:

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1 = 13 5 221 Adapter

Note: Engine: M43, M44, M52, M62

2 = 13 5 222 Coupling connector

Note: For connecting DIS pressure sensor

**13 5 280 PLUGS FOR FUEL LINES**

Note: For sealing off fuel lines when removing and installing engine - Applicable to M62 only fitted in E39 / M52 only fitted in E38 / S50B32 only fitted in E36 / N62 only fitted in E65 / M54 in E83.

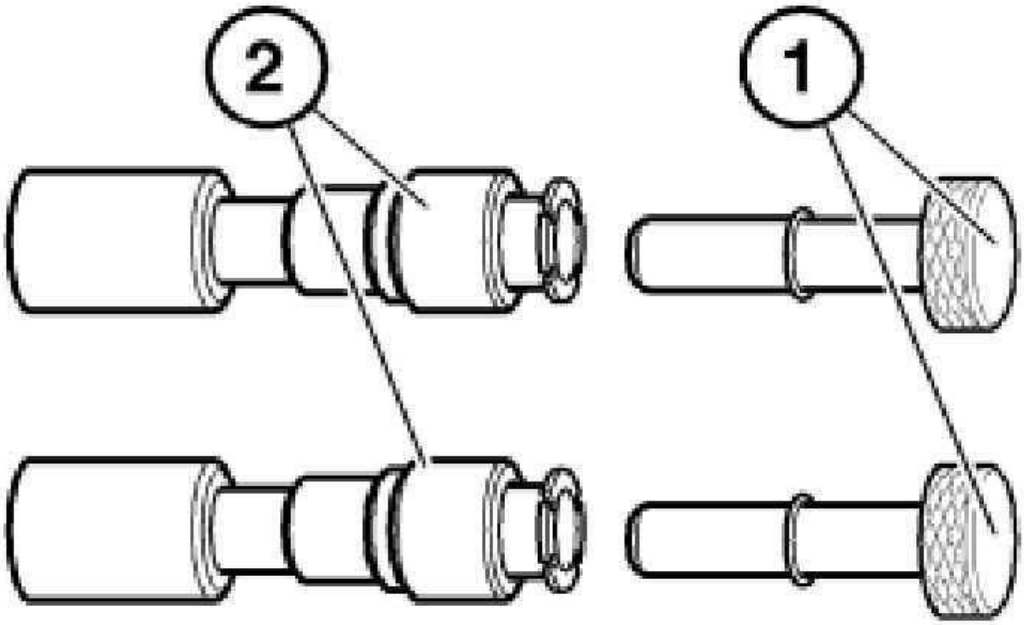
Series: E36, E38, E39, E46, E60, E61, E63, E64, E65, E66, E67, E83, E85, R50, R52, R53, RR1

Engine: M52, M54, M62, N40, N42, N62, N73, S50B32, W10, W11

Storage location: B16

SI number: 1 18 96 (163)

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1 = 13 5 281 Seal (2 x)

2 = 13 5 282 Seal (2 x)

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**Fig. 7: Identifying Plugs For Fuel Lines**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Order number: 13 5 280

Plugs for fuel lines

Consisting of:

1 = 13 5 281 Seal (2 x)

Note: For sealing quick couplings

2 = 13 5 282 Seal (2 x)

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Note: For sealing fuel lines

**13 6 050 SET OF ADAPTERS FOR BMW DIS**

**Minimum set: Mechanical tools**

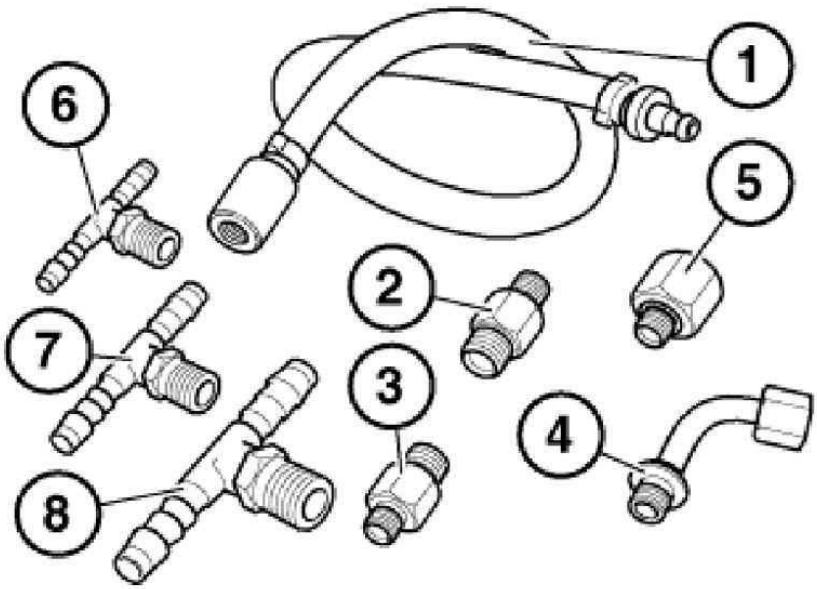
Note: For measuring oil and fuel pressures

Engine: M10, M20, M20B25, M20B27, M21, M30, M30B34, M30Tur, M40, M41, M42, M43, M43TU, M44, M47, M47T2, M47TU, M50, M51, M52, M52TU, M54, M56, M57, M57D25, M57D30, M57TU, M60, M62, M62VAN, M67, M70, M73, M88, N40, N42, N62, N73, S14, S38, S50B30, S50B32, S50US, S52US, S54, S62, W10, W11, W17

Storage location: A16, B16

SI number: 1 12 94 (859)

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| | | |
|---|---|---|
| 1 | = 13 6 051 | Connecting hose |
| 2 | = 13 6 052 | Reducer |
| 3 | = 13 6 053 | Reducer for adapter 16 1 300 |
| 4 | = 13 6 054 | Pipe elbow |
| 5 | = 13 6 055 | Reducer for T-pieces 13 6 056 and 13 6 057 |
| 6 | = 13 6 056 | T-piece for 6 mm dia. line |
| 7 | = 13 6 057 | T-piece for 8 mm dia. line |

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**Fig. 8: Identifying Set Of Adapters**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Order number: 13 6 050

Set of adapters for BMW DIS

Consisting of:

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1 = 13 6 051 Connecting hose

Note: For connecting reducers 13 6 052, 13 6 053, 13 6 55 and adapters 11 4 050, 11 4 160, 11 4 170, 13 5 131 to BMW DIS

2 = 13 6 052 Reducer

Note: For pipe elbows 24 0 023, 24 0 024, 24 0 140

In conjunction with: 13 6 051

3 = 13 6 053 Reducer for adapter 16 1 300

In conjunction with: 13 6 051

4 = 13 6 054 Pipe elbow

In conjunction with: 13 6 051, 11 4 050

5 = 13 6 055 Reducer for T-pieces 13 6 056 and 13 6 057

In conjunction with: 13 6 051

6 = 13 6 056 T-piece for 6 mm dia. line

7 = 13 6 057 T-piece for 8 mm dia. line

**13 6 058 T-PIECE FOR 12 MM DIA. LINE**

Order number: 13 6 058

T-piece for 12 mm dia. line

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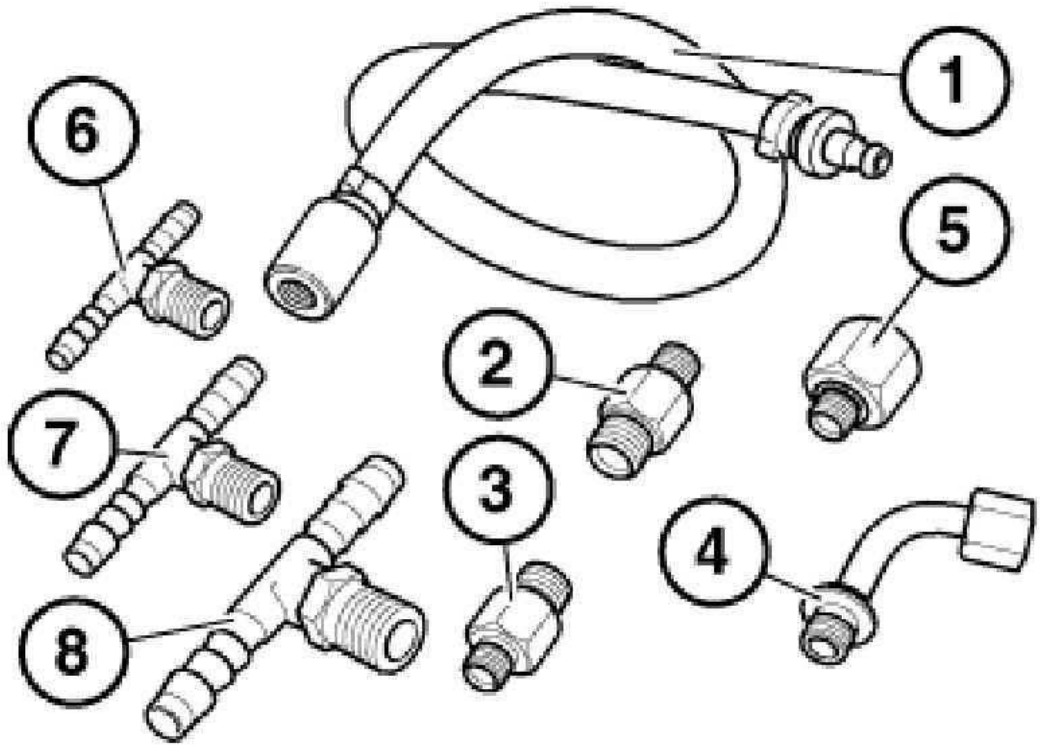



**Fig. 9: Identifying T-Piece**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**13 6 200 ULTRASONIC CLEANING SYSTEM**

Note: For fuel injectors complete with special detergent

Engine: M10, M20, M21, M30, M40, M41, M42, M43, M44, M50, M51, M52, M54, M60, M62, M70, M73, M88, N42, N46, S14, S38, S50B30, S50B32, S50US, S52US

Storage location: Single

SI number: 2 01 87(623)

Order number: 13 6 200

Ultrasonic cleaning system

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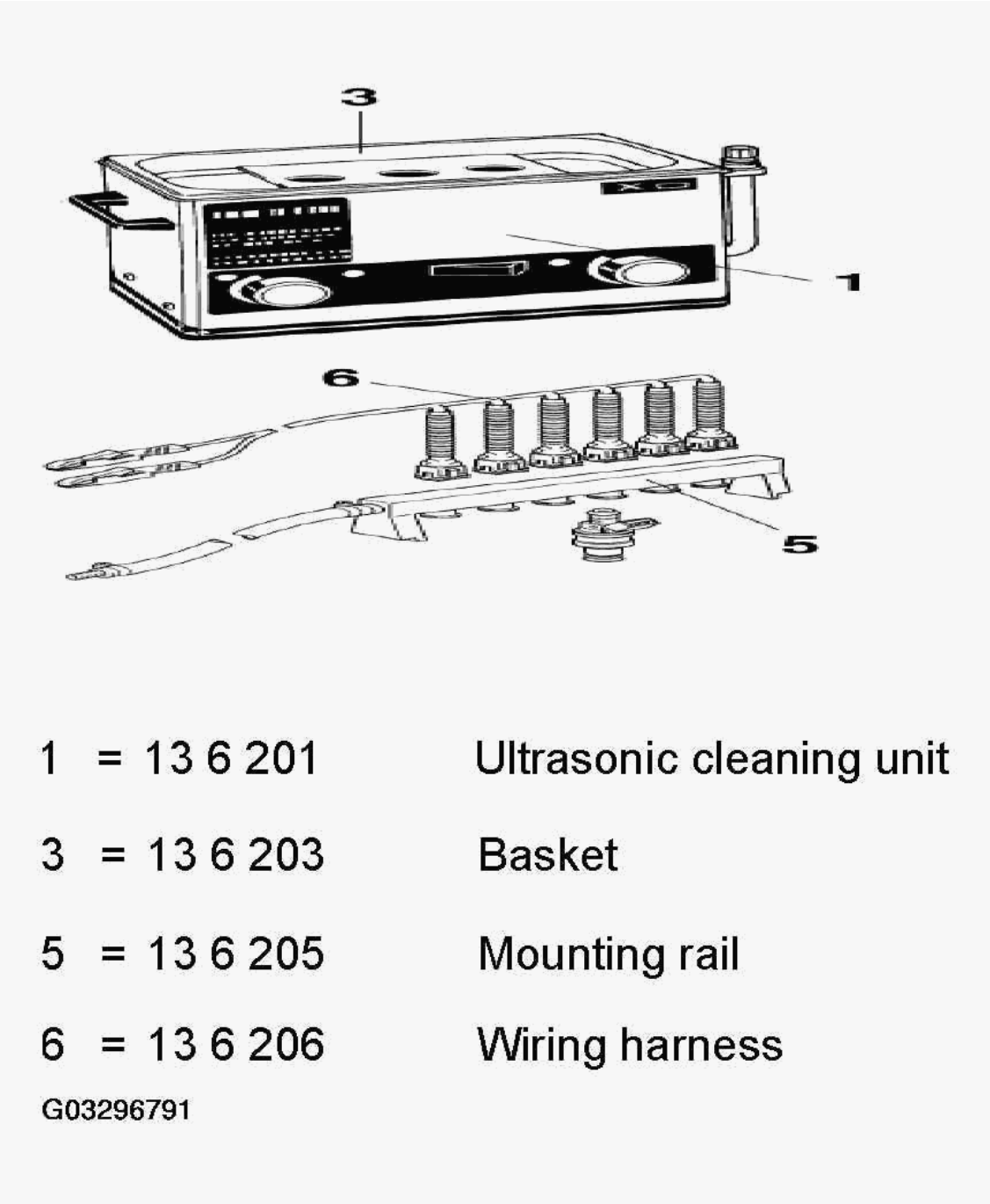



**Fig. 10: Identifying Ultrasonic Cleaning System**
**Courtesy of BMW OF NORTH AMERICA, INC.**

Consisting of:

1 = 13 6 201 Ultrasonic cleaning unit

Note: Without special cleaner

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3 = 13 6 203 Basket

Note: For diesel injection nozzles

5 = 13 6 205 Mounting rail

Note: For fuel injectors - engine: M10, M20, M30, M40, M42, M43, M44,M M50, M52,M54, M60, M62, M70, M73, M88, N42, S14, S38, S50B30, S50B32, S50US, S52

6 = 13 6 206 Wiring harness

13 6 202 Special cleaner (R 60 L) 10 ltr.

13 6 207 Cleaning agent concentrate 1 ltr.

Note: Tunop 656

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## ENGINE PERFORMANCE

## Fuel System - Technical Data - X3

# 53 INJECTION NOZZLE AND LINES

### 13 53 INJECTORS AND LINES, FUEL PRESSURE REGULATOR N52 / N52K / N51

### TECHNICAL DATA - INJECTORS AND LINES, FUEL PRESSURE REGULATOR

| | | |
|---|---|---|
| Test pressure / nominal value | bar ± 0.02 | 5.0 |

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# ENGINE PERFORMANCE

## Fuel System - Tightening Torques - X3

## 31 FUEL PUMP WITH DRIVE AND LINE

### 13 31 FUEL PUMP WITH DRIVE AND PIPES

**FUEL PUMP WITH DRIVE AND PIPES - TIGHTENING TORQUES**

| | Type | thread | tightening specification | Measure |
|---|---|---|---|---|
| 1AZ Fuel pump to engine | All | | | 12 Nm |
| 2AZ Fuel pipe coupling bolt | All / with K-Jetr. | M8 | | 9 Nm |
| 3AZ Fuel pipe coupling bolt | All / with K-Jetr. | M12 | | 20 Nm |
| 4AZ Fuel pipe to pressure regulator | All / with L-Jetr. | | | 30 Nm |
| 5AZ Return pipe connector to pressure regulator | All / with L-Jetr. | | | 27 Nm |

## 32 FUEL FILTER

### 13 32 FUEL FILTER

**FUEL FILTER - TIGHTENING TORQUES**

| | Type | Thread | Tightening specification | Measure |
|---|---|---|---|---|
| 1AZ Fuel line to filter housing and injection pump | | | | |
| Coupling nut | M21 / M51 / M41 | M14 x 1.5 | | 14 Nm |
| Adapter | M21 / M51 / M41 | M12 x 1.5 | | 9 Nm |
| Hollow bolt | M21 / M51 / M41 | M14 x 1.5 | | 14 Nm |
| 2AZ Fuel filter to holder | M51 / M41 | M8 | | 22 Nm |
| 3AZ Air duct to fuel cooler | M47 | | | 5.7 Nm |
| | M57 | | | 2 Nm |
| 4AZ Fuel filter cover | M47 | | | 25 Nm |
| 5AZ Fuel filter with holder to body | N42 | | | 8.8 Nm |

## 51 INJ. PUMP, REGULAR, MIXER REGULATOR

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### 13 51 INJECTION PUMP, CONTROL RECEPTACLE

**INJECTION PUMP, CONTROL RECEPTACLE - TIGHTENING TORQUES**

| | Type | Thread | Tightening specification | Measure |
|---|---|---|---|---|
| 1AZ Plug for high pressure section of injection pump | M21 / M51 / M41 | | | 25 Nm |
| 2AZ Distributor injection pump to holder | M21 / M51 / M41 | | | 25 Nm |
| 3AZ Electric shutoff to injection pump | M21 / M51 / M41 | | | 20 ± 5 Nm |
| 4AZ Electric cold start valve to injection pump | M21 | | | 20 Nm |
| 5AZ Coupling bolt (OUT) to injection pump (fuel return) | M21 / M51 / M41 | | | 25 Nm |
| 6AZ Pressure valve holder to injection pump | M21 / M51 | | | 45 Nm |
| 7AZ Expansion element housing (temperature dependent idling speed boost) to injection pump | M21 | | | 18 Nm |
| 8AZ Distributor injection pump to flange and console | M21 / M51 / M41 | | | 22 Nm |
| 9AZ Electr. line on fuel cutout device | M51 / M41 | | | 2.5 Nm |
| 10AZ Fuel feed line to injection pump (VP44) | M47 | | | 30 Nm |
| 11 AZ Fuel return line to injection pump (VP44) | M47 | | | 25 Nm |
| 12AZ Plug for static basic adjustment (injection pump VP44) | M47 | | | 13 Nm |
| 13AZ Blocking screw for injection pump shaft without spacer plate (injection pump VP44) | M47 | | | 31 Nm |
| 14AZ Blocking screw for injection pump shaft with spacer plate (injection pump VP44) | M47 | | | 13 Nm |
| 15AZ Injection line (union nut) to injection pump (VP44) | M47 | | | 30 Nm |

## 53 INJECTION NOZZLE AND LINES

### 13 53 FUEL INJECTION NOZZLES AND PIPES

**FUEL INJECTION NOZZLES AND PIPES - TIGHTENING TORQUES**

| | Type | Thread | Tightening specification | Measure |
|---|---|---|---|---|
| 1AZ Fuel rail | N52, N52K | M6 x 12 | | 9 ± 1 Nm |
| 1AZ Fuel rail | N51 | M6 x 16 | | 9 ± 1 Nm |

## 54 THROTTLE AND OPERATION

### 13 54 THROTTLE AND ACTUATOR

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**THROTTLE AND ACTUATOR - TIGHTENING TORQUES**

| | Type | Thread | Tightening specification | Measure |
|---|---|---|---|---|
| 1AZ Throttle-valve assembly to intake manifold | N52 / N52K / N51 / N53 | M6 x 50 | | 9 Nm |

# 62 SENSOR FOR CONTROL UNIT

**13 62 SENDERS FOR CONTROL UNIT**

**SENDERS FOR CONTROL UNIT - TIGHTENING TORQUES**

| | Type | Thread | Tightening specification | Measure |
|---|---|---|---|---|
| 1AZ Temperature time switch | M21 / M51 | | | 18 Nm |
| 2AZ Coolant temperature sensor | M60/1 / M60/2 / M21 / M51 | | | 18 Nm |
| | All others | | | 13 Nm |
| 3AZ Temperature switch | All | | | 28 Nm |
| 4AZ Temperature sensor - air | All | | | 13 Nm |
| 5AZ Charge-air pressure sensor on holder | M51 / M41 | | | 4 Nm |
| Charge-air pressure sensor on intake manifold | M47 | | | 5 Nm |
| 6AZ Twin temperature sensor (4-pin plug-in connection) | M41 / M43 / M44 / S50 / S52 / M52/ M57 / M67 / M62 / M73 | | | 13 Nm |
| 7AZ Air-mass sensor on lower section of air filter housing | M51 | | | 3.5 Nm |
| Air-mass flow sensor to cylinder head cover | M47 / M47TU / M57 / M57TU | | | 4.5 Nm |
| 8AZ Pulse generator, camshaft to cylinder head cover | M57 | | | 4.5 Nm |
| | M47TU / M57TU | | | 3.5 Nm |
| 9AZ Intake neck on air-mass flow sensor | M47 | | | 9 Nm |

# 64 START VALVES

**13 64 FUEL INJECTORS**

**FUEL INJECTORS - TIGHTENING TORQUES**

| | Type | Thread | Tightening specification | Measure |
|---|---|---|---|---|
| 1AZ Fuel injector to intake manifold | All | M6 | | 10 Nm |
| 2AZ Coupling nut on fuel injector | All / with K-Jetr. | | | 25 Nm |

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## 2007 ENGINE PERFORMANCE

## Self Diagnosis - Theory & Operation - 328i, 328xi, X3 (N52 Engine)

# DIAGNOSTIC TROUBLE CODE INDEX

### DIAGNOSTIC TROUBLE CODE INDEX - THEORY & OPERATION

| DTC | Definition |
|---|---|
| **P0420/0430** | Catalyst Monitoring |
| **P0300, P0301, P0302, P0303, P0304, P0305, P0306** | Misfire Monitoring |
| **P0442/P0456, P1434, P1447, P1448, P1449** | Evaporative system leak measurement |
| **P0440, P0441** | EVAP (Functional check canister purge solenoid) |
| **P0461, P0462, P0463, P2067, P2068** | Fuel Level Sensor |
| **P0072, P0073** | CAN based Ambient Temperature - signal diagnosis |
| **P0071** | Ambient Temperature Signal Plausibility Check |
| **P0171, P0172,P0174, P0175** | Fuel System Monitoring Lambda Adaptation |
| **P2096/P2098, P2097/P2099** | Fuel System Monitoring Trim Control Plausibility Monitoring |
| **P0131/P0151, P0132/P0152** | Upstream Oxygen Sensor - Short Circuit Monitoring |
| **P112C/P112D, P2243/P2247, P2626/P2629** | Upstream Oxygen Sensor - Open Circuit Monitoring |
| **P3022/P3023, P3024/P3025** | Upstream Oxygen Sensor - Signal Controller Monitoring |
| **P2414/P2415** | Upstream Oxygen Sensor - Signal Activity Check |
| **P0040** | Upstream Oxygen Sensor - Swapped Sensors Check |
| **P2195, P2196, P2197, P2198** | Upstream Oxygen Sensor - Active Signal Check (Shift to lean / rich) |
| **P0133/P0153** | Upstream Oxygen Sensor - Signal Dynamic Monitoring (Slow Response) |
| **P2297/P2298** | Upstream Oxygen Sensor - Signal Monitoring During Fuel Cut-off |
| **P3026/P3027** | Upstream Oxygen Sensor - Heater Monitoring |
| | |

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| | |
|---|---|
| **P0030, P0031, P0032, P0050, P0051, P0052** | Upstream Oxygen Sensor - Heater Circuit Monitoring |
| **P0137, P0138, P0140, P0157, P0158, P0160** | Downstream Oxygen Sensor - Circuit Monitoring |
| **P0139/P0159** | Downstream Oxygen Sensor - Signal Dynamic / Plausibility Check During Fuel Cutoff |
| **P1130/P1131** | Downstream Oxygen Sensor - Dynamic / Transition Time in Sensor Midpoint Range Monitoring |
| **P114A, P114B, P114C, P114D, P2279, P2271, P2271, P2273** | Downstream Oxygen Sensor - Active Signal Check (Stuck lean / rich) |
| **P0141, P0161, P0036, P0037, P0038, P0056, P0057, P0058** | Downstream Oxygen Sensor - Heater Circuit Monitoring |
| **P0017, P0018** | Electrical Coolant Temperature Diagnosis |
| **P3198** | Coolant Temperature Gradient Diagnosis |
| **P3199** | Coolant Temperature Stuck Diagnosis |
| **P316A** | Coolant Temperature Sensor stuck in a range Diagnosis with Engine off timer |
| **P1515, P1551** | Engine off timer Monitoring |
| **P0128, P0597, P0598, P0599** | Thermostat |
| **P0112, P0113** | Electrical Intake Air Temperature Diagnosis |
| **P0111, P111E, P111F** | Intake Air Plausibility Check |
| **P0012/P0015** | Variable Camshaft Timing (Vanos) (detection of mechanical IVVT error) |
| **P0340/P0365/P1300/P130A/P0344/P0369/P1554/P1553/P0016/P0017** | Camshaft position sensor (CMP) |
| **P0341** | Camshaft Crankshaft synchronization |
| **P0335/P0370/P0373** | Crankshaft position sensor (CRK) |
| **P1047, P1048, P1049, P1076, P1075, P103A, P1078, P107A, P107B, P107C, P105B, P105A, P1055, P1056, P1019, P1020, P1057, P1017, P1030, P1064, P101A, P1023, P1024, P1041** | Variable Valve Lift - Electrical Diagnosis |
| **P169A, P1694** | ETC spring check (start routine) |
| **P1632, P1633, P1634, P1635** | ETC adaptation diagnosis |
| **P1637, P1639** | Electronic Throttle Control |

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| | |
|---|---|
| | (ETC) Motor Control Performance |
| **P0506, P0507** | ISC (Idle Speed Control) Actuator |
| **P1415, P1424** | Air Mass Flow Meter - Rationality check |
| **P1124, P1104, P1105** | Manifold Differential Pressure Sensor - Rationality check |

## CATALYST MONITORING

**NOTE: OBD System Description of Siemens VDO ECU MSV80 for following models:**

**X3 3.0i, X3 3.0Si, 323i (only Canada), 328i, 328xi, 328Ci, 328Cxi, 328i sport wagon, 328xi sport wagon and 328Ci convertible**

*P0420/0430*

**DIAGNOSTIC OVERVIEW**

The ECM tests the catalyst system during steady state driving by cycling the fueling LEAN and then RICH for a calibrated number of cycles while monitoring the oxygen storage capacity (OSC). Prior to the Catalyst test the canister purge valve is completely closed or completely opened with low canister purge value. This is to eliminate the influence of canister vapors on the downstream sensor during the test.

The first lean to rich cycle of the test is only used to establish an average voltage value of the downstream sensor voltage. During subsequent cycles the OSC is based on the integrated (accumulated) value of the difference between the average value of the previous lean to rich cycle and the measured instantaneous voltage during the current lean to rich cycle.

**MONITORING FUNCTION**

Catalyst monitoring is based on the monitoring of the oxygen storage capability by comparing the signals of the O2 sensor upstream and downstream the catalyst.

The engine control results in regular lambda oscillations of the exhaust gas. These oscillations are damped by the storage activity of the catalyst. The amplitude of the remaining lambda oscillations downstream the catalyst indicates the oxygen storage capability.

If all monitoring conditions are fulfilled, then a special defined A/F-modulation will be done. The relation of the deviations between the current downstream-sensor-signal to the average value of the downstream-sensor-signal is a sign for catalyst condition. The catalyst system is considered malfunctioning, if after a specified number of monitoring cycles the average of the ratios exceeds a threshold. The corresponding fault code is stored.

**VARIABLES LIST**

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**VARIABLES LIST**

| Siemens Parameter SAM/Specification | Description |
|---|---|
| CAT_DIAG | Result value of Cat diagnosis |
| SUM_CAT_DIAG | Counter Increment |
| CAT_DIAG_CLC | Current Cat Diagnosis |
| VLS_CAT_RATIO SUM | Final Sum of values |

## MISFIRE MONITORING

*P0300, 0301, 0302, 0303, 0304, 0305, 0306*

**MONITORING FUNCTION**

The method of engine misfire detection is based on evaluating the engine speed fluctuations.

The engine torque is a function of engine speed, engine load and the moment of inertia.

In order to detect misfiring at any cylinder, the torque of each cylinder is evaluated by metering the time between two ignition events, which is a measure for the mean value of the speed of this angular segment. This means, a change of the engine torque results in a change of the engine speed.

It is also an influence of the load torque. This means, the influences of different road surface, e. g. pavement, pot holes etc. If the mean engine speed is measured, influences caused by road surfaces have to be eliminated.

This method consists of following main parts:

*Data acquisition:*

The duration of the crankshaft segments is measured continuously for every combustion cycle.

*Sensor wheel adaptation:*

Within a defined engine speed range and during fuel cut-off, the adaptation of the sensor wheel tolerances, instead of the misfire detection, is carried out.

With progressing adaptation the sensitivity of the misfire detection is increasing. The adaptation values are stored and taken into consideration for the calculation of the engine roughness.

*Calculation of the engine roughness:*

The engine roughness is derived from the differences of the segment durations. Different statistical methods are used to distinguish between normal changes of the segment duration and the changes due to misfiring.

*Determination of misfiring:*

Misfire detection is performed by comparing the engine roughness threshold value with the engine roughness

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value. If the threshold is exceeded, single misfire is detected.

**STATISTICS, FAULT PROCESSING**

*Emission Limit: (e) (3.2.2)*

If the sum of cylinder(s) misfire counters within 1000 revolutions is 4 times exceeding a predetermined value during a driving cycle, or during the first 1000 revolutions, the fault code for emission relevant misfiring is temporarily stored. If the following driving cycle is also above the emission limits, the MIL will be switched on and a cylinder selective or global fault will be stored.

*Catalyst Damage: (e) (3.2.1)*

If the weighted sum of cylinder(s) misfire counters within 200 revolutions exceeds a predetermined value the fault code for catalyst damage relevant misfiring is stored and the cylinder with the highest rate will be switched off and the MIL will be switched on immediately. If two cylinders are switched off and the misfire rate is still above the damage limits, MIL is flashed immediately. If one of the cylinder selective counters exceeds the predetermined threshold, the following measures take place:

1. The Lambda closed loop system is switched to open-loop condition.
2. The cylinder individual fault code is stored or if multiple cylinders, then the Global fault code is set.
3. Fuel supply of the misfiring cylinder(s) is not cut-off (per customer request)
4. No downstream fuel trim.

All misfire counters are reset after each interval.

**CALIBRATION VARIABLES**

**CALIBRATION VARIABLES**

| Siemens VDO Parameter SAM/Specification | J1930 Description | Cal Value |
|---|---|---|
| C_MIS_B_MIN_NR | Threshold for CARB B detection | |
| C_MIS_A_IND_THD | Cylinder individual threshold used for cylinder shut-off during CARB A criterion window | |
| C_MIS_SUM_A_THD | Cylinder global threshold for misfire status CARB A detection | |
| THD_ER_AV | Engine speed fluctuation threshold for misfire detection | Table |

**FUNCTION VARIABLES**

**FUNCTION VARIABLES**

| Siemens VDO Parameter SAM/Specification | J1930 Description |
|---|---|
| MIS_NR_TDC_ER | Number of misfire (for all cylinder) |
| MIS_SUM_ER(SEG) | Number of misfire (cylinder selective) |
| MIS_B_(SEG) | CARB B relevant misfire sums (cylinder individual) |

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| | |
|---|---|
| MIS_CTR_A_(SEG) | CARB A relevant misfire sums (cylinder individual) |
| MIS_SUM_A | CARB A misfire weighted sum (global) |

# EVAP-SYSTEM LEAK DIAGNOSIS (MODULE DM-TL)

## EVAPORATIVE SYSTEM LEAK MEASUREMENT

*P0442/0456, 1434, 1447, 1448, 1449*

**General description of leak measurement**

The evaporative system monitoring permits the detection of leaks in the evaporative system with a diameter of 0.02 inches and up.

By means of a Diagnostic Module Tank Leakage (DM-TL), an electrical actuated pump located at the atmospheric connection of the evaporative canister, a pressure test of the evaporative system is performed in the following order:

a. During the Reference Leak Measurement, the electrical actuated pump delivers through the reference restriction. The engine-management system measures the pump's electrical current consumption in this section.

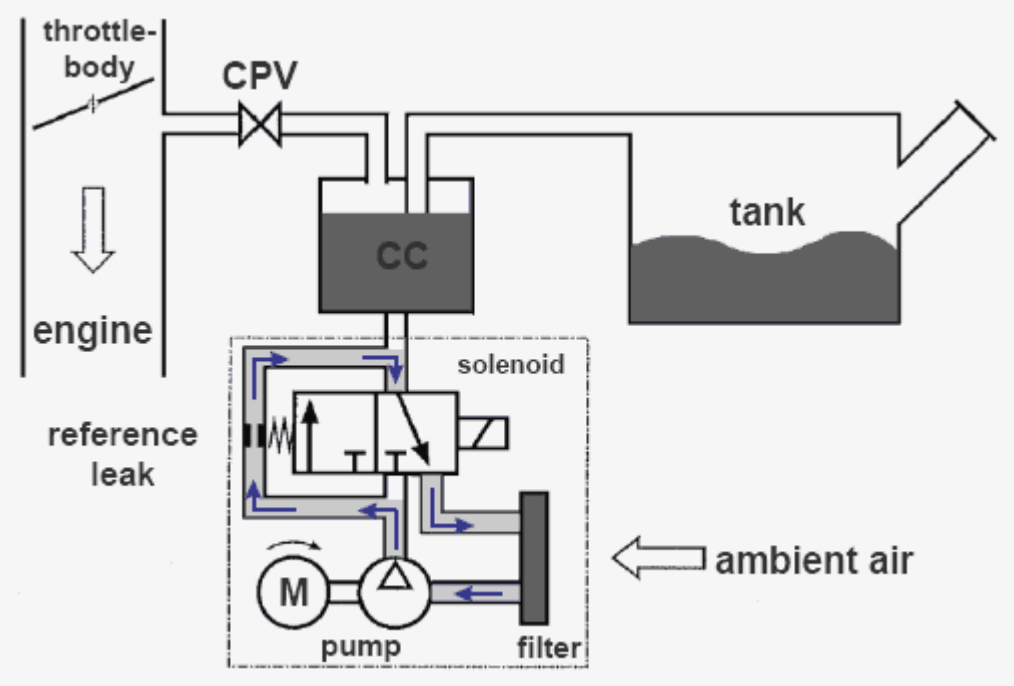



**Fig. 1: Evaporative System Diagram (Actuated Pump Delivers Through Reference Restriction)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

b. During the Leak Measurement, the electrically actuated pump delivers through the charcoal canister into the fuel-tank system. The pressure in the evaporative system may be up to 2.5 kPa depending on the fuel level in the tank. The engine-management system measures the pump's electrical current consumption. A

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comparison of the currents of the reference leak measurement and the leak measurement is an indication of the leakage in the tank.

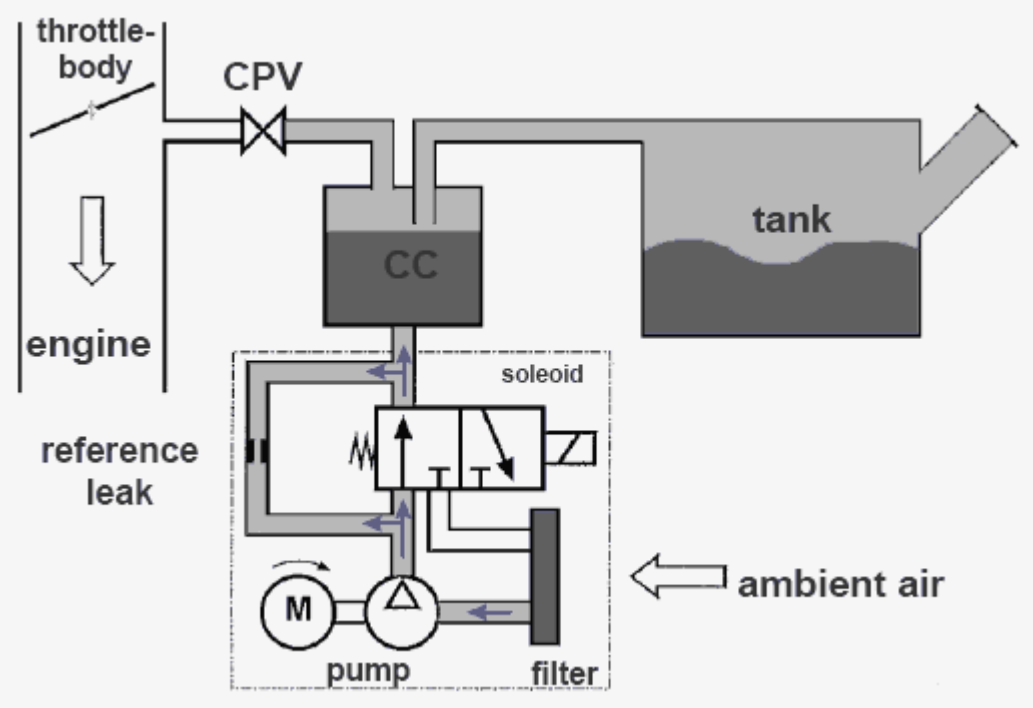



**Fig. 2: Evaporative System Diagram (Actuated Pump Delivers Through Charcoal Canister Into Fuel-Tank System)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**0.02 inch diagnosis:**

The first step of the diagnosis is the reference measurement, the result of the pump reference current is stored (picture in chapter a). After the solenoid switches, the venting system is pressurized (picture in chapter b). In the rough leak measurement the rough leak threshold is reached, if the leak is smaller than 0.04 inch and then the small leak measurement phase follows. When the DMTL current reaches the reference current within the small leak time, the system is tight (leak smaller than 0.02 inch), otherwise a small leak between 0.02 - 0.04 inches is detected.

**0.04 inch diagnosis:**

The first step of the diagnosis is also the reference measurement, the result of the pump reference is stored (picture in chapter a). After the solenoid switches, the venting system is pressurized (picture in chapter b). In the rough leak phase (time) the pump current must reach the rough leak threshold 1 (rough leak threshold 1 = idle current pump + K1 x (reference current - idle current). Factor K1 is between 0.16 and 0.28 depending on the characteristic current value of the pump (reference current - idle current), this value is various in every pump.

If the rough leak threshold 1 is not reached in the rough leak time, the rough leak threshold 2 must be reached in an additional time (rough leak threshold 2 = idle current pump + K2 x (reference current - idle current). Factor K2 is between 0.60 and 0.80 depending on the characteristic current value of the pump

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(reference current - idle current).

If the rough leak threshold 2 is also not reached, a leak > 0.04 inches is detected.

In the diagram below is the typical current of a tight system, a 0.02 inch leak, and a leak > 0.04 inches.

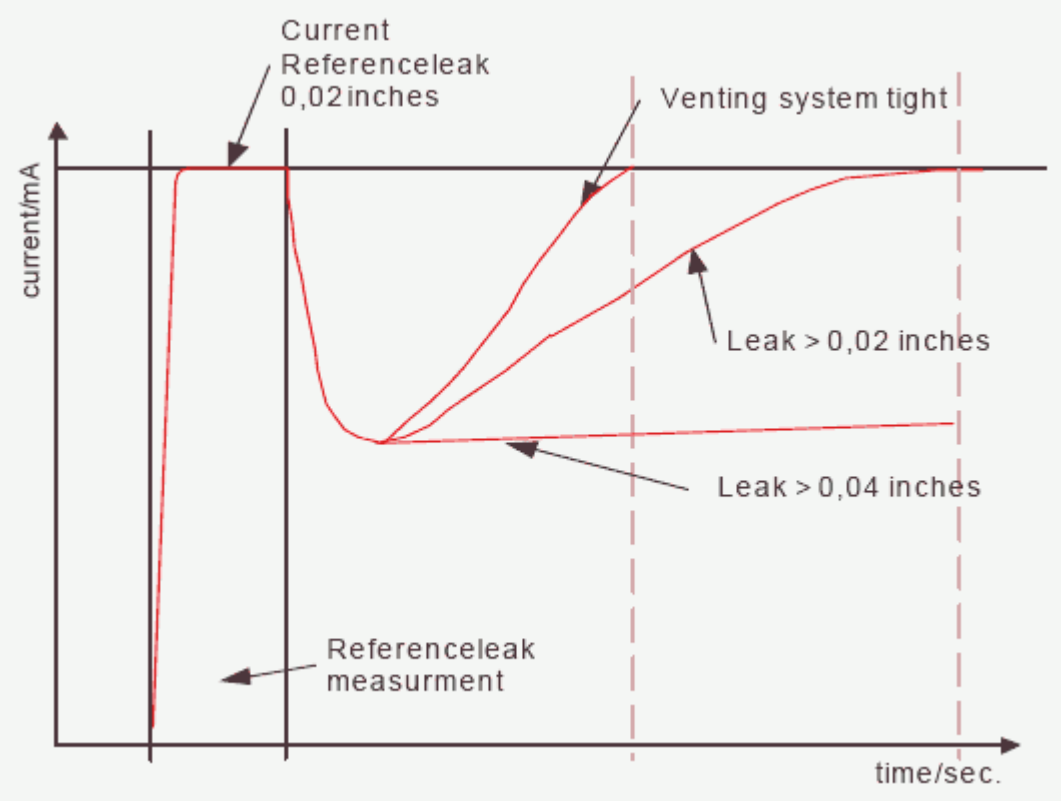



**Fig. 3: Tight System Typical Current Diagram**
**Courtesy of BMW OF NORTH AMERICA, INC.**

c. After the test the remaining pressure in the evaporative system is bled off through the charcoal canister by switching off the pump and solenoid.

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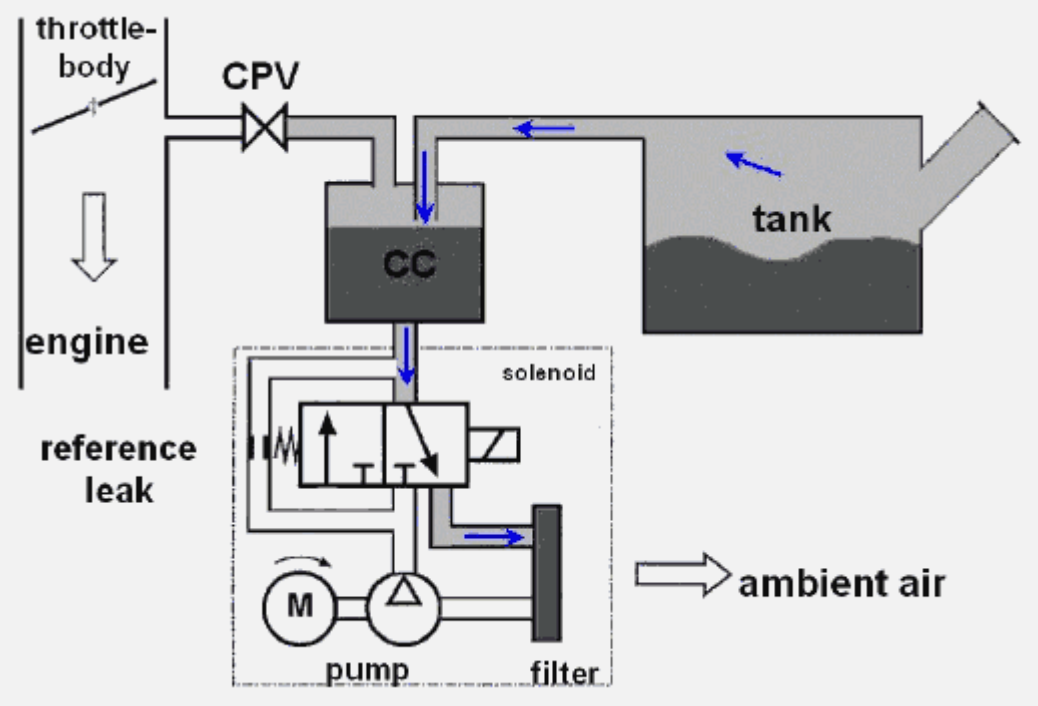



**Fig. 4: Evaporative System Diagram**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**Diagnosis Frequency and MIL illumination**

**Diagnosis Frequency and MIL illumination-no refueling detected, leak > 0.04 inches**

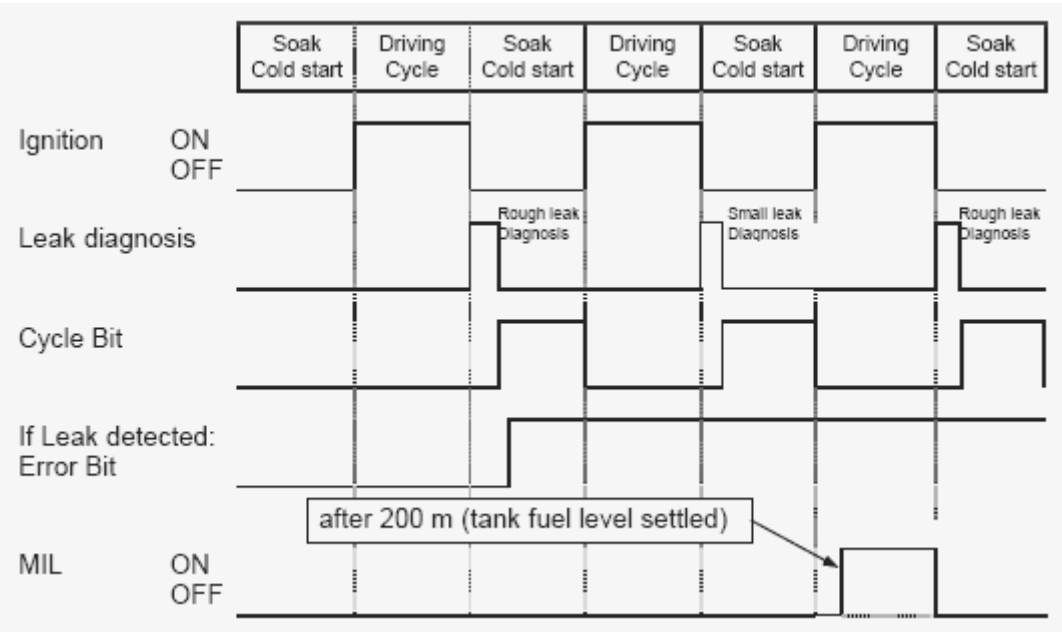



**Fig. 5: Diagnosis Frequency And Mil Illumination Blinking Pattern (No Refueling Detected, Leak > 0.04 Inches)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

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**Diagnosis Frequency and MIL illumination-after refueling detected, leak > 0.02 inches**

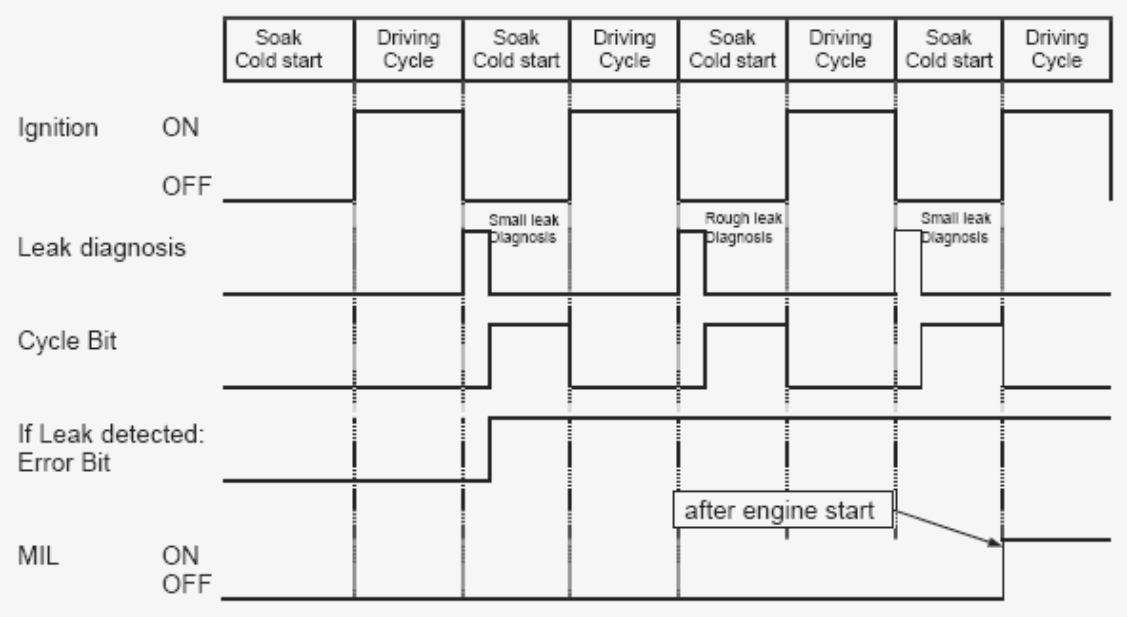



**Fig. 6: Diagnosis Frequency And Mil Illumination Blinking Pattern (After Refueling Detected, Leak > 0.02 Inches)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

## EVAP (FUNCTIONAL CHECK CANISTER PURGE SOLENOID)

*P0440, 0441*

**Monitoring the canister purge solenoid**

The diagnosis is used for the functional test of the CP solenoid (CPS).

The test consists of three steps. Step 2 can be triggered separately by an EOL (End Of Line) request by a serial communication tool.

Step 1: based on the activated charcoal filter (ACF) load degree

Step 2: based on ...

- the engine speed change at idle speed
- the deviation of lambda-controller
- manifold air pressure (MAP) change at idle speed

Step 3: based on the difference between the measured air mass flow before and during a CPS opening

**Monitoring function**

The first check of the CPS is based on the ACF- load degree. The "Canister Load diagnosis" is calculated

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permanently until the complete check CPS is finished.

During the next check, the CPS is evaluated based on the engine speed change at idle speed. To this effect, the CPS is opened for a short time and the engine speed monitored for a certain period.

After this check has been enabled for the first time, it is requested during each idle speed phase. This is repeated as long as a result has been reached. This check is not bound to one IS phase, but can be distributed to several IS phases.

During this check the lambda deviation will also be checked.

In step 3 the CPS is considered on the basis of the measured mass air flow before and during a CPS opening phase.

If the CPS is detected to be not OK after all three checks have been passed (end of step 3), then the error is set.

## FUEL LEVEL SENSOR

*P0461, P0462, P0463, P2067, P2068*

The diagnosis of the fuel level sensor signal consists of a circuit continuity check and a rationality check.

**FUEL LEVEL SENSOR CIRCUIT CONTINUITY CHECK**

The signal of the fuel level sensor is monitored concerning the valid range. This range depends on the used fuel level sensor.

If the left or right fuel level sensor signal is above the upper threshold, a short circuit plus is detected. If the left or right fuel level sensor signal is below the lower threshold, an appropriate fault code for the left or right sensor is set.

**FUEL LEVEL SENSOR SIGNAL RATIONALITY CHECK (PLAUSIBILITY ERROR)**

The engine management system of every BMW has the capability to calculate fuel consumption. For the fuel level sensor plausibility check, this calculated consumption is compared with the difference of the fuel level signal. When the calculated fuel consumption reaches an appropriate and predetermined amount (for example five gallons), the calculated fuel consumption is compared to the change in fuel level as indicated by the fuel level sensors. If the difference is greater than the applicable threshold value, a stuck fuel level sensor fault is detected and an appropriate fault code is set.

If a fault is present, the OBD II EVAP leak monitor will run using a substitute value of 85% total fuel tank volume.

The 85% substitute value will assure that in every case the required 0.020 inch leak is detected by the OBD II system.

**FLS DIAGNOSIS FREQUENCY OF FLS CIRCUIT CONTINUITY CHECK**

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**short circuit battery**

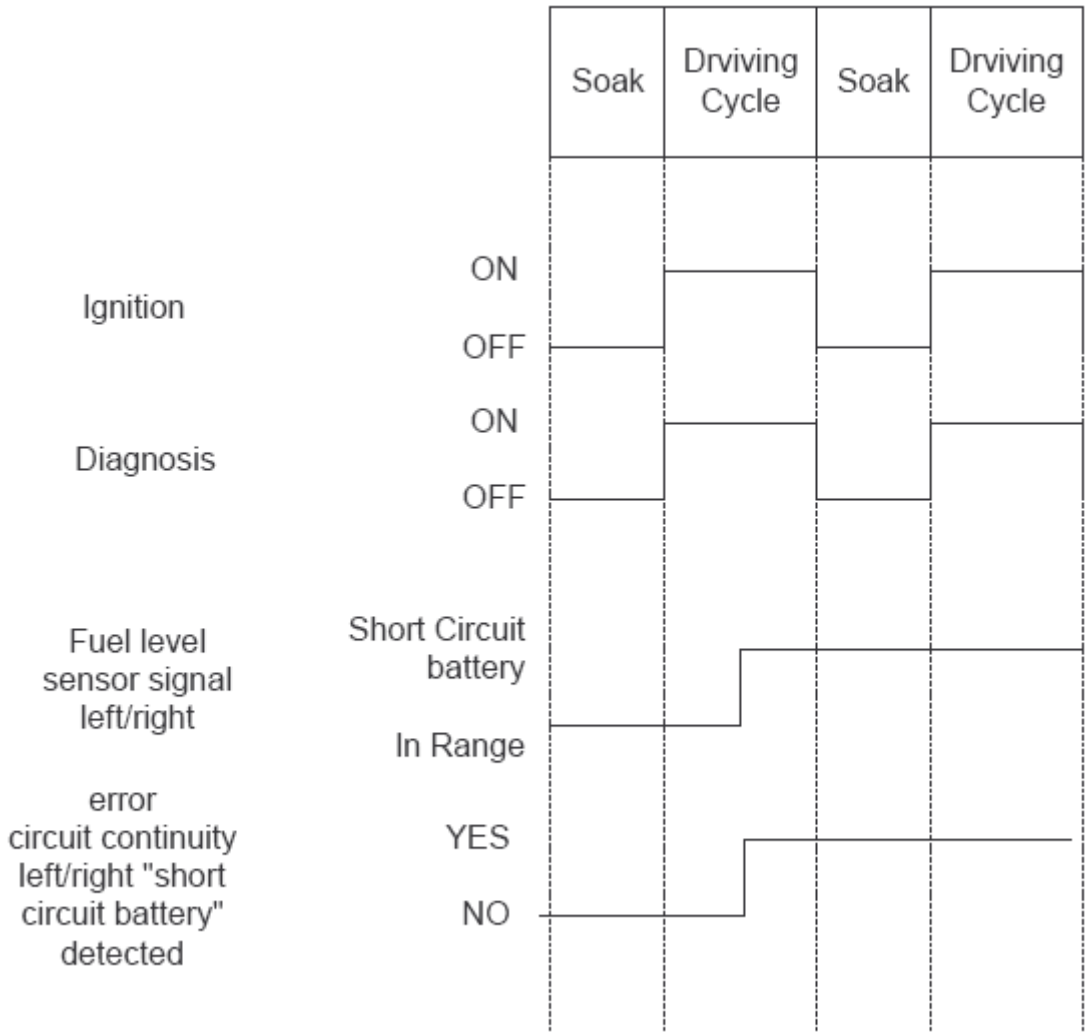



**Fig. 7: FLS Diagnosis Frequency Pattern (Short Circuit Battery)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**short circuit ground**

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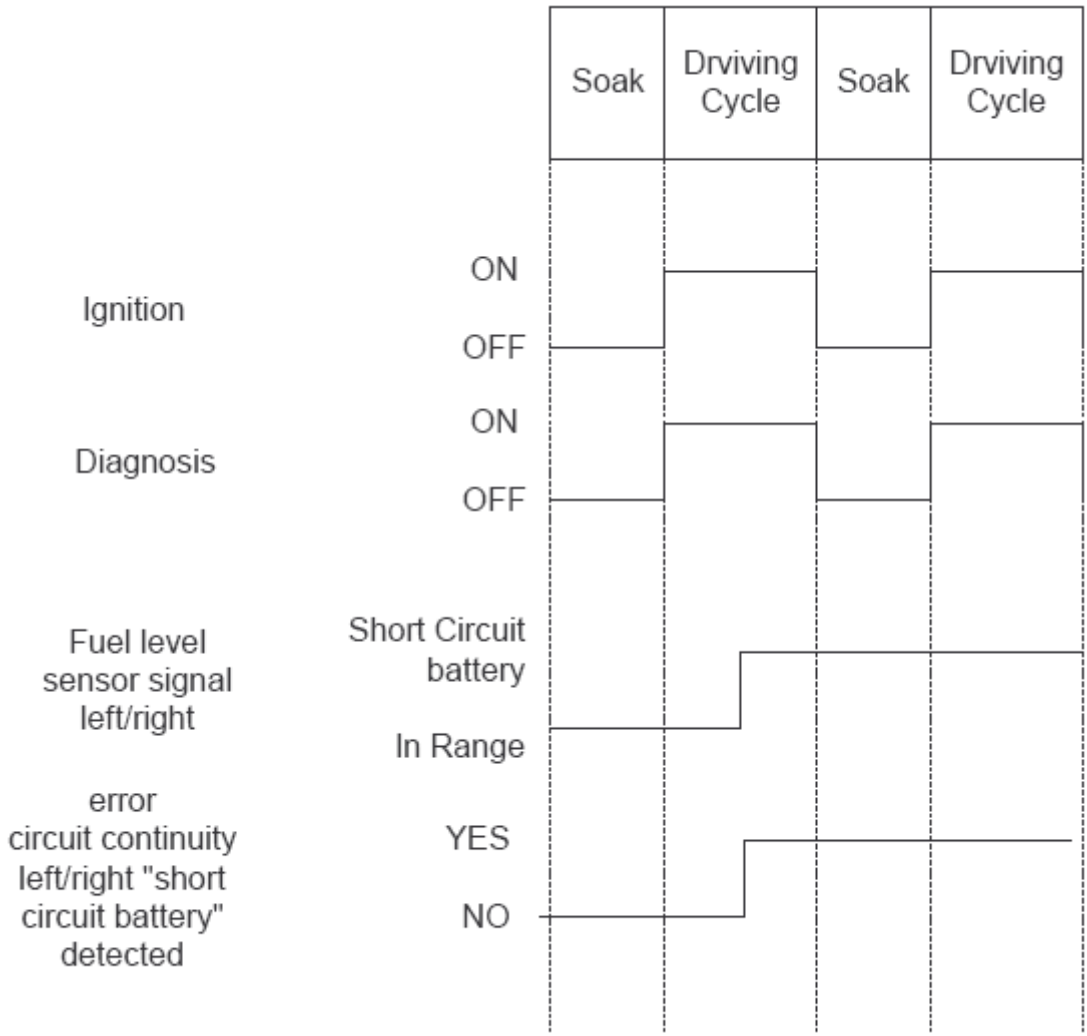



**Fig. 8: FLS Diagnosis Frequency Pattern (Short Circuit Ground)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**FLS DIAGNOSIS FREQUENCY OF FLS RATIONALITY CHECK (PLAUSIBILITY ERROR)**

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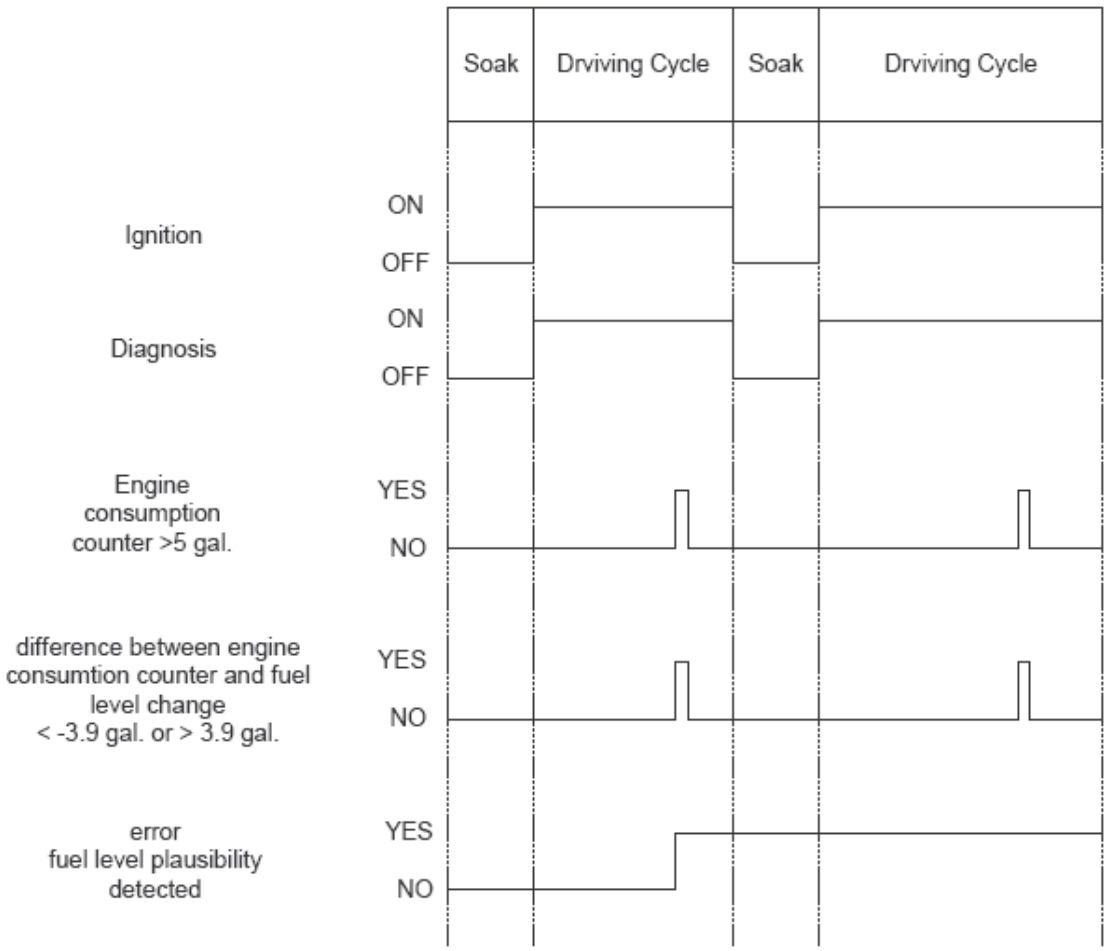



**Fig. 9: FLS Diagnosis Frequency Pattern (FLS Rationality Check (Plausibility Error))**
**Courtesy of BMW OF NORTH AMERICA, INC.**

# POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM

### GENERAL DESCRIPTION OF THE PCV-SYSTEM

There are 3 tubes connected to the engine: The first of them conducts the blow-by gases from the cylinder head cover to the separator, where the oil is separated from the air and lead back by a second tube to the crankcase sump. A third tube directs the cleaned blow-by gases via the intake system to the combustion. The pressure regulator makes sure that the high vacuum level between crankcase and ambient air will be reduced if needed.

### DIAGNOSIS OF A LEAKAGE IN THE PCV-SYSTEM

A disconnection or leakage in the PCV-System is indicated by a rough or stalling engine and results in a reaction within the fuel system (fuel trim deviation). In this case a fault code will be stored by the **fuel system monitoring.**

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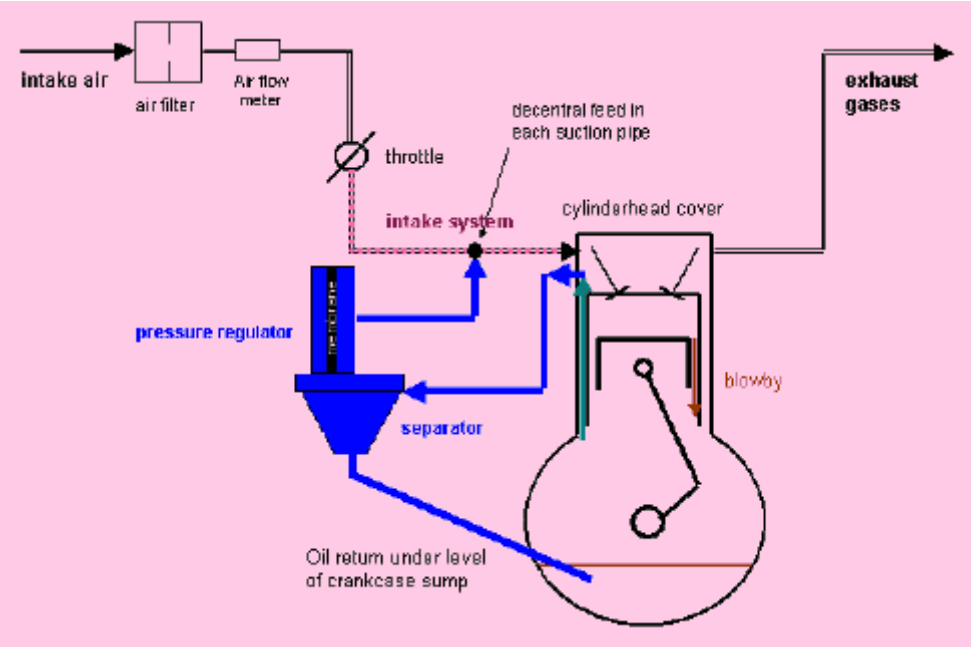



**Fig. 10: PCV-System Diagram**
**Courtesy of BMW OF NORTH AMERICA, INC.**

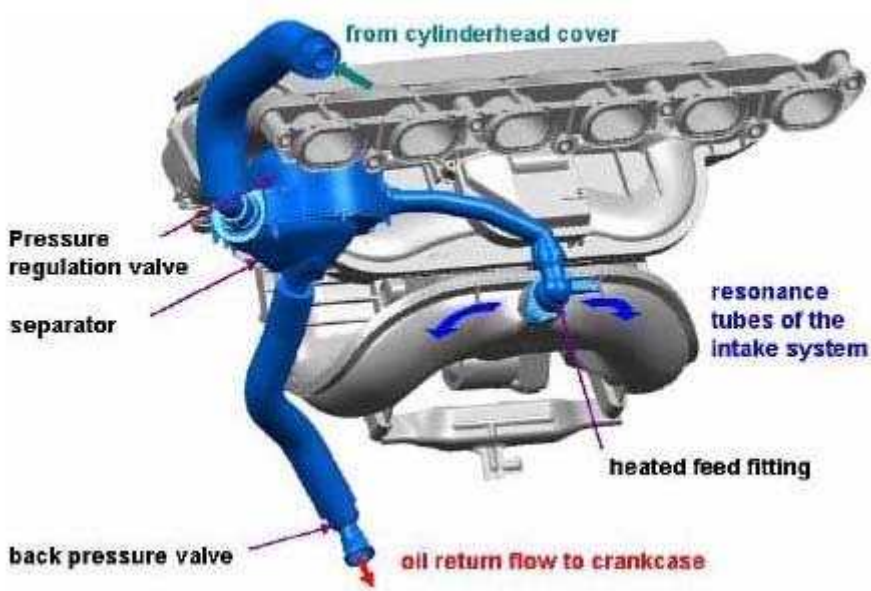



**Fig. 11: Overview Of PCV-System**
**Courtesy of BMW OF NORTH AMERICA, INC.**

## AMBIENT TEMPERATURE MONITORING

### CAN BASED AMBIENT TEMPERATURE - SIGNAL DIAGNOSIS

*P0072, P0073*

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**General Description**

The purpose of this diagnosis is to detect electrical faults as defined in OBDII requirements. The input signal is a CAN message of instrumentation cluster. If an error is present on CAN signal, an error symptom is set and an error counter is de-bounced.

**Error Symptoms**

- short circuit to vbatt or open line
- short circuit to ground
- signal error

## AMBIENT TEMPERATURE SIGNAL PLAUSIBILITY CHECK

*P0071*

**General Description**

This diagnosis is performed in order to detect a stuck or not plausible TAM signal which cannot be detected by electrical range diagnosis.

The first part, just after start looks at the change of ambient temperature and compares the start and stop temperature. If the check is positive the diagnosis is finished. In negative case diagnosis runs to next step during warm up phase.

The error detection is only performed if the monitoring conditions for time after start, engine state idle speed, time of engine stop, ECT and ambient temperature are fulfilled. The plausibility error is detected if the absolute value of the temperature-difference between the arithmetic mean of ECT (Engine Coolant Temperature) and TIA (Temperature Intake Air) and the ambient temperature TAM (in formula: ABS [(ECT+TIA) x 0,5 -TAM)]) exceeds the threshold for an anti-bounce time.

The error validation is only performed if ECT signal is valid and the vehicle was driven with a certain vehicle speed. If both conditions are true and an error was detected, then the error is set for this driving cycle and the diagnosis is switched off.

For RBM handling the Cold Start Denominator will be considered.

**Error Symptoms**

- Ambient temperature not plausible

**Input parameters for monitoring**

- ECT
- engine state
- engine stop time
- ambient temperature after engine stop (last driving cycle)

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- ambient temperature at start
- actual ambient temperature
- vehicle speed
- engine run time after start

# FUEL SYSTEM MONITORING

## LAMBDA ADAPTATION

**Diagnostic Overview / Monitoring Function**

*(P0171, 172,174, 175)*

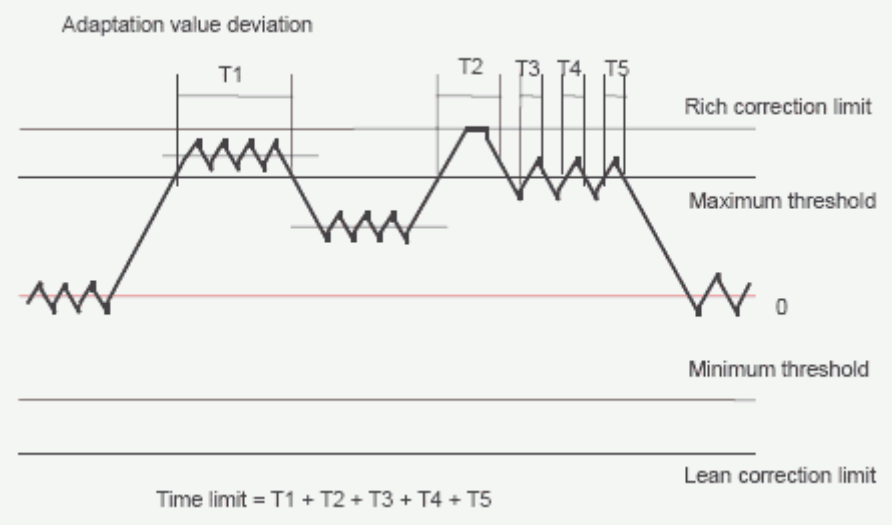
The ECM monitors the fuel system control continuously during all engine states except PUC (decal fuel cut-off). After the enable conditions are met a counter is started. At this point the ECM evaluates the total percentage of short and long term fuel control. If no condition is present the end diagnostic counter will decrement from a calibrated value to zero and a passing decision is made.

If a lean condition is present and total fuel control is above the calibrated threshold two timers are started. If the lean threshold counter exceeds the calibrated threshold before the reset timer has decremented from a calibrated threshold to zero a lean error is set.

If a rich condition is present and total fuel control is below the calibrated threshold two timers are started. If the rich threshold counter exceeds the calibrated threshold before the reset timer has decremented from a calibrated threshold to zero a rich error is set.

The time counter is increased while "lambda controller + lambda adaptation" exceed minimum or maximum threshold.

The error is detected as soon as the time counter reaches its maximum value.




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**Fig. 12: Fuel System Monitoring Timing Chart**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**Similar Conditions Function**

When the engine management system recognizes a failure in the misfire or fuel systems, the engine management system is required to record the conditions present when the fault occurred. These conditions recorded include engine speed, engine load (MAF), and warm up status of the first event that resulted in the storage of a code. These conditions stored are referred to as **similar conditions**

Once the similar conditions are met without a failure in the misfire or fuel system, the flag is set to 1. Once this flag is set the driving cycle counter for that failure can be decremented.

The code and stored freeze frame conditions may be erased if similar conditions are not encountered during the next 80 driving cycles immediately following the initial detection of the malfunction.

The MIL may be extinguished after three sequential driving cycles in which similar conditions have been encountered without an exceeding the thresholds of the fuel system diagnostic.

## TRIM CONTROL PLAUSIBILITY MONITORING

*P2096/2098, P2097/2099*

**Monitoring function**

The trim control plausibility monitoring detects a high deviation of the l-share of lambda trim control. If it exceeds given thresholds the following malfunction is detected:

*Fuel trim above limit*

If the above mentioned malfunction is detected, the corresponding fault code is stored.

## FAULT CODE CHART

| | B1S1 | B2S1 |
|---|---|---|
| Air fuel mixture too rich | P2097 | P2099 |
| Air fuel mixture too lean | P2096 | P2098 |

**Block diagram**

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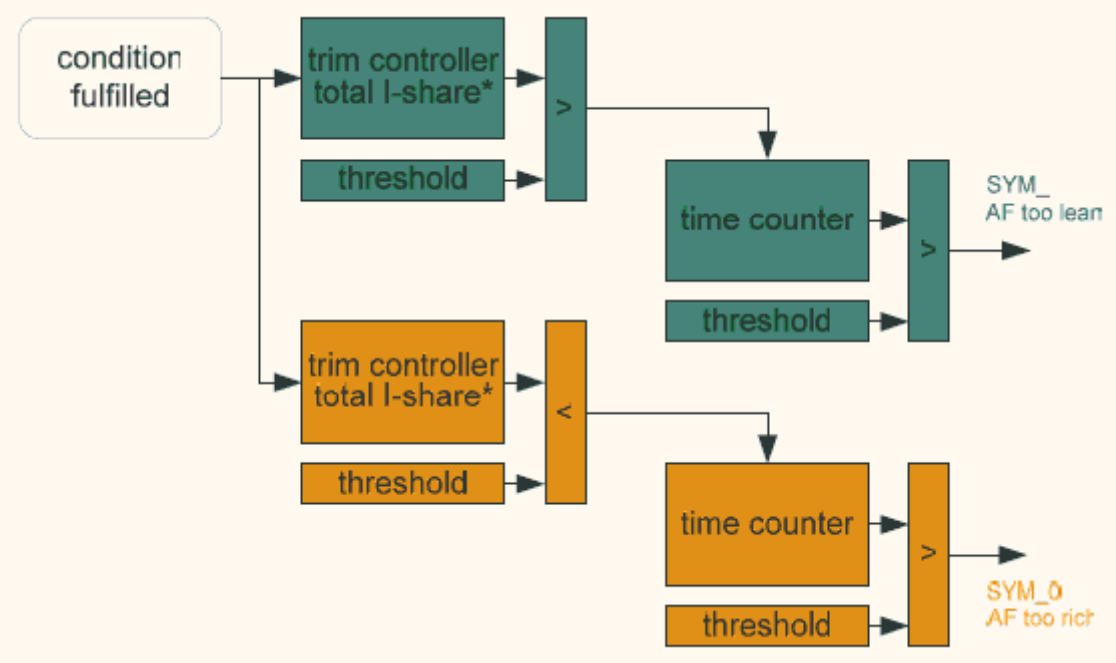



**Fig. 13: Trim Control Plausibility Monitoring - Block Diagram**
**Courtesy of BMW OF NORTH AMERICA, INC.**

# OXYGEN SENSOR MONITORING LINEAR UPSTREAM / BINARY DOWNSTREAM

## UPSTREAM OXYGEN SENSOR MONITORING (LINEAR)

### Upstream Oxygen Sensor - Short Circuit Monitoring

*P0131/0151, P0132/0152*

#### Monitoring function

The oxygen sensor circuit monitoring detects the following malfunctions by evaluating the error information received from oxygen sensor microcontroller:

- Short circuit of sensor signal to battery voltage
- Short circuit of sensor signal to ECM ground

If one of the above mentioned malfunctions is detected, the corresponding fault code is stored.

## FAULT CODE CHART

| | B1S1 | B2S1 |
|---|---|---|
| SC Ground | P0131 | P0151 |
| SC Vbatt | P0132 | P0152 |

### Upstream Oxygen Sensor - Open Circuit Monitoring

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*P112C/112D, P2243/2247, P2626/2629*

**Monitoring function**

The oxygen sensor circuit monitoring detects the following malfunctions by evaluating the error information received from oxygen sensor monitoring functions:

**FAULT CODE CHART**

| | B1S1 | B2S1 |
|---|---|---|
| o Reference voltage Failure - (UN) | P2243 | P2247 |
| o Virtual Ground Failure - (VM) | P112C | P112D |
| o Pumping Current Failure - (IP) | P112C | P112D |
| o Trim Current Failure - (IA) | P2626 | P2629 |

If one of the above mentioned malfunctions is detected, the corresponding fault code is stored.

**Monitoring Description**

This function determines, if an open circuit in any of the four electric lines *(Reference Voltage, Virtual Ground, Pumping Current and Trim Current)* is present in the WRAF Sensor.

This function shall be triggered only if one of the following diagnosis is active (to set the readiness bit), which are 'Upstream Oxygen Sensor - Signal Monitoring During Fuel Cut-off and 'Upstream Oxygen Sensor - Heater Monitoring'. The function shall go to the state = "active" only if one of the above diagnosis detected a fault.

**(Reference Voltage)**

If a heater error exist and sensor voltage is too low, while the internal resistance measurement is turned off, an open circuit in the line 'Reference voltage' occurred.

**(Virtual Ground) or (Pumping Current)**

An open circuit in line Virtual Ground or in the line Pumping current can be detected if the sensor signal stocks near lambda 1. The sensor non-activity can be detected by the Oxygen Sensor Signal Monitoring During Fuel Cut-off (signal voltage below e.g. 2.1 V *) in fuel cut off).

**(Trim Current)** If the sensor shows an augmented gain, i.e. the sensor signal is higher than the nominal characteristic line, the plausibility test during the fuel cutoff phase shall detect this symptom (signal voltage above e.g. 5.6 V *) during fuel cut off) and an Open Circuit is assigned to the line Trim Current.

)* For exact values please have a look at the summary table!

**Upstream Oxygen Sensor - Signal Controller Monitoring**

*P3022/3023, P3024/3025*

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**Diagnostic Overview**

*Sec (e) (7.2)*

This function will detect an error during the initialization and/or operation of a WRAF sensor controller through SPI communication. Information communicated from the Basic Software (BSW) is used for initialization and communication between application software (ASW) and the controller. This is used to determine if the function is working properly.

**Monitoring Function**

*Sec (e) (7.2.1)*

After an ECU reset, the WRAF sensor controller is started and the diagnosis determines the time until the initialization, has been performed in the allowed time. If not successful, then a DTC will be stored. If this is successful, then the difference is checked between the present error counter and the stored value of this error counter at ECU reset, (switching from Key "OFF" to Key "ON") or at clearing error memory and after each function call, in case a difference between both counters was found. If there is a difference, another counter is incremented.

If this counter is higher than a threshold, a SPI communication error is stored.

**FAULT CODE CHART**

| | **B1S1** | **B2S1** |
|---|---|---|
| Communication error | P3022 | P3023 |
| Initialization error | P3024 | P3025 |

All of the above checks are performed internal to the ECU. (See )

**Upstream Oxygen Sensor - Signal Activity Check**

*P2414/2415*

**Monitoring function**

The oxygen sensor signal activity check monitors if the sensor is attached to the exhaust pipe and whether the exhaust is sampled correctly (no leakage). A malfunction is detected if the oxygen sensor voltage is above a threshold (shows too lean mixture in part load or full load)

If the above mentioned malfunction is detected, the corresponding fault code is stored.

B1S1 P2414

B2S1 P2415

**Upstream Oxygen Sensor - Swapped Sensors Check**

*P0040*

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**Monitoring Description**

This function will detect if the Oxygen Sensor wire harness has been cross connected, i.e., Bank 1 with Bank 2. This is performed by the use of the output of the fuel correction (lambda controller) of each bank. If this control is on opposite limit at bank 1 and bank 2, the sensors are swapped and the corresponding fault code is stored.

Corresponding fault code:

P0040

**Upstream Oxygen Sensor - Active Signal Check (Shift to lean / rich)**

*P2195, 2196, 2197, 2198*

**Monitoring Function**

This monitor is an enhancement of the Downstream Oxygen Sensor - Active Signal Check (Stuck lean / rich) and the Trim Control Plausibility Monitoring. Its purpose is to help determine the root cause of a stocking downstream sensor signal or a implausible high i- share of the fuel trim controller.

The monitor will only be enabled if a fuel correction fault has been detected and a malfunction code has been stored (P2096 - P2097 - P2098 - P2099)

**OR**

if the rear sensor signal check has detected, that the rear sensor signal is very rich or very lean and the corresponding malfunction fault code has stored (P114A - PI 14B - PP114C-P114C)

If one of the listed fault codes exists, this diagnosis will be enabled to determine if the root cause of the malfunction is due to a stuck signal or characteristic line shift of the upstream O2 sensor or due to a stuck signal of the downstream O2 sensor or a system malfunction, i.e. vacuum leak, injector, etc...

If it has been determined that the upstream O2 signal was the root cause of the fuel correction fault, the appropriate DTC will be stored along with the fuel correction or with the downstream sensor stuck DTC.

**Upstream Oxygen Sensor - Signal Dynamic Monitoring (Slow Response)**

*P0133/0153*

**Monitoring function**

The oxygen sensor signal dynamic monitoring detects greater deviations of the dynamic behavior of the sensor signal compared to the nominal behavior, controlled by the lambda controller

The change of the dynamic behavior is caused by problems of the electrical connection (e.g. open circuit), extreme aging of the sensor or a low sensor temperature which slows down the sensor compared to the nominal behavior.

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The monitoring is based on an amplitude criterion, i.e. the relation between the amplification of the oxygen sensor and the model is monitored and detects the following malfunction:

Sensor signal too slow

If the above mentioned malfunction is detected, the corresponding fault code is stored.

B1S1 P0133

B2S1 P0153

**Upstream Oxygen Sensor - Signal Monitoring During Fuel Cut-off**

*P2297/2298*

**Monitoring function**

The oxygen sensor signal monitoring during fuel cut-off detects if the oxygen sensor signal is not plausible during fuel cut-off. A malfunction is detected if the oxygen sensor voltage is outside the normal operating voltage range (3.1 V ... 5.68 V). )*

If the oxygen sensor signal voltage is between 2.1 ... 3.1 V during fuel cut-off, then the signal is not plausible.

If the above mentioned malfunction is detected, the corresponding fault code is stored.

B1S1 P2297

B2S1 P2298

If the oxygen sensor signal voltage is above a threshold during fuel cut-off (e.g. 5.6 V)* ) or below a threshold (e.g. 2.1 V )* ) then the open circuit diagnostic function is triggered (see chapter '**OXYGEN SENSOR MONITORING - OPEN CIRCUIT** '). The fault processing continues in this function.

)* For exact values please have a look at the summary table!

**Upstream Oxygen Sensor - Heater Monitoring**

*P3026/3027*

**Diagnostic Overview**

*Sec (e) (7.2.3)*

The purpose of this function is to detect oxygen sensor heater failures that would lead to an increase in emissions beyond the thresholds stated in the appropriate regulations.

The diagnosis shall be carried out by determining whether the measured oxygen sensor ceramic temperature falls below set limits over a number of measurement cycles. The evaluations of the diagnosis cycle are

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determined after the completion of a limited number of monitoring cycles.

Deviations in the oxygen sensor ceramic temperature or the oxygen sensor not being operatively ready in a timely manner (because of a too low temperature) can lead to an increase in emissions above the applicable standards or prevent the sensor signal from being used as a diagnostic system monitoring device. Deviations may occur due to, for example, ageing of the heater element, defective wiring, increased heater circuit connector contact resistance, defective heater driver etc.

**Monitoring Function**

The diagnosis strategy is based on a statistical evaluation of the oxygen sensor ceramic temperature over a pre-defined number of monitoring cycles.

The oxygen sensor ceramic temperature shall be obtained indirectly via the measured internal resistance of the sensor.

If the sensor is not ready after a defined time (e.g. 30s after start) )* the sensor is set to forced readiness mode and the Upstream Oxygen Sensor Heater Monitoring is started.

Two cases can appear:

- sensor temperature is invalid (no measurement of sensor temperature possible because of an ECU internal (electrical) failure)

  =>P165F/P166F is stored

- sensor temperature is below a threshold

  => normal failure detection

A low sensor temperature can be caused by a weak heater or a open circuit in the temperature measurement line (line UN). After a low sensor temperature has been detected, the open circuit diagnosis is triggered to check, if an open circuit in line UN is present. If there is an open circuit, then open circuit fault code (P2243/P2247) is stored (see chapter '**OXYGEN SENSOR MONITORING - OPEN CIRCUIT** ' and picture below).

If there is no open circuit present, then the heater fault code is stored (P0135/P0155).

)* For exact values please have a look at the summary table!

**SUMMARY**

| **Sensor heater power temperature** | **too low** | **invalid** |
|---|---|---|
| **B1S1** | P0135 | P165F |
| **B2S1** | P0155 | P166F |

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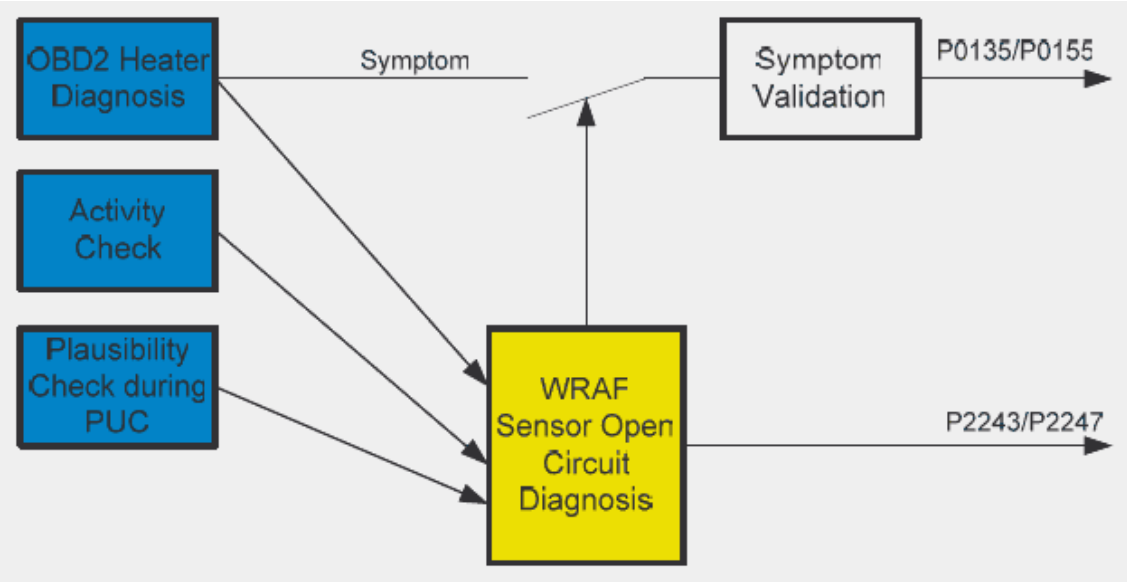



**Fig. 14: Upstream Oxygen Sensor - Block Diagram**
**Courtesy of BMW OF NORTH AMERICA, INC.**

#### Upstream Oxygen Sensor - Heater Circuit Monitoring

*P0030,0031,0032,0050,0051,0052*

#### Monitoring function

The oxygen sensor heater circuit monitoring detects the following malfunctions by evaluating the error information received from the power stage:

- HO2S up SCVB
- HO2S up SCG
- HO2S up Open circuit

If one of the above mentioned malfunctions is detected, the corresponding fault code is stored.

### FAULT CODE CHART

| | B1S1 | B2S1 |
|---|---|---|
| SC Ground | P0031 | P0051 |
| SC Vbatt | P0032 | P0052 |
| Open circuit | P0030 | P0050 |

## DOWNSTREAM OXYGEN SENSOR MONITORING (BINARY)

#### Downstream Oxygen Sensor - Circuit Monitoring

*P0137,0138,0140,0157,0158,0160*

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**Monitoring function**

The oxygen sensor electrical monitor detects the following malfunctions:

- HO2S Down signal SCVB
- HO2S Down signal SCG
- HO2S Down Signal Open Line

If one of the above mentioned malfunctions is detected, the corresponding fault code is stored.

**FAULT CODE CHART**

| | B1S2 | B2S2 |
|---|---|---|
| SC Ground | P0137 | P0157 |
| SC Vbatt | P0138 | P0158 |
| Open circuit | P0140 | P0160 |

**Downstream Oxygen Sensor - Signal Dynamic / Plausibility Check During Fuel Cutoff**

*P0139/0159*

**Monitoring function**

The following plausibility and activity monitoring is carried out: (e) (7.3.2)

Sensor signal plausibility and signal activity monitoring is performed during coasting conditions during fuel cut-off (slow response / sensor signal range too small).

A malfunction is detected, if the sensor signal is not below a threshold after a short time after entering fuel cut-off. This short time is needed to purge the exhaust pipe. Usually the signal falls from fuel trim correction setpoint (e.g. 680 mV) to a voltage near 0mV.

If one of the above mentioned malfunctions is detected, the corresponding fault code is stored.

**FAULT CODE CHART**

| | B1S2 | B2S2 |
|---|---|---|
| Failure during fuel cut-off | P0139 | P0159 |

**Downstream Oxygen Sensor - Dynamic / Transition Time in Sensor Midpoint Range Monitoring**

*P1130/1131*

**Monitoring Function**

This function monitors the transition Time in sensor midpoint range of the downstream sensor voltage. When a fuel cut-off phase starts, the following steps will be executed:

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- sensor voltage must be above a threshold (signal must be rich enough, to measure the switchtime)

  *Remark: Usually the signal starts at fuel trim control setpoint (e.g. 650 mV)*

- sensor voltage value is stored (= "start-value")
- switchtime measurement is started, when the signal is e.g. at 75 % of start value

  *Remark: The measurement start and stop- value are relative to the start value, to measure always the switchtime around the fuel trim control setpoint.*

- switchtime measurement is finished, when the signal is e.g. at 40 % of start value
- measured switchtime is corrected over mass air flow

The transition time ("switchtime") is represented by a cycle counter. This switchtime is measured over x )* fuel cut-off phases. The mean value after x fuel cut- off phases is compared with a failure threshold.

If this value is above a threshold, a malfunction is detected and the corresponding fault code is stored.

**FAULT CODE CHART**

| | **B1S2** | **B2S2** |
|---|---|---|
| Switchtime too high | P1130 | P1131 |

)* For exact values of thresholds etc. please have a look at the summary table!

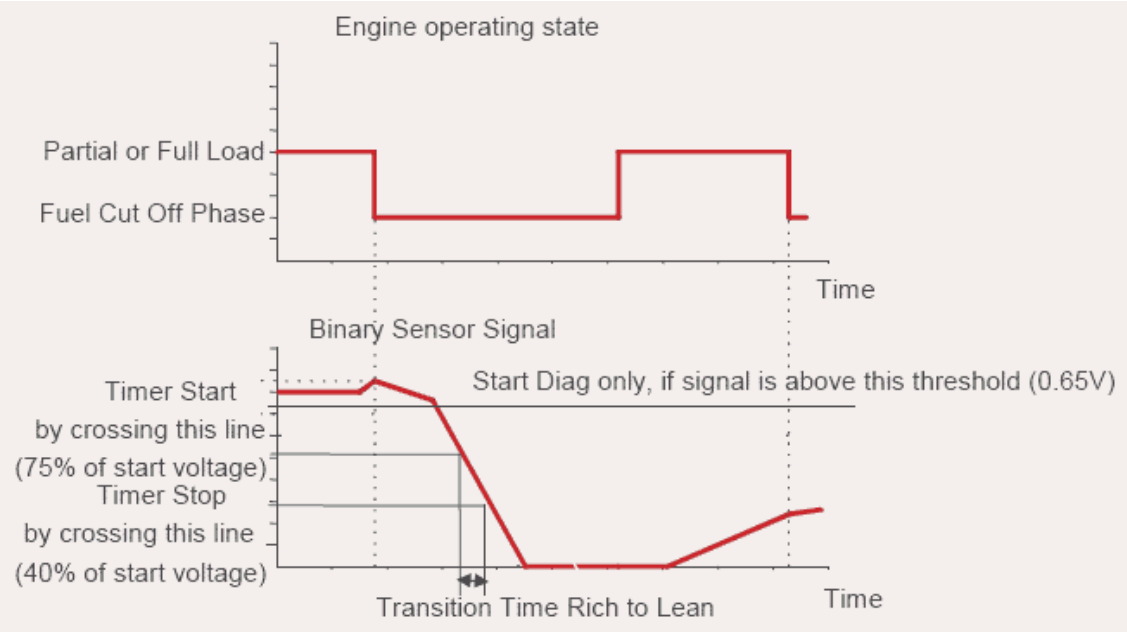



**Fig. 15: Sensor Signal Graph**
**Courtesy of BMW OF NORTH AMERICA, INC.**

**Downstream Oxygen Sensor - Active Signal Check (Stuck lean / rich)**

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*P114A, 114B, 114C, 114D, P2279,2271,2271,2273*

**Monitoring Function**

This monitor consists of two parts.

1. **Part one** monitors the downstream sensor voltage during active fuel trim controller p- share. If the fuel trim control is active, the downstream sensor voltage must be in a band around the trim control setpoint. If the voltage is outside this band )*, a mass air flow integral is incremented. If this integral is over a threshold, a malfunction is detected (see also picture below!). When the downstream sensor voltage will not switch to rich before the integral is over a threshold after a fuel cut-off phase, then this fault will be stored, too.

   If the above mentioned malfunctions are detected, the corresponding fault code is stored.

   **FAULT CODE CHART**

| | B1S2 | B2S2 |
|---|---|---|
| Downstream sensor voltage too low | P114B | P114D |
| Downstream sensor voltage too high | P114A | P114C |

   )* For exact values of thresholds etc. please have a look at the summary table!

2. **Part two - Downstream Active Test:**

   This monitor is an enhancement of the Downstream Oxygen Sensor - Active Signal Check (Stuck lean / rich) and the Trim Control Plausibility Monitoring. Its purpose is to help determine the root cause of a stocking downstream sensor signal or a implausible high i- share of the fuel trim controller.

   The monitor will only be enabled if a fuel correction fault has been detected and a malfunction code has been stored (P2096 - P2097 - P2098 - P2099)

   **OR**

   if the rear sensor signal check has detected, that the rear sensor signal is very rich or very lean and the corresponding malfunction fault code has stored (P114A - PI 14B - PP114C-P114C)

   If one of the listed fault codes exists, this diagnosis will be enabled to determine if the root cause of the malfunction is due to a stuck signal or characteristic line shift of the upstream O2 sensor or due to a stuck signal of the downstream O2 sensor or a system malfunction, i.e. vacuum leak, injector, etc...

   If it has been determined that the upstream O2 signal was the root cause of the fuel correction fault, the appropriate DTC will be stored along with the fuel correction or with the downstream sensor stuck DTC (see chapter '**UPSTREAM OXYGEN SENSOR - ACTIVE SIGNAL CHECK (SHIFT TO LEAN / RICH)**').

   If it has been determined that the downstream sensor signal was the root cause of the fuel correction fault, the appropriate DTC (see table below) will be stored along with the fuel correction or with the

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downstream sensor stuck DTC.

This function will also detect, if the oxygen sensor wire harness has been cross connected, i.e., Bank 1 with Bank 2. When this failure is present, the downstream sensor voltages of bank 1 and 2 are on opposite limits.

If one of the above mentioned malfunctions is detected, the corresponding fault code is stored.

**FAULT CODE CHART**

| | B1S2 | B2S2 |
|---|---|---|
| Downstream sensor stuck rich | P2271 | P2273 |
| Downstream sensor stuck lean | P2270 | P2272 |
| Downstream sensors interchanged | P0041 | |

**Downstream Oxygen Sensor - Heater Circuit Monitoring**

*P0141,0161,P0036,0037,0038,0056,0057,0058*

**Monitoring Function: Circuit**

For proper function of the oxygen sensor, the sensor element must be heated.

A non functioning heater delays the sensor readiness for closed loop control and thus influences emissions.

The monitoring strategy is based on the comparison of the O2 sensor heater resistance to an absolute threshold during coasting conditions where the exhaust temperature is sufficiently low as to cause the sensor ceramic temperature to fall outside normal operating levels, in cases where the heating power is insufficient.

The cooling energy of the exhaust gas is calculated and compared to a calibrated threshold.

The heater monitor is active if the calculated energy is equal or exceeds the threshold. Then the O2 sensor heater is compared to a calibrated threshold. If the heater resistance is equal or exceeds the threshold, an O2 sensor heater malfunction is detected and the corresponding fault code is stored.

Corresponding fault code:

**B1S2** P0141

**B2S2** P0161

**Monitoring Function: Power stage**

The purpose of this monitor is to detect errors within the O2 Sensor Heater Circuit. The signal for the O2 sensor heater is pulse-width modulated. The signal of the power stage is monitored internally by the driver. The driver can distinguish between three symptoms:

- HO2S Down SCVB

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- HO2S Down SCG
- HO2S Down Open Line

If one of the above mentioned symptoms is present, a malfunction is detected and the corresponding fault code is stored.

**FAULT CODE CHART**

| | B1S2 | B2S2 |
|---|---|---|
| SC Ground | P0037 | P0057 |
| SC Vbatt | P0038 | P0058 |
| Open circuit | P0036 | P0056 |

## CLOSED LOOP LAMBDA CONTROL - ENABLE CONDITIONS

Closed loop lambda control is enabled (with a delay) at the start of a driving cycle and can be temporary or permanently deactivated during the driving cycle. The turn-on delay at the start of a driving cycle is described by the following enable conditions:

- the upstream oxygen sensor operability is detected i.e. the upstream HO2'S operating temperature has been reached
- a calibrated delay time, after end of engine start, has elapsed
- the engine coolant temperature must have exceeded a calibrated threshold or the modeled engine coolant temperature (substitute for a faulty temperature sensor minimum) must have exceeded a calibrated threshold after a calibrated period of time
- no secondary air activity

  Closed loop lambda operation is disabled during the driving cycle, if the following operating condition, which permits only mixture enrichment by the lambda controller, is fulfilled:

- when Catalyst overheating prevention is active.

**Only for linear Lambda Sensor:**

- the A/F ratio set-point value lies below oxygen sensor's measurable limit - in this case only A/F mixture enrichment can be executed by the lambda control (no closed loop operation) the moment the set-point value exceeds the measurable threshold.

  Closed loop lambda operation is further deactivated during a driving cycle when any of the following conditions are fulfilled:

- during fuel cut-off or cylinder shut-off and immediately afterwards till the oxygen sensor again starts indicating correct values (the waiting time depends on integrated mass airflow or on a calibrated delay time).
- the mass air flow is below a calibrated threshold that leads to the minimum possible injection time.
- Secondary air system active

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# ENGINE COOLANT TEMPERATURE (ECT) MONITORING

## ELECTRICAL COOLANT TEMPERATURE DIAGNOSIS

*P0017,0018*

**General Description**

The purpose of this diagnosis is to detect electrical faults of the sensor signal. The input signal is analog from a NTC and has to be in a calibrated range. Short cut to ground can be detected immediately, short cut to voltage battery or open load after a delay time. If an error symptom is detected, the error counter is de-bounced.

**Error Symptoms**

- Short circuit to voltage battery or open circuit
- Short circuit to ground

## COOLANT TEMPERATURE GRADIENT DIAGNOSIS

*P3198*

**General Description**

The purpose of this diagnosis is to detect an implausible gradient on the coolant temperature signal. The diagnostic function checks whether the difference between one measured coolant temperature value and the succeeding value is too big.

**Error Symptom**

- ECT signal gradient error

**Input parameters for monitoring**

- measured ECT

## COOLANT TEMPERATURE STUCK DIAGNOSIS

*P3199*

**General Description**

The purpose of this diagnosis is to detect a stuck coolant temperature signal. The diagnostic function checks if after a variation of the calculated coolant temperature also a variation of the measured coolant temperature is detected.

For RBM handling the Cold Start Denominator will be considered.

**Error Symptom**

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- ECT signal stuck error

**Input parameters for monitoring**

- Measured ECT
- Calculated (modeled) ECT

## COOLANT TEMPERATURE SENSOR STUCK IN A RANGE DIAGNOSIS WITH ENGINE OFF TIMER

*P316A*

**General description**

The engine off time is calculated by a relative time counter of an instrumentation CAN message. After evaluation of this message the engine off time is compared with the difference of ECT at engine stop and ECT. This is to check if the engine off time is within a certain temperature range.

**Error Symptoms**

- Coolant temperature signal stuck in range error

**Input parameters for monitoring**

- ECT (at start)
- IAT (at start)
- ambient temperature (at start)
- engine off timer

## ENGINE OFF TIMER MONITORING

*P1515,1551*

**General description**

The engine off time is calculated by a relative time counter of an instrumentation CAN message. After evaluation of this message the engine off time is compared with the difference of ECT at engine stop and ECT. This is to check if the engine off time is within a certain temperature range.

**Error Symptoms**

- No signal from CAN (symptom 2)
- Engine off time not plausible to ECT (symptom 3)

**Input parameters for monitoring**

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- ECT at engine stop
- ECT
- relative time counter via CAN

## THERMOSTAT

*P0128,0597,0598,0599*

**DESCRIPTION OF THE ENGINE COOLANT THERMOSTAT MONITORING**

The coolant thermostat monitoring is done to detect a slow warm-up due to heat losses through thermostat and radiator. It is based on the comparison of the measured ECT sensor signal and the calculated ECT model (TCO_SUB).

The ECT model calculation is depending on the speed of the water pump, engine load and ambient temperature.

A malfunctioning coolant thermostat is detected, if the calculated ECT model has exceeded the threshold 1 (P0128) and the measured ECT sensor signal remains below threshold 2 (P0128).

Before a malfunctioning coolant thermostat is entered into failure memory, the conditions concerning low load, coasting duration and IAT during the monitoring are checked. If the monitoring conditions are met, the coolant thermostat is entered into failure memory. Otherwise the coolant thermostat monitoring is inhibited for this driving cycle.

**THE INPUT PARAMETERS USED FOR MONITORING ARE**

- Engine coolant temperature
- Intake air temperature
- Ambient air
- Engine load

**EXAMPLE OF MONITORING METHOD**

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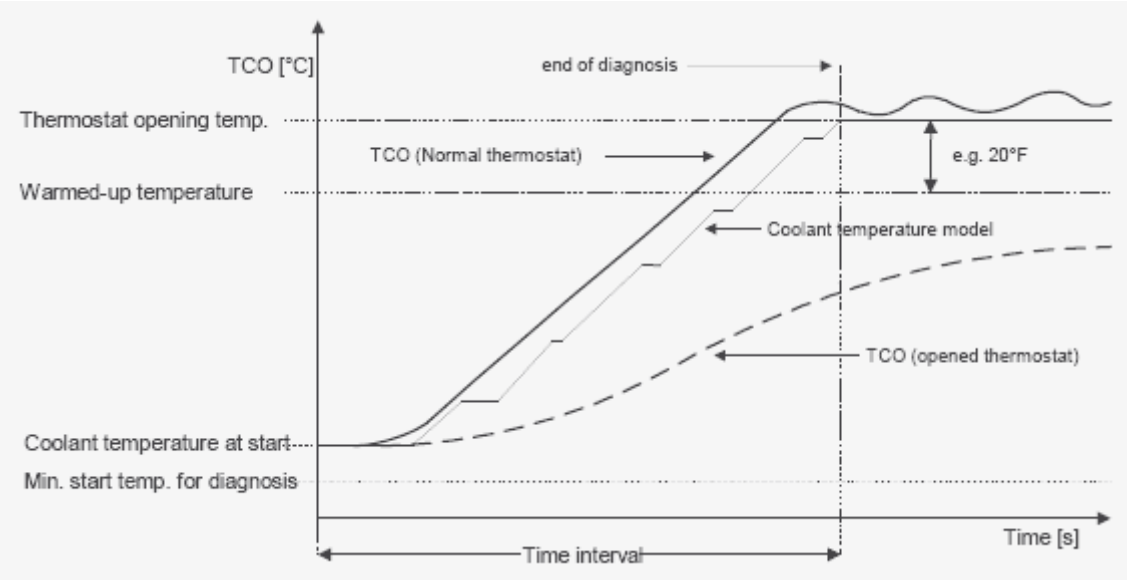



**Fig. 16: Monitoring Method (Example)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

A comparison between the measured coolant temperature and the "warmed-up temperature" is done after a specific time interval. The interval itself is based on the coolant temperature model (Function of intake air mass).

As soon as the model temperature exceeds the thermostat opening temperature and all other monitoring conditions are fulfilled at the same time, a valid diagnosis occurs.

At that time, if the measured coolant temperature is higher than warmed-up temperature, the thermostat is concluded as normal thermostat.

On the contrary, if the measured coolant temperature is lower than warmed-up temperature, the thermostat is concluded as opened stuck thermostat.

## INTAKE AIR TEMPERATURE (IAT) MONITORING

### ELECTRICAL INTAKE AIR TEMPERATURE DIAGNOSIS

*P0112,0113*

**General Description**

The purpose of this diagnosis is to detect electrical faults as defined in OBDI requirements. The input signal is analog from a NTC and has to be in a calibrated range. Short cut to ground can be detected immediately, short cut to voltage battery or open load after a delay time. If an error symptom is detected, the error counter is de-bounced.

**Error Symptoms**

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- Short circuit to voltage battery or open load
- Short circuit to ground

### INTAKE AIR PLAUSIBILITY CHECK

*P0111, 111E, 111F*

**General Description**

This diagnosis checks IAT integrity for a plausible range and / or signal stuck. For the range detection, IAT has to be within coolant temperature and ambient temperature window. If IAT is outside of the range plus an offset, the error symptom is set and the error counter is de-bounced.

If the vehicle was driven with a certain vehicle speed for a calibrated time (cool down of hot IAT) and afterwards the vehicle was in idle for a calibrated time, and the IAT signal has not moved, then a stuck IAT signal is detected and the error is de-bounced.

For RBM handling the Cold Start Denominator will be considered.

**Error Symptoms**

- Signal too high
- Signal too low
- Signal not plausible

**Input parameters for monitoring**

- ECT
- Ambient temperature at start and continuously
- IAT
- Vehicle speed
- Engine speed

## CAMSHAFT AND CRANKSHAFT SENSOR INCLUDING VALVE TIMING

### CAMSHAFT SENSOR

**Variable Camshaft Timing (Vanos) (detection of mechanical IVVT error)**

*P0012/0015*

The BMW-Vanos is a combined hydraulic and mechanical camshaft control unit, managed by the ECU. The double Vanos allows the engine to control valve-timing continuously for both intake and exhaust camshafts. The electronically control of the Vanos positions is dependant on engine speed, load and temperature.

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The diagnosis is monitoring the correct mechanical function of the variable camshaft timing. The diagnosis carries out a continuous rationality check of the Vanos function. If a malfunction is detected, an error bit will be set and sent to the Error management module. This module produces the final information for setting the corresponding DTC.

The diagnostic strategy for inlet and exhaust camshaft is identical.

**Control deviation of the camshaft position controller: ("target + slow response")**

**Description**

In this diagnosis module the difference between the actual and target position of the Vanos units ("control deviation") is checked. If the calculated difference between these two positions exceeds the established threshold, a counter is started. The counter is incremented twice per crank revolution (but not exceeding 10 msec-rates).

If the counter exceeds a limit (also adjustable), a Rationality Fault (DTC) is stored.

The control deviation diagnosis has got an interface to the Rate-Based Monitoring module.

A. **In-use monitor performance Ratio:**

The incrementing of the numerator, denominator, and the ratio calculation for the Variable Camshaft Timing monitor is executed by the Rate-Based Monitoring module. Like all monitors for which a standardized track and report in-use performance is required, the Variable Camshaft Timing monitor reports to the RBM-module via status flags.

B. **Conditions for incrementing the Numerator:**

The numerator is incremented if and only if the monitor is not inhibited due to stored faults and the diagnostic has been performed and a fault would have been detected.

C. **Conditions for incrementing the Denominator:**

The denominator is incremented if the monitor is not inhibited due to stored faults, the general driving conditions have been fulfilled and all additional physical conditions for incrementing have been fulfilled.

**Camshaft position sensor (CMP)**

*P0340/0365/1300/130A/0344/0369/1554/1553/0016/0017*

**Description**

The purpose of the diagnosis is to detect when the camshaft reference position is outside the designed range relative to the engine position from crankshaft and to detect a signal which is not valid.

The diagnostic strategy for inlet and exhaust camshaft is identical.

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**Monitoring Function**

The detection of each camshaft position is done by an active hall sensor and a cam wheel, "3 asymmetric teeth". The camshaft sensor delivers 3 high and 3 low phases of different length per 720°CRK. The high or low pegel of the signal at the reference gap of the crankshaft signal determines the position of the engine within the combustion cycle. With that information, a engine position is calculated from the crankshaft position sensor within a range from [0 to 720[ °CRK

**The following malfunctions are detected:**

**MALFUNCTIONS REFERENCE CHART**

| | |
|---|---|
| - CMP sensor signal plausibility | P0340 / P0365 |
| - CMP sensor signal segment period | P1300 / P130A |
| - CMP sensor signal loss of synchronization | P0344 / P0369 |
| - CMP sensor signal reference to CRK position | P1554 / P1553 |
| - CMP sensor signal jump of chain | P0016 / P0017 |

**Diagnosis of signal plausibility**

*P0340/0365*

The monitor checks once per combustion cycle the edge counter of the camshaft. If the edge counter has not changed during the last cycle, a cycle counter is incremented. When the counter reaches a threshold, the error CAM_plaus is delivered to the error management.

**Diagnosis of period length**

*P1300/130A*

The monitor checks at every edge of the CMP signal the length of the last signal period. If the difference to the designed length exceeds a max value, the corresponding debounce counter is incremented. When the counter reaches a threshold the error CAM_period is delivered to the error management.

**Diagnosis of synchronization state**

*P0344/P0369*

The monitor checks at every reference gap of the crankshaft sensor signal whether the camshaft is synchronized or not. If the camshaft is not synchronized, a revolution counter for the camshaft is incremented. When the counter reaches a threshold the error CAM sync is delivered to the error management.

**Diagnosis of mechanical reference position**

*P1554/1553*

The monitor checks at least once per driving cycle the position of the camshaft in reference position compared to the crankshaft position. The deviation of all camshaft edges compared to the designed position is averaged. If the average value exceeds a max value, the corresponding debounce counter is incremented. When the counter

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reaches a threshold the error CAM_ref_crk_cam is delivered to the error management.

#### Diagnosis of mechanical chain jump

*P0016/0017*

The diagnosis is performed after the reference position adaptation and uses the same calculated average value. The average value is stored in the non volatile RAM of the ECU as an adaptation value. Before storing the value, the new adapted value is compared with the stored value. If the deviation exceeds a max value, the error CAM_one_tooth_off is delivered to the error management and the new value is not stored in RAM. With this diagnosis a chain jump of the timing chain is detected.

The diagnosis of the mechanical chain jump has got an interface to the Rate-Based Monitoring module.

A. **In-use monitor performance Ratio:**

   The incrementing of the numerator and denominator for the diagnosis of chain jump is executed by the Rate-Based Monitoring module. Like all monitors for which a standardized track and report in-use performance is required, the diagnosis monitor reports to the RBM-module via status flags.

B. **Conditions for incrementing the Numerator:**

   The numerator is incremented if and only if the monitor is not inhibited due to stored faults and the diagnostic has been performed and a fault would have been detected.

C. **Conditions for incrementing the Denominator:**

   The denominator is incremented with every driving cycle.

   Flowchart for diagnosis of chain jump:

   see Diagnosis of mechanical reference position

#### Camshaft Crankshaft synchronization

*P0341*

#### Description

The purpose of the diagnosis is to determine whether the inlet (first) camshaft is used for engine synchronization or the exhaust camshaft.

#### Monitoring Function

The diagnosis is performed at every edge of the selected camshaft signal and at the reference gap of the CKP sensor signal. With the period between current event and the last event, the function eliminates the edges of the camshaft which are not inside the designed window. The window is calculated from the designed position plus / minus a tolerance. The tolerance is expanded by the range of the variable valve timing, when the camshaft is not

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in lock position.

**The following malfunctions are detected:**

**MALFUNCTIONS REFERENCE CHART**

| | |
|---|---|
| - CMP sensor signal not valid for synchronization | P0341 |

**Diagnosis of camshaft crankshaft synchronization**

The monitor eliminates with every event the edges from the list of all 6 cam edges, which are not insides the pattern. If only one edge is left, the edge number is identified and the camshaft is valid for synchronization. If no edge is left in the list, synchronization failed and is started again. If a calibrated number of synchronizations failed, the error is delivered to the error management. Afterwards, an only if synchronization fails with the intake camshaft, the same procedure is started with the exhaust camshaft.

## CRANKSHAFT POSITION SENSOR (CRK)

*P0335/0370/0373*

**Description**

The purpose of this diagnostic is to check the integrity of the crankshaft sensor signal and/or electrical malfunctions. (Open line, SCG, SCVB)

**Monitoring Function**

The detection of crankshaft position is done by an active hall sensor and a crank wheel, "e.g. 60 minus 2 teeth". A reference gap, "e.g. of two teeth" allows the detection of the top dead center of cylinder 0. The crankshaft sensor delivers a certain number of high and low phases per 360°CRK. The transition from high to low is a falling edge; from low to high is a rising edge. Only the falling edges are counted. The difference between two falling edges is 6° CRK.

**The following malfunctions are detected:**

**MALFUNCTIONS REFERENCE CHART**

| | |
|---|---|
| - missing CRK sensor signal | P0335 |
| - no plausible CRK signal | P0335 |
| - wrong tooth number | P0370 |
| - wrong tooth period | P0370 |
| - sync error | P0373 |

A teeth counter is incremented at every falling edge of the CRK sensor signal. If plus or minus one tooth is detected during the last 360° CRK at the reference gap, the tooth number debounce counter will be incremented. If the counter exceeds a limit, a CRK tooth error is delivered to the error management.

If more then one tooth plus or minus is detected the CRK looses synchronization and a CRK sync debounce counter will be incremented. If the counter exceeds a limit, a CRK sync error is delivered to the error

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management.

The detection of a tooth period error is done by an acceptance window. The expected tooth period is multiplied and divided with an engine speed dependency factor. The result is a bottom and a top limit of tooth period, in which the transition from high to low of the electrical signal has to occur. If a tooth period is not valid, the tooth period error debounce counter will be incremented. If the counter exceeds a limit, a CRK tooth per error is delivered to the error management.

Detection of implausible crankshaft signal is based on the detection of CAM signals without receiving correct CRK signal. If 12 or more CAM edges are detected (eg. 2 working cycles), without valid synchronization of the crankshaft, then CRK plaus error is detected and delivered to the error management. If no CRK signal at all is received, the symptom is "missing signal", else the symptom is "implausible signal".

## VARIABLE VALVE LIFT - ELECTRICAL DIAGNOSIS

*P1047,1048,1049,1076,1075,103A, 1078,107A, 107B107C,105B,105A,1055,1056,1019, 1020,1057,1017,1030,1064,101A,1023,1024,1041*

**DESCRIPTIONS**

The electronic control of the Variable Valve Lift positions is dependant on, Voltage Limits, Start & Stop position, Adaptations, current and temperature. The following errors will be detected in this system.

***Electrical diagnosis*** is performed internally to the controller in order to detect the following errors: Short circuit to battery, to ground or short circuit to each other:

SCVB - P1047

SCG-P1048

S together - P1049

***System current*** is monitored through the ECU and the variable valve train relay. This diagnosis checks for over-temperature and overload conditions and performs short term and long term high current monitoring (looks for current spikes over a threshold, and time vs. current table based):

Relay over temp - P1076

Relay overload - P1075

Relay overload - P103A

VVL Bus Conductor Temp - P1078

VVL Power Stage Warning - P107A

VV Train Bus Conductor Temp - P107B

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VVL Power Stage Warning - P107C

***Powerstage self diagnosis*** is performed to realize if power stage diagnosis has detected under voltage or overcurrent of high or lowsider. The diagnosis is a self check realized therefore in the specific hardware (powerstage).

undervoltage of driver - P105B

overcurrent detection on high side / low side of H-bridge - P105A

***Power Supply Control Motor*** is monitored through the main relay and checks over and under voltage conditions. There is also a Power Supply sensor diagnosis which checks short circuit to battery and to ground. If this occurs, the following DTC's will be stored:

Power Supply over voltage - P1055

Power Supply Under Voltage - P1056

Power Supply Sensor SCVB - P1019

Power Supply Sensor SCG - P1020

***VVL Relay Diagnosis*** is performed internally to the ECU and does a comparison of the main relay voltage to the variable valve lift capacitors. If the difference is greater than a threshold then an appropriate DTC will be stored.

Relay Diagnosis - P1057 (Battery Main Relay Voltage - Capacitor Voltage)

***Sensor Diagnosis*** is performed internally to the ECU and checks the sensor supply voltage to tunable boundaries. A sensor signal versus an internal sensor self check will determine the integrity of the sensor. If an error is detected, the appropriate DTC will be stored.

Sensor Signal fault - P1017 (ECU check)

***Control Position Diagnosis*** and the ***Value Comparison Diagnosis*** are used to monitor the start and stop positions and the current PWM signal movement of the variable valve train system. If the difference between the target and actual angle is determined to be greater than a threshold percentage an error is detected, if a difference in the start and stop positions are greater than a threshold an error is detected. If any of these errors is detected, the appropriate DTC will be stored:

Control Position fault - P1030 (PWM out of range)

Value Comparison fault - P1064 (Difference)

***Self Learning / Adaptation Diagnosis*** is performed internally to the ECU. There are three adaptation diagnoses performed in this function, the top and bottom limit individually out of range and both limits out of range. Furthermore the ECU self check diagnosis is performed, which is basically a check sum error. If any of these

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errors is detected, the appropriate DTC will be stored:

Top Limit Fault - P101A (top limit not reached)

Bottom Limit Fault - P1023 (bottom limit not reached)

Both Adaptations Fails - P1024 (both limits not reached)

ECU Check Sum Error - P1041

**VARIABLE VALVE LIFT ELECTRICAL DIAGRAM**

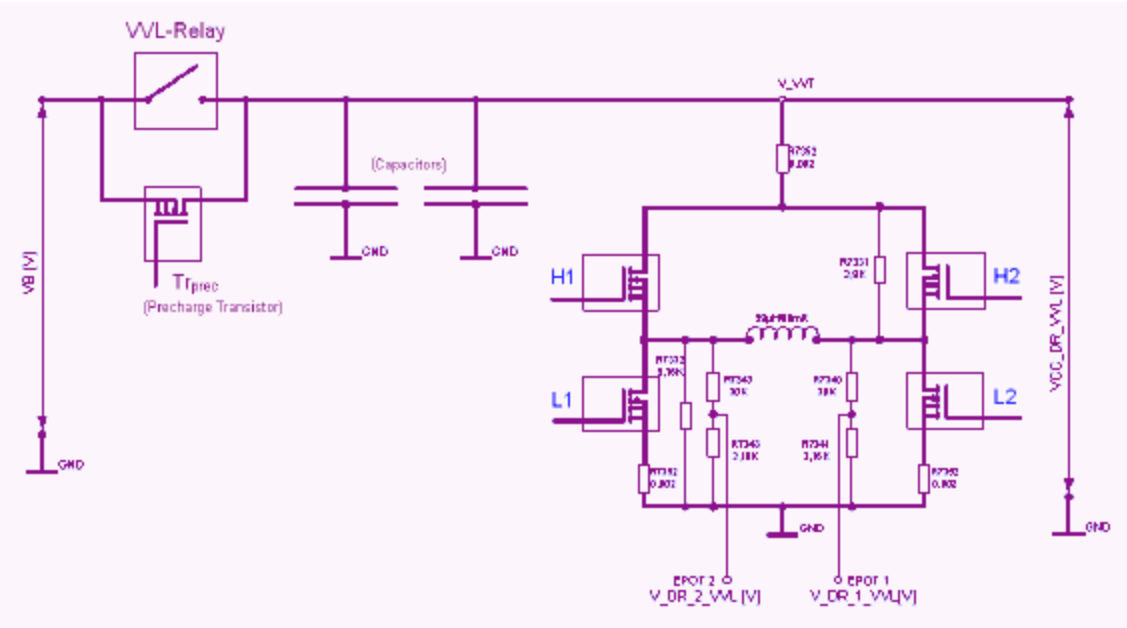



**Fig. 17: Variable Valve Lift Electrical Diagram**
**Courtesy of BMW OF NORTH AMERICA, INC.**

# ELECTRONIC THROTTLE CONTROL MONITOR

## ELECTRONIC THROTTLE CONTROL (ETC) MOTOR CONTROL CIRCUIT

### Monitoring Descriptions

ETC Driver diagnosis (H-bridge): The ETC - H-Bridge IC continually checks the MTC if there is a short circuit to battery voltage or ground. In addition the IC is able to detect overtemperature. This is performed internally to the ECU.

### ETC spring check (start routine)

*(P169A, P1694)*

This Diagnosis checks if the throttle spring is working correctly and if the throttle limp home position can be

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reached.

The diagnosis is performed at the beginning of every driving cycle at ignition "Key ON" position.

**ETC adaptation diagnosis**

*(P1632, P1633, P1634, P1635)*

After the initial engine start and / or component change, the characteristic Potentiometer values for the limp home position and the lower mechanical stop are learned within an adaptation routine. The values are stored at the end of the driving cycle in the non-volatile memory.

If the conditions are not fulfilled, the malfunction errors (DTC's) are stored.

**Electronic Throttle Control (ETC) Motor Control Performance**

*(P1637, P1639)*

This diagnosis is able to detect a too slow or jammed actuator. The given pulse width modulation signal (MTCPWM) exceeds the position controller permissible maximum value for longer than designated (Max short or Max Long) time.

If either of the times is exceeded, the appropriate DTC will be stored.

Also if a maximum allowed difference between throttle actual value and setpoint value is exceeded, a DTC is stored.

## ISC (IDLE SPEED CONTROL) ACTUATOR

*90506,0507*

**IDLE SPEED CONTROL ELECTRICAL DIAGNOSIS**

*Sec (e) (16.2.2) (B) CCR Title 13, 1968.2*

**General Description**

The purpose of this diagnosis is to detect electrical faults of the idle speed controller circuit. The controller is PWM modulated, inverse output signals are used for continuous activation of the opening and closing of a double-wound coil actuator.

The error detection is activated at Key "ON". The following errors are detected:

- Short to ground
- Short to battery
- Open circuit

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If any of the above errors are detected during opening or closing of the controller, the appropriate DTC will be stored.

**Idle Speed Control - Rationality Diagnosis**

General Description:

This diagnosis detects the stability of the idle speed. If the commanded idle speed and the actual idle speed is not within a calibrated value, above or below commanded, the idle speed is considered to be out of range.

If the above failure conditions are detected, the appropriate DTC will be stored.

## AIR MASS FLOW METER - RATIONALITY CHECK

*P1415, 1424*

**DESCRIPTION**

Depending on engine speed, valve-lift, inlet camshaft position, outlet camshaft position and manifold pressure an air mass flow into the cylinder is calculated. There is also a correction of the calculated air mass flow depending on intake air temperature, coolant temperature and ambient pressure. The ratio between the measured air mass flow and the calculated air mass flow must be between calibrated MIN/MAX-values. If the MIN/MAX thresholds are exceeded, a time counter is incremented. After this counter reaches the threshold within one diagnosis cycle, an air mass flow meter malfunction is detected.

## MANIFOLD DIFFERENTIAL PRESSURE SENSOR - RATIONALITY CHECK

*P1124,P1104,1105*

**DESCRIPTION**

For a variable valve lift engine, the main function of the throttle body is to control the pressure in the intake manifold. Therefore the manifold differential pressure plausibility check is testing the plausibility of measured intake manifold pressure in comparison to the measured throttle position. So no throttle position acquisition error must be present.

The setpoint of the differential intake manifold pressure is up to 60-70% of maximum torque request constant 5 kPa beneath ambient pressure. At higher load the differential pressure setpoint becomes Zero.

In case the setpoint of the differential pressure in the intake manifold is > 3 Kpa beneath the ambient pressure, a differential pressure controller is active. The output of the controller is monitored. The output of the manifold pressure controller has to be between calibrated MIN/MAX-thresholds. If the MIN/MAX thresholds are exceeded a time counter is incremented. After this counter reaches the threshold within one diagnosis cycle, a manifold differential pressure sensor malfunction is detected.

## COMPREHENSIVE COMPONENT MONITORING OBD II SIEMENS VDO FUNCTION DEFINITION

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## STRATEGY

**Principle:**

- **Sensors** that can affect emissions or are used to monitor other component / system are monitored for circuit continuity and short to battery voltage and / or to ground using high and low voltage signal limit.
- **Actuators** that can affect emissions or are used to monitor other component / system are monitored by power stage voltage check for valid signals.
- For some of sensors or actuators, plausibility checks are included to ensure proper operation of the components.

## MONITORING STRATEGY FOR SENSORS

- Sensor signals out of a defined range are regarded as circuit malfunctions shorted to BATT, GND or Open circuit.

## MONITORING STRATEGY FOR ACTUATORS

- Invalid actuator output signals at power stage are regarded as circuit malfunctions shorted to BATT, GND or Open circuit.

## RATIONALITY CHECK

- Components are checked for the integrity of their values. This is accomplished by the use of a model or other sensor inputs. If a component does not function as expected or the integrity is in question (values are not within a threshold) it is considered out of range / plausible.

## COMPREHENSIVE MONITORING FOR FOLLOWING SENSORS AND ACTUATORS

- Throttle Position Sensor - Electrical Check
- Mass Air Flow Sensor - Electrical Check
- Coolant Temperature Sensor (ECT) - Electrical Check
- Camshaft Position Sensor
- Vehicle Speed Signal
- Injector Valve Diagnosis
- Idle Speed Plausibility
- Differential Pressure Sensor - Electrical check
- Knock Sensor diagnosis
- TCU error diagnosis
- CAN Communication
- Pedal Position Sensor
- Ambient Pressure Sensor - Electrical check
- Ambient Pressure Sensor - Rationality Check

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- EVAP - DMTL Valve, Electrical check
- EVAP - DMTL Heater, Electrical check
- EVAP - DMTL Pump, Electrical check
- EVAP - Purge Control Valve, Electrical check

## LISTING OF ALL ECM INPUT AND OUTPUT SIGNALS

**ECM INPUT AND OUTPUT SIGNAL LIST**

| BMW signal naming | BMW N52KP | Pin | SIEMENS signal naming | MSV80 | OBD II relevant |
|---|---|---|---|---|---|
| Fahrzeug CAN-Schnittstelle 1 LOW | D_PT_CANL1 | 1_01 | CAN-Low1 | CAN1_L | No |
| Start(er)-Relais (Automatikstart) | A_S_START | 1_02 | start relay | RLY_START | No |
| Generatorschnittstelle | D_BSD | 1_03 | generator interface | BSD | No |
| Bremslichtschalter | E_S_BLS | 1_04 | brakelight switch | BLS | No |
| Abgasklappe | A_S_AKL | 1_05 | exhaust flap | EF | No |
| Masse Temperatur K hlwasseraustritt | M_TKA | 1_06 | ground coolant outlet temperature | TCO_EX_GND GND | Yes |
| Fahrerwunsch Geber 2 | E_A_FWG2 | 1_07 | pedal value sensor 2 | PVS_2 | No |
| Elektr. L fter getaktet | A_T_ELUE | 1_08 | cooling fan | CFA | No |
| Luftklappe | A_T_LKS | 1_09 | air flap | AF | No |
| Masse Pedalwertgeber 1 | M_FWG1 | 1_10 | ground pedal value sensor 1 | GND | No |
| Spannungsversorgung 5V (PWG1) | A_U_FWG1 | 1_11 | supply voltage PVS1 | PVS1_VCC | No |
| Lin Bus | LIN_BUS_MS | 1_12 | Lin Bus | LIN | No |
| Sekund rluftpumpe Stufe 1 | A_S_SLP | 1_13 | Secondary air pump | SAP | not used |
| Fahrzeug CAN-Schnittstelle 1 HIGH | D_PT_CANH1 | 1_14 | CAN-High1 | CAN1_H | No |
| Wegfahrsperre, EWS4 | D_EWS | 1_15 | imobilizer EWS4 | IMOB | No |
| Bremslichtschalter | E_S_BLTS | 1_16 | brakelight test switch | BTS | No |
| Fahrzeuggeschwindigkeit | E_F_DFAHR | 1_17 | wheel speed | WHEEL | Yes |
| Kupplungsschalter | E_S_KUP | 1_18 | clutch switch | CLU_SWI | No |
| Temperaturf hler K hlwasseraustritt | E_A_TKA | 1_19 | coolant outlet temperature | TCO_EX | not used |
| Fahrerwunsch Geber 1 | E_A_FWG1 | 1_20 | pedal value sensor 1 | PVS_1 | No |
| Drehzahl | A_F_TD | 1_21 | engine speed signal | ESS | Yes |

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| | | | | | |
|---|---|---|---|---|---|
| Fzg. Pin KI 15/3 | E_S_KL15_3 | 1_22 | Ignition key KI. 15/3 | V_IG_3 | No |
| Masse Pedalwertgeber 2 | M_FWG2 | 1_23 | ground pedal value sensor 2 | GND | No |
| Spannungsversorgung 5V (PWG2) | A_U_FWG2 | 1_24 | supply voltage PVS2 | PVS2_VCC | No |
| Sekund rluft | E_A_HFMS | 1_25 | mass air flow metersecondary air | MAFMS | not used |
| EBox-L fter | A_S_EBOXL | 1_26 | cooling fan Ebox | CFA_EBOX | No |
| Fzg. Pin KI.15 | E_S_KL15 | 2_01 | ignition key KI.15 | V_IG | No |
| Lin Bus | LIN_BUS_MS | 2_02 | Lin Bus | LIN | No |
| Fahrdynamikkontrolle | E_A_FDC | 2_03 | Sound flap switch | SOF_SWI | No |
| Multifunktionslenkrad | D_FGRD | 2_04 | multifunctional steering wheel | MSW | No |
| Pumpstrom, Stetige-Lambdas. v Kat 2 | A_I_LSVP2 | 2_05 | pump current output 2 | LSL_IA_2 | Yes |
| Pumpzelle, Stetige-Lambdas. v Kat 1 | E_A_LSVP1 | 2_06 | pump current measurement 1 | LSL_IP_1 | Yes |
| Pumpzelle, Stetige-Lambdas. v Kat 2 | E_A_LSVP2 | 2_07 | pump current measurement 2 | LSL_IP_2 | Yes |
| Lambdasonde/Referenzzelle vor Kat 1 | E_A_LSVR1 | 2_08 | lambda sensor upstream 1 | LS_UP_1 | Yes |
| Lambdasonde/Referenzzelle vor Kat 2 | E_A_LSVR2 | 2_09 | lambda sensor upstream 2 | LS_UP_2 | Yes |
| Masse Lambdasonde vor Kat 1 | M_LSV1 | 2_10 | ground lambda sensor upstream 1 | LS_UP_1_GND | Yes |
| Masse Lambdasonde vor Kat 2 | M_LSV2 | 2_11 | ground lambda sensor upstream 2 | LS_UP_2_GND | Yes |
| Heizung Lambdasonde vor Kat 1 | A_T_LHV1 | 2_12 | lambda sensor heater upstream 1 | LSH_UP_1 | Yes |
| Heizung Lambdasonde vor Kat 2 | A_T_LHV2 | 2_13 | lambda sensor heater upstream 2 | LSH_UP_2 | Yes |
| Haupt-Relais ( Ansteuerung) | A_S_HR | 2_14 | Main relay | RLY_MAIN | No |
| Ventil Tankleckdiagnose | A_S_DMTLV | 2_15 | Tank leakage detection valve | DMTLV | Yes |
| Pumpe Tankleckdiagnose | A_S_DMTLP | 2_16 | Tank leakage detection pump | DMTLP | Yes |
| DMTL Heizung | A_S_DMTLH | 2_17 | DMTL heater | DMTLH | Yes |
| Pumpstrom, Stetige-Lambdas. v Kat 1 | A_I_LSVP1 | 2_18 | pump current output 1 | LSL_IA_1 | Yes |
| Lambdasonde hinter Kat 2 | E_A_LSH2 | 2_19 | lambda sensor downstream 2 | LS_DOWN_2 | Yes |
| Lambdasonde hinter Kat 1 | E_A_LSH1 | 2_20 | lambda sensor downstream 1 | LS_DOWN_1 | Yes |

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| | | | | | |
|---|---|---|---|---|---|
| Relais Klimakompressor | A_S_KOREL | 2_21 | relay air conditioning compressor | RLY_ACC | No |
| Reserve Analogeingang 1 | E_A_RES1 | 2_22 | Reserve analog 1 | SPARE_AN_1 | Not used |
| Masse Lambdasonde hinter Kat 1 | M_LSH1 | 2_23 | ground lambda sensor downstream 1 | LS_DOWN_1_GND | Yes |
| Masse Lambdasonde hinter Kat 2 | M_LSH2 | 2_24 | ground lambda sensor downstream 2 | LS_DOWN_2_GND | Yes |
| Heizung Lambdasonde hinter Kat 2 | A_T_LHH2 | 2_25 | lambda sensor heater downstream 2 | LSH_DOWN_2 | Yes |
| Heizung Lambdasonde hinter Kat 1 | A_T_LHH1 | 2_26 | lambda sensor heater downstream 1 | LSH_DOWN_1 | Yes |
| Dauerplus KI.30 | E_U_30 | 3_01 | direct battery KI.30 | VB | No |
| Hauptrelais | E_U_HR | 3_02 | main relay KI.87 | V_EL | No |
| Masse Z ndung | M_ZUE | 3_03 | Ground ignition | GND_IG | No |
| Masse Elektronik Einspritzventile | M_EL/EV | 3_04 | ground electronic, injection | GND_EL | Yes |
| Masse VVT | M_VVT | 3_05 | ground VVT | GND_VVT | Yes |
| Masse VVT | M_VVT | 3_06 | ground VVT | GND_VVT | Yes |
| Spannungsversorgung VVT | E_U_VVTR1 | 4_01 | Supply voltage from VVT relay | V_VVT | Yes |
| Spannungsversorgung VVT | E_U_VVTR1 | 4_02 | Supply voltage from VVT relay | V_VVT | Yes |
| Motorausgang 2 VVT | A_T_VVT2M1 | 4_03 | Motor output 2 VVT | VVT2M1 | Yes |
| Motorausgang 1 VVT | A_T_VVT1M1 | 4_04 | Motor output 1 VVT | VVT1M1 | Yes |
| Motorausgang 2 VVT | A_T_VVT2M1 | 4_05 | Motor output 2 VVT | VVT2M1 | Yes |
| Motorausgang 1 VVT | A_T_VVT1M1 | 4_06 | Motor output 1 VVT | VVT1M1 | Yes |
| Masse (nicht angeschlossen) | n. c. (Masse) | 5_01 | GND (not connected | n. c. | not used |
| Masse (nicht angeschlossen) | n. c. (Masse) | 5_02 | GND (not connected | n. c. | not used |
| Masse (nicht angeschlossen) | n. c. (Masse) | 5_03 | GND (not connected | n. c. | not used |
| MAF Frequenzsignal | E_P_HFM | 5_04 | SIMAF | SIMAF | not used |
| Masse ldrucksensor | M_OLD | 5_05 | Ground oil | OILP_GND | not used |

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| | | | | | |
|---|---|---|---|---|---|
| | | | pressure sensor | | |
| Reserve Analogeingang 3 | E_A_RES3 | 5_06 | Reserve analog 3 | SPARE_AN3 | not used |
| Spannungsversorgung 5V ( ldrucksensor) | A_U_OLD | 5_07 | Supply voltage OILP | OILP_VCC | No |
| NTC-Wasser (Motortemperatur) | E_A_TMOT | 5_08 | Coolant temperature | TCO | Yes |
| Masse Motortemperaturfuhler | M_TMOT | 5_09 | ground coolant temperature sensor | TCO_GND | Yes |
| ldruck | E_S_OLD | 5_10 | Oil pressure | POIL | No |
| ldruckventil | A_T_OLP | 5_11 | Oilpressure valve | SAV_OILP | not used |
| Kraftstoffpumpe | A_S_EKP | 5_12 | Electrical fuel pump | EFP | No |
| Haupt-Relais (Ansteuerung) | A_S_HR | 5_13 | Main relay | RLY_MAIN | No |
| Spannungsversorgung 5V (DKG1,2) | A_U_DKG | 5_14 | supply voltage TPS | PVS1TPS_VC C | Yes |
| Ansteuerung 1 Drosselklappe | A_T_MDK1 | 5_15 | throttle actuator out 1 | MTC1 | Yes |
| Ansteuerung 2 Drosselklappe | A_T_MDK2 | 5_16 | throttle actuator out 2 | MTC2 | Yes |
| Masse reserve 2 | M_RES1 | 5_17 | Ground spare 2 | SPARE2_GND | not used |
| Schaltsaugrohr 2 | A_T_DISA2 | 5_18 | variable intake manifold 2 | VIM2 | No |
| Klopfsensor 1B (Diff.-Signal) | E_A_KS1B | 5_19 | knock sensor 1B | KNKS_1_B | Yes |
| Klopfsensor 2B (Diff.-Signal) | E_A_KS2B | 5_20 | knock sensor 2B | KNKS_2_B | Yes |
| Applikation CAN-Schnittstelle 3 HIGH | D_APPLI_CANH | 5_21 | CAN-High3 | CAN3_H | No |
| Lokaler CAN-High | D_LO_CANH | 5_22 | local CAN-High | LOCAN_H | No |
| Tankentll ftungsventil | A_T_TEV | 5_23 | canister purge solenoid | CPS | Yes |
| Soundklappe | A_S_ESK | 5_24 | sound flap | SF | No |
| Spannungsversorgung 5V (Reserve) | A_U_RES1 | 5_25 | Supply voltage spare | SPARE_VCC | not used |
| Reserve Analogeingang 2 | E_A_RES2 | 5_26 | Reserve analog 2 | SPARE_AN_2 | not used |
| Masse Hei filmluftmassenmesser | M_HFM | 5_27 | ground mass air flow meter | MAFM_GND | Yes |
| Ansauglufttemperatur | E_A_TANS | 5_28 | intake air temperature | TIA | Yes |
| Kurbelwellensensor | E_P_KWG | 5_29 | crankshaft position sensor | CRK | Yes |
| Masse Kurbelwellensensor | M_KWG | 5_30 | ground crankshaft position sensor | CRK_GND | Yes |
| Spannungsversorgung 5V | | | supply voltage | | |

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| | | | | | |
|---|---|---|---|---|---|
| (SDF) | A_U_SDF | 5_31 | MAP | MAP_VCC | Yes |
| Masse Saugrohrdrucksensor | M_SDF | 5_32 | ground manifold air pressure | MAP_GND | Yes |
| Saugrohrdrucksensor | E_A_SDF | 5_33 | manifold air pressure | MAP (IAP) | Yes |
| Reserve Analogeingang 1 | E_A_RES1 | 5_34 | Reserve analog 1 | SPARE_AN_1 | not used |
| Generatorschnittstelle | D_BSD | 5_35 | generator interface | BSD | No |
| Drosselklappengeber2 | E_A_DKG2 | 5_36 | throttle position sensor 2 | TPS_2 | Yes |
| Drosselklappengeber1 | E_A_DKG1 | 5_37 | throttle position sensor 1 | TPS_1 | Yes |
| Masse Drosselklappengeber | M_DKG | 5_38 | ground throttle position sensor | TPS_GND | Yes |
| ldrucksensor | E_A_OLD | 5_39 | Oil pressure sensor | OILP | not used |
| Schaltsaugrohr1 | A_T_DISA1 | 5_40 | variable intake manifold 1 | VIM1 | No |
| Klopfsensor 1A (Diff.-Signal) | E_A_KS1A | 5_41 | knock sensor 1A | KNKS_1_A | Yes |
| Klopfsensor 2A (Diff.-Signal) | E_A_KS2A | 5_42 | knock sensor 2A | KNKS_2_A | Yes |
| Applikation CAN Schnittstelle 3 LOW | D_APPLI_CANL | 5_43 | CAN-Low3 | CAN3_L | No |
| Lokalerr CAN-Low | D_LO_CANL | 5_44 | local CAN-Low | LOCAN_L | No |
| Z ndspule 1 | A_P_ZSZ1 | 6_01 | Ignition coil 1 | IGC0 | No |
| Z ndspule 5 | A_P_ZSZ2 | 6_02 | Ignition coil 5 | IGC4 | No |
| Z ndspule 3 | A_P_ZSZ3 | 6_03 | Ignition coil 3 | IGC2 | No |
| Z ndspule 6 | A_P_ZSZ4 | 6_04 | Ignition coil 6 | IGC5 | No |
| Z ndspule 2 | A_P_ZSZ5 | 6_05 | Ignition coil 2 | IGC1 | No |
| Z ndspule 4 | A_P_ZSZ6 | 6_06 | Ignition coil 4 | IGC3 | No |
| Masse (nicht angeschlossen) | M_ZUE | 6_07 | GND (not connected) | IG_GND | not used |
| Masse (nicht angeschlossen) | M_ZUE | 6_08 | GND (not connected) | IG_GND | not used |
| Masse (nicht angeschlossen) | M_ZUE | 6_09 | GND (not connected) | IG_GND | not used |
| Masse (nicht angeschlossen) | M_ZUE | 6_10 | GND (not connected) | IG_GND | not used |
| Masse (nicht angeschlossen) | M_ZUE | 6_11 | GND (not connected) | IG_GND | not used |
| Masse (nicht angeschlossen) | M_ZUE | 6_12 | GND (not connected) | IG_GND | not used |
| Einspritzventil 1 | A_P_EVZ1 | 7_01 | Injection valve 1 | IV_0 | Yes |
| | | | | | |

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| | | | | | |
|---|---|---|---|---|---|
| Einspritzventil 5 | A_P_EVZ2 | 7_02 | Injection valve 5 | IV_4 | Yes |
| Einspritzventil 3 | A_P_EVZ3 | 7_03 | Injection valve 3 | IV_2 | Yes |
| NTC- Wasser (Motortemperatur) | E_A_TMOT | 7_04 | coolant temperature | TCO | Yes |
| VANOS Einlass | A_T_NWE | 7_05 | infinetely variable valve timing inlet | IVVT_IN | Yes |
| Datenclock VVT Sensor | A_P_CLKS1 | 7_06 | Data clock VVT sensor | PCLK1S1 | Yes |
| Dateneingang F hrungssensor VVT | E_T_DAT1S1 | 7_07 | Data input main sensor VVT | TDAT1S1 | Yes |
| Chip Select Referenzsensor VVT | A_P_CS2S1 | 7_08 | Chip select refernce sensor VVT | PCS2S1 | Yes |
| Dateneingang Referenzsensor VVT | E_T_DAT2S1 | 7_09 | Data input reference sensor VVT | TDAT2S1 | Yes |
| Schirm VVT | W_VVTS1 | 7_10 | Shield VVT | VVT_SHIELD | Yes |
| Nockenwellengeber Einla | E_P_NWGE | 7_11 | camshaft position sensor inlet | CAM_IN | Yes |
| Nockenwellengeber Ausla | E_P_NWGA | 7 12 | camshaft position sensor exhaust | CAM_EX | Yes |
| ldruck | E_S_OLD | 7_13 | oil pressure | POIL | No |
| Einspritzventil 6 | A_P_EVZ4 | 7_14 | Injection valve 6 | IV_5 | Yes |
| Einspritzventil 2 | A_P_EVZ5 | 7_15 | Injection valve 2 | IV_1 | Yes |
| Einspritzventil 4 | A_P_EVZ6 | 7_16 | Injection valve 4 | IV_3 | Yes |
| Masse Motortemperaturfuhler | M_TMOT | 7_17 | ground coolant temperature sensor | TCO_GND | Yes |
| Vanos Auslass | A_T_NWA | 7_18 | infinitely variable valve timing exhaust | IVVT_EX | Yes |
| Elektr. Geregeltes Thermostat | A_S_KFK | 7_19 | el. controlled thermostat | ECT | Yes |
| Masse VVT-Sensor | M_VVTS1 | 7_20 | Ground variable valve timing | VVTS1_GND | Yes |
| Spannungsversorgung 5V (VVT-Sensor) | A_U_VVTS1 | 7_21 | supply voltage to VVT sensor | VVTS1_VCC | Yes |
| Chip Select Fuhrungssensor VVT | A_P_CS1S1 | 7_22 | Chip select main sensor VVT | PCS1S1 | Yes |
| Schaltsignal VVT Relais | A_S_VVTR1 | 7_23 | VVT relay | RLY_VVT | Yes |
| Masse Nockenwellengeber 1 Einla | M_NWGE | 7_24 | ground camshaft position sensor inlet 1 | CAM_IN_GND | Yes |
| Masse Nockenwellengeber 1 Ausla | M_NWGA | 7_25 | ground camshaft position sensor | CAM_EX_GND | Yes |

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| | | | | | |
|---|---|---|---|---|---|
| | | | exhaust 1 | | |
| Generatorschnittstelle | D_BSD | 7_26 | generator interface | BSD | No |

# LOCATION OF THE DATA LINK CONNECTOR

## LOCATION OF THE DATA LINK CONNECTOR FOR FOLLOWING MODELS

X3 3.0i, X3 3.0Si



**Fig. 18: Position DLC For X3 Models And Closed Design Cover**
**Courtesy of BMW OF NORTH AMERICA, INC.**



**Fig. 19: Position DLC For X3 Models With Opened Design Cover And Closed Functional Cover**
**Courtesy of BMW OF NORTH AMERICA, INC.**

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**Fig. 20: Position DLC For X3 Models With Opened Design Cover And Opened Functional Cover**
**Courtesy of BMW OF NORTH AMERICA, INC.**

The DLC is located at the lower left A-pillar and under a design cover. This cover has the letters OBD on it. Under the design cover there is an additional function cover (also labeled with the letters OBD) including an electrical function (resistance).

**LOCATION OF THE DATA LINK CONNECTOR FOR FOLLOWING MODELS**

323i (only Canada), 328i, 328xi, 328Ci, 328Cix, 328i sport wagon 328xi sport wagon, 328Ci conv.



**Fig. 21: Position DLC For 3 Series Models And Closed Design Cover**

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**Courtesy of BMW OF NORTH AMERICA, INC.**



**Fig. 22: Position DLC For 3 Series Models And Opened Design Cover / Closed Functional Cover**
**Courtesy of BMW OF NORTH AMERICA, INC.**



**Fig. 23: Position DLC For 3 Series Models And Opened Design Cover / Opened Functional Cover**
**Courtesy of BMW OF NORTH AMERICA, INC.**

The DLC is located at the lower left A-pillar and under a design cover. This cover has the letters OBD on it. Under the design cover there is an additional function cover (also labeled with the letters OBD) including an

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electrical function (resistance).

## DRAWING AND LOCATION OF THE MALFUNCTION INDICATOR LIGHT

### DRAWING AND LOCATION OF THE MALFUNCTION INDICATOR LIGHT FOR FOLLOWING MODELS

X3 3.0i, X3 3.0Si




**Fig. 24: Locating Malfunction Indicator Light**
**Courtesy of BMW OF NORTH AMERICA, INC.**

### DRAWING AND LOCATION OF THE MALFUNCTION INDICATOR LIGHT FOR FOLLOWING MODELS

323i (only Canada), 328i, 328xi, 328i sport wagon, 328xi sport wagon, 328Ci, 328Cix, 328Ci conv.

Complete Instrument panel (European Version)

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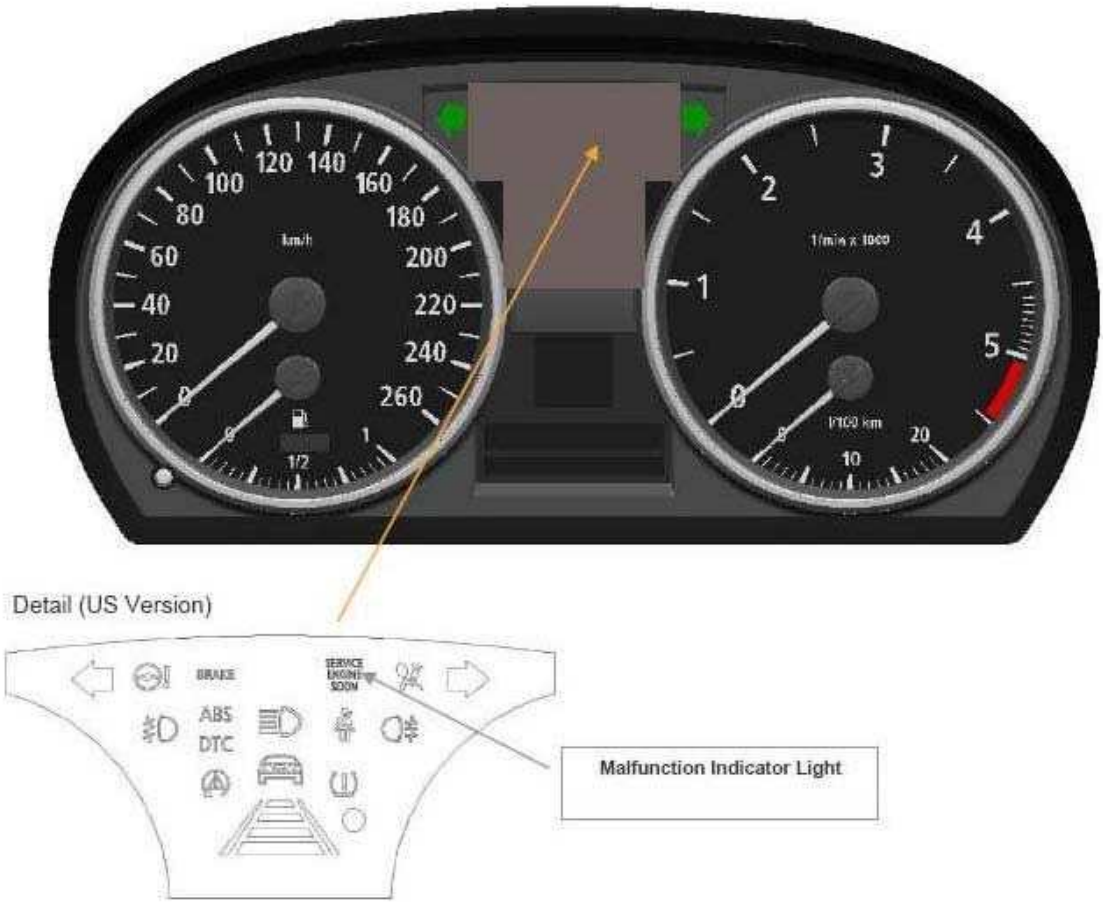



**Fig. 25: Identifying Complete Instrument Panel (European Version)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

## CALCULATED LOAD AND FUEL TRIM DETERMINATION

The calculated engine load "LOAD_CLC [%]" is based on the measured mass air flow (metered by the hot-film air-mass sensor (HFM)).

**Strategy:**

A 2-dimensional map is used to interpolate the calculated engine load "LOAD_CLC [%]" depending on metered mass air flow and engine speed. A weighting factor is applied to compensate the altitude influence.

**The calculation is performed as follows:**

LOAD_CLC [%] = LOAD_CLC_RAW f (metered mass air flow, engine speed) x (1013hPa / ambient pressure) x 100%

with:

**REFERENCE CHART**

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| | |
|---|---|
| LOAD_CLC | calculated engine load in % with altitude correction |
| LOAD_CLC_RAW | calculated engine load in % without altitude correction |

In case of a malfunction of the HFM, the metered mass air flow is substituted by a modeled mass air flow value.

## START EMISSION REDUCTION STRATEGY MONITORING

*P1561,1562*

All parameters, that are relevant during the cat heating phase, are monitored by standard monitoring functions:

**MONITORING FUNCTION REFERENCE CHART**

| **Relevant Components during Cat Heating Phase** | | | | | | **Impact of faulty Componen Parameter** | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Comp./ System** | **Parameter** | **needed for** | **Component Diagnosis** | **Diagnosis during Cat Heating** | **Emission Impact > 1,5xGW** | **Idle Speed** | **Ignition Angle** | **Engine Lambda** | **Tra S** |
| Secondary Air | Secondary Air Mass | Enleanment exhaust gas | Secondary Air diagnosis | Yes | Yes, dep. to variant and emission class | | | X | |
| Injection Value | Injection time | Enleanment lambda_engine < 1<br>Enleanment lambda_engine > 1 | Output stage diagnosis<br>Misfire detection<br>Fuel supply diagnosis | Yes<br>Yes<br>no | none | X | X | X | |
| Mass Air Flow Sensor | Air Mass - Input for maps | Larger overlap, VANOS End position | Air mass flow sensor diagnosis<br>Air mass model diagnosis<br>Fuel supply diagnosis | Yes<br>Yes<br>no | none | X | X | X | |
| Throttle Position | Angle | Mass Air Flow | Power stage, accelerator pedal diagnosis | Yes | none | X | X | X | |
| Valvetronic | Valve Lift | Load-control | Valvetronic electrical / mechanical diagnosis | Yes | none | X | X | X | |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Air mass model diagnosis | Yes | | | | | |
| Phase Sensor (Camshaft) | Valve overlap | Larger overlap | RPM sensor diagnosis | Yes | none | | | | |
| Camshaft Position Actuator | Valve overlap | Larger overlap | Output stage diagnosis<br>Camshaft position actuator | Yes<br>Yes | none | | | | |
| RPM Sensor | Engine speed | Idle speed increase | RPM sensor diagnosis | Yes | none | X | | | |
| Idle Speed | Engine speed | EVAP, Camshaft Position | Idle speed diagnosis | Yes | none | X | | | |
| CAN-Communication with Transmission | CAN-bus | Shifting point | Timeout CAN-message | Yes | none | X | | | |
| Coolant Temperature Sensor | Temperature | Input for maps | Electrical plausibility<br>Stuck signal | Yes<br>no | Yes | X | X | X | |
| ECM | Signals | Calculation | Self Check RAM,ROM,W-dog | Yes | - | | | | |
| Ignition | Ignition angle | Optimum: retarded ignition | Misfire detection | Yes | Yes, dep. to emission class | | X | | |

*Illustration 1 (Standard monitoring functions during Cat Heating - Overview)*

To fulfill the legal requirements, the monitoring of the idle speed is now extended to the cold start phase. In case of an error, the specific P-Codes:

- P1561 Cold Start Idle Air Control System RPM lower than expected
- P1562 Cold Start Idle Air Control System RPM higher than expected

are set.

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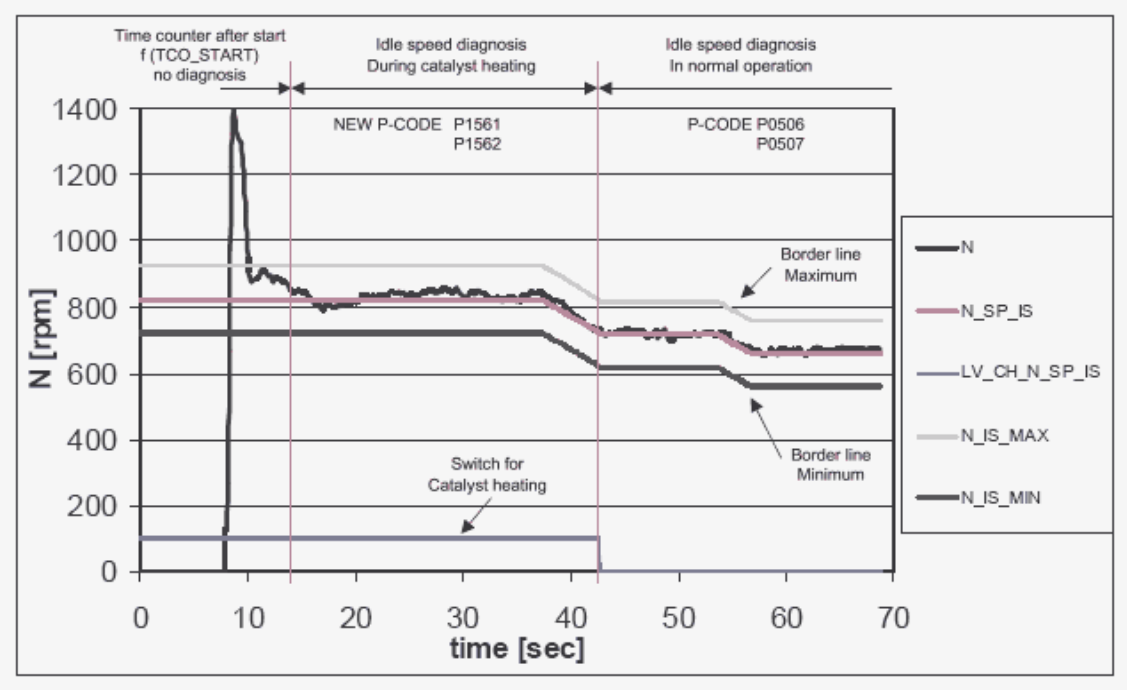



**Fig. 26: Idle Speed Control Graph**
**Courtesy of BMW OF NORTH AMERICA, INC.**

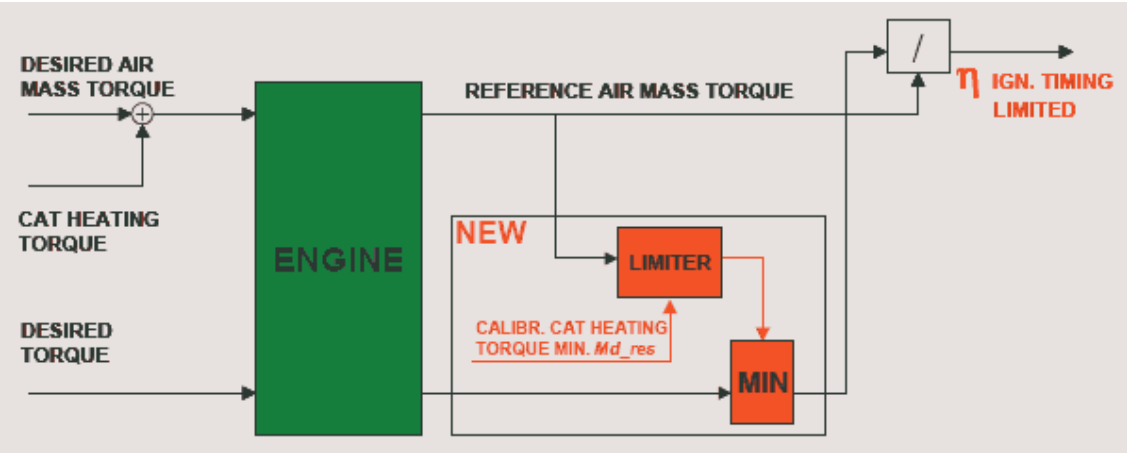
*Illustration 2 (Idle speed control)*

During cat heating, it is essential to make sure, that enough thermal energy is applied to the catalyst to heat it up as quick as possible.

Therefore it is target to limit the ignition timing to the earliest possible value during the cat heating phase.

If there would be a demand for more torque and therefore for an advanced ignition timing beyond the limits, the engine would be allowed to stall instead of fulfilling the demand.

The torque limits are calibrated the way that the emissions stay below 1.5 times of the limits.




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**Fig. 27: Start Emission Reduction Strategy - Flow Chart**
**Courtesy of BMW OF NORTH AMERICA, INC.**

*Illustration 3 (Flowchart)*

**Known System:**

During normal driving, the ignition timing desired torque corresponds to the air mass desired torque, which determines the ignition timing. During the cat heating phase, the cat heating torque is added to the air mass desired torque, resulting in a higher reference air mass torque.

The efficiency, desired torque divided by the reference torque, determines the ignition timing.

**New System (BMW-development):**

The earliest possible ignition timing is determined by the limitation of the torque reserve to a minimum value during the cat heating phase. For this, the required minimum cat heating torque is subtracted from the reference air mass torque. The thus reduced efficiency leads to a safe ignition retard and limits the ignition timing during the cat heating measures.

Limitation of ignition timing to the earliest possible ignition timing during the cat heating phase by limitation of torque reserve to the minimum required torque reserve.

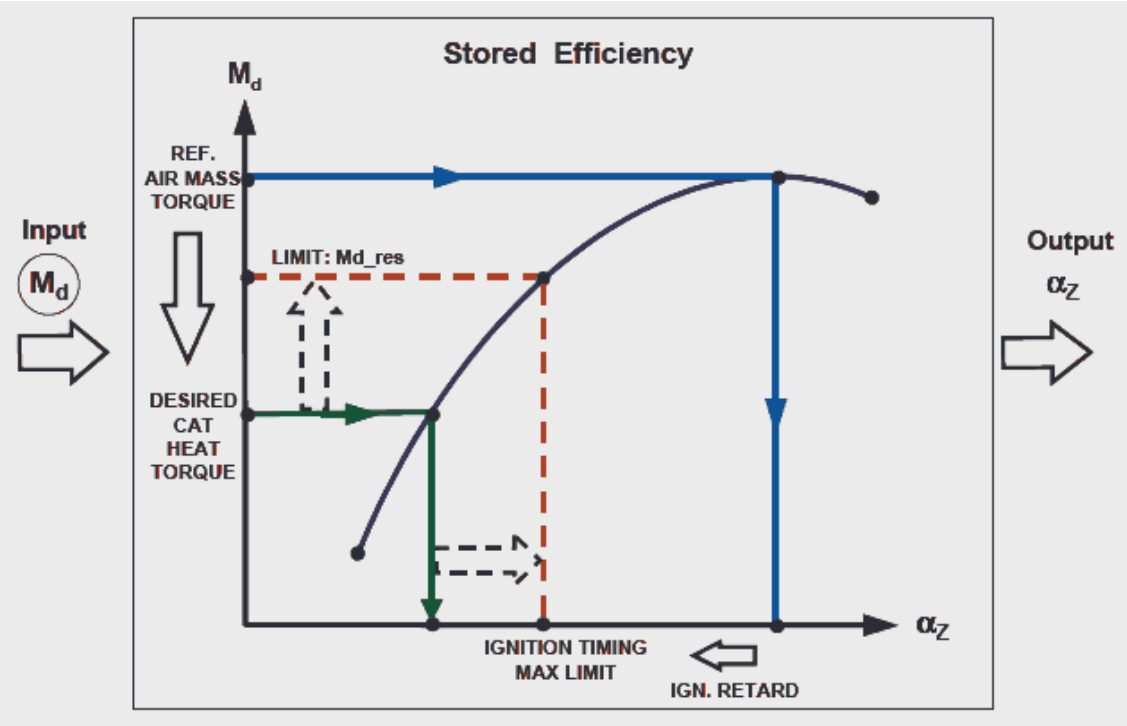



**Fig. 28: Torque Characteristic Line And Ignition Timing Diagram**
**Courtesy of BMW OF NORTH AMERICA, INC.**

*Illustration 4 (Diagram torque characteristic line and ignition timing)*

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**The maximum ignition timing after cold start with new BMW method:**

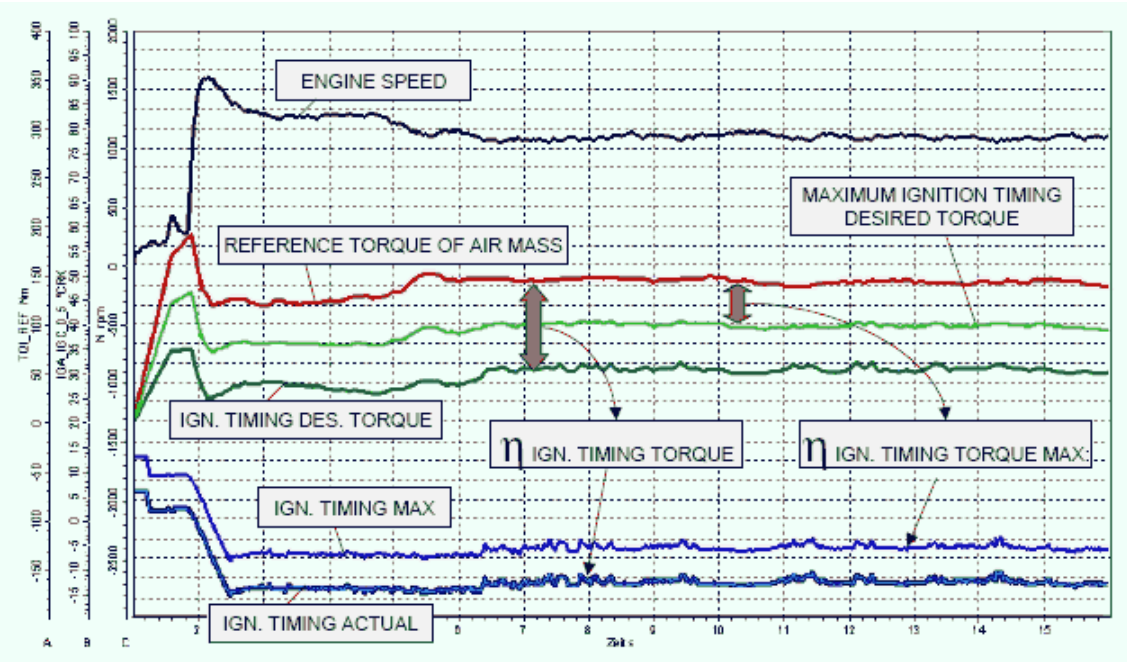



**Fig. 29: Measuring Data (Maximum Ignition Timing After Cold Start With New BMW Method)**
**Courtesy of BMW OF NORTH AMERICA, INC.**

*Illustration 5 (Measuring Data)*

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