Chapter 2

ESSENTIAL CHARACTERISTICS OF THE VEHICLE AND ENGINE AND INFORMATION CONCERNING THE CONDUCT OF TESTS

1. Information is to be provided as per AIS-007 Revision 3

2. Additionally for On-board Diagnostic (OBD) system, the following information shall be provided:

   2.1. Written description and/or drawing of the Malfunction Indicator (MI).

   2.2. List and purpose of all components monitored by the OBD system.

   2.3. Written description (general working principles).

   2.4. For Positive-ignition engines.
      2.4.1. Catalyst monitoring.
      2.4.2. Misfire detection.
      2.4.3. Oxygen sensor monitoring.
      2.4.4. Other components monitored by the OBD system.

   2.5. Compression-ignition engines.
      2.5.1. Catalyst monitoring.
      2.5.2. Particulate trap monitoring
      2.5.3. Electronic fuelling system monitoring.
      2.5.4. Other components monitored by the OBD system.

   2.6. Criteria for MI activation (fixed number of driving cycles or statistical method).

   2.7. List of all OBD output codes and formats used (with explanation of each).

   2.8. The following additional information shall be provided by the vehicle manufacturer for the purposes of enabling the manufacture of OBD-compatible replacement or service parts and diagnostic tools and test equipment, unless such information is covered by intellectual property rights or constitutes specific know-how of the manufacturer or the OEM supplier(s).

      2.8.1. A description of the type and number of the pre-conditioning cycles used for the original type approval of the vehicle.

      2.8.2. 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.

      2.8.3. 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 must 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, must be provided. This information may be defined in the form of a table, as follows:

Component	Fault code	Monitoring strategy	Fault detection criteria	MI activation criteria	Secondary parameters	Preconditioning	Demonstration test
Catalyst	P0420	Oxygen sensor 1 and 2 signals	Difference between sensor 1 and sensor 2 signals	3rd cycle	Engine speed, engine load, A/F mode, catalyst temperature	Two type l cycles	Type l'

Note: For OBD – I the sections 2.4.1, 2.4.2, 2.4.3, 2.5.1, 2.5.2 and 2.5.3, are not required

2.9. Additionally for vehicle equipped with a periodically regenerating system, the following information shall be provided

2.9.1. Regeneration systems / method of exhaust after-treatment systems, description

2.9.1.1. The number of Type I operating cycles, or equivalent engine test bench cycles, between two cycles where regenerative phases occur under the conditions equivalent to Type I test (Distance "D" in figure 1 in Chapter 15).

2.9.1.2. Description of method employed to determine the number of cycles between two cycles where regenerative phases occur.

2.9.1.3. Parameters to determine the level of loading required before regeneration occurs (i.e. temperature, pressure etc.)

2.9.1.4. Description of method used to load system in the test procedure described in paragraph 3.1., Chapter 15

2.9.2. Particulate trap: yes/no

2.9.2.1. Dimensions and shape of the particulate trap (capacity)

2.9.2.2. Type of particulate trap and design

2.9.2.3. Location of the particulate trap (reference distances in the exhaust system)

2.9.2.4. Regeneration system/method. Description and drawing

2.9.2.5. The number of Type I operating cycles, or equivalent engine test bench cycle, between two cycles where regeneration phases occur under the conditions equivalent to Type I test (Distance 'D' in figure 1 in Chapter 15)

2.9.2.6. Description of method employed to determine the number of cycles between two cycles where regenerative phases occur

2.9.2.7. Parameters to determine the level of loading required before regeneration occurs (i.e. temperature, pressure, etc.)

2.9.2.8. Description of method used to load system in the test procedure described in paragraph 3.1 Chapter 15