INFORMATION DOCUMENT

of

# Diesel On-Board Diagnostic system

Family Name : MMC-EOBD-D21

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| 3.2.12.2.7. | On-board-diagnostic (OBD) system | |
| 3.2.12.2.7.1. | Written description and/or drawing of the MI | : See Part 3 |
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| 3.2.12.2.7.4. | Criteria for MI activation (fixed number of driving cycles or statistical method) | : See Parts 3 to 6 |
| 3.2.12.2.7.5. | List of all OBD output codes and formats used (with explanation of each) | : See Parts 3 to 6 |
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| 3.2.12.2.7.6.1. | A description of the type and number of the pre-conditioning cycles used for the original type-approval of the vehicle. | : See Part 4 |
| 3.2.12.2.7.6.2. | A description of the type of the OBD demonstration cycle used for the original type-approval of the vehicle for the component monitored by the OBD system. | : See Part 4 |

| | | |
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| 3.2.12.2.7.6.3. | A comprehensive document describing all sensed components with the strategy for fault detection and MI activation (fixed number of driving cycles or statistical method), including a list of relevant secondary sensed parameters for each component monitored by the OBD system. A list of all OBD output codes and format used (with an explanation of each) associated with individual emission related power-train components and individual non-emission related components, where monitoring of the component is used to determine MI activation. In particular, a comprehensive explanation for the data given in service $05 Test ID $21 to FF and the data given in service $06 shall be provided. In the case of vehicle types that use a communication link in accordance with ISO 15765-4 'Road vehicles diagnostics on controller area network (CAN) - part 4: requirements for emissions-related systems', a comprehensive explanation for the data given in service $06 Test ID $00 to FF, for each OBD monitor ID supported, shall be provided. | : See Parts 4 & 6 |
| 3.2.12.2.7.6.4. | The information required by this section may, for example, be defined by completing a table as follows, which shall be attached to this Annex. | : See Part 4 |

**Description of monitoring**

**1. Monitoring items**

Monitoring items are listed in Part 4.

Following components are not monitored since defective components will not result in emissions exceeding the EOBD-limits.

- EGR cooler

When the malfunction condition is detected, the fault code and freeze-frame data will be stored and the MI will be illuminated.

**2. Readiness**

The readiness can be read-out and reset by means of a general scan-tool via the data link connector in the vehicle.
Battery disconnection does not reset the readiness status.

At the end of the D/C*, the readiness will be attained in case there are no tests that are incomplete (Judgment of malfunction or not is made by the EOBD-system)

* : D/C means the driving cycle of Type I test.

**3. Fault code storage**

The fault codes can be read-out and reset by means of a general scan-tool via the diagnostic connector in the vehicle.

The fault codes will be erased from the ECU after 40 warm up cycles during which the failure has not been reported anymore.

(Annex XI of UN/ECE Regulation 83, paragraph 3.6.1.)
The distance traveled by the vehicle while MI activated is available.

**4. Freeze-frame storage**

In the application to the engine(s) covered by this EOBD family, one freeze-frame of data is available. The freeze-frame shows the following data, which will be stored in the ECU at a defect recognition.

- Coolant temperature
- Intake manifold absolute pressure
- Engine RPM
- Vehicle speed
- Intake air temperature
- Air flow rate
- Absolute throttle position
- Time since engine start
- Commanded throttle actuator control
- Fuel rail pressure
- Commanded EGR valve position
- EGR valve position
- Barometric Pressure
- Control module voltage
- Relative throttle position
- Accelerator Pedal position main
- Accelerator Pedal position sub

The freeze-frame data can be read-out and reset by means of a general scan-tool via the data link connector in the vehicle.

The freeze-frame will be erased from the ECU after 40 warm up cycles during which the failure has not been reported anymore.

**5. Calibration identification**

The software calibration identification number is available through the serial port on the standardized data link connector and is provided in a standardized format in accordance with SAE J1979

The software calibration identification number is alphanumeric designation which has max. 16.places.

**6. Data link connector**

Data link connector complies with ISO DIS 15031-3.

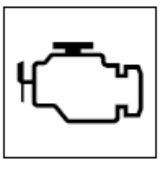
**7. Malfunction indicator**

Malfunction indicator lamp identified by the following symbol illuminates when the ignition key is turned to “ON” position before engine start to indicate that malfunction indicator lamp is functioning.

Malfunction indicator lamp illuminates when the emission control component is malfunctioning.

Location : Malfunction indicator lamp is located somewhere in the meter cluster depending on vehicle models so that it is readily visible to the driver.

Size : The size of the actual symbol is almost the same as those of other symbols in the meter cluster, such as the brake failure tell-tale or the battery charging condition tell-tale.

Symbol of malfunction indicator lamp  Color : Amber (Tell-tale)

**8. Provisions taken to prevent tampering with and modification of the emission control computer**

- The emission control computer is integrated in the powertrain control module and non-removable.
- The software is protected against misuse by encoding, checksum detection or encrypted access.
- Switch-off function is not provided to emission control computer.

## List of monitoring Items for Engine

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Supply pump Suction control Valve | P0003 | Circuit continuity: Shorted-low | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0004 | Circuit continuity: Open/Shorted-low | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0089 | Plausibility of Fuel pressure | Fuel pressure | 1st cycle | Battery voltage<br>Ignition on<br>Pump initial learning<br>Fuel pressure pump status<br>Injection amount | - | Type1 |
| Crankshaft position sensor and Camshaft position sensor | P0016 | Position sensor Phase problem | Angle difference | 1st cycle | Time after Ignition on<br>Battery voltage<br>Camshaft sensor status<br>Crankshaft sensor status<br>Engine speed | - | Type1 |
| Turbocharger control solenoid | P0047 | Circuit continuity: Shorted-low | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0048 | Circuit continuity: Shorted-high | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| Air temperature Sensor (integrated Mass air flow sensor) | P0072 | Circuit continuity: Shorted-low | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0073 | Circuit continuity: Shorted-high | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| Common Rail | P0088 | Plausibility (high pressure) | Fuel pressure | 1st cycle | Battery voltage | - | Type1 |
| Mass Air Flow Sensor | P0101 | Range/ Performance | Voltage | 1st cycle | Engine speed<br>Injection amount<br>EGR valve duty<br>EGR valve Lift position<br>Target EGR valve Lift position<br>Intake air temperature<br>Accel-pedal position<br>Throttle duty<br>Ignition on | - | Type1 |
| | P0102 | Circuit continuity: Shorted-low | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0103 | Circuit continuity: Shorted-high | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| Manifold absolute Pressure sensor | P0106 | Plausibility | Signal dependency on engine condition | 1st cycle | Battery voltage<br>Time after engine start-up<br>Injection amount<br>Engine speed | - | Type1 |
| | P0107 | Range check-min | Pressure | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0108 | Range check-max | Pressure | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| Intake air Temperature Sensor | P0112 | Range check-min | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0113 | Range check-max | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| Fuel Leak Problem | P0093 | Fuel pressure | Fuel pressure | 1st cycle | Battery voltage<br>Engine running<br>Fuel pressure sensor status | - | Type1 |
| Power Steering Switch | P0551 | Plausibility | Voltage | 2nd cycle | Ignition off | One Type1 Cycle | Type1 |
| Swirl Control Valve Solenoid Circuit | P2009 | Circuit continuity: Shorted-low | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P2010 | Circuit continuity: Shorted-high | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| Temperature Sensor (For DPF Diff Press Snsr) | P1474 | Circuit continuity: Shorted-low | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P1475 | Circuit continuity: Shorted-high | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Engine coolant Temperature Sensor | P0117 | Range check-min | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0118 | Range check-max | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| Throttle Position Sensor | P0122 | Range check-min | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0123 | Range check-max | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| Fuel Temperature Sensor | P0182 | Range check-min | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0183 | Range check-max | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 *Cycle* | Type1 |
| Fuel pressure Sensor | P0191 | Plausibility | Deviation of actual and target pressure<br><br>Voltage | 1st cycle | Ignition on<br>Target fuel pressure<br>Injection amount<br>Fuel temp<br>Pump initial learning | - | Type1 |
| | P0192 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0193 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| Turbocharger | P0299 | Absolute boost pressure monitor | Intake air pressure | 1st cycle | Engine running<br>Accel-pedal | - | Type1 |
| | P1298 | Positive deviation | Intake air pressure | 1st cycle | Engine running<br>Injection amount<br>Engine speed<br>Gear position<br>Vehicle speed<br>Intake air temperature<br>Atmosphere pressure<br>Turbocharger control status<br>EGR valve position | - | Type1 |
| | P1299 | negative deviation | Intake air pressure | 1st cycle | Engine running<br>Injection amount<br>Engine speed<br>Gear position<br>Vehicle speed<br>Intake air temperature<br>Atmosphere pressure<br>Turbocharger control status<br>EGR valve position | - | Type1 |

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Injector | P0201 | Circuit continuity (Cylinder #1) | Voltage | 1st cycle | Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P0202 | Circuit continuity (Cylinder #2) | Voltage | 1st cycle | Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P0203 | Circuit continuity (Cylinder #3) | Voltage | 1st cycle | Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P0204 | Circuit continuity (Cylinder #4) | Voltage | 1st cycle | Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P0301 | Engine speed monitor | Engine speed | 1st cycle | Battery voltage<br>Time after engine start-up<br>Fuel balancing<br>Engine coolant temp. | - | Type1 |
| | P0302 | Engine speed monitor | Engine speed | 1st cycle | Battery voltage<br>Time after engine start-up<br>Fuel balancing<br>Engine coolant temp. | - | Type1 |
| | P0303 | Engine speed monitor | Engine speed | 1st cycle | Battery voltage<br>Time after engine start-up<br>Fuel balancing<br>Engine coolant temp. | - | Type1 |
| | P0304 | Engine speed monitor | Engine speed | 1st cycle | Battery voltage<br>Time after engine start-up<br>Fuel balancing<br>Engine coolant temp. | - | Type1 |
| Crankshaft Position Sensor | P0335 | No pulse | Alignment to camshaft | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0336 | Plausibility | Alignment to camshaft | 1st cycle | Engine speed<br>Battery voltage | - | Type1 |
| Camshaft Position Sensor | P0340 | No pulse | Alignment to crankshaft | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0341 | Plausibility | Alignment to crankshaft | 1st cycle | Engine speed<br>Battery voltage | - | Type1 |
| Glow plug Control module | P0381 | Glow plug open or short | Glow module status signal | 2nd cycle | Engine running<br>Glow duty | One Type1 Cycle | Type1 |
| | P064C | Self check of Glow plug module | Glow module status signal | 2nd cycle | Engine running<br>Glow duty | One Type1 Cycle | Type1 |
| | P0683 | No signal of Glow plug module | Glow module status signal | 2nd cycle | Engine running<br>Glow duty | One Type1 Cycle | Type1 |
| EGR system | P0401 | Plausibility | Intake air pressure | 2nd cycle | Engine speed<br>Atmosphere pressure<br>Injection amount<br>Gear position<br>Vehicle speed<br>intake temp<br>target air-fuel ratio<br>DPF regeneration status | One Type1 Cycle | Type1 |

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| EGR valve | P0403 | Self check of Driver IC | Motor current | 2nd cycle | Ignition on | One Type1 Cycle | Type1 |
| | P2413 | EGR position Comparison to Target value | EGR position | 2nd cycle | Ignition on | One Type1 Cycle | Type1 |
| Exhaust gas temperature sensor (Aft.DOC) | P0427 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0428 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Engine running<br>Engine coolant temp.<br>Vehicle speed<br>Injection amount<br>Intake temp<br>Engine speed | - | Type1 |
| EGR valve Lift sensor | P0489 | Range check-min | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0490 | Range check-max | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| vehicle speed sensor | P0500 | Plausibility | vehicle speed | 2nd cycle | CAN network status<br>Engine running<br>Engine coolant temp<br>Battery voltage<br>Engine speed<br>Injection amount<br>Clutch SW status | One Type1 Cycle | Type1 |
| Exhaust gas temperature sensor (Bef.DOC) | P0545 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0546 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Engine running<br>Engine coolant temp.<br>Vehicle speed<br>Injection amount<br>Intake temp<br>Engine speed | - | Type1 |
| EEPROM | P0602 | self check of coded (Variant code not done / EOL not programmed) | coded counter | 1st cycle | Ignition on | - | Type1 |
| | P062F | Read/write to EEPROM | EEPROM data | 2nd cycle | Ignition on | One Type1 Cycle | Type1 |
| | P0630 | self check (VIN not programmed) | VIN data | 1st cycle | Ignition on | - | Type1 |
| | P1625 | self check of injection quantity compensation value | Stored data | 1st cycle | Ignition on | - | Type1 |
| | P1626 | self check of injection quantity compensation value is coded | Stored data | 1st cycle | Ignition on | - | Type1 |
| RAM | P0604 | self check | Internal check | 2nd cycle | Ignition on | One Type1 Cycle | Type1 |
| ROM | P0605 | Calculate check sum and compare with stored value | Check sum | 1st cycle | Ignition on | - | Type1 |

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| CPU (MAIN) | P0606 | Check with SUB-CPU run pulse | Run pulse signal change | 1st cycle | Ignition on | - | Type1 |
| CPU (SUB) | P0607 | Check with CPU run pulse | Run pulse signal change | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| Throttle actuator Control | P0638 | Throttle valve position comparison To target value | Throttle valve position | 2nd cycle | Ignition on<br>Battery voltage<br>Injection amount<br>Engine speed<br>target intake-valve position | One Type1 Cycle | Type1 |
| | P2118 | Self check of driver IC | Motor current | 2nd cycle | Ignition on | One Type1 Cycle | Type1 |
| Analog sensor Reference voltage #1 | P0642 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0643 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| Analog sensor Reference voltage #2 | P0652 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P0653 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| Injector driver #1 and #2 | P1203 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Time after engine start-up<br>Injector activation | - | Type1 |
| | P1204 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Time after engine start-up<br>Injector activation | - | Type1 |
| | P2146 | Circuit continuity: Open (driver1) | Voltage | 1st cycle | starter off<br>Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P2147 | Circuit continuity: Open/Shorted-low (driver1) | Voltage | 1st cycle | starter off<br>Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P2148 | Circuit continuity: Shorted-high (driver1) | Voltage | 1st cycle | starter off<br>Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P2149 | Circuit continuity: Open(driver2) | Voltage | 1st cycle | starter off<br>Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P2150 | Circuit continuity: Open/Shorted-low (driver2) | Voltage | 1st cycle | starter off<br>Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |
| | P2151 | Circuit continuity: Shorted-high (driver2) | Voltage | 1st cycle | Starter off<br>Ignition on<br>Battery voltage<br>Injector activation | - | Type1 |

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Pressure limiter | P1272 | Fuel pressure | Fuel pressure | 2nd cycle | Battery voltage<br>Ignition on<br>Engine speed<br>Fuel pressure sensor status | One Type1 Cycle | Type1 |
| Supply pump | P1273 | Injection amount monitor | Injection amount | 1st cycle | Fuel pressure pump status<br>Fuel pressure<br>Injection amount | - | Type1 |
| | P1274 | High pressure Occurrence for protection | Counter of High pressure Occurrence | 1st cycle | Engine running | - | Type1 |
| | P1275 | Fuel pressure | Pressure | 1st cycle | Fuel pressure sensor status<br>Ignition on | - | Type1 |
| Exhaust gas temperature sensor (Aft.DPF) | P1427 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P1428 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Ignition on<br>Engine running<br>Engine coolant temp.<br>Vehicle speed<br>Injection amount<br>intake temp<br>Engine speed | - | Type1 |
| Accelerator Position Sensor (APS) | P2122 | Range check-min | APS(main) voltage | 1st cycle | Ignition on<br>APS(sub) status | - | Type1 |
| | P2123 | Range check-max | APS(main) voltage | 1st cycle | Ignition on<br>APS(sub) status | - | Type1 |
| | P2127 | Range check-min | APS(sub) voltage | 1st cycle | Ignition on<br>APS(main) status | - | Type1 |
| | P2128 | Range check-max | APS(sub) voltage | 1st cycle | Ignition on<br>APS(main) status | - | Type1 |
| | P2138 | Rationality | Relation between main and sub | 1st cycle | Ignition on<br>Battery voltage<br>starter off<br>Engine speed | - | Type1 |
| Barometric Pressure Sensor | P2228 | Range check-min | Pressure | 2nd cycle | Ignition on<br>Battery voltage | One Type1 Cycle | Type1 |
| | P2229 | Range check-max | Pressure | 2nd cycle | Ignition on<br>Battery voltage | One Type1 Cycle | Type1 |
| EGR cooler bypass valve | P2426 | Range check-min | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P2427 | Range check-max | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| DPF Differential Pressure Sensor | P2453 | Range/ Performance | Differential Pressure | 1st cycle | Battery voltage | - | Type1 |
| | P2454 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P2455 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| DPF | P1497 | Regeneration occurrence | Regeneration counter | 1st cycle | Regeneration mode | - | Type1 |
| | P1498 | Time of regeneration exceeded limit | Regeneration timer | 1st cycle | Ignition on | - | Type1 |
| | P1499 | Temperature check | Temperature | 1st cycle | Battery voltage<br>Engine running<br>Regeneration mode | - | Type1 |
| | P244A | DPF Differential Pressure Too Low | Differential pressure | 2nd cycle | Battery voltage<br>Engine running<br>Engine speed<br>Injection amount<br>Intake air mass<br>Exhaust gas temperature | One Type1 Cycle | Type1 |
| | P2463 | Time of regeneration exceeded limit | Regeneration timer | 1st cycle | Ignition on | - | Type1 |
| Catalytic converter | P0420 | Catalytic Converter Malfunction (HC Conversion Efficiency) | Catalyst temperature | 2nd cycle | Regeneration mode | One Type1 Cycle | Type1 |
| NOx aftertreatment system | P2000 | NOx Adsorber Efficiency Below Threshold | <GA0, GF0><br>Exhaust gas Temperature<br><br><V88, V98><br>Differential pressure | 2nd cycle | <GA0, GF0><br>Engine running<br>Exhaust gas temperature<br><br><V88, V98><br>Engine speed<br>Injection amount<br>Intake air mass<br>Exhaust gas temperature | One Type1 Cycle | Type1 |

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| NTC Differential Pressure Sensor | P1480 | Range/ Performance | Differential Pressure | 1st cycle | Battery voltage | - | Type1 |
| | P1481 | Range check-min | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| | P1482 | Range check-max | Voltage | 1st cycle | Battery voltage<br>Engine running | - | Type1 |
| O2 Sensor | P0130 | Circuit | Voltage | 1st cycle | Battery voltage | - | Type1 |
| | P0134 | Circuit (No Activity Detected) | Impedance | 1st cycle | Battery voltage<br>O2 sensor status | - | Type1 |
| | P0135 | Heater Circuit | Voltage | 1st cycle | Battery voltage<br>O2 sensor heater duty | - | Type1 |
| | P2297 | Out of Range During Deceleration | Current | 1st cycle | Atmospheric oxygen learning state | - | Type1 |
| | P2238 | Pumping Current Circuit Low | Voltage | 1st cycle | Ignition on<br>Battery voltage | - | Type1 |
| | P2239 | Pumping Current Circuit High | Voltage | 1st cycle | Ignition on<br>Battery voltage | - | Type1 |
| | P2252 | Offset Circuit Low | Voltage | 1st cycle | Ignition on<br>Battery voltage | - | Type1 |
| | P2253 | Offset Circuit High | Voltage | 1st cycle | Ignition on<br>Battery voltage | - | Type1 |
| Exhaust Fuel Injector | P20CD | Control Circuit Low | Monitor port signal | 1st cycle | Exhaust fuel injector duty<br>Battery voltage<br>Engine running | - | Type1 |
| | P20CE | Control Circuit High | Monitor port signal | 1st cycle | Exhaust fuel injector duty<br>Battery voltage<br>Engine running | - | Type1 |
| | P20CF | Stuck Open | air-fuel ratio | 1st cycle | Engine speed<br>Injection amount<br>Intake air mass<br>O2 sensor status<br>Exhaust gas temperature | - | Type1 |
| | P20D0 | Stuck Closed | air-fuel ratio | 1st cycle | NTC status<br>Exhaust gas mass<br>Exhaust gas temperature<br>air-fuel ratio(In Cylinder) | - | Type1 |
| **VGT Position Sensor** | **P2564** | **Range check-min** | **Voltage** | **2nd cycle** | **Battery voltage<br>Engine running** | **One Type1 Cycle** | **Type1** |
| | **P2565** | **Range check-max** | **Voltage** | **2nd cycle** | **Battery voltage<br>Engine running** | **One Type1 Cycle** | **Type1** |
| Engine Coolant Over Temperature Condition | P0217 | Temperature check | Temperature | 1st cycle | Ignition on<br>Engine speed<br>Gear position<br>Vehicle speed | - | Type1 |
| Transmission Fulid Temperature Sensor | P0712 | Range check-min | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |
| | P0713 | Range check-max | Voltage | 2nd cycle | Battery voltage<br>Engine running | One Type1 Cycle | Type1 |

## List of monitoring Items for T/M

<5AT> for V88 & V98, KJ0T & KT0T

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| A/T Range Switch | P0707 | Circuit continuity | T/M range switch input | 2nd cycle | Battery voltage<br>Engine speed | One Type1 cycle | Type1 |
| | P0708 | Circuit continuity | T/M range switch input | 2nd cycle | Battery voltage<br>Engine speed | One Type1 cycle | Type1 |
| A/T Oil Temp Sensor1 | P0711 | Rationality (Stuck) | Fluid temperature | 2nd cycle | Battery voltage<br>Engine speed<br>Time after T/M range switch "D" | One Type1 cycle | Type1 |
| | P0712 | Circuit continuity | Fluid temperature | 1st cycle | Battery voltage<br>Engine speed | - | Type1 |
| | P0713 | Circuit continuity | Fluid temperature | 1st cycle | Battery voltage<br>Engine speed<br>Time after IG-ON<br>T/M range switch not "P" or not "N"<br>Output shaft speed | - | Type1 |
| A/T Oil Temp Sensor2 | P2742 | Circuit continuity | Fluid temperature | 2nd cycle | Battery voltage<br>Engine speed | One Type1 cycle | Type1 |
| | P2743 | Circuit continuity | Fluid temperature | 2nd cycle | Battery voltage<br>Engine speed<br>Time after IG-ON<br>T/M range switch not "P" or not "N"<br>Output shaft speed | One Type1 cycle | Type1 |
| A/T Input Speed Sensor | P0715 | Circuit continuity | Input shaft speed | 1st cycle | Battery voltage<br>Engine speed<br>Output shaft speed<br>Time after T/M range switch "D" | - | Type1 |
| A/T Output Speed Sensor | P0720 | Circuit continuity | Output shaft speed | 1st cycle | Battery voltage<br>Engine speed<br>Input shaft speed<br>Time after T/M range switch "D" | - | Type1 |
| Shift Solenoid A | P0751 | Rationality (Stuck-Off) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |

## List of monitoring Items for T/M

<5AT> for V88 & V98, KJ0T & KT0T

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Shift Solenoid A | P0752 | Rationality (Stuck-On) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |
| | P0973 | Circuit continuity | Solenoid actual current | 1st cycle | Battery voltage | - | Type1 |
| | P0974 | Circuit continuity | Solenoid actual current | 1st cycle | Battery voltage | - | Type1 |
| Shift Solenoid B | P0756 | Rationality (Stuck-Off) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |
| | P0757 | Rationality (Stuck-On) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |
| | P0976 | Circuit continuity | Solenoid actual current | 1st cycle | Battery voltage | - | Type1 |
| | P0977 | Circuit continuity | Solenoid actual current | 1st cycle | Battery voltage | - | Type1 |

## List of monitoring Items for T/M

<5AT> for V88 & V98, KJ0T & KT0T

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Shift Solenoid E | P0771 | Rationality (Stuck-Off) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |
| | P0772 | Rationality (Stuck-On) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |
| | P0985 | Circuit continuity | Solenoid actual current | 1st cycle | Battery voltage | - | Type1 |
| | P0986 | Circuit continuity | Solenoid actual current | 1st cycle | Battery voltage | - | Type1 |
| Pressure Control Solenoid A | P0961 | Rationality (Stuck) | Solenoid actual current | 1st cycle | Battery voltage<br>Solenoid actual current<br>Solenoid actual voltage | - | Type1 |
| | P0962 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |
| | P0963 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |
| Pressure Control Solenoid B | P0771 | Rationality (Stuck-Off) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |

**List of monitoring Items for T/M**

<5AT> for V88 & V98, KJ0T & KT0T

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Pressure Control Solenoid B | P0965 | Rationality (Stuck) | Solenoid actual current | 1st cycle | Battery voltage<br>Solenoid actual current<br>Solenoid actual voltage | - | Type1 |
| | P0966 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |
| | P0967 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |
| Pressure Control Solenoid C | P0797 | Rationality (Stuck-On) | Gear ratio<br>Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |
| | P0969 | Rationality (Stuck) | Solenoid actual current | 1st cycle | Battery voltage<br>Solenoid actual current<br>Solenoid actual voltage | - | Type1 |
| | P0970 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |
| | P0971 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |
| Torque Converter Clutch Solenoid | P2757 | Rationality (Stuck-Off) | Engine speed<br>Input shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Transfer high/low gear signal | One Type1 cycle | Type1 |
| | P2758 | Rationality (Stuck-On) | Engine speed<br>Input shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Engine water temperature<br>Transfer high/low gear signal | One Type1 cycle | Type1 |
| | P2762 | Rationality (Stuck) | Solenoid actual current | 1st cycle | Battery voltage<br>Solenoid actual current<br>Solenoid actual voltage | - | Type1 |
| | P2763 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |
| | P2764 | Circuit continuity | Solenoid actual current<br>Solenoid actual voltage | 1st cycle | Battery voltage | - | Type1 |

**List of monitoring Items for T/M**

<5AT> for V88 & V98, KJ0T & KT0T

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| 1-2shift valve | P0781 | Functional | Input shaft speed<br>Output shaft speed | 2nd cycle | Battery voltage<br>Engine speed<br>AT fluid temperature<br>T/M range switch "D"<br>Time after T/M range switch "D"<br>Water temperature<br>Accelerator position<br>Engine torque<br>Transfer high/low gear signal<br>Time after shift gear<br>Sports mode and Gear ratio | One Type1 cycle | Type1 |
| Power Input Signal | P0882 | Circuit continuity | Battery voltage | 1st cycle | Input shaft speed<br>Engine speed<br>IG-ON signal | - | Type1 |
| EEPROM | P0603 | Rationality | Checksum | 1st cycle | IG-ON signal | - | Type1 |
| RAM | P0604 | Rationality | Access error | 1st cycle | IG-ON signal | - | Type1 |
| ROM | P0605 | Rationality | Checksum | 1st cycle | IG-ON signal<br>Requested diag clear | - | Type1 |
| Controller area network | U1073 | Malfunction CAN status (BUS OFF) | CAN signal | 1st cycle | Battery voltage | - | Type1 |
| | U1100 | Communication status (ENG-ECU) | CAN signal from ENG-ECU | 1st cycle | Battery voltage | - | Type1 |

**List of monitoring Items for T/M**

<6AT> for GF0, GA0

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| A/T Range Switch | P0705 | Rationality<br>Circuit continuity | T/M range switch input | 2nd cycle | Battery voltage | One Type1 cycle | Type1 |
| A/T Oil Temp Sensor | P0712 | Range check Min | Fluid temperature | 1st cycle | T/M Range Switch "D"<br>Accelerator position<br>Vehicle speed<br>Engine speed | - | Type1 |
| | P0713 | Range check Max | Fluid temperature | 1st cycle | Vehicle speed | | |
| A/T Input Speed Sensor | P0715 | Circuit continuity | Input shaft speed | 1st cycle | Idle Status<br>Vehicle speed<br>Engine speed | - | Type1 |
| A/T Output Speed Sensor | P0720 | Circuit continuity | Output shaft speed | 1st cycle | Vehicle speed | - | Type1 |
| 1st Gear Ratio | P0731 | Rationality | Input shaft speed<br>Output shaft speed | 1st cycle | Gear Position | - | Type1 |
| 2nd Gear Ratio | P0732 | Rationality | Input shaft speed<br>Output shaft speed | 1st cycle | Gear Position | - | Type1 |
| 3rd Gear Ratio | P0733 | Rationality | Input shaft speed<br>Output shaft speed | 1st cycle | Gear Position | - | Type1 |
| 4th Gear Ratio | P0734 | Rationality | Input shaft speed<br>Output shaft speed | 1st cycle | Gear Position | - | Type1 |
| 5th Gear Ratio | P0735 | Rationality | Input shaft speed<br>Output shaft speed | 1st cycle | Gear Position | - | Type1 |
| 6th Gear Ratio | P0729 | Rationality | Input shaft speed<br>Output shaft speed | 1st cycle | Gear Position | - | Type1 |
| Reverse Gear Ratio | P0736 | Rationality | Input shaft speed<br>Output shaft speed | 1st cycle | Gear Position | - | Type1 |
| Torque Converter Clutch | P0741 | Rationality | Engine Speed<br>Input shaft speed | 2nd cycle | TCC target status<br>T/M Range Switch "D" | One Type1 cycle | Type1 |
| | P0742 | Rationality<br>(Stuck ON) | Engine Speed<br>Input shaft speed | | TCC target status<br>T/M Range Switch "D"<br>Output shaft speed | | |
| Torque Converter Clutch Solenoid | P0743 | Circuit continuity | Solenoid actual current | 1st cycle | Gear Position<br>TCC status<br>Solenoid target current | - | Type1 |

## List of monitoring Items for T/M

<6AT> for GF0, GA0

| Component | Fault code | Monitoring Strategy | Fault detection Criteria | MI activation criteria | Secondary Parameters | Precondition | Demo. test |
|---|---|---|---|---|---|---|---|
| Pressure Control Solenoid | P0748 | Circuit continuity | Solenoid actual current | 2nd cycle | T/M relay voltage<br>Solenoid target current | One Type1 cycle | Type1 |
| Shift Solenoid A | P0753 | Circuit continuity | Solenoid actual current | 1st cycle | Gear Position<br>Solenoid target current | - | Type1 |
| Shift Solenoid B | P0758 | Circuit continuity | Solenoid actual current | 1st cycle | Gear Position<br>Solenoid target current | - | Type1 |
| Shift Solenoid C | P0763 | Circuit continuity | Solenoid actual current | 1st cycle | Gear Position<br>Solenoid target current | - | Type1 |
| Shift Solenoid D | P0768 | Circuit continuity | Solenoid actual current | 1st cycle | Gear Position<br>Solenoid target current | - | Type1 |
| A/T Oil Press Switch B | P0846 | Rationality (Stuck) | Pressure switch status | 2nd cycle | T/M Range Switch "D"or"R"<br>Gear Position | One Type1 cycle | Type1 |
| A/T Oil Press Switch D | P0876 | Rationality (Stuck) | Pressure switch status | 2nd cycle | T/M Range Switch "D"<br>Solenoid target current | One Type1 cycle | Type1 |
| A/T Oil Press Switch E | P0988 | Rationality (Stuck) | Pressure switch status | 2nd cycle | T/M Range Switch "D"or"R"<br>Gear Position | One Type1 cycle | Type1 |
| Shift Solenoid F | P1753 | Circuit continuity | Solenoid actual current | 1st cycle | Gear Position<br>TCC status<br>Solenoid target current | - | Type1 |
| Shift Solenoid G | P1758 | Circuit continuity | Solenoid actual current | 1st cycle | T/M relay voltage<br>Solenoid target current | - | Type1 |
| Interlock Detection | P0893 | Rationality | Deceleration | 1st cycle | A/T Oil press switch combination<br>Brake switch signal | - | Type1 |
| Throttle position signal | P1705 | Throttle position sensor malfunction | CAN signal from ENG | 1st cycle | Time after TCM start<br>Vehicle speed | - | Type1 |
| Accelerator position signal | P1706 | Accelerator position sensor malfunction | CAN signal from ENG | 1st cycle | Time after TCM start | - | Type1 |
| ABS status | P1773 | ABS malfunction | CAN signal from ABS/ASC | 2nd cycle | Time after TCM start | One Type1 cycle | Type1 |
| Controller Area Network | U0001 | malfunction CAN Line | CAN communication | 1st cycle | Time after TCM start<br>T/M relay voltage | - | Type1 |
| | U0100 | CAN communication status (ENG-ECU) | CAN signal from ENG | 1st cycle | Time after TCM start | - | Type1 |

## SERVICE $06 DATA / Engine

※1 The OBDMIDs definition is based on SAE J1979 (May 2007).

| OBDMID※1 | Test ID | Unit and Scaling ID |
|---|---|---|
| OBDMID $00 OBD Monitor Ids supported($01-$20) | | |
| OBDMID $01 Exhaust Gas Sensor Monitor Bank1-Sensor1 | | |
| OBDMID $02 Exhaust Gas Sensor Monitor Bank1-Sensor2 | | |
| OBDMID $03 Exhaust Gas Sensor Monitor Bank1-Sensor3 | | |
| OBDMID $04 Exhaust Gas Sensor Monitor Bank1-Sensor4 | | |
| OBDMID $05 Exhaust Gas Sensor Monitor Bank2-Sensor1 | | |
| OBDMID $06 Exhaust Gas Sensor Monitor Bank2-Sensor2 | | |
| OBDMID $07 Exhaust Gas Sensor Monitor Bank2-Sensor3 | | |
| OBDMID $08 Exhaust Gas Sensor Monitor Bank2-Sensor4 | | |
| OBDMID $09 Exhaust Gas Sensor Monitor Bank3-Sensor1 | | |
| OBDMID $0A Exhaust Gas Sensor Monitor Bank3-Sensor2 | | |
| OBDMID $0B Exhaust Gas Sensor Monitor Bank3-Sensor3 | | |
| OBDMID $0C Exhaust Gas Sensor Monitor Bank3-Sensor4 | | |
| OBDMID $0D Exhaust Gas Sensor Monitor Bank4-Sensor1 | | |
| OBDMID $0E Exhaust Gas Sensor Monitor Bank4-Sensor2 | | |
| OBDMID $0F Exhaust Gas Sensor Monitor Bank4-Sensor3 | | |
| OBDMID $10 Exhaust Gas Sensor Monitor Bank4-Sensor4 | | |
| OBDMID $11-$1F ISO/SAE reserved | | |
| OBDMID $20 OBD Monitor Id supported($21-$40) | | |
| OBDMID $21 Catalyst Monitor Bank1 | | |
| OBDMID $22 Catalyst Monitor Bank2 | | |
| OBDMID $23 Catalyst Monitor Bank3 | | |
| OBDMID $24 Catalyst Monitor Bank4 | | |
| OBDMID $25-$30 ISO/SAE reserved | | |
| OBDMID $31 EGR Monitor Bank1 | S/MD TID $81 EGR Pressure (MMC) | $2D mg/stroke per bit |
| OBDMID $32 EGR Monitor Bank2 | | |
| OBDMID $33 EGR Monitor Bank3 | | |
| OBDMID $34 EGR Monitor Bank4 | | |
| OBDMID $35 VVT Monitor Bank1 | | |
| OBDMID $36 VVT Monitor Bank2 | | |
| OBDMID $37 VVT Monitor Bank3 | | |
| OBDMID $38 VVT Monitor Bank4 | | |
| OBDMID $39 EVAP Monitor(Cap Off / 0.150") | | |
| OBDMID $3A EVAP Monitor(0.09") | | |
| OBDMID $3B EVAP Monitor(0.04") | | |
| OBDMID $3C EVAP Monitor(0.02") | | |
| OBDMID $3D Purge Flow Monitor | | |
| OBDMID $3E-$3F ISO/SAE reserved | | |
| OBDMID $40 OBD Monitor Ids supported($41-$60) | | |
| OBDMID $41 Exhaust Gas Sensor Heater Monitor Bank1-Sensor1 | | |
| OBDMID $42 Exhaust Gas Sensor Heater Monitor Bank1-Sensor2 | | |
| OBDMID $43 Exhaust Gas Sensor Heater Monitor Bank1-Sensor3 | | |
| OBDMID $44 Exhaust Gas Sensor Heater Monitor Bank1-Sensor4 | | |
| OBDMID $45 Exhaust Gas Sensor Heater Monitor Bank2-Sensor1 | | |
| OBDMID $46 Exhaust Gas Sensor Heater Monitor Bank2-Sensor2 | | |
| OBDMID $47 Exhaust Gas Sensor Heater Monitor Bank2-Sensor3 | | |
| OBDMID $48 Exhaust Gas Sensor Heater Monitor Bank2-Sensor4 | | |
| OBDMID $49 Exhaust Gas Sensor Heater Monitor Bank3-Sensor1 | | |
| OBDMID $4A Exhaust Gas Sensor Heater Monitor Bank3-Sensor2 | | |
| OBDMID $4B Exhaust Gas Sensor Heater Monitor Bank3-Sensor3 | | |
| OBDMID $4C Exhaust Gas Sensor Heater Monitor Bank3-Sensor4 | | |
| OBDMID $4D Exhaust Gas Sensor Heater Monitor Bank4-Sensor1 | | |
| OBDMID $4E Exhaust Gas Sensor Heater Monitor Bank4-Sensor2 | | |
| OBDMID $4F Exhaust Gas Sensor Heater Monitor Bank4-Sensor3 | | |

| OBDMID※1 | Test ID | Unit and Scaling ID |
|---|---|---|
| OBDMID $50 Exhaust Gas Sensor Heater Monitor Bank4-Sensor4 | | |
| OBDMID $51-$5F ISO/SAE reserved | | |
| OBDMID $60 OBD Monitor Ids supported($61-$80) | | |
| OBDMID $61 Heated Catalyst Monitor Bank1 | | |
| OBDMID $62 Heated Catalyst Monitor Bank2 | | |
| OBDMID $63 Heated Catalyst Monitor Bank3 | | |
| OBDMID $64 Heated Catalyst Monitor Bank4 | | |
| OBDMID $65-$70 ISO/SAE reserved | | |
| OBDMID $71 Secondary Air Monitor 1 | | |
| OBDMID $72 Secondary Air Monitor 2 | | |
| OBDMID $73 Secondary Air Monitor 3 | | |
| OBDMID $74 Secondary Air Monitor 4 | | |
| OBDMID $75-$7F ISO/SAE reserved | | |
| OBDMID $80 OBD Monitor Ids supported($81-$A0) | | |
| OBDMID $81 Fuel System Monitor Bank1 | | |
| OBDMID $82 Fuel System Monitor Bank2 | | |
| OBDMID $83 Fuel System Monitor Bank3 | | |
| OBDMID $84 Fuel System Monitor Bank4 | | |
| OBDMID $85 Boost Pressure Control Monitor Bank1 | | |
| OBDMID $86 Boost Pressure Control Monitor Bank2 | | |
| OBDMID $87-$8F ISO/SAE reserved | | |
| OBDMID $90 NOx Adsorber Monitor Bank1 | | |
| OBDMID $91 NOx Adsorber Monitor Bank2 | | |
| OBDMID $92-$97 ISO/SAE reserved | | |
| OBDMID $98 NOx Catalyst Monitor Bank1 | | |
| OBDMID $99 NOx Catalyst Monitor Bank2 | | |
| OBDMID $9A-$9F ISO/SAE reserved | | |
| OBDMID $A0 OBD Monitor Ids supported($A1-$C0) | | |
| OBDMID $A1 Misfire General Data | | |
| OBDMID $A2 Misfire Cylinder1 Data | | |
| OBDMID $A3 Misfire Cylinder2 Data | | |
| OBDMID $A4 Misfire Cylinder3 Data | | |
| OBDMID $A5 Misfire Cylinder4 Data | | |
| OBDMID $A6 Misfire Cylinder5 Data | | |
| OBDMID $A7 Misfire Cylinder6 Data | | |
| OBDMID $A8 Misfire Cylinder7 Data | | |
| OBDMID $A9 Misfire Cylinder8 Data | | |
| OBDMID $AA Misfire Cylinder9 Data | | |
| OBDMID $AB Misfire Cylinder10 Data | | |
| OBDMID $AC Misfire Cylinder11 Data | | |
| OBDMID $AD Misfire Cylinder12 Data | | |
| OBDMID $AE Misfire Cylinder13 Data | | |
| OBDMID $AF Misfire Cylinder14 Data | | |
| OBDMID $B0 Misfire Cylinder15 Data | | |
| OBDMID $B1 Misfire Cylinder16 Data | | |
| OBDMID $B2 PM Filter Monitor Bank1 | | |
| OBDMID $B3 PM Filter Monitor Bank2 | | |
| OBDMID $B4-$BF ISO/SAE reserved | | |
| OBDMID $C0 OBD Monitor Ids supported($C1-$E0) | | |
| OBDMID $C1-$DF ISO/SAE reserved | | |
| OBDMID $C0 OBD Monitor Ids supported($E1-$FF) | | |
| OBDMID $E1-$FFVehicle manufacturer defined OBDMIDs | | |