**Amendment No 6 (08/2018)**

**To**

**AIS-007 (Rev.5): 2014 - Information on Technical Specifications to be submitted by the Vehicle Manufacturer.**

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| **1.0** | **Page 21/227,** |
|  | Add following new tables 1C and 1 D after table 1A |

**Table 1 C**

**TECHNICAL SPECIFICATIONS OF L2 CATEGORY VEHICLES FOR BS VI NORMS**

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| --- | --- | --- | --- |
| **Item No.** | **Detailed Information** | | |
| **0.** | **GENERAL INFORMATION** | | |
| **A.** | **General information concerning vehicles** | | |
| 0.1. | Make (trade name of manufacturer) | : |  |
| 0.2. | Type (state any possible variants: each variant must be identified by a code consisting of numbers or a combination of letters and numbers) | : |  |
| 0.2.1. | Variant(s) | : |  |
| 0.2.2. | Commercial name(s) (if available) | : |  |
| 0.3. | Category | : |  |
| 0.3.1 | subcategory of vehicle |  |  |
| 0.4. | Company name and address of manufacturer | : |  |
| 0.4.1. | Name(s) and address(es) of assembly plants | : |  |
| 0.4.2. | Name(s) and address of Vehicle importer | : |  |
| 0.4.3. | Name and address with email id and contact number of manufacturer’s authorised representative, if any |  |  |
| 0.5. | Manufacturer’s statutory plate(s), | | |
| 0.5.1. | Location of the manufacturer’s statutory plate (1) | : |  |
| 0.5.2. | Method of attachment | : |  |
| 0.5.3. | Photographs and/or drawings of the statutory plate (completed example with dimensions) | : |  |
| 0.6. | Location of the vehicle identification number (1) and height of VIN characters. | : |  |
| 0.6.1. | Photographs and/or drawings of the locations of the vehicle identification number (completed example with dimensions) | : |  |
| 0.6.1.1. | The serial number of the type begins with |  |  |
| 0.7. | Vehicle run in and driven at least 1000 km before the test : yes/no |  |  |
| 0.7.1. | Please specify : Coast down / Table method to be used for Mass Emission Test |  |  |
| **B.** | **General information regarding conformity of production and access to repair and maintenance information** | | |
| 0.1 | Conformity of production | | |
| 0.1.1. | Description of overall quality-assurance management systems. | : |  |
| **1.0** | **GENERAL CONSTRUCTION CHARACTERISTICS** | | |
| 1.1. | Photographs and/or drawings of a representative / prototype vehicle | : |  |
| 1.2. | Scale drawing of the whole vehicle | : |  |
| 1.3. | Number of axles and wheels | : |  |
| 1.3.1. | Axles with twinned wheels (2) | : |  |
| 1.3.2. | Powered axles (2) | : |  |
| 1.4. | Position and arrangement of the propulsion(s) | : |  |
| 1.4.1. | Declared maximum vehicle speed (km/h)- laden condition | : |  |
| 1.4.2. | Declared maximum vehicle speed (km/h)- unladen condition |  |  |
| 1.4.3. | Maximum net power combustion engine  (kW/min-1 at A/F ratio) | : |  |
| 1.4.4. | Maximum net torque combustion engine  (Nm/min-1 at A/F ratio) | : |  |
| 1.4.5. | Maximum continuous-rated power electric motor 15/30minutes power (3) (kW/min-1) | : |  |
| 1.4.6. | Maximum continuous-rated torque electric motor (Nm/min-1) | : |  |
| 1.4.7. | Maximum continuous total power for propulsion(s)  (kW/min-1 at A/F ratio) | : |  |
| 1.4.8. | Maximum continuous total torque for propulsion(s)  (Nm/min-1 at A/F ratio) | : |  |
| 1.4.9. | Maximum peak power for propulsion(s)  (kW/min-1 at A/F ratio) | : |  |
| 1.4.10. | Engine Power Table (Engine Performance Declared speed and powers of the engine submitted for type approval) (Speedsto be agreed with the testing agency) |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| 1.4.11. | Power for propulsion(s): ......... kW at .......... min-1 ( min 6 points) | | | | |  |  |
|  |  | Sr.No | Engine Speed (RPM) | Power (kW) |  |  |  |
|  | 1 |  |  |  |  |
|  | 2 |  |  |  |  |
|  | 3 |  |  |  |  |
|  | 4 |  |  |  |  |
|  | 5 |  |  |  |  |
|  | 6 |  |  |  |  |
| **2.0** | **MASSES AND DIMENSIONS**  (In kg and mm.) refer to drawings where applicable | | | | | | |
| **2.1.** | **Range of vehicle mass (overall)** | | | | | | |
| 2.1.1. | Mass in running order (kg) ( Kerb weight + rider) | | | | | : |  |
| 2.1.1.1. | Distribution of mass in running order between the axles (kg) | | | | | : |  |
| 2.1.2. | Actual mass (kg) (without/with optional parts) | | | | | : |  |
| 2.1.2.1. | Distribution of actual mass between the axles (kg)  (without/with optional parts) | | | | | : |  |
| 2.1.3. | Technically permissible maximum laden mass (kg) | | | | | : |  |
| 2.1.3.1. | Technically permissible maximum mass on front axle (kg) | | | | | : |  |
| 2.1.3.2. | Technically permissible maximum mass on rear axle (kg) | | | | | : |  |
| 2.1.4. | Maximum gradeability at the maximum technically permissible mass declared by the manufacturer (% slope) | | | | | : |  |
| 2.1.5. | Maximum pay mass declared by manufacturer (kg)  (without/with optional parts) | | | | | : |  |
| 2.1.6. | Mass of the optional equipment (kg) | | | | | : |  |
| 2.1.7. | Mass of the propulsion battery (kg) | | | | | : |  |
| 2.1.8. | Mass of the gaseous fuel system as well as storage tanks for gaseous fuel (kg) | | | | | : |  |
| 2.1.9. | Mass of the storage tanks to store compressed air (kg) | | | | | : |  |
| **2.2.** | **Range of vehicle dimensions (overall)** | | | | | | |
| 2.2.1. | Length (mm) | | | | | : |  |
| 2.2.2. | Width (mm) | | | | | : |  |
| 2.2.3. | Height (mm) | | | | | : |  |
| 2.2.4. | Wheelbase (mm) | | | | | : |  |
| 2.2.5. | Track width | | | | | | |
| 2.2.5.1. | Track width front (mm); if equipped with twinned wheels | | | | | : |  |
| 2.2.5.2. | Track width rear (mm); if equipped with twinned wheels | | | | | : |  |
| **3.0** | **GENERAL POWERTRAIN CHARACTERISTICS** | | | | | | |
| **3.1.** | **Manufacturer of the propulsion unit** | | | | | | |
| **3.1.1.** | **Combustion engine** | | | | | | |
| 3.1.1.1. | Manufacturer | | | | | : |  |
| 3.1.1.2. | Engine identification number and its location | | | | | : |  |
| 3.1.1.3. | Fuel identification marking (if available) | | | | | : |  |
| **3.1.2.** | **Electric Motor** | | | | | | |
| 3.1.2.1. | Manufacturer | | | | | : |  |
| 3.1.2.2. | Electric motor code and its location | | | | | : |  |
| **3.1.3.** | **Hybrid application** | | | | | | |
| 3.1.3.1. | Manufacturer | | | | | : |  |
| 3.1.3.2. | Application code | | | | | : |  |
| 3.1.3.3. | Fuel identification marking (if available) | | | | | : |  |
| 3.1.3.4. | Photographs and/or drawings of the location of the code(s) | | | | | : |  |
| **3.2.** | **Combustion engine** | | | | | | |
| **3.2.1.** | **Specific Engine information** | | | | | | |
| 3.2.1.1. | Number of combustion engines | | | | | : |  |
| 3.2.1.2. | Working principle: internal combustion engine (ICE)/positive ignition/ compression ignition /external combustion engine (ECE)/ turbine/ compressed air | | | | | : |  |
| 3.2.1.3. | Cycle: four-stroke/two-stroke/rotary/other | | | | | : |  |
| 3.2.1.4. | Cylinders | | | | | : |  |
| 3.2.1.4.1. | Number | | | | | : |  |
| 3.2.1.4.2. | Arrangement (4) | | | | | : |  |
| 3.2.1.4.3. | Bore  (5) (mm) | | | | | : |  |
| 3.2.1.4.4. | Stroke (5) (mm) | | | | | : |  |
| 3.2.1.4.5. | Number and configuration of stators in the case of rotary-piston engine | | | | | : |  |
| 3.2.1.4.6. | Volume of combustion chambers in the case of rotary-piston engine (cm3) | | | | | : |  |
| 3.2.1.4.7. | Firing order | | | | | : |  |

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| --- | --- | --- | --- |
| 3.2.1.5. | Engine capacity (6) (cm3) | : |  |
| 3.2.1.6. | Volumetric compression ratio (7) | : |  |
| 3.2.1.7. | Number of inlet and exhaust valves | : |  |
| 3.2.1.8. | Drawings of combustion chamber, cylinder head, piston, piston rings | : |  |
| 3.2.1.9. | Nominal engine idling speed (min-1) | : |  |
| 3.2.1.9.1 | High idle engine speed (specify tolerance): |  |  |
| 3.2.1.9.2. | High Idle Lambda value (1± 0.03) or as specified by the vehicle manufacturer) |  |  |
| 3.2.1.10. | Stop-start system: yes/no | : |  |
| 3.2.1.10.1 | Selective Catalytic Reduction (SCR) and its components | | |
| 3.2.1.10.1.1 | Principle and Characteristics: | | |
| 3.2.1.10.1.2 | Make: | | |
| 3.2.1.10.2 | Type and Identification number: | | |
| 3.2.1.10.2.1 | Total charge of precious metal: | | |
| 3.2.1.10.2.2 | Substrate (structure and material): | | |
| 3.2.1.10.2.3 | Relative Concentration (%): | | |
| 3.2.1.10.2.4 | Dimensions and shape of the SCR (volume, etc.): | | |
| 3.2.1.10.2.5 | Dosing ECU: | | |
| 3.2.1.10.2.5.1 | Make: | | |
| 3.2.1.10.2.5.2 | Identification number: | | |
| 3.2.1.10.2.5.3 | Calibration Identification number: (16 digits) | | |
| 3.2.1.10.2.5.4 | Calibration Verification number: | | |
| 3.2.1.10.2.5.5 | Urea Dosing Unit: | | |
| 3.2.1.10.2.5.5.1 | Dosing Unit: | | |
| 3.2.1.10.2.5.5.1.1 | Make: | | |
| 3.2.1.10.2.5.5.1.2 | Type and Identification number: | | |
| 3.2.1.10.2.5.5.2 | Supply Unit: | | |
| 3.2.1.10.2.5.5.2.1 | Make: | | |
| 3.2.2. | Fuel | | |
| 3.2.2.1. | Fuel type: Diesel/ Gasoline/ LPG/ CNG/ Biomethane/Bio-H2 methane/ HCNG/ E5/ B7/ Biogas/ LNG/ Ethanol ((E85)/ (E100))/ Flex fuel Methanol M15/ M100/MD95/ Biodiesel up to 100%/Hydrogen. ( as notified from time to time) | : |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 3.2.2.2. | Vehicle fuel configuration: mono-fuel/ bi-fuel / flex fuel/Dual Fuel | : |  |
| 3.2.2.2.1. | Maximum amount of bio-fuel acceptable in fuel (% by volume) | : |  |
| 3.2.3. | Fuel pressure delivery and control | | |
| 3.2.3.1. | Brief description and schematic drawing of low-and/or high-pressure fueling wet system(s) | : |  |
| 3.2.3.2. | Low- and/or high-pressure fuel pump(s): yes/no | : |  |
| 3.2.3.2.1. | Fuel pump control: mechanical/on/off electric/ continuous operation/electronically controlled variable operation | : |  |
| 3.2.3.2.2. | For CI combustion engines and dual fuel engines only maximum fuel delivery : (g/s or mm3 /stroke) or cycle at an engine speed of …. min-1 or, alternatively, a characteristic diagram (When boost control is supplied, state the characteristic fuel delivery and boost pressure versus engine speed) | : |  |
| 3.2.3.3. | Common rail: yes/no | : |  |
| 3.2.3.4. | Fuel distributor/rail/hoses : yes/no | : |  |
| 3.2.3.5. | Fuel pressure and/or fuel flow regulator(s): yes/no | : |  |
| 3.2.4. | Fuel mass metering and control | | |
| 3.2.4.1. | By carburetor(s): yes/no | : |  |
| 3.2.4.1.1 | Make(s) |  |  |
| 3.2.4.1.2. | Carburetor(s) settings (7) | : |  |
| 3.2.4.1.3. | Carburetor cold-starting system: manual / automatic : yes/no | : |  |
| 3.2.4.1.3.1. | Carburetor cold-starting system operating principle(s) | : |  |
| 3.2.4.1.4. | Mixture scavenging port: yes/no | : |  |
| 3.2.4.1.4.1. | Mixture scavenging port dimensions | : |  |
| 3.2.4.2. | By mechanically/hydraulically controlled fuel injection : yes/no | : |  |
| 3.2.4.2.1. | Operation principle | : |  |
| 3.2.4.2.2. | Mechanical/electronic adjustment of maximum fuel mass delivery: yes/ no | : |  |
| 3.2.4.3. | By electronically controlled fuel injection system: yes/no | : |  |
| 3.2.4.3.1. | Operation principle: port injection/direct injection/pre-chamber/swirl chamber | : |  |
| 3.2.4.3.2. | Fuel injector(s): single-/multi-point/direct injection/other (specify) | : |  |
| 3.2.4.3.3. | Total and per cylinder amount of fuel injectors | : |  |
| 3.2.4.3.4 | Make (trade name of manufacturer) |  |  |
| 3.2.4.3.5 | Identification number: |  |  |
| 3.2.4.4. | Air-assisted fuel injector: yes/no | : |  |
| 3.2.4.4.1. | Description and operating pressure of air-assist | : |  |
| 3.2.4.5. | Cold start system: yes/no | : |  |
| 3.2.4.5.1. | Description of cold start system | : |  |
| 3.2.4.6. | Auxiliary starting aid: yes/no | : |  |
| 3.2.4.7. | CI injection specific: yes/no | : |  |
| 3.2.4.7.1. | Static injection timing (7) | : |  |
| 3.2.4.7.2. | Injection advance curve (7) | : |  |
| **3.2.5.** | **Gaseous fueling system and control** | | |
| 3.2.5.1. | Brief description and schematic drawing of gaseous fueling system(s) | : |  |
| 3.2.5.2. | Liquefied petroleum gas (LPG) fueling system: yes/no | : |  |
| 3.2.5.2.1. | Electronic engine management control unit for LPG fueling: yes/no | : |  |
| 3.2.5.2.2.1. | Emission-related adjustment possibilities | : |  |
| 3.2.5.2.3. | Further documentation | : |  |
| 3.2.5.2.3.1. | System layout (electrical connections, vacuum connections, compensation hoses, etc.) | : |  |
| 3.2.5.2.4. | Drawing of the symbol | : |  |
| 3.2.5.3. | Natural gas (NG) fueling system: yes/no | : |  |
| 3.2.5.3.1. | Electronic engine management-control unit for NG fueling: yes/no | : |  |
| 3.2.5.3.2. | Emission-related adjustment possibilities | : |  |
| 3.2.5.3.3. | Further documentation | : |  |
| 3.2.5.3.3.1. | System layout (electrical connections, vacuum connections compensation hoses, etc.) | : |  |
| 3.2.5.3.4. | Drawing of the symbol | : |  |
| 3.2.5.4. | Gaseous fuel: LPG/NG-H/NG-L/NG-HL : yes/no | : |  |
| 3.2.5.4.1. | Pressure regulator(s) or vaporizer/pressure regulator(s) | : |  |
| 3.2.5.4.1.1. | Pressure in final stage,  minimum: ....... kPa, maximum: ....... kPa | : |  |
| 3.2.5.4.1.2. | Number of main adjustment points | : |  |
| 3.2.5.4.1.3. | Number of idle adjustment points | : |  |
| 3.2.5.4.1.4. | Make and Identification | : |  |

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| --- | --- | --- | --- |
| 3.2.5.4.2. | Fueling system: mixing unit/gas injection/liquid injection/direct injection | : |  |
| 3.2.5.4.2.1. | System description and/or diagram and drawings | : |  |
| 3.2.5.4.2.2. | Make and Identification | : |  |
| 3.2.5.4.3. | Mixing unit: yes/no | : |  |
| 3.2.5.4.3.1. | Number | : |  |
| 3.2.5.4.3.2. | Location | : |  |
| 3.2.5.4.3.3. | Adjustment possibilities | : |  |
| 3.2.5.4.3.4. | Make and Identification | : |  |
| 3.2.5.4.4. | Inlet manifold injection: yes/no | : |  |
| 3.2.5.4.4.1. | Injection: single-point/multi-point | : |  |
| 3.2.5.4.4.2. | Injection: continuous/simultaneously timed/ sequentially timed | : |  |
| 3.2.5.4.5. | Injection equipment: yes/no | : |  |
| 3.2.5.4.5.1. | Adjustment possibilities | : |  |
| 3.2.5.4.5.2. | Make and Identification | : |  |
| 3.2.5.4.6. | Supply pump: yes/no | : |  |
| 3.2.5.4.6.1. | Make and Identification | : |  |
| 3.2.5.4.7. | Injector(s) | : |  |
| 3.2.5.4.7.1. | Make and Identification | : |  |
| 3.2.5.4.8. | Direct/port injection: yes/no | : |  |
| 3.2.5.4.9. | Injection pump/pressure regulator: yes/no | : |  |
| 3.2.5.4.9.1. | Make and Identification | : |  |
| 3.2.5.4.10. | Separate electronic control unit (ECU) for gaseous fueling system: yes/no | : |  |
| 3.2.5.4.10.1. | Adjustment possibilities | : |  |
| 3.2.5.4.10.2. | Software identification number(s) (16 digit) | : |  |
| 3.2.5.4.10.3. | Calibration verification number(s) | : |  |
| 3.5.4.4.10.4. | Hardware identification number (s) |  |  |
| 3.2.5.5. | NG fuel-specific equipment | : |  |
| 3.2.5.5.1. | Variant 1 (only in the case of approvals of engines for several specific fuel compositions) | : |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 3.2.5.5.2. | Fuel composition | | | | | | |
|  | Methane (CH4): | Basis: ----------  % mole | | Min. ------------  % mole | | Max. -----------  % mole | |
|  | Ethane (C2H6) | Basis: ----------  % mole | | Min. ------------  % mole | | Max. -----------  % mole | |
|  | Propane (C3H8) | Basis: ----------  % mole | | Min. ------------  % mole | | Max. -----------  % mole | |
|  | Butane (C4H10) | Basis: ----------  % mole | | Min. ------------  % mole | | Max. -----------  % mole | |
|  | C5/C5 + | Basis: ----------  % mole | | Min. ------------  % mole | | Max. -----------  % mole | |
|  | Oxygen (O2) | Basis: ----------  % mole | | Min. ------------  % mole | | Max. -----------  % mole | |
|  | Inert (N2, He, etc) | Basis: ----------  % mole | | Min. ------------  % mole | | Max. -----------  % mole | |
| 3.2.5.5.3. | Gaseous fuel injector(s) | | | | | : |  |
| 3.2.5.5.4. | Variant 2 (only in the case of approvals for several specific fuel compositions) | | | | | : |  |
| 3.2.5.6. | Hydrogen fuel-specific equipment: yes/no | | | | | : |  |
| 3.2.5.6.1 | System layout (electrical connections, vacuum connections, compensation hoses, etc.) | | | | | : |  |
| 3.2.5.6.2. | Drawing of the symbol | | | | | : |  |
| 3.2.5.7. | H2NG fueling system: yes/no | | | | | : |  |
| 3.2.5.7.1. | Percentage of hydrogen in the fuel (the maximum specified by the manufacturer) | | | | | : |  |
| **3.2.6.** | **Air-induction system** | | | | | | |
| 3.2.6.1. | Brief description and schematic drawing of gaseous intake air-flow and induction system | | | | | : |  |
| 3.2.6.2. | Intake manifold description and working principle (e.g. fixed length/variable length/swirl valves) (include detailed drawings and/ or photos) | | | | | : |  |
| 3.2.6.3. | Intake air pressure charger: yes/no | | | | | : |  |
| 3.2.6.3.1. | Brief description and schematic drawing of the intake air-pressure charger system | | | | | : |  |
| 3.2.6.3.2. | Working and control principles | | | | | : |  |
| 3.2.6.3.3. | Type(s) (turbo or supercharger, other) | | | | | : |  |
| 3.2.6.3.4. | Maximum intake air-charge pressure (kPa) and flow-rate (g/s) at maximum torque and power; or charge pressure (kPa) and flow-rate map (g/s) | | | | | : |  |
| 3.2.6.4. | Waste gate: yes/no | | | | | : |  |
| 3.2.6.5. | Intercooler: yes/no | | | | | : |  |
| 3.2.6.5.1. | Type: air-air/air-water/other | | | | | : |  |
| 3.2.6.6. | Air filter (drawings, photographs) | | | | | : |  |
| 3.2.6.7. | Intake air-silencer description (drawings, photographs) | | | | | : |  |
| **3.2.7.** | **Air-mass metering and control** | | | | | | |
| 3.2.7.1. | Brief description and schematic drawing of air-mass metering and control system | | | | | : |  |
| 3.2.7.2. | Mechanical throttle body: yes/no | | | | | : |  |
| 3.2.7.3. | Electronic throttle control (ETC): yes/no | | | | | : |  |
| 3.2.7.3.1. | Schematic drawing of electronic throttle control | | | | | : |  |
| **3.2.8.** | **Spark delivery system and control** | | | | | | |
| 3.2.8.1. | Brief description and schematic drawing of spark delivery and control system | | | | | : |  |
| 3.2.8.1.1. | Working principle | | | | | : |  |
| 3.2.8.1.2. | Ignition advance curve or map(7) at wide open throttle | | | | | : |  |
| 3.2.8.1.3. | Static ignition timing (7) : ........... degrees before TDC  at maximum torque  at maximum power | | | | | : |  |
| 3.2.8.2. | Ion sense capability: yes/no | | | | | : |  |
| 3.2.8.3. | Spark plugs   * Numbers * Make * Identification * Nominal resistance (kilo ohm) (if resistive type) | | | | | : |  |
| 3.2.8.3.1. | Gap setting (mm) | | | | | : |  |
| 3.2.8.4. | Ignition coil(s) | | | | | : |  |
| 3.2.8.4.1 | Make | | | | |  |  |
| 3.2.8.4.2 | Type | | | | |  |  |
| 3.2.8.4.3 | Part no./Identification number(ID)/Drawing No. | | | | |  |  |
| 3.2.8.5. | Ignition condenser(If fitted) | | | | |  |  |
| 3.2.8.5.1. | Make | | | | |  |  |
| 3.2.8.5.2. | Type | | | | |  |  |
| 3.2.8.5.3. | Part no./Identification number(ID)/Drawing No. | | | | |  |  |
| 3.2.8.6. | HT cable(if resistive) | | | | |  |  |
| 3.2.8.6.1. | Type/Part no./Identification number(ID)/Drawing No. | | | | |  |  |
| 3.2.8.6.2. | Nominal resistance per unit length | | | | |  |  |
| 3.2.8.6.3. | Nominal length with tolerance | | | | |  |  |
| 3.2.8.7. | Alternator/ Generator | | | | |  |  |
| 3.2.8.7.1. | Identification number(ID), if resistive type | | | | |  |  |
| **3.2.9.** | **Powertrain cooling system and control** | | | | | | |
| 3.2.9.1. | Brief description and schematic drawing of powertrain cooling and control system | | | | | : |  |
| 3.2.9.2. | Cooling system: liquid: yes/no | | | | | : |  |
| 3.2.9.2.1. | Maximum temperature at outlet ( deg C) | | | | | : |  |
| 3.2.9.2.2. | Nominal setting of the engine temperature control mechanism  (Thermostat open temperature – deg C) | | | | | : |  |
| 3.2.9.2.3. | Nature of liquid | | | | | : |  |
| 3.2.9.2.4. | Circulating pump(s): yes/no | | | | | : |  |
| 3.2.9.2.4.1. | Characteristics | | | | | : |  |
| 3.2.9.2.5. | Drive ratio(s) | | | | | : |  |
| 3.2.9.2.6. | Description of the fan and its drive mechanism | | | | | : |  |
| 3.2.9.3. | Air cooling: yes/no | | | | | : |  |
| 3.2.9.3.1. | Reference point | | | | | : |  |
| 3.2.9.3.2. | Maximum temperature at reference point (deg C) | | | | | : |  |
| 3.2.9.3.3. | Fan: yes/no | | | | | : |  |
| 3.2.9.3.3.1. | Characteristics | | | | | : |  |
| 3.2.9.3.3.2. | Drive ratio(s) | | | | | : |  |
| **3.2.10.** | **Powertrain lubrication System and Control** | | | | | | |
| 3.2.10.1. | Brief description and schematic drawing of powertrain lubrication and control system | | | | | : |  |
| 3.2.10.2. | Lubrication system configuration(s) (wet sump, dry sump, other, pump/injection into induction system/  mixed with the fuel, etc.) | | | | | : |  |
| 3.2.10.3. | Location of oil reservoir (if any) | | | | | : |  |
| 3.2.10.4. | Feed system (pump/injection into induction system/  mixed with the fuel, etc.) | | | | | : |  |
| 3.2.10.5. | Lubricating pump: yes/no | | | | | : |  |
| 3.2.10.6. | Oil cooler: yes/no | | | | | : |  |
| 3.2.10.6.1. | Drawing | | | | | : |  |
| 3.2.10.7. | Lubricant(s) characteristics | | | | | : |  |
| 3.2.10.8. | Lubricant mixed with the fuel: yes/no | | | | | : |  |
| 3.2.10.8.1. | **Lubricant Temperature in Deg C (Location of measurement be specified )** | | | | |  |  |
| 3.2.10.8.1.1. | Minimum | | | | |  |  |
| 3.2.10.8.1.2. | Maximum | | | | |  |  |
| 3.2.10.8.3. | Percentage range of lubricant mixed with the fuel | | | | | : |  |
| **3.2.11.** | **Exhaust system and control** | | | | | | |
| 3.2.11.1. | Brief description and schematic drawing of exhaust devices for noise and tailpipe emission control | | | | | : |  |
| 3.2.11.2. | Description and drawing of the exhaust manifold | | | | | : |  |
| 3.2.11.3. | Description and detailed drawing of the exhaust device | | | | | : |  |
| 3.2.11.4. | For CI engines only, Maximum permissible exhaust back-pressure at rated engine speed and at 100 % load (KPa) | | | | | : |  |
| 3.2.11.5. | Type, marking of exhaust noise-abatement device(s)   * Make * Identification | | | | | : |  |
| 3.2.11.6. | Location of the exhaust outlet | | | | | : |  |
| 3.2.11.7. | Exhaust noise-abatement device containing fibrous materials: yes/no | | | | | : |  |
| **3.2.12.** | **Other electrical systems and control than those intended for the electrical propulsion** | | | | | | |
| 3.2.12.1. | Rated voltage (V), positive/negative ground | | | | | : |  |
| 3.2.12.2. | Generator: yes/no | | | | | : |  |
| 3.2.12.2.1. | Nominal output (VA) | | | | | : |  |
| 3.2.12.3. | Battery(ies): yes/no | | | | | : |  |
| 3.2.12.3.1. | Capacity (Ah) and other characteristics | | | | | : |  |
| **3.3.** | **Pure electric and hybrid electric propulsion and control** | | | | | | |
| 3.3.1. | Electric vehicle configuration: pure electric/hybrid electric/manpower — electric | | | | | : |  |
| 3.3.2. | Brief description and schematic drawing of pure and hybrid electric propulsions and its control system(s) | | | | | : |  |
| 3.3.3. | Electric propulsion motor | | | | | | |
| 3.3.3.1. | Number of electric motors for propulsion | | | | | : |  |
| 3.3.3.2. | Type (winding, excitation) | | | | | : |  |
| 3.3.3.3. | Operating voltage (V) | | | | | : |  |
| 3.3.3.4. | 15/30 minutes power(3) (kW) | | | | | : |  |
| **3.3.4.** | **Propulsion batteries** | | | | | | |
| 3.3.4.1. | Primary propulsion battery | | | | | : |  |
| 3.3.4.1.1. | Number of cells | | | | | : |  |
| 3.3.4.1.2. | Mass (kg) | | | | | : |  |
| 3.3.4.1.3 | Capacity - Ah (Amp-hours) /V | | | | | : |  |
| 3.3.4.1.4. | Voltage (V) | | | | | : |  |
| 3.3.4.1.5. | Position in the vehicle | | | | | : |  |
| 3.3.4.2. | Secondary propulsion battery | | | | | | |
| 3.3.4.2.1. | Number of cells | | | | | : |  |
| 3.3.4.2.2. | Mass (kg) | | | | | : |  |
| 3.3.4.2.3. | Capacity - Ah (Amp-hours) / V | | | | | : |  |
| 3.3.4.2.4. | Voltage (V) | | | | | : |  |
| 3.3.4.2.5. | Position in the vehicle | | | | | : |  |
| **3.3.5.** | **Hybrid electric vehicle** | | | | | | |
| 3.3.5.1. | Engine or motor combination (number of electric motor(s) and/or combustion engine(s)/other) | | | | | : |  |
| 3.3.5.2. | Category of hybrid electric vehicle: off-vehicle charging/not off-vehicle charging | | | | | : |  |
| 3.3.5.3. | Operating mode switch: with/without | | | | | : |  |
| 3.3.5.4. | Selectable modes: yes/no | | | | | : |  |
| 3.3.5.5. | Pure fuel consuming: yes/no | | | | | : |  |
| 3.3.5.6. | Vehicle propelled with fuel cell: yes/no | | | | | : |  |
| 3.3.5.7. | Hybrid operation modes: yes/no (if yes, short description): | | | | | : |  |
| **3.3.6.** | **Energy storage device** | | | | | | |
| 3.3.6.1. | Description: (battery, capacitor, flywheel/generator) | | | | | : |  |
| 3.3.6.2. | Make and Identification number | | | | | : |  |
| 3.3.6.3. | Energy (for battery: voltage and capacity Ah in 2h, for capacitor: J…, for flywheel/generator: J.…) | | | | | : |  |
| 3.3.6.4. | Charger: on-board/external/without | | | | | : |  |
| **3.3.7.** | **Electric motor (describe each type of electric motor separately)** | | | | | | |
| 3.3.7.1. | Primary use: propulsion motor/generator | | | | | : |  |
| 3.3.7.2. | When used as propulsion motor: single-/multi-motors (number) | | | | | : |  |
| 3.3.7.3. | Working principle | | | | | : |  |
| 3.3.7.4. | Direct current/alternating current/number of phases | | | | | : |  |
| 3.3.7.5. | Separate excitation/series/compound | | | | | : |  |
| 3.3.7.6. | Synchronous/asynchronous | | | | | : |  |
| **3.3.8.** | **Electric motor control unit** | | | | | | |
| 3.3.8.1. | Make and Identification number | | | | | : |  |
| **3.3.9.** | **Power controller** | | | | | | |
| 3.3.9.1. | Make and Identification number | | | | | : |  |
| **3.4.** | **Other engines, electric motors or combinations (specific information concerning the parts of these motors)** | | | | | | |
| **3.4.1.** | **Cooling system (temperatures permitted by the manufacturer)** | | | | | | |
| 3.4.1.1. | Liquid cooling | | | | | : |  |
| 3.4.1.1.1. | Maximum temperature at outlet (deg C) | | | | | : |  |
| 3.4.1.2. | Air cooling | | | | | : |  |
| 3.4.1.2.1. | Reference point | | | | | : |  |
| 3.4.1.2.2. | Maximum temperature at reference point (deg C) | | | | | : |  |
| **3.4.2.** | **Lubrication system** | | | | | | |
| 3.4.2.1. | Description of lubrication system | | | | | : |  |
| 3.4.2.2. | Location of oil reservoir (if any) | | | | | : |  |
| 3.4.2.3. | Feed system (pump/injection into induction system/mixed with the fuel, etc.) | | | | | : |  |
| 3.4.2.4. | Lubricant mixed with the fuel | | | | | : |  |
| 3.4.2.4.1. | Percentage | | | | | : |  |
| 3.4.2.5. | Oil cooler: yes/no | | | | | : |  |
| 3.4.2.6 | Oil grade | | | | |  |  |
| **3.5.** | **Drive-train and control (8)** | | | | | | |
| 3.5.1. | Brief description and schematic drawing of the vehicle drive-train and its control system (gear shift control, clutch control or any other element of drive-train) | | | | | : |  |
| **3.5.2.** | **Clutch** | | | | | | |
| 3.5.2.1. | Brief description, Type and schematic diagram of the clutch and its control system | | | | | : |  |
| **3.5.3.** | **Transmission** | | | | | | |
| 3.5.3.1. | Brief description and schematic drawing of gear shift system(s) and its control | | | | | : |  |
| 3.5.3.2. | Drawing of the transmission | | | | | : |  |
| 3.5.3.3. | Type (mechanical, hydraulic, electric, manual/manual automated/automatic/CVT/ other (indicate)) | | | | | : |  |
| 3.5.3.4. | A brief description of the electrical/electronic components (if any) | | | | | : |  |
| 3.5.3.5. | Location relative to the engine | | | | | : |  |
| 3.5.3.6. | Method of control | | | | | : |  |
| 3.5.3.7 | Clutch (type) | | | | |  |  |
| 3.5.4 | **Gearbox** | | | | | | |
| 3.5.4.1 | Type (manual/automatic/CVT (continuously variable transmission) | | | | | | |
| Index | Internal gearbox ratios (ratios of engine to gearbox output shaft revolutions) | | Final drive ratios (ratio of gearbox output shaft to driven wheel revolutions) | | Total gear ratios | Ratio (engine speed/vehicle speed) for manual transmission only. | |
| Maximum for Continuously Variable Transmission (CVT) |  | |  | |  |  | |
| 1 |  | |  | |  |  | |
| 2 |  | |  | |  |  | |
| 3 |  | |  | |  |  | |
| 4, 5, others |  | |  | |  |  | |
| Minimum for CVT |  | |  | |  |  | |
| Reverse |  | |  | |  |  | |
| 3.5.4.2 | Method of selection: by hand/foot(1) | | | | | : |  |
| 3.5.4.3 | Gear shifting pattern | | | | | : |  |
| **3.5.5.** | **Gear ratios** | | | | | : |  |
| 3.5.5.1 | Primary ratio | | | | | : |  |
| 3.5.5.2 | Secondary ratio | | | | | : |  |
| 3.5.5.3 | Individual and Overall ratios | | | | | : |  |
| 3.5.5.3.1 | First gear | | | | | : |  |
| 3.5.5.3.2 | Second gear | | | | | : |  |
| 3.5.5.3.3 | Third gear | | | | | : |  |
| 3.5.5.3.4 | Fourth gear | | | | | : |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 3.5.5.3.5 | Fifth gear | : |  |
| 3.5.5.3.6 | Sixth gear | : |  |
| 3.5.5.4 | Minimum continuously  Variable transmission | : |  |
| 3.5.5.5 | Maximum continuously  Variable transmission | : |  |
| 3.5.5.6 | Reverse Gear | : |  |
| 3.5.6 | Brief description of the ECUs used in the transmission | : |  |
| 3.5.7 | Maximum designed speed of vehicle and gear in which it is reached (in km/h)(9) | : |  |
| **3.6.** | **Safe-cornering device, if equipped with twinned wheels** | | |
| 3.6.1. | Safe-cornering device yes/ no ; differential/other | : |  |
| 3.6.2. | Differential lock: yes/no/optional | : |  |
| 3.6.3. | Brief description and schematic drawing of the safe-cornering device, the differential lock and their control systems | : |  |
| **3.7.** | **Suspension and control** | | |
| 3.7.1. | Brief description and schematic drawing of suspension and its control system | : |  |
| 3.7.2. | Drawing of the suspension arrangements | : |  |
| 3.7.3. | Level adjustment: yes/no/optional | : |  |
| 3.7.4. | Brief description of the electrical/electronic components | : |  |
| 3.7.5. | Stabilisers: yes/no/optional | : |  |
| 3.7.6. | Shock absorbers: yes/no/optional | : |  |
| **4.0** | **GENERAL INFORMATION ON ENVIRONMENTAL AND PROPULSION PERFORMANCE** | | |
| 4.1. | Fuel consumption (provide details for each reference fuel tested) (l/100 km) | : |  |
| 4.2 | CO2 emissions(9) (g/km) | : |  |
| 4.3 | Energy consumption(9) (Wh/km) | : |  |
| 4.4 | Electric range(9) (km) | : |  |
| 4.5 | **Tailpipe emission-control system** | | |
| 4.5.1 | Brief description and schematic drawing of the tailpipe emission-control system and its control | : |  |
| 4.5.2 | **Catalytic converter**(information to be provided for each separate unit) | | |
| 4.5.2.1. | Configuration | : |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 4.5.2.2. | number of catalytic converters |  |  |
| 4.5.2.3. | elements |  |  |
| 4.5.2.4. | cell density |  |  |
| 4.5.2.5. | Total charge of precious metals. |  |  |
| 4.5.2.6. | Substrate – material and structure |  |  |
| 4.5.2.7. | Type of casing for catalytic convertor |  |  |
| 4.5.2.8. | Drawing with dimensions, shape and volume of the catalytic converter(s) | : |  |
| 4.5.2.9. | Catalytic reaction | : |  |
| 4.5.2.10. | Location of the catalytic converter(s) (place and reference distance in the exhaust line) | : |  |
| 4.5.2.11. | Catalyst heat-shield yes/no | : |  |
| 4.5.2.12. | Brief description and schematic drawing of the regeneration system/ method of exhaust after-treatment systems and its control system | : |  |
| 4.5.2.13. | Consumable reagents : yes/no | : |  |
| 4.5.2.14. | Brief description and schematic drawing of the reagent flow (wet) system and its control system | : |  |
| 4.5.2.15 | Type and concentration of reagent needed for catalytic action | : |  |
| 4.5.2.16. | Frequency of reagent refill : continuous/maintenance | : |  |
| 4.5.2.17. | Make and Identifying part number | : |  |
| 4.5.2.18. | **Canister** |  |  |
| 4.5.2.18.1 | Working capacity |  |  |
| 4.5.2.18.2 | Make |  |  |
| 4.5.2.18.3 | Identification number(ID) / Part No./Drawing No |  |  |
| 4.5.2.18.4 | Schematic diagram |  |  |
| 4.5.2.18.5 | Canister bed volume (1) |  |  |
| **4.5.3.** | **Oxygen sensor(s)** | | |
| 4.5.3.1. | Oxygen sensor component(s) drawing(s) | : |  |
| 4.5.3.2. | Drawing of exhaust device with oxygen sensor location(s) (dimensions relative to exhaust valves) | : |  |
| 4.5.3.3. | Control range(s) | : |  |
| 4.5.3.4. | Make and Identifying part number(s) | : |  |
| 4.5.3.5. | Description of oxygen sensor heating system and heating strategy | : |  |
| 4.5.3.6. | Oxygen sensor heat shield(s) : yes/no | : |  |
| **4.5.4.** | **Secondary air-injection (air-inject in exhaust)** | | |
| 4.5.4.1. | Brief description and schematic drawing of the secondary air-injection system and its control system | : |  |
| 4.5.4.2. | Configuration (mechanical, pulse air, air pump etc.) | : |  |
| 4.5.4.3. | Working principle | : |  |
| 4.5.4.4. | Make and Identifying part number(s) |  |  |
| **4.5.5.** | **External exhaust gas recirculation (EGR)** | | |
| 4.5.5.1. | Brief description and schematic drawing of the EGR system (exhaust flow) and its control system | : |  |
| 4.5.5.2. | Characteristics | : |  |
| 4.5.5.3. | Water-cooled / Air Cooled EGR system : yes/no | : |  |
| 4.5.5.3.1. | Make |  |  |
| 4.5.5.3.2. | Type |  |  |
| 4.5.5.3.3. | Part no./Identification number(ID)/Drawing No. | : |  |
| **4.5.6** | **Particulate filter** | | |
| 4.5.6.1. | PT component drawing with dimensions, shape and capacity of the particulate filter | : |  |
| 4.5.6.2. | Design of the particulate filter | : |  |
| 4.5.6.3. | Brief description and schematic drawing of the particulate filter and its control system | : |  |
| 4.5.6.4. | Location (reference distance in the exhaust line) | : |  |
| 4.5.6.5. | Method or system of regeneration, description and drawing | : |  |
| 4.5.6.6. | Make and Identifying part number | : |  |
| **4.5.7.** | **Lean NOx trap** | | |
| 4.5.7.1. | Operation principle of lean NOx trap | : |  |
| 4.5.7.2. | **Additional tailpipe emission-control devices (if any not covered under another heading)** | | |
| 4.5.7.2.1 | Working principle |  |  |
| **4.6** | **Crankcase emission control system** | | |
| 4.6.1 | Configuration of crank-case gas recycling system (breather system, positive crank-case ventilation system, other) (description and drawings | : |  |
| **4.7** | **Evaporative emission control system** | | |
| 4.7.1. | Evaporative emissions control system: yes/no | : |  |
| 4.7.2. | Drawing with dimensions of the evaporative control system (including fuel hoses length and diameter): | : |  |
| 4.7.3. | Drawing of the canister (including dimensions and indicating vent and purge mechanism)  Make and Identifying part number | : |  |
| 4.7.4. | Working capacity (g) | : |  |
| 4.7.5. | Adsorption material (e.g. charcoal, carbon, synthetic, …) | : |  |
| 4.7.6 | Housing material (e.g. plastic, steel, …) | : |  |
| 4.7.7 | Schematic drawing of the fuel tank, indicating capacity and material | : |  |
| 4.7.8. | Drawing of the heat-shield between tank and exhaust device | : |  |
| **4.8.** | **Additional information on environmental and propulsion unit performance** | | |
| 4.8.1. | Description and/or schematic drawings of additional pollution-control devices | : |  |
| 4.8.2. | Location of the coefficient of absorption symbol (compression-ignition engines only) | : |  |
| **5.0** | **VEHICLE PROPULSION FAMILY** | | |
| 5.1. | To define the vehicle propulsion family, the manufacturer shall submit the information required for classification criteria set out in AIS 137 as applicable, if not already provided in the information document. | : |  |
| **6.0** | **INFORMATION ON FUNCTIONAL SAFETY** | | |
| **6.1.** | **Audible warning devices** | | |
| 6.1.1. | Summary description of device(s) used and their purpose | : |  |
| 6.1.2. | Nos of audible warning devices installed |  |  |
| 6.1.3. | TAC No. / BIS license number/ "E" marking |  |  |
| 6.1.4. | Drawing(s) showing the location of the audible warning device(s) in relation to the structure of the vehicle | : |  |
| 6.1.5. | Details of the method of attachment, including the part of the vehicle structure to which the audible warning device(s) is (are) attached and which may obstruct audibility | : |  |
| 6.1.6. | Electrical/pneumatic circuit diagram: | : |  |
| 6.1.6.1. | Voltage: AC/DC | : |  |
| 6.1.6.2. | Rated voltage or pressure | : |  |
| 6.1.7. | Drawing of the mounting device | : |  |
| **6.2.** | **Braking, including anti-lock and combined braking systems** | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 6.2.1. | Characteristics of the brakes, including details and drawings of the drums, discs, hoses, make and type of shoe/pad assemblies and/or linings, effective braking areas, radius of drums, shoes or discs, mass of drums, adjustment devices, relevant parts of the axle(s) and suspension, levers, pedals | : |  |
| 6.2.2. | Operating diagram, description and/or drawing of the braking system, including details and drawings of the transmission and controls as well as a brief description of the electrical and/or electronic components used in the braking system | : |  |
| 6.2.2.1. | Front brake  Rear brake  disc and/or drum | : |  |
| 6.2.2.2. | Parking braking system | : |  |
| 6.2.2.3. | Any additional braking system | : |  |
| 6.2.4. | Anti-lock/Combined braking system | | |
| 6.2.4.1. | Anti-lock braking system: yes/no | : |  |
| 6.2.4.2. | Combined braking system: yes/no | : |  |
| 6.2.4.2.1. | Directly controlled wheels (Front or rear) |  |  |
| 6.2.4.2.2. | Sensors (Make )(front /Rear) |  |  |
| 6.2.4.2.2.1 | Identification number(ID) / Part No./Drawing No. |  |  |
| 6.2.4.2.3. | Make of modulator(front /rear) |  |  |
| 6.2.4.2.3.1. | Identification number(ID) / Part No./Drawing No. |  |  |
| 6.2.4.2.4. | ABS ECU |  |  |
| 6.2.4.2.4.1. | Make of controller |  |  |
| 6.2.4.2.4.2. | Identification number(ID) / Part No./Drawing No. |  |  |
| 6.2.4.2.5. | Other devices (parking brake, etc.) (where applicable): drawing and description |  |  |
| 6.2.4.2.6. | Brief description of the ECUs used in the braking system |  |  |
| 6.2.4.2.7. | Brake hose – make(s) and Type Approval Number or BIS license number or identification: |  |  |
| 6.2.4.2.8 | Brake fluid – make(s) |  |  |
| 6.2.4.2.9 | Hydraulic reservoir(s) (volume and location) |  |  |
| 6.2.5. | Brief description & Schematic drawing(s) | : |  |
| **6.2.6.** | **Particular characteristics of the braking system(s)** | | |
| 6.2.6.1. | Brake shoes and/or pads | : |  |
| 6.2.6.2. | Linings and/or pads (indicate make, type, grade of material or identification mark): | : |  |
| 6.2.6.3. | Brake levers and/or pedals | : |  |
| 6.2.6.4. | Other devices (where applicable): drawing and description | : |  |
| **6.3.** | **Driver-operated controls including identification of controls, tell- tales and indicators** | | |
| 6.3.1. | Arrangement and identification of controls, tell-tales and indicators | : |  |
| 6.3.2. | Photographs and/or drawings of the arrangement of symbols and controls, tell-tales and indicators | : |  |
| 6.3.3. | Controls, tell-tales and indicators for which, when fitted, identification is mandatory, including the identification symbols to be used for that purpose | : |  |
| 6.3.4. | Summary table: the vehicle is equipped with the following driver-operated controls, including indicators and tell-tales for which, when fitted, identification is mandatory and symbols to be used for that purpose as per AIS 126 | : |  |
| 6.3.5 | Controls, tell-tales and indicators for which, when fitted, identification is optional, and symbols which shall be used if they are to be identified as per AIS 126 | : |  |
| **6.4.** | **Speedometer and odometer** | | |
| **6.4.1.** | **Speedometer** | | |
| 6.4.1.1. | Make(s) |  |  |
| 6.4.1.2 | Type(s) (Digital/Analog) |  |  |
| 6.4.1.3 | Photographs and/or drawings of the complete system | : |  |
| 6.4.1.4. | Vehicle speed range displayed | : |  |
| 6.4.1.5. | Tolerance of the measuring mechanism of the speedometer | : |  |
| 6.4.1.6. | Technical constant of the speedometer | : |  |
| 6.4.1.7. | Method of operation and description of the drive mechanism | : |  |
| 6.4.1.8. | Overall transmission ratio of the drive mechanism | : |  |
| **6.4.2** | **Odometer** | | |
| 6.4.2.1 | Make(s) |  |  |
| 6.4.2.2 | Type(s) (Digital/Analog) |  |  |
| 6.4.2.3 | Tolerance of the measuring mechanism of the odometer | : |  |
| 6.4.2.4. | Method of operation and description of the drive mechanism | : |  |
| **6.5.** | **Installation of lighting, light-signaling devices, including automatic switching of lighting** | | |
| 6.5.1. | List of all devices (mentioning the number, make(s), type, component type- approval mark(s), the maximum intensity of the main-beam headlamps, colour, the corresponding tell-tale) | : |  |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Device | Variant / Version | Number | make | Type Approval Number | Lens  Colour | Tell-tale  Colour | | Head Lamp High beam |  |  |  |  |  |  | | Head Lamp dipped beam |  |  | | Front position light |  |  |  |  |  |  | | Tail / stop light |  |  |  |  |  |  | | Number plate illumination light |  |  |  |  |  |  | | Direction indicator lights, front, rear and side (as applicable) |  |  |  |  |  |  | | Parking lights |  |  |  |  |  |  | | Reversing light(s) |  |  |  |  |  |  | | Reflex reflector rear |  |  |  |  |  |  | | Reflex reflector side(if provided) |  |  |  |  |  |  | | Hazard warning lamp (wherever applicable) |  |  |  |  |  |  | |  | | | | | | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 6.5.2 | List of all bulbs (Enclose annexure, if required.) |  |  |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Bulb used for | Variant / Version | number | make | Type Approval Number | colour | Designation  as per  AIS-034 | | Head lamp high beam / low beam |  |  |  |  |  |  | | Front position light |  |  |  |  |  |  | | Tail / stop light |  |  |  |  |  |  | | Number plate illumination light |  |  |  |  |  |  | | Direction indicator lights |  |  |  |  |  |  | | Parking light |  |  |  |  |  |  | | Reversing light (s) |  |  |  |  |  |  | | Hazard warning lamp |  |  |  |  |  |  | | | | |
| 6.5.2 | Diagram showing the location of the lighting and light-signalling devices | : |  |
| 6.5.3. | Hazard warning lamps | : |  |
| 6.5.4. | Brief description of the electrical and/or electronic components used in the lighting system and in the light-signalling system | : |  |
| **6.5.5.** | **For every lamp and reflector, supply the following information (in writing and/or by diagram)** | | |
| 6.5.5.1. | Drawing showing the extent of the illuminating surface | : |  |
| 6.5.5.2. | Method used to define the apparent surface | : |  |
| 6.5.5.3. | Axis of reference and centre of reference | : |  |
| 6.5.5.4. | Method of operation of concealable lamps | : |  |
| 6.5.6. | Description/drawing and type of headlamp levelling device (e.g. automatic, stepwise manually adjustable, continuously manually adjustable) | : |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 6.5.6.1. | Control device | : |  |
| 6.5.6.2. | Reference marks | : |  |
| 6.5.6.3. | Marks assigned for loading conditions | : |  |
| **6.6.** | **Rearward visibility** | | |
| **6.6.1.** | **Rear-view mirrors (stating for each mirror)** | | |
| 6.6.1.1. | Make |  |  |
| 6.6.1.2. | Class of mirror |  |  |
| 6.6.1.3. | TAC No. / BIS license number/ "E" marking |  |  |
| 6.6.1.4 | Drawing(s) for the identification of the mirror showing the position of the mirror relative to the vehicle structure | : |  |
| 6.6.1.5 | Details of the method of attachment including that part of the vehicle structure to which it is attached | : |  |
| 6.6.1.6 | A brief description of the electronic components of the adjustment system | : |  |
| **6.6.2.** | **Devices for indirect vision other than mirrors** | | |
| 6.6.2.1. | Description of the device | : |  |
| 6.6.2.2. | In the case of a camera-monitor device, the detection distance (mm), contrast, luminance range, glare correction, display performance (black and white/colour ), image repetition frequency, luminance reach of the monitor | : |  |
| 6.6.2.3. | Sufficiently detailed drawings to identify the complete device, including installation instructions; the position for the type-approval mark has to be indicated on the drawings | : |  |
| **6.7.** | **Seating positions (saddles and seats)** | | |
| 6.7.1. | Number of seating positions | : |  |
| 6.7.2. | Seating position configuration: seat/saddle | : |  |
| **6.8.** | **Steer-ability, cornering properties and turn-ability** | | |
| 6.8.1. | Schematic diagram of steered axle(s) showing steering geometry | : |  |
| **6.8.2.** | **Transmission and control of steering** | | |
| 6.8.2.1. | Configuration of steering transmission (specify for front and rear) | : |  |
| 6.8.2.2. | Linkage to wheels (including other than mechanical means; specify for front and rear) | : |  |
| 6.8.2.2.1 | A brief description of the electrical/electronic components | : |  |
| 6.8.2.3. | Diagram of the steering transmission | : |  |
| 6.8.3. | Maximum steering angle of the wheels | | |
| 6.8.3.1. | To the right: …. degrees; number of turns of the steering wheel (or equivalent data): …. | : |  |
| 6.8.3.2. | To the left: …. degrees; number of turns of the steering wheel (or equivalent data): …. | : |  |
| **6.9.** | **Tyres/wheels combination** | | |
| **6.9.1.** | **Tyres** | | |
| 6.9.1.1. | Size designation | | |
| 6.9.1.1.1. | Axle 1 | : |  |
| 6.9.1.1.2. | Axle 2 | : |  |
| 6.9.1.2. | Minimum load-capacity index: …. with the maximum load on each tyre: …… Kg   * Front * Rear | : |  |
| 6.9.1.3. | Minimum-speed category symbol compatible with the theoretical maximum design vehicle speed   * Front * Rear | : |  |
| 6.9.1.4. | Tyre pressure(s) as recommended by the vehicle manufacturer (kPa)   * Front * Rear | : |  |
| 6.9.1.5 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Tyre | Variant / version | Type | Make (s) | Type Approval Number or BIS license number or identification | Dynamic  Rolling  Radius | | Front |  |  |  |  |  | | Rear |  |  |  |  |  | | Any other |  |  |  |  |  | | | |
| **6.9.2.** | **Wheels** | | |
| 6.9.2.1. | Rim size(s)   * Front * Rear | : |  |
| 6.9.2.1.1 | Type (Alloy / Sheet metal / spoke) |  |  |
| 6.9.2.2. | Categories of use compatible with the vehicle | : |  |
| 6.9.2.3. | Maximum design loading capacity |  |  |
| 6.9.2.4. | Radial load & Bending Load |  |  |
| 6.9.2.5. | Nominal rolling circumference   * Front * Rear | : |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **7.0** | **INFORMATION ON VEHICLE CONSTRUCTION** | | |
| **7.1** | **Coupling devices and attachments** | | |
| 7.1.1. | L-category vehicle equipped with coupling device: yes/no/optional | : |  |
| 7.1.2. | Guidelines and information for consumers regarding the impact on the driveability of using a trailer with an L-category vehicle included in the owner's manual: yes/no | : |  |
| 7.1.3. | For coupling-device approved as separate technical unit: installation and operating instructions added to documentation: yes/no | : |  |
| 7.1.4. | Photographs and/or drawings showing the position and the construction of the coupling-devices | : |  |
| 7.1.5. | Instructions for attaching the coupling-type to the vehicle and photographs or drawings of the fixing points on the vehicle as stated by the manufacturer; additional information, if the use of the coupling-type is restricted to certain variants or versions of the vehicle type | : |  |
| 7.1.6. | Attachment points for a secondary coupling and/or breakaway cable (drawings and pictures may be used as appropriate): yes/no | : |  |
| **7.2.** | **Devices to prevent unauthorized use** | | |
| **7.2.1.** | **Protective device** | | |
| 7.2.1.1 | Summary description of protective device(s) used | : |  |
| 7.2.1.2. | Type of device(s) as per AIS-074 |  |  |
| 7.2.1.3. | Make(s) |  |  |
| **7.2.2.** | **Vehicle immobilizer** | | |
| 7.2.2.1. | Technical description of the vehicle immobilizer and of the measures taken against inadvertent activation | : |  |
| **7.2.3.** | **Alarm system** | | |
| 7.2.3.1. | Description of the alarm system and of the vehicle parts involved in its installation | : |  |
| 7.2.3.2. | List of the main components comprising the alarm system | : |  |
| **7.3.** | **Electromagnetic compatibility (EMC)** | | |
| 7.3.1. | Requirements under AIS 004 are met with relevant documentation included in the information document: yes/no | : |  |
| 7.3.2. | Table or drawing of radio-interference control equipment | : |  |
| 7.3.3. | Particulars of the nominal value of the direct-current resistance, and, in the case of resistive ignition cables, of their nominal resistance per meter | : |  |
| **7.4.** | **External projections** | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 7.4.1 | General arrangement (drawing or photographs accompanied if necessary by dimensional details and/or text) indicating the position of the attached sections and views, of any parts of the exterior surface which can be regarded as critical for external projections, for example, and where relevant: bumpers, floor line, door and window pillars, air-intake grilles, radiator grille, windscreen wipers, rain gutter channels, handles, slide rails, flaps, door hinges and locks, hooks, eyes, winches, decorative trim, badges, emblems and recesses and any other parts of the exterior surface which can be regarded as critical (e.g. lighting equipment) | : |  |
| **7.5.** | **Fuel storage** | | |
| 7.5.1. | Fuel tank(s) | | |
| 7.5.1.1. | Main fuel tank(s) | | |
| 7.5.1.1.1. | Manufacturer and Trade mark | | |
| 7.5.1.1.2. | Maximum capacity (l) | : |  |
| 7.5.1.1.3. | Materials used (Metallic / Non Metallic) | : |  |
| 7.5.1.1.4. | Diagram clearly indicating the position of the tank on the vehicle | : |  |
| 7.5.1.1.5. | Identification: TAC No. / BIS License No. / E- Marking | : |  |
| 7.5.1.1.6. | Fuel tank inlet: restricted orifice/label | : |  |
| **7.5.1.2.** | **Reserve fuel tank(s)** | | |
| 7.5.1.2.1. | Maximum capacity | : |  |
| 7.5.1.2.2. | Materials used | : |  |
| 7.5.1.2.3. | Fuel tank inlet: restricted orifice/label | : |  |
| 7.5.1.3. | Drawing and technical description of the tank(s) with connections and lines of the breathing and venting system, locks, valves, fastening devices | : |  |
| 7.5.1.4. | Drawing clearly showing the position of the tank(s) in the vehicle | : |  |
| 7.5.1.5. | Drawing of the heat shield between tank and exhaust device | : |  |
| **7.5.2.** | **Compressed natural gas (CNG) container(s)** | | |
| **7.5.3.** | **Liquefied petroleum gas (LPG) container(s)** | | |
| **7.6.** | **On-board diagnostics (OBD) functional requirements** | | |
| **7.6.1.** | **On-board diagnostics system** | | |
| 7.6.1.1. | Stage I: yes/no | : |  |
| 7.6.1.2. | Stage II: yes/no | : |  |
| 7.6.1.3 | Separate electronic control unit (ECU): yes/no | : |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7.6.1.4 | Software identification number(s) (16 digit) | | | | | | : |  |
| 7.6.1.5 | Calibration verification number(s) | | | | | | : |  |
| 7.6.1.6 | Hardware identification number (s) | | | | | | : |  |
| 7.6.1.7 | Selectable modes for vehicle operation in ECU with brief description | | | | | | : |  |
| **7.6.2.** | **OBD system general information** | | | | | | | |
| 7.6.2.1. | Written description and/or drawing of the malfunction indicator (MI) | | | | | | : |  |
| 7.6.2.2 | List and purpose of all components monitored by the OBD system | | | | | | : |  |
| 7.6.2.3. | Written description (general working principles) for all OBD stage I circuit (open circuit, shorted low and high, and electronics (PCU/ECU internal and communication) diagnostics | | | | | | : |  |
| 7.6.2.4. | Written description (general working principles) for all OBD stage I diagnostic functionality triggering any operating mode which significantly reduces engine torque in case of fault detection | | | | | | : |  |
| 7.6.2.5. | Written description of the communication protocol(s) supported | | | | | | : |  |
| 7.6.2.6. | Physical location of diagnostic-connector (add drawings and photographs) | | | | | | : |  |
| 7.6.2.7 | Information on the operation of all AES or defeat device (if any) | | | | | | : |  |
| 7.6.2.8 | A description of the provisions taken to prevent tampering with and modification of the emission control computer. | | | | | | : |  |
| 7.6.2.9. | **Written description in case of voluntary compliance with OBD stage II (general working principles)** | | | | | | | |
| 7.6.2.9.1. | Positive-ignition engines | | | | | | | |
| 7.6.2.9.1.1. | Catalyst monitoring | | | | | | : |  |
| 7.6.2.9.1.2. | Misfire detection | | | | | | : |  |
| 7.6.2.9.1.3. | Oxygen sensor monitoring | | | | | | : |  |
| 7.6.2.9.1.4. | Other components monitored by the OBD system | | | | | | : |  |
| 7.6.2.9.2. | **Compression-ignition engines** | | | | | | | |
| 7.6.2.9.2.1. | Catalyst monitoring | | | | | | : |  |
| 7.6.2.9.2.2. | Particulate filter monitoring | | | | | | : |  |
| 7.6.2.9.2.3. | Electronic fuelling system monitoring | | | | | | : |  |
| 7.6.2.9.2.4. | deNOx system monitoring | | | | | | : |  |
| 7.6.2.9.2.5. | Other components monitored by the OBD system | | | | | | : |  |
| 7.6.2.9.3 | Criteria for MI activation (fixed number of driving cycles or statistical method) | | | | | | : |  |
| 7.6.2.9.4. | List of all OBD output codes and formats used (with explanation of each) | | | | | | : |  |
| 7.6.3. | **OBD compatibility** | | | | | |  |  |
|  | The following additional information shall be provided by the vehicle manufacturer to enable the manufacture of OBD-compatible replacement or service parts, diagnostic tools and test equipment | | | | | | | |
| 7.6.3.1. | A comprehensive document describing all sensed components concerned with the strategy for fault detection and MI activation (fixed number of driving cycles or statistical method). This shall, include a list of relevant secondary sensed parameters for each component monitored by the OBD system. The document shall also list all OBD output codes and formats (with an explanation of each) used in association with individual emission-related powertrain components and individual non-emission-related components, where monitoring the component is used to determine MI activation. This shall contain, in particular, a comprehensive explanation for the data given in service $05 Test ID $ 21 to FF and the data given in service $06 | | | | | | : |  |
| 7.6.3.2. | For vehicle types using a communication link in accordance with ISO 15765-4 ‘Road vehicles, diagnostics on controller area network (CAN) — Part 4: requirements for emissions-related systems’, the manufacturer shall provide a comprehensive explanation for the data given in service $06 Test ID $00 to FF, for each OBD monitor ID supported: | | | | | | : |  |
| 7.6.3.3. | The information required above may be provided in table form as described below | | | | | | : |  |
| Example OBD fault-code overview list | | | | | | | | |
| Component | Fault code | Monitoring strategy | Fault decision criteria | MI activation criteria | Secondary parameters | Precondi- tioning | | Demon-  stration test |
| Intake air temperature sensor open circuit | P0xxxxxx | Comparison with temperature model after cold star | >20 degree difference between measured and modelled intake air temperature | 3rd cycle | Coolant and intake air temperature sensor signals | Two type 1 cycle | | TYPE 1 |

|  |  |  |  |
| --- | --- | --- | --- |
| 7.6.3.4. | Description of ETC diagnostic fault codes | : |  |
| 7.6.4. | **Communication protocol information**  The following information shall be referenced to a specific vehicle make, model and variant, or identified using other workable definitions such as VIN or vehicle and systems identification | | |
| 7.6.4.1. | Any protocol information system needed to enable complete diagnostics in addition to the standards prescribed in AIS 137 as applicable, such as additional hardware or software protocol information, parameter identification, transfer functions, ‘keep alive’ requirements, or error conditions | : |  |
| 7.6.4.2. | Details of how to obtain and interpret all fault codes not in accordance with the standards prescribed in AIS 137 as applicable. | : |  |
| 7.6.4.3. | A list of all available live data parameters including scaling and access information; | : |  |
| 7.6.4.4. | A list of all available functional tests including device activation or control and the means to implement them; | : |  |
| 7.6.4.5. | Details of how to obtain all component and status information, time stamps, pending DTC and freeze frames | : |  |
| 7.6.4.6. | PCU/ECU identification and variant coding; | : |  |
| 7.6.4.7. | Details of how to reset service lights; | : |  |
| 7.6.4.8. | Location of diagnostic connector and connector details | : |  |
| 7.6.4.9. | Engine code identification. | : |  |
| 7.6.5. | **Test and diagnosis of OBD monitored components** | | |
| 7.6.5.1. | A description of tests to confirm its functionality, at the component or in the harness | : |  |
| 7.6.5.2 | PARAMETERS DEFINING THE OBD FAMILY |  |  |
| 7.6.5.2.1 | The OBD family means a manufacturer's grouping of vehicles which, through their design, are expected to have similar exhaust emission and OBD system characteristics. Each engine of this family shall comply with the requirements of this Part.  The OBD family may be defined by basic design parameters which shall be common to vehicles within the family. In some cases there may be interaction of parameters. These effects shall also be taken into consideration to ensure that only vehicles with similar exhaust emission characteristics are included within an OBD family.  To this end, those vehicle types whose parameters described below are identical are considered to belong to the same engine/emission control/OBD system combination.  Engine: |  |  |
|  | 1. Combustion process (i.e. positive ignition, compression ignition, two-stroke, four-stroke/rotary); |  |  |
|  | 1. Method of engine fuelling (i.e. single or multi-point fuel injection); and |  |  |
|  | 1. Fuel type (i.e. petrol, diesel, flex fuel petrol/ethanol, flex fuel diesel/biodiesel, NG/biomethane, LPG, bi-fuel petrol/NG/biomethane, bi-fuel petrol/LPG). |  |  |
| 7.6.5.2.2 | Emission control system: |  |  |
|  | (a) Type of catalytic converter (i.e. oxidation, three-way, heated catalyst, SCR, other); |  |  |
|  | (b) Type of particulate trap; |  |  |
|  | (c) Secondary air injection (i.e. with or without); and |  |  |
|  | (d) Exhaust gas recirculation (i.e. with or without); |  |  |
| 7.6.5.2.3 | OBD parts and functioning.  The methods of OBD functional monitoring malfunction detection and malfunction indication to the vehicle driver. |  |  |
| 7.7. | **Passenger handholds and footrests** | | |
| 7.7.1. | **Handholds** | | |
| 7.7.1.1. | Configuration: strap and/or handle | : |  |
| 7.7.1.3. | Photographs and/or drawings showing the location and the construction | : |  |
| 7.7.2. | **Footrests** | | |
| 7.7.2.1. | Photographs and/or drawings showing the location and the construction | : |  |
| 7.8. | **Registration plate space** | | |
| 7.8.1. | Location of front and rear registration plate (indicate variants where necessary; drawings may be used as appropriate) | : |  |
| 7.8.1.1. | Height above road surface, upper edge (mm) | : |  |
| 7.8.1.2. | Height above road surface, lower edge (mm) | : |  |
| 7.8.1.3. | Distance of the center line from the longitudinal median plane of the vehicle (mm) | : |  |
| 7.8.1.4. | Dimensions (length x width): (mm) x (mm) | : |  |
| 7.8.1.5. | Inclination of the plane to the vertical (degrees) | : |  |
| 7.8.1.6. | Angle of visibility in the horizontal plane (degrees) | : |  |
| **7.9.** | **Stands** | | |
| 7.9.1. | Configuration: central and/or side/prop | : |  |
| 7.9.2 | Construction material used | : |  |
| 7.9.3. | Photographs and drawings showing the location of the stand(s) in relation to the structure of the vehicle | : |  |
| 7.9.4. | Description of the method to prevent contact of the stand with the ground when the vehicle is being propelled | : |  |
| 7.10 | Protective device covering half of the rear wheel.(as applicable) along with Schematic drawing. |  |  |
| 7.11 | **Spray suppression device (as applicable)** |  |  |
| 7.11.1 | Diagram showing general arrangement of spray suppression system, Angle θ and relevant dimensions as specified in AIS-103 :2009 |  |  |
| 7.11.2 | Tyre Overall Width (Maximum of variants and tyre makes) |  |  |
| 8.0 | **Any other features manufacturer desires to declare** |  |  |

**Explanatory notes**

1. Indicate the location of the centre of the VIN/statutory plate by the following codes:

|  |  |
| --- | --- |
| R | Right side of the vehicle |
| C | Center of the vehicle |
| L | Left side of the vehicle |
| x | Horizontal distance (in mm) from the front-most axle (preceded by ‘-‘ (i.e. minus) if located in front of the front axle) |
| y | Horizontal distance (in mm) from the longitudinal centre line of the vehicle |
| z | Distance (in mm) from the ground |
| (r/o) | Parts needing to be removed or opened for access to the marking. |

Example for a VIN fitted on the right side of a motorcycle steering head-pipe, 500 mm behind the front axle, 30 mm from the center-line and 1100 mm high:

R, x500, y30, z1100

1. Axles with twinned wheels/powered:

|  |  |
| --- | --- |
| F | front |
| R | rear |
| M | middle (for vehicles with sidecar) |
| F&R | front and rear |

(3) In the case of more than one electric motor indicate the addition of all the engines.

1. Indicate the arrangement of the cylinders by following codes:

|  |  |
| --- | --- |
| LI | In line |
| V | In V |
| O | Opposed-cylinder engine |
| S | Single-cylinder engine |
| R | Rotatory piston engine. |

(5) This figure shall be rounded off to the nearest tenth of a millimetre.

(6) This value shall be calculated (π = 3.1416) and rounded off to the nearest cm3 .

(7) Specify the tolerance.

(8) The specified particulars are to be given for any proposed variants.

(9) For externally chargeable hybrid electric vehicles, the “weighted, combined” values for CO2 , fuel consumption and electric energy consumption shall be indicated.

**Table 1D**

**TECHNICAL SPECIFICATIONS OF L5 CATEGORY VEHICLES FOR BS VI NORMS TO BE FILLED IN ADDITION TO INFORMATION GIVEN IN TABLE 1,1A,1B AS APPLICABLE.**

|  |  |  |  |
| --- | --- | --- | --- |
| **1.0** | **Engine** |  |  |
| 1.1. | Manufacturer | **:** |  |
| 1.1.1 | **Make** | **:** |  |
| 1.1.2 | **Type (stated on the engine. or other means of identification)** | **:** |  |
| 1.1.3 | Location of engine number (if applicable): | **:** |  |
| 1.2 | **Spark- or compression-ignition engine** | **:** |  |
| 1.2.1 | Specific characteristics of the engine | **:** |  |
| 1.2.1.1 | Operating cycle (four or two-stroke. spark or compression ignition) | **:** |  |
| 1.2.1.2. | Number. arrangement and firing order of cylinders | **:** |  |
| 1.2.1.2.1. | Bore: mm(1) | **:** |  |
| 1.2.1.2.2 | Stroke: mm(1) | **:** |  |
| 1.2.1.3 | Cylinder capacity(2): cm3 |  |  |
| 1.2.1.4 | Compression ratio | **:** |  |
| 1.2.1.5 | Drawings of cylinder head. piston(s). piston rings and cylinder(s) | **:** |  |
| 1.2.1.6 | Maximum net power output: kW at min-1 (specify standard and tolerance) | **:** |  |
| 1.2.1.7 | Net maximum torque; Nm at min-1 (specify standard) | **:** |  |
| 1.2.1.8 | In case of compression ignition engines, the max power and max torque shall also be specified as per conditions given in AIS 137 Part 5. | **:** |  |
| 1.2.1.9 | Idling speed *,* min-1 (specify tolerance) | **:** |  |
| 1.2.1.10. | High idle engine speed (specify tolerance): | **:** |  |
| 1.2.1.10.1. | High Idle Lambda value (For petrol driven four wheeled vehicles only) (1± 0.03) or as specified by the vehicle manufacturer) | **:** |  |
| **1.2.2** | **Fuel:** | **:** |  |
| 1.2.2.1. | Type of fuel used : Mono Fuel / Bi-Fuel / Flex Fuel / Dual Fuel |  |  |
| 1.2.2.2. | Fuel: Diesel/ Gasoline/ Diesel/ LPG/ CNG/ Biomethane/Biogas/LNG/Ethanol ((E85)/(E100))/ Biodiesel up to 100%/Hydrogen. | **:** |  |
| 1.2.3 | **Fuel tank** |  |  |
| 1.2.3.1 | Capacity (Nominal in liters) |  |  |
| 1.2.3.2 | Material used (Metallic/Nonmetallic) |  |  |
| 1.2.3.3 | Diagram clearly indicating the position of the tank on the vehicle |  |  |
| 1.2.3.4 | Type Approval number or BIS license no of the fuel tank fitted |  |  |
| 1.2.4. | **Fuel supply** | **:** |  |
| 1.2.4.1 | Via carburetor(s): yes/no | **:** |  |
| 1.2.4.1.1 | Make(s): | **:** |  |
| 1.2.4.1.2 | Type(s) and Identification mark: | **:** |  |
| 1.2.4.1.3 | Number fitted | **:** |  |
| 1.2.4.1.4 | Settings | **:** |  |
| 1.2.4.1.4.1 | Jets (indicate venture dia, main jet, pilot jet) | **:** |  |
| 1.2.4.1.4.2 | Maximum Level in float chamber |  |  |
| 1.2.4.1.4.3 | Mass of float | **:** |  |
|  | OR | **:** |  |
| 1.2.4.1.4.4 | Fuel curve as a function of the air flow and setting required in order to maintain that curve | **:** |  |
| 1.2.4.1.5 | Cold-starting system: manual/automatic | **:** |  |
| 1.2.4.1.5.1 | Operating principle(s): | **:** |  |
| 1.2.4.2 | By fuel injection : yes/no (For CI engines) | **:** |  |
| 1.2.4.2.1 | Description of system | **:** |  |
| 1.2.4.2.2 | Operating principle: direct/indirect/turbulence chamber injection | **:** |  |
| 1.2.4.2.3 | Injection pump |  |  |
|  | Either | **:** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.2.4.2.3.1 | Make(s): | **:** |  |
| 1.2.4.2.3.2 | Type(s): | **:** |  |
|  | or | **:** |  |
| 1.2.4.2.3.3 | Maximum fuel flow rate, mm3 per stroke or cycle(1) at a pump rotational speed of:  min–l or characteristic diagram | **:** |  |
| 1.2.4.2.3.4 | Injection advance | **:** |  |
| 1.2.4.2.3.5 | Injection advance curve |  |  |
| 1.2.4.2.3.6 | Calibration procedure: test bench/engine | **:** |  |
| 1.2.4.2.4 | Regulator | **:** |  |
| 1.2.4.2.4.1 | Type | **:** |  |
| 1.2.4.2.4.2 | Cut-off point | **:** |  |
| 1.2.4.2.4.2.1 | Cut-off point under load: min-1 | **:** |  |
| 1.2.4.2.4.2.2 | Cut-off point under no load: min-1 | **:** |  |
| 1.2.4.2.4.3 | Idling speed: min-1 |  |  |
| 1.2.4.2.5 | Injection pipe work | **:** |  |
| 1.2.4.2.5.1 | Length: mm | **:** |  |
| 1.2.4.2.5.2 | Internal diameter: mm | **:** |  |
| 1.2.4.2.6 | Injector(s) | **:** |  |
|  | either | **:** |  |
| 1.2.4.2.6.1 | Make: | **:** |  |
| 1.2.4.2.6.2 | Type: | **:** |  |
|  | or | **:** |  |
| 1.2.4.2.6.3 | Description of system |  |  |
| 1.2.4.3 | By fuel injection (solely in the case of spark-ignition): yes/no | **:** |  |
|  | either: | **:** |  |
| 1.2.4.3.1 | Description of system | **:** |  |
| 1.2.4.3.2 | Operating principle: injection into induction manifold (single/multiple point) (3) /directinjection/other (state which) | **:** |  |
|  | or | **:** |  |
| 1.2.4.3.2.1 | Make(s) of the injection pump | **:** |  |
| 1.2.4.3.2.2 | Type(s) of the injection pump |  |  |
| 1.2.4.3.3 | Injectors: opening pressure (state tolerance) kPa | **:** |  |
|  | or characteristic diagram (state tolerance) | **:** |  |
| 1.2.4.3.4 | Injection advance | **:** |  |
| 1.2.4.3.5 | Cold-starting system | **:** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.2.4.3.5.1 | Operating principle(s): | **:** |  |
| 1.2.4.3.5.2. | Operating/setting limits (3)(state tolerance) | **:** |  |
| 1.2.4.4. | Fuel pump: yes/no(3) | **:** |  |
| 1.2.5. | **Electrical equipment** | **:** |  |
| 1.2.5.1. | Nominal voltage: ........ V, positive/negative earth(1) | **:** |  |
| 1.2.5.2. | Generator | **:** |  |
| 1.2.5.2.1. | Type | **:** |  |
| 1.2.5.2.2. | Nominal power: ........ W | **:** |  |
| 1.2.6. | **Ignition** | **:** |  |
| 1.2.6.1. | Make(s) | **:** |  |
| 1.2.6.2. | Type(s) | **:** |  |
| 1.2.6.3. | Operating principle |  |  |
| 1.2.6.4. | Ignition advance curve or operating set point (state tolerance) | **:** |  |
| 1.2.6.5. | Static timing (state tolerance): ........ before TDC | **:** |  |
| 1.2.6.6. | Points gap (state tolerance): ....... mm | **:** |  |
| 1.2.6.7. | Dwell angle (state tolerance) : ....... degrees | **:** |  |
| 1.2.6.8 | Spark plug | **:** |  |
| 1.2.6.8.1 | Make | **:** |  |
| 1.2.6.8.2 | Type and designation |  |  |
| 1.2.6.8.3 | Number of Spark Plug in each cylinder | **:** |  |
| 1.2.6.8.4 | Spark-gap setting | **:** |  |
| 1.2.6.8.5 | Nominal resistance (kilo ohm) (if resistive type) | **:** |  |
| 1.2.6.9 | Anti-radio interference system | **:** |  |
| 1.2.6.9.1. | Terminology and drawing of anti-radio interference equipment | **:** |  |
| 1.2.6.9.2. | Indication of the nominal DC resistance value and, in the case of resistive ignition leads, statement of nominal resistance per meter | **:** |  |
| 1.2.6.10 | Ignition coil(if resistive) | **:** |  |
| 1.2.6.10.1 | Make | **:** |  |
| 1.2.6.10.2 | Type |  |  |
| 1.2.6.10.3 | Type/Part no./Identification number(ID)/Drawing No. | **:** |  |
| 1.2.6.11 | Ignition condenser(If fitted) | **:** |  |
| 1.2.6.11.1 | Make | **:** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.2.6.11.2 | Type | **:** |  |
| 1.2.6.11.3 | Type/Part no./Identification number(ID)/Drawing No. | **:** |  |
| 1.2.6.12 | HT cable(if resistive) | **:** |  |
| 1.2.6.12.1 | Type/Part no./Identification number(ID)/Drawing No. | **:** |  |
| 1.2.6.12.2 | Nominal resistance per unit length | **:** |  |
| 1.2.6.12.3 | Nominal length with tolerance |  |  |
| 1.2.6.13 | Alternator/ Generator | **:** |  |
| 1.2.6.13.1 | Identification number(ID), if resistive type | **:** |  |
| 1.2.7. | **Cooling system (liquid/air)(3)** | **:** |  |
| 1.2.7.1. | Nominal setting for the engine-temperature control device | **:** |  |
| 1.2.7.2 | Cooling system temperatures permitted by the manufacturer | **:** |  |
| 1.2.7.3. | Liquid | **:** |  |
| 1.2.7.3.1. | Nature of liquid |  |  |
| 1.2.7.3.2. | Circulating pump(s): yes/no(3) | **:** |  |
| 1.2.7.3.3 | Maximum temperature at outlet: .... °C | **:** |  |
| 1.2.7.4. | Air | **:** |  |
| 1.2.7.4.1. | Blower: yes/no (3) | **:** |  |
| 1.2.7.4.2 | Reference point | **:** |  |
| 1.2.7.4.3 | Maximum temperature at reference point: …...°C | **:** |  |
| 1.2.7.4.4 | Max. Exhaust temperature ( Except Engine <200 cc) | **:** |  |
| 1.2.7.5 | Cooling Fan (if provided) | **:** |  |
| 1.2.7.5.1 | No of blades |  |  |
| 1.2.7.5.2 | Diameter of fan | **:** |  |
| 1.2.7.5.3 | RPM of fan | **:** |  |
| 1.2.7.5.4 | Material of fan | **:** |  |
| 1.2.8. | **Induction system** | **:** |  |
| 1.2.8.1. | Supercharging: yes/no(3) | **:** |  |
| 1.2.8.1.1. | Make(s) | **:** |  |
| 1.2.8.1.2. | Type(s) | **:** |  |

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| --- | --- | --- | --- |
| 1.2.8.1.3. | Description of system [example: maximum boost pressure …..... kPa, waste gate (where appropriate)] | **:** |  |
| 1.2.8.2. | Intercooler: with/without(3) |  |  |
| 1.2.8.3. | Description and drawings of induction pipe work and accessories (plenum chamber, heating device, additional air intakes, etc.): | **:** |  |
| 1.2.8.3.1. | Description of induction manifold (with drawings and/or photos): | **:** |  |
| 1.2.8.3.2. | Air filter, | **:** |  |
| 1.2.8.3.2.1. | Make | **:** |  |
| 1.2.8.3.2.2. | Type | **:** |  |
| 1.2.8.3.2.3 | Part no./Identification number(ID)/Drawing No. | **:** |  |
| 1.2.8.3.2.4 | Schematic dimensional drawing |  |  |
| 1.2.8.3.3. | Inlet silencer, drawings | **:** |  |
|  | or | **:** |  |
| 1.2.8.3.3.1. | Make(s) | **:** |  |
| 1.2.8.3.3.2. | Type(s) | **:** |  |
| 1.2.9. | **Exhaust system** | **:** |  |
| 1.2.9.1. | Drawing of complete exhaust system with identification (if proprietary) or part no (if non-proprietary) | **:** |  |
| 1.2.9.2 | Silencer (if proprietary) | **:** |  |
| 1.2.9.2.1 | Make | **:** |  |
| 1.2.9.2.2 | Type |  |  |
| 1.2.9.2.3 | Number | **:** |  |
| 1.2.9.2.4 | Part no./Identification number (ID)/Drawing No. | **:** |  |
| 1.2.10. | Minimum cross-section of the inlet and exhaust ports | **:** |  |
| 1.2.11. | Induction system or equivalent data | **:** |  |
| 1.2.11.1. | Maximum valve lift, opening and closing angles in relation to the dead centers, or data concerning the settings of other possible systems | **:** |  |
| 1.2.11.2. | Reference and/or setting ranges(3) | **:** |  |
| 1.2.12. | **Anti-air pollution measures adopted** | **:** |  |
| 1.2.12.1. | Crankcase-gas recycling device, solely in the case of four-stroke engines description and drawings): | **:** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.2.12.2. | Additional anti-pollution devices, if any (where present and not included under another heading) | **:** |  |
| 1.2.12.2.1. | Catalytic converter make and identification |  |  |
| 1.2.12.2.1.1 | Type | **:** |  |
| 1.2.12.2.1.2 | Number of catalytic converters and elements | **:** |  |
| 1.2.12.2.1.3 | Dimensions, shape and volume of the catalytic converter(s) | **:** |  |
| 1.2.12.2.1.4 | Substrate(structure and material ) | **:** |  |
| 1.2.12.2.1.5 | Cell density | **:** |  |
| 1.2.12.2.1.6 | Type of casing for the catalytic converter(s) | **:** |  |
| 1.2.12.2.1.7 | Total charge of precious metal g/vehicle. |  |  |
| 1.2.12.2.1.8 | Relative concentration (%) of Pt : Rh : Pd | **:** |  |
| 1.2.12.2.1.9 | Diagram indicating the arrangement and position of catalyst w.r.t. exhaust manifold. | **:** |  |
| 1.2.12.2.2 | **Selective Catalytic Reduction(SCR) and its components** | **:** |  |
| 1.2.12.2.2.1 | Principle and Characteristics: | **:** |  |
| 1.2.12.2.2.2 | Make: | **:** |  |
| 1.2.12.2.2.3 | Type and Identification number: | **:** |  |
| 1.2.12.2.2.3.1 | Total charge of precious metal: | **:** |  |
| 1.2.12.2.2.3.2 | Substrate (structure and material): | **:** |  |
| 1.2.12.2.2.3.3 | Relative Concentration (%): |  |  |
| 1.2.12.2.2.3.4 | Dimensions and shape of the SCR (volume, etc.): | **:** |  |
| 1.2.12.2.2.4 | Dosing ECU: | **:** |  |
| 1.2.12.2.2.4.1 | Make: | **:** |  |
| 1.2.12.2.2.4.2 | Identification number: | **:** |  |
| 1.2.12.2.2.4.3 | Calibration Identification number: | **:** |  |
| 1.2.12.2.2.4.4 | Calibration Verification number: | **:** |  |
| 1.2.12.2.2.4.5 | **Urea Dosing Unit**: | **:** |  |
| 1.2.12.2.2.4.5.1 | Dosing Unit: | **:** |  |
| 1.2.12.2.2.4.5.1.1 | Make: |  |  |
| 1.2.12.2.2.4.5.1.2 | Type and Identification number: | **:** |  |
| 1.2.12.2.2.4.5.2 | Supply Unit: | **:** |  |
| 1.2.12.2.2.4.5.2.1 | Make: | **:** |  |
| 1.2.12.2.2.4.5.2.3 | Type and Identification number | **:** |  |
| 1.2.12.2.2.4.5.3 | Dosing Injector: | **:** |  |
| 1.2.12.2.2.4.5.3.1 | Make: | **:** |  |
| 1.2.12.2.2.4.5.3.2 | Type and Identification number : |  |  |
| 1.2.12.2.2.4.6 | NOx Sensor (Before /After of SCR): | **:** |  |
| 1.2.12.2.2.4.6.1 | Make: | **:** |  |
| 1.2.12.2.2.4.6.2 | Type and Identification number: | **:** |  |
| 1.2.12.2.3 | Regeneration systems/method of  Exhaust after- treatment systems, description: | **:** |  |
| 1.2.12.2.3.1 | 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 | **:** |  |
| 1.2.12.2.3.2 | Description of method employed to determine the number of cycles between two cycles where regenerative phases occur: | **:** |  |
| 1.2.12.2.3.3 | Parameters to determine the level of loading required before regeneration occurs (i.e. temperature, pressure etc.): | **:** |  |
| 1.2.12.2.3.4 | Description of method used to load system in the test procedure described in AIS 137 | **:** |  |
| 1.2.12.2.3.5 | Normal operating temperature range (K): |  |  |
| 1.2.12.2.3.6 | Consumable reagents (where appropriate) | **:** |  |
| 1.2.12.2.3.7 | Type and concentration of reagent needed for catalytic action (where appropriate): | **:** |  |
| 1.2.12.2.3.8 | Normal operational temperature range of reagent (where appropriate): | **:** |  |
| 1.2.12.2.3.9 | International standard (where appropriate): | **:** |  |
| 1.2.12.2.3.10 | Frequency of reagent refill:  continuous/maintenance (where appropriate): | **:** |  |
| 1.2.13 | **Secondary Air Injection (yes/no) (3)** | **:** |  |
| 1.2.13.1 | Make and identification | **:** |  |
| 1.2.14 | **Fuel temperature 0C: (for diesel engines at the injection pump inlet)** | **:** |  |
| 1.2.14.1 | Minimum |  |  |
| 1.2.14.2 | Maximum | **:** |  |
| 1.2.15 | **Lubricant Temperature 0C (Location of measurement be specified )** | **:** |  |
| 1.2.15.1 | Minimum | **:** |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.2.15.2 | Maximum | | | | | **:** |  | |
| 1.3 | Electric traction motor (yes / no) | | | | | **:** |  | |
| 1.4. | **Lubrication system** | | | | | **:** |  | |
| 1.4.1. | Description of system | | | | |  |  | |
| 1.4.1.1 | Location of oil reservoir (if any) | | | | | **:** |  | |
| 1.4.1.2 | Feed system (pump/injection into induction system/mixed with the fuel, etc.)(3) | | | | | **:** |  | |
| 1.4.1.3 | Lubrication oil grade | | | | | **:** |  | |
| 1.4.2. | Lubricant mixed with the fuel | | | | | **:** |  | |
| 1.4.2.1. | Percentage | | | | | **:** |  | |
| 1.4.3. | **Oil cooler: yes/no(3)** | | | | | **:** |  | |
| 1.4.3.1. | Drawing(s): | | | | | **:** |  | |
|  | Or | | | | | **:** |  | |
| 1.4.3.1.1. | Make(s) | | | | |  |  | |
| 1.4.3.1.2. | Type(s): | | | | | **:** |  | |
| 1.5 | **Electronic Control Unit (ECU)** | | | | | **:** |  | |
| 1.5.1 | Make | | | | | **:** |  | |
| 1.5.2 | Type/Part no./Identification number(ID)/Drawing No. | | | | | **:** |  | |
| 1.5.3 | Calibration Identification number(ID) (If applicable) | | | | | **:** |  | |
| 1.5.4 | Adjustment possibilities ,( Yes / No ) | | | | | **:** |  | |
| 1.6 | **Exhaust Gas Re-circulating System** | | | | | **:** |  | |
| 1.6.1 | Brief description of the system | | | | | **:** |  | |
| 1.6.2 | Type ( Cooled / Non-cooled/ Progressive/ On-Off/ Any Other ) | | | | |  |  | |
| 1.6.3 | EGR Valve | | | | | **:** |  | |
| 1.6.3.1 | Make | | | | | **:** |  | |
| 1.6.3.2 | Type | | | | | **:** |  | |
| 1.6.3.3 | Type/Part no./Identification number(ID)/Drawing No. | | | | | **:** |  | |
| 1.7 | **Evaporative emission control system: yes/no** | | | | | **:** |  | |
| 1.7.1 | Detailed description of the devices and their state of tune: | | | | | **:** |  | |
| 1.7.2 | Drawing with dimensions of the carbon canister: | | | | | **:** |  | |
| 1.7.3 | Drawing with dimensions of the evaporative control system (including fuel hoses length and diameter): | | | | |  |  | |
| 1.7.4 | **Canister** | | | | | **:** |  | |
| 1.7.4.1 | Working capacity | | | | | **:** |  | |
| 1.7.4.2 | Make | | | | | **:** |  | |
| 1.7.4.3 | Identification number(ID) / Part No./Drawing No | | | | | **:** |  | |
| 1.7.4.4 | Schematic diagram | | | | | **:** |  | |
| 1.7.4.5 | Canister bed volume (3) | | | | |  |  | |
| 1.8 | **Lambda Sensor (If provided)** | | | | | **:** |  | |
| 1.8.1 | Make | | | | | **:** |  | |
| 1.8.2 | Identification number(ID) / Part No./Drawing No. | | | | | **:** |  | |
| 1.8.3 | Location | | | | | **:** |  | |
| 1.9 | On-board-diagnostic (OBD) system: (yes/no) | | | | | **:** |  | |
| 1.9.1 | Written description and/or drawing of the Malfunction Indicator (MI): | | | | | **:** |  | |
| 1.9.2 | List and purpose of all components monitored by the OBD system: | | | | | **:** |  | |
| 1.9.3 | Written description (general working principles) for: | | | | |  |  | |
| 1.9.3.1 | Positive ignition engines | | | | | **:** |  | |
| 1.9.3.1.1 | Catalyst monitoring: | | | | | **:** |  | |
| 1.9.3.1.2 | Misfire detection: | | | | | **:** |  | |
| 1.9.3.1.3 | Oxygen sensor monitoring: | | | | | **:** |  | |
| 1.9.3.1.4 | Other components monitored by the OBD system: | | | | | **:** |  | |
| 1.9.3.2 | Compression-ignition engines | | | | | **:** |  | |
| 1.9.3.2.1 | Catalyst monitoring | | | | | **:** |  | |
| 1.9.3.2.3 | Electronic fuelling system monitoring: | | | | | **:** |  | |
| 1.9.3.2.4 | Nox control system monitoring (SCR/LNT/NOx absorber): | | | | |  |  | |
| 1.9.3.2.5 | Other components monitored by the OBD system: | | | | | **:** |  | |
| 1.9.3.2.4 | Criteria for MI activation (fixed number of driving  cycles or statistical method): | | | | | **:** |  | |
| 1.9.3.2.5 | List of all OBD output codes and formats used (with  explanation of each): | | | | | **:** |  | |
| 1.9.3.2.5.1 | OBD Communication protocol standard | | | | | **:** |  | |
| 1.9.3.2.6 | 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 or its supplier(s). | | | | | **:** |  | |
| 1.9.3.2.6.1 | A description of the type and number of the pre- conditioning cycles used for the original type approval of the vehicle. | | | | | **:** |  | |
| 1.9.3.2.6.2 | 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. | | | | | **:** |  | |
| 1.9.3.2.6.3 | 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. | | | | | **:** |  | |
| 1.9.3.2.6.4 | The information required by this paragraph may, for example, be defined by completing a table as follows, which shall be attached to this annex: | | | | |  |  | |
|  | | | | | | | | |
| **Component** | **Fault**  **code** | **Monitoring strategy** | **Fault**  **detection criteria** | **MI**  **activation criteria** | **Secondary**  **parameters** | | **Precondi**  **-tioning** | **Demon-**  **stration 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 temperat ure | | Two  Type I  cycles | Type I |
| 1.9.3.2.6.5 | OBD vehicle family if any | | | | | **:** |  | |
| 1.9.3.2.6.5.1 | Parameters defining the OBD family (to be attached) (in reference with AIS 137) | | | | | **:** |  | |
| 1.9.3.3 | LPG fuelling system: yes/no | | | | |  |  | |
| 1.9.3.3.1 | Electronic engine management control unit for LPG fuelling | | | | | **:** |  | |
| 1.9.3.3.1.1 | Make(s): | | | | | **:** |  | |
| 1.9.3.3.1.2 | Type and Identification Number : | | | | | **:** |  | |
| 1.9.3.3.1.3 | Calibration Identification Number | | | | | **:** |  | |
| 1.9.3.3.1.5 | Emission-related adjustment possibilities: | | | | | **:** |  | |
| 1.9.3.3.2 | Further documentation: | | | | | **:** |  | |
| 1.9.3.3.2.1 | System layout (electrical connections, vacuum connections, compensation hoses, etc.) | | | | | **:** |  | |
| 1.9.3.3.2.2 | Drawing of the symbol: | | | | |  |  | |
| 1.9.3.4 | NG fuelling system: yes/no | | | | | **:** |  | |
| 1.9.3.4.1 | Approval number: | | | | | **:** |  | |
| 1.9.3.4.2 | Electronic engine management control unit for NG fuelling | | | | | **:** |  | |
| 1.9.3.4.2.1 | Make(s): | | | | | **:** |  | |
| 1.9.3.4.2.2 | Type and Identification Number : | | | | | **:** |  | |
| 1.9.3.4.2.3 | Calibration Identification Number | | | | | **:** |  | |
| 1.9.3.4.2.5 | Emission-related adjustment possibilities: | | | | | **:** |  | |
| 1.9.3.4.3 | Further documentation: | | | | | **:** |  | |
| 1.9.3.4.3.1 | Description of the safeguarding of the catalyst at switch-over from petrol to NG or back | | | | |  |  | |
| 1.9.3.4.3.2 | System layout (electrical connections, vacuum connections, compensation hoses, etc.): | | | | | **:** |  | |
| 1.9.3.4.3.3 | Drawing of the symbol: | | | | | **:** |  | |
| 1.9.3.5 | Hydrogen fuelling system: yes/no | | | | |  |  | |
| 1.9.3.5.1 | Electronic engine management control unit for hydrogen fuelling | | | | | **:** |  | |
| 1.9.3.5.1.1 | Make(s): | | | | | **:** |  | |
| 1.9.3.5.1.2 | Identification Number : | | | | | **:** |  | |
| 1.9.3.5.1.3 | Calibration Identification Number | | | | | **:** |  | |
| 1.9.3.5.1.5 | Emission-related adjustment possibilities: | | | | |  |  | |
| 1.9.3.5.2 | Further documentation | | | | | **:** |  | |
| 1.9.3.5.2.1 | Description of the safeguarding of the catalyst at switch-over from petrol to hydrogen or back: | | | | | **:** |  | |
| 1.9.3.5.2. | System lay-out (electrical connections, vacuum connections compensation hoses, etc.): | | | | | **:** |  | |
| 1.9.3.5.2.3 | Drawing of the symbol: | | | | | **:** |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.9.3.6 | H2NG fuelling system: yes/no | **:** |  |
| 1.9.3.6.1 | Percentage of hydrogen in the fuel (maximum specified by the manufacturer) | **:** |  |
| 1.9.3.6.2 | Electronic engine management control unit for H2NG fuelling | **:** |  |
| 1.9.3.6.2.1 | Make(s): | **:** |  |
| 1.9.3.6.2.2 | Identification Number : |  |  |
| 1.9.3.6.2.3 | Calibration Identification Number | **:** |  |
| 1.9.3.6.2.5 | Emission-related adjustment possibilities: | **:** |  |
| 1.9.3.6.3 | Further documentation | **:** |  |
| 1.9.3.6.3.1 | Description of the safeguarding of the catalyst at switch-over from petrol to H2NG or back: | **:** |  |
| 1.9.3.6.3.1 | System lay-out (electrical connections, vacuum connections compensation hoses, etc.): | **:** |  |
| 1.9.3.6.3.3 | Drawing of the symbol: | **:** |  |
| 1.9.3.7 | Electric motor | **:** |  |
| 1.9.3.7.1 | Type (winding, excitation): | **:** |  |
| 1.9.3.7.1.1 | Maximum hourly output: kW(manufacturer’s  declared value) |  |  |
| 1.9.3.7.1.1.1 | Maximum net power: kW (manufacturer’s  declared value) | **:** |  |
| 1.9.3.7.1.1.2 | Maximum 30 minutes power: kW  (manufacturer’s declared value) | **:** |  |
| 1.9.3.7.1.2 | Operating voltage: V | **:** |  |
| 1.9.3.7.2 | Battery | **:** |  |
| 1.9.3.7.2.1 | Number of cells: | **:** |  |
| 1.9.3.7.2.2 | Mass: …………kg | **:** |  |
| 1.9.3.7.2.3 | Capacity: Ah (Amp-hours) |  |  |
| 1.9.3.7.2.4 | Position: | **:** |  |
| 1.9.3.8 | Engines or motor combinations | **:** |  |
| 1.9.3.8.1. | Hybrid Electric Vehicle: yes/no | **:** |  |
| 1.9.3.8.2. | Category of Hybrid Electric vehicle Off Vehicle Charging/Not Off Vehicle Charging | **:** |  |
| 1.9.3.8.3. | Operating mode switch: with/without | **:** |  |
| 1.9.3.83.1. | Selectable modes | **:** |  |
| 1.9.3.8.3.1.1. | Pure electric: yes/no | **:** |  |
| 1.9.3.8.3.1.2. | Pure fuel consuming: yes/no | **:** |  |
| 1.9.3.8.3.1.3. | Hybrid modes: yes/no (if yes, short description) |  |  |
| 1.9.3.8.4. | Description of the energy storage device: (battery, capacitor, flywheel/generator...) | **:** |  |
| 1.9.3.8.4.1. | Make(s): | **:** |  |
| 1.9.3.8.4.2. | Type(s) : | **:** |  |
| 1.9.3.8.4.3. | Identification number: | **:** |  |
| 1.9.3.8.4.4. | Kind of electrochemical couple: | **:** |  |
| 1.9.3.8.4.5. | Energy: ........... (for battery: voltage and capacity Ah in 2 h, for capacitor: J) | **:** |  |
| 1.9.3.8.4.6. | Charger: on board/external/without | **:** |  |
| 1.9.3.8.5. | Electric machines (describe each type of electric machine separately) | **:** |  |
| 1.9.3.8.5.1. | Make: |  |  |
| 1.9.3.8.5.2. | Type: | **:** |  |
| 1.9.3.8.5.3. | Primary use: traction motor/generator | **:** |  |
| 1.9.3.8.5.3.1. | When used as traction motor: mono motor / multi motors (number): | **:** |  |
| 1.9.3.8.5.4. | Maximum power: kW | **:** |  |
| 1.9.3.8.5.5. | Working principle: | **:** |  |
| 1.9.3.8.5.5.1. | Direct current/alternating current/number of phases: | **:** |  |
| 1.9.3.8.5.5.2. | Separate excitation/series/compound |  |  |
| 1.9.3.8.5.5.3. | Synchronous/asynchronous | **:** |  |
| 1.9.3.8.6. | Control unit | **:** |  |
| 1.9.3.8.6.1. | Make: | **:** |  |
| 1.9.3.8.6.2. | Type : | **:** |  |
| 1.9.3.8.6.3. | Identification number: | **:** |  |
| 1.9.3.8.7. | Power controller | **:** |  |
| 1.9.3.8.7.1. | Make: | **:** |  |
| 1.9.3.8.7.2. | Type: | **:** |  |
| 1.9.3.8.7.3. | Identification number: |  |  |
| 1.9.3.8.8. | Vehicle electric range................. km (according to AIS 137): | **:** |  |
| 1.9.3.9. | Manufacturer’s recommendation for preconditioning: | **:** |  |

Footnotes: -

1. This figure should be to the nearest tenth of a millimeter.
2. This value should be calculated with pi = 3,1416 to the nearest cm3
3. State as appropriate

|  |  |
| --- | --- |
| **2.0** | **Page 132/227, Table 15** |
|  | Substitute following table for existing table: |

**Table 15 of AIS-007 (Revision 5)**

DETAILED TECHNICAL SPECIFICATIONS FOR

CONSTRUCTION EQUIPMENT VEHICLES

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1.0** | **Details of Manufacturer** | | | |  |
| 1.1 | Manufacturer's name and address | | | |  |
| 1.2 | Telephone No. | | | |  |
| 1.3 | Fax No. | | | |  |
| 1.4 | E-mail ID | | | |  |
| 1.5 | Contact person | | | |  |
| 2.0 | **Vehicle Data** | | | |  |
| 2.1 | Basic model | | | |  |
| 2.2 | Variant(s) | | | |  |
| 2.3 | Type/Designation as per ISO 6165/CMVR | | | |  |
| 2.4 | Engine No. | | | |  |
| 2.5 | Chassis No/PIN Number as per AIS 136 | | | |  |
| 2.6 | Publications available (Owner's manual, service manual, spare parts list) as per IS/ISO:6750:2005 | | | |  |
| 2.7 | Color/ color code (As defined in  CMVR) | | | |  |
| 3.0 | **Performance** | | | |  |
| 3.1 | Max. speed (kmph) | | | |  |
| 3.1.1 | Forward (kmph) | | | |  |
| 3.1.2 | Reverse (kmph) | | | |  |
| 3.2 | Stopping distance (m) as per AIS 143 (Rubber wheeled M/c) & IS/ISO 10265(Rubber Padded crawlers ) (From initial speed kmph) | | | |  |
| 3.2.1 | Stopping distance(m) other than IS/ISO 6165 categories | | | |  |
| 3.2.2 | Service brake | | | |  |
| 3.2.3 | Secondary brake | | | |  |
| 3.3 | Parking brake performance as per AIS 143 | | | |  |
| 3.4 | Climbing performance (start & stop) | | | |  |
| 3.5 | Min. turning circle diameter (m) as per IS/ISO 7457 : 1997 | | | |  |
| 4.0 | **Weights** | | | |  |
| 4.1 | Vehicle kerb weight (kg) | | | |  |
| 4.1.1 | Front axle (FAW1, FAW2 etc.) | | | |  |
| 4.1.2 | Rear axle (RAW1, RAW2 etc.) | | | |  |
| 4.1.3 | Total | | | |  |
| 5.0 | **Dimensions -**IS 11114-2&3:2006 / ISO 6746-1 & 2:2003 | | | |  |
| 5.1 | Overall length (m) | | | |  |
| 5.2 | Overall width (m) | | | |  |
| 5.3 | Overall height (m) | | | |  |
| 5.4 | Wheel base (m) | | | |  |
| 5.5 | Tread (m) | | | |  |
| 5.5.1 | Front wheel | | | |  |
| 5.5.2 | Rear wheel | | | |  |
| 5.6 | Min. road clearance (m) | | | |  |
| 5.7 | Road clearance from floor (m) | | | |  |
| 5.8 | Body overhang (m) | | | |  |
| 5.8.1 | Front end | | | |  |
| 5.8.2 | Rear end | | | |  |
| 5.9 | Gravity height (m) | | | |  |
| 5.10 | Max. stable inclination angle | | | |  |
| 5.10.1 | Left | | | |  |
| 5.10.2 | Right | | | |  |
| 5.11 | Riding capacity | | | |  |
|  | **Note :**   1. The essential characteristics of the Parent engine and the Engines falling in the same family are as given in the enclosed Annexure - 1. Clause 6.0 to Clause 27.0 are related to the characteristics of the parent engine. 2. Clause A 6.0 to A 27.0 are related to the characteristics of every engine that falls within the same family. This may be filled separately for each engine. | | | | |
| **6.0** | Engine (Parent) | | |  | |
| 6.1 | Type (NA/TC/TCIC, DI/IDI) | | |  | |
| 6.2 | Manufacturer's name & Address of the Manufacturing Plant. | | |  | |
| 6.3 | Working principle (four / two stroke) | | |  | |
| 6.4 | Model name and identification | | |  | |
| 6.5 | Type of fuel used | | |  | |
| 6.6 | No.& Layout of cylinders & firing order | | |  | |
| 6.7 | Swept volume (cc) | | |  | |
| 6.8 | Bore (mm) | | |  | |
| 6.9 | Stroke (mm) | | |  | |
| 6.10 | Compression ratio (specify tolerance) | | |  | |
| **6.11** | **Engine performance (declared by the manufacturer)** | | |  | |
| 6.11.1 | Max. Gross power of engine on bench kW  (Specify standard and tolerance) | | |  | |
| 6.11.2 | Maximum Gross torque on bench Nm @ rpm | | |  | |
| 6.11.3 | Engine RPM at max. Power (specify tolerance) | | |  | |
|  | **Note:** In case of diesel engines the max. power and max. torque shall be specified as per conditions given in Chapter 6 of Part IV of Doc. MoSRTH / CMVR / TAP-115 / 116 Issue No 3. | | | | |
| 6.12 | Location of engine (Front / Rear) | | |  | |
| **7.0** | **Combustion** | | |  | |
| 7.1 | Type of combustion chamber (Hemispherical / squish/others) | | |  | |
| 7.2 | Drawings of combustion chamber and piston crown (mention drawing no) | | |  | |
| 7.3 | Minimum cross section area of ports | | |  | |
| 7.3.1 | Inlet (mm2) | | |  | |
| 7.3.2 | Outlet (mm2) | | |  | |
| **8.0** | **Liquid cooling system** | | |  | |
| 8.1 | Nature of liquid and capacity | | |  | |
| 8.2 | Circulating pump yes/no | | |  | |
| 8.3 | Characteristics of Circulating pump or make(s) & type(s) | | |  | |
| 8.3.1 | Drive ratio | | |  | |
| 8.4 | Thermostat type and setting | | |  | |
| 8.5 | Air ducting (std production) | | |  | |
| **9.0** | **Air Cooling system** | | |  | |
| 9.1 | Blower characteristics | | |  | |
| 9.1.1 | Make(s) | | |  | |
| 9.1.2 | Type(s) | | |  | |
| 9.1.3 | Drive ratio(s) | | |  | |
| **10.0** | **Temperature regulating system (yes/no)** | | |  | |
| 10.1 | Brief description | | |  | |
| **11.0** | **Temperature permitted by manufacturer (0C)** | | |  | |
| 11.1 | Liquid cooling :- | | |  | |
| 11.1.1 | Max. temp. at engine Outlet | | |  | |
| 11.2 | Air cooling:- | | |  | |
| 11.2.1 | Reference point | | |  | |
| 11.2.2 | Max. temperature at reference point | | |  | |
| 11.3 | Max. outlet temperature of the intercooled-air ( Location of measurement be specified ) | | |  | |
| 11.4 | Max. exhaust temperature  (in case of diesel engines, at the point in the exhaust pipe(s) adjacent in outlet flange(s) of exhaust manifolds) | | | | |
| **12.0** | **Fuel temperature (0C) :** | | |  | |
| 12.1 | Minimum | | |  | |
| 12.2 | Maximum | | |  | |
| **13.0** | **Lubricant** **Temperature (0C)**( Location of measurement be specified ) | | |  | |
| 13.1 | Minimum | | |  | |
| 13.2 | Maximum | | |  | |
| **14.0** | **Intake system** | | |  | |
| 14.1 | Supercharger **/** Turbocharger – yes/no | | |  | |
| 14.1.1 | Description of system | | |  | |
| 14.1.2 | Make(s) | | |  | |
| 14.1.3 | Type(s) & Part No. | | |  | |
| 14.2 | Intake manifold | | |  | |
| 14.2.1 | Description & Drawings | | |  | |
| 14.3 | Air filter | | |  | |
| 14.3.1 | Make | | |  | |
| 14.3.2 | Type & Part No. | | |  | |
| 14.3.3 | Dimensional drawing, with drawing number and part number | | |  | |
| 14.4 | Intake silencer | | |  | |
| 14.4.1 | Make | | |  | |
| 14.4.2 | Type | | |  | |
| 14.5 | Description & dimensional drawing of inlet pipe & their accessories (dash pot, heating device, additional air intake etc.) | | |  | |
| 14.6 | Inter cooler | | |  | |
| 14.6.1 | Make | | |  | |
| 14.6.2 | Identification mark / & Part No. | | |  | |
| **15.0** | **Fuel feed** | | |  | |
| 15.1 | Injection system description | | |  | |
| 15.2 | Working principle: intake manifold/ direct injection/ indirect injection/swirl chamber/others | | |  | |
| 15.3 | Fuel Pump | | |  | |
| 15.3.1 | Make(s) & Place / | | |  | |
| 15.3.2 | Type(s) & Part No. | | |  | |
| 15.4 | Delivery mm3/per stroke at Rated speed and at Max Torque speed (specify tolerance) or characteristic diagram (specify tolerance) | | |  | |
| 15.5 | Calibration procedure on engine/pump bench | | |  | |
| 15.6 | Injection timing deg BTDC (specify tolerance) | | |  | |
| 15.7 | Injection advance curve (attach the same) | | |  | |
| 15.8 | Injection advance (specify the tolerance) | | |  | |
| 15.9 | Injectors | | |  | |
| 15.9.1 | Type, (mention holder, nozzle and assembly no(s)) | | |  | |
| 15.9.2 | Make | | |  | |
| 15.9.3 | Opening pressure (specify tolerance) or characteristic diagram | | |  | |
| 15.9.4 | Injection piping | | |  | |
| 15.9.5 | Length (mm) | | |  | |
| 15.9.6 | Internal diameter (mm) | | |  | |
| **16.0** | **Device for recycling crank-case gases** | | |  | |
| 16.1 | Description & diagrams | | |  | |
| **17.0** | **Governor** | | |  | |
| 17.1 | Make(s) & | | |  | |
| 17.2 | Type(s) | | |  | |
| 17.3 | Cut off point under load (rpm) | | |  | |
| 17.4 | Max. Speed without load (rpm) | | |  | |
| 17.5 | Idle Speed (rpm) | | |  | |
| **18.0** | **Cold start device (starting aid)** | | |  | |
| 18.1 | Make(s) | | |  | |
| 18.2 | Type(s) | | |  | |
| 18.3 | System description | | |  | |
| **19.0** | **Starting System** | | |  | |
| 19.1 | Make(s) | | |  | |
| 19.2 | Type(s) | | |  | |
| 19.3 | System description | | |  | |
| **20.0** | **Valve timing / Port timing or equivalent data** | | |  | |
| 20.1 | Max. lift of valves | | |  | |
| 20.1.1 | Inlet (mm) | | |  | |
| 20.1.2 | Exhaust (mm) | | |  | |
| 20.2 | Angle of valves / port (w.r.t. top dead center) | | |  | |
| 20.3 | Inlet | | |  | |
| 20.3.1 | Opening | | |  | |
| 20.3.2 | Closing | | |  | |
| 20.4 | Exhaust | | |  | |
| 20.4.1 | Opening | | |  | |
| 20.4.2 | Closing | | |  | |
| 20.5 | Transfer | | |  | |
| 20.5.1 | Opening | | |  | |
| 20.5.2 | Closing | | |  | |
| 20.6 | Reference or setting ranges | | |  | |
| 20.7 | Valve gap (Hot & Cold) | | |  | |
| 20.7.1 | Inlet | | |  | |
| 20.7.2 | Exhaust | | |  | |
| 20.8 | Distribution by ports | | |  | |
| 20.8.1 | Volume of crank-case cavity with piston at TDC | | |  | |
| 20.8.2 | Description of reed valve if any with drawing | | |  | |
| 20.8.3 | Description (with drawing) of inlet ports, scavenging and exhaust ports with corresponding timing. (The drawing should include one representing the inner surface of the cylinder) | | |  | |
| **21.0** | **Lubrication system** | | |  | |
| 21.1 | Description of system | | |  | |
| 21.2 | Lubrication oil capacity lit | | |  | |
| 21.3 | Position of lubricant reservoir | | |  | |
| 21.4 | Lubricating oil grade | | |  | |
| 21.5 | Feed system (pump, injection in to intake mixing with fuel etc.) | | |  | |
| 21.6 | Lubricating pump | | |  | |
| 21.6.1 | Make | | |  | |
| 21.6.2 | Type | | |  | |
| 21.7 | Mixture with fuel : yes/no, and if yes % | | |  | |
| 21.8 | Oil cooler : yes/no, and if yes Drawings/ makes & types | | |  | |
| **22.0** | **Electrical equipment** | | |  | |
| 22.1 | Generator/alternator characteristics (specify tolerance) or | | |  | |
| 22.1.1 | Make | | |  | |
| 22.1.2 | Type | | |  | |
| **23.0** | **Other engine driven auxiliaries**: | | |  | |
| 23.1 | Enumeration & brief description, if necessary | | |  | |
| **24.0** | **Idling System** | | |  | |
| 24.1 | Idling speed (rpm) (specify the tolerance) | | |  | |
| 24.2 | Description of settings and relevant requirements | | |  | |
| **25.0** | **Additional requirements** | | |  | |
| 25.1 | Maximum permitted depression of air intake at characteristic place (Specify location of measurement) (kPa) | | |  | |
| 25.2 | Exhaust back pressure at maximum Gross power and location of measurement (kPa) | | |  | |
| 25.3 | Effective volume of exhaust -System (specify the tolerance & range) in liters (from exhaust manifold / TC outlet to tail pipe end), Enclose the exhaust system drawing and indicate the volume of each parts clearly. | | |  | |
| 25.4 | Moment of inertia of combined flywheel & transmission at condition when no gear is engaged | | |  | |
| 25.5 | Maximum rated speed (Specify the tolerance) | | |  | |
| 25.6 | Minimum rated speed (Specify the tolerance) | | |  | |
| 25.7 | Power absorbed by fan kW (specify the tolerance) | | |  | |
| 25.8 | Max. Gross torque on bench, Nm@ rpm | | |  | |
| 25.9 | Declared speed and powers of the enginesubmitted for type approval  (Speeds to be agreed with the testing agency) | | |  | |
| **Measurement point\*** | | **Engine speed rpm** | **Gross Power kW\*\*** |  | |
|  | |  |  |  | |
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|  | |  |  |  | |
| \* | See Chapter 3 of Part IV of Doc.MoSRTHST/CMVR/TAP115/116 Issue No 3. | | | | |
| \*\* | Gross power according to Chapter 6 of Part IV of Doc.MoSRTHST/CMVR/TAP115/116 Issue No 3. | | | | |
| **26.0** | **Exhaust system :** | | |  | |
| 26.1 | Silencer, Number, Type and make | | |  | |
| 26.2 | Identification mark (If proprietary) / Part No. | | |  | |
| 26.3 | Internal dia. of exhaust pipe | | |  | |
| 26.4 | Description (with a general arrangement , dimensional drawing of exhaust system along with its routing indicating the lengths of exhaust pipe, tail pipe and exhaust outlet location) | | |  | |
| 26.5 | Minimum distance between exhaust pipe(s) and the fuel line | | |  | |
| **27.0** | **Additional emission control devices, such as catalytic converter etc. (if any & if not covered by another heading)** | | |  | |
| 27.1 | Catalyser make, Number | | |  | |

|  |  |  |
| --- | --- | --- |
| 27.2 | Identification Mark / Part No |  |
| 27.3 | Type of catalytic action (One/two/three way) |  |
| 27.4 | Total charge of precious metal (g/vehicle) |  |
| 27.5 | Relative concentration (%) |  |
| 27.5.1 | Platinum |  |
| 27.5.2 | Rhodium |  |
| 27.5.3 | Palladium |  |
| 27.6 | Substrate (Monolythic metal/ Ceramic/ honeycomb) |  |
| 27.7 | Cell density (cells per sq. inch) |  |
| 27.8 | Type of casing for catalyser |  |
| 27.9 | Diagram indicating the arrangement and position of catalytic converter w.r.t. exhaust manifold) |  |
| 27.10 | **Electronic Control Unit (ECU)** |  |
| 27.10.1 | Make |  |
| 27.10.2 | Identification mark |  |
| 27.10.3 | Calibration Identification No. |  |
| 27.11 | **Secondary Air Injection** |  |
| 27.11.1 | Make |  |
| 27.11.2 | Identification mark |  |
| 27.12 | **Exhaust Gas Recirculating System** |  |
| 27.12.1 | Make |  |
| 27.12.2 | Type |  |
| 27.12.3 | Identification mark |  |
|  | Note : The following Clause A 6.0 to A 27.0 are to be filled separately for each of the engines that fall within the same family : | |
| **A6.0** | Engine (Type within the Family) |  |
| A6.1 | Type (NA/TC/TCIC, DI/IDI) |  |
| A6.2 | Manufacturer's name & Manufacturing Plant address. |  |
| A6.3 | Working principle (four / two stroke) |  |
| A6.4 | Model name and identification |  |
| A6.5 | Type of fuel used |  |
| A6.6 | No.& Layout of cylinders & firing order |  |
| A6.7 | Swept volume (cc) |  |
| A6.8 | Bore(mm) |  |
| A6.9 | Stroke (mm) |  |
| A6.10 | Compression ratio (specify tolerance) |  |

|  |  |  |
| --- | --- | --- |
| A6.11 | **Engine performance (declared by the manufacturer,)** |  |
| A6.11.1 | Max. Gross power of engine on bench (kW)  (Specify standard and tolerance) |  |
| A6.11.2 | Maximum Gross torque on bench (Nm @ rpm) |  |
| A6.11.3 | Engine RPM at max. Power (specify tolerance) |  |
|  | **Note:** In case of diesel engines the max. power and max. torque shall be specified as per conditions given in Chapter 6 of Part IV of Doc. MoSRTH / CMVR / TAP-115 / 116 Issue No 3. | |
| A6.12 | Location of engine (Front / Rear) |  |
| **A7.0** | **Combustion :** |  |
| A7.1 | Type of combustion chamber (Hemispherical / squish/others) |  |
| A7.2 | Drawings of combustion chamber and piston crown (mention drawing no) |  |
| A7.3 | Minimum cross section area of ports |  |
| A7.3.1 | Inlet mm2 |  |
| A7.3.2 | Outlet mm2 |  |
| **A8.0** | **Liquid cooling system** |  |
| A8.1 | Nature of liquid and capacity |  |
| A8.2 | Circulating pump yes/no |  |
| A8.3 | Characteristics of Circulating pump or make(s) & type(s) |  |
| A8.3.1 | Drive ratio |  |
| A8.4 | Thermostat type and setting |  |
| **A9.0** | **Air Cooling system** |  |
| A9.1 | Blower characteristics |  |
| A9.1.1 | Make(s) |  |
| A9.1.2 | Type(s) |  |
| A9.1.3 | Drive ratio(s) |  |
| A9.2 | Air ducting(std production) |  |
| **A10.0** | **Temperature regulating system (yes/no)** |  |
| **A11.0** | **Temperature permitted by manufacturer (0C)** |  |
| A11.1 | Liquid cooling:- |  |
| A11.1.1 | Max. temp. at engine Outlet |  |
| A11.2 | Air cooling:- |  |
| A11.2.1 | Reference point |  |
| A11.2.2 | Max. temperature at reference point |  |
| A11.3 | Max. outlet temperature of the intercooled - air (Location of measurement to be specified) |  |

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| A11.4 | Maximum exhaust temperature (0C) |  |
| A11.4.1 | Max. exhaust temperature  (in case of diesel engines, at the point in the exhaust pipe(s) adjacent in outlet flange(s) of exhaust manifolds) | |
| **A12.0** | **Fuel temperature (0C)** |  |
| A12.1 | Minimum |  |
| A12.2 | Maximum |  |
| **A13.0** | **Lubricant** **Temperature (0C)**  **(Location of measurement to be specified)** |  |
| A13.1 | Minimum |  |
| A13.2 | Maximum |  |
| **A14.0** | **Intake system** |  |
| A14.1 | Supercharger **/** Turbocharger - yes/no |  |
| A14.1.1 | Description of system |  |
| A14.1.2 | Make(s) |  |
| A14.1.3 | Type(s) & Part No. |  |
| A14.2 | **Intake manifold** |  |
| A14.2.1 | Description & Drawings |  |
| A14.3 | **Air filter** |  |
| A14.3.1 | Make |  |
| A14.3.2 | Type & Part No. |  |
| A14.3.3 | Dimensional drawing, with drawing number and part number |  |
| A14.4 | **Intake silencer** |  |
| A14.4.1 | Make |  |
| A14.4.2 | Type |  |
| A14.5 | Description & diagrams of inlet pipe & their accessories (dash pot, heating device, additional air intake etc.) |  |
| A14.6 | **Inter cooler** |  |
| A14.6.1 | Make |  |
| A14.6.2 | Identification mark / & Part No. |  |
| **A15.0** | **Fuel feed** |  |
| A15.1 | Injection system description |  |
| A15.2 | Working principle: intake manifold/ direct injection / indirect injection / swirl chamber/others |  |
| A15.3 | **Fuel Pump** |  |
| A15.3.1 | Make(s) & ( if imported) |  |
| A15.3.2 | Type(s) & Part No. |  |
| A15.4 | Delivery mm3/per stroke at Rated speed and at Max Torque speed (specify tolerance) or characteristic diagram (specify tolerance) |  |
| A15.5 | Calibration procedure on engine/pump bench |  |
| A15.6 | Injection timing deg BTDC (specify tolerance) |  |
| A15.7 | Injection advance curve (attach the same) |  |
| A15.8 | Injection advance (specify the tolerance) |  |
| A15.9 | **Injectors** |  |
| A15.9.1 | Type, (mention Holder, Nozzle & assembly no(s)) |  |
| A15.9.2 | Make |  |
| A15.9.3 | Opening pressure (specify tolerance) or characteristic diagram |  |
| A15.9.4 | Injection piping |  |
| A15.9.5 | Length mm |  |
| A15.9.6 | Internal diameter (mm) |  |
| **A16.0** | **Device for recycling crank-case gases** |  |
| A16.1 | Description & diagrams |  |
| **A17.0** | **Governor** |  |
| A17.1 | Make(s) & |  |
| A17.2 | Type(s) |  |
| A17.3 | Cut off point under load (rpm) |  |
| A17.4 | Max. Speed without load (rpm) |  |
| A17.5 | Idle Speed (rpm) |  |
| **A18.0** | **Cold start device (starting aid)** |  |
| A18.1 | Make(s) |  |
| A18.2 | Type(s) |  |
| A18.3 | System description |  |
| **A19.0** | **Starting System** |  |
| A19.1 | Make(s) |  |
| A19.2 | Type(s) |  |
| A19.3 | System description |  |
| **A20.0** | **Valve timing / Port timing or equivalent data** |  |
| A20.1 | Max. lift of valves |  |
| A20.1.1 | Inlet (mm) |  |
| A20.1.2 | Exhaust (mm) |  |
| A20.2 | Angle of valves / port (w.r.t. top dead center) |  |
| A20.3 | Inlet |  |
| A20.3.1 | Opening |  |
| A20.3.2 | Closing |  |
| A20.4 | Exhaust |  |
| A20.4.1 | Opening |  |
| A20.4.2 | Closing |  |
| A20.5 | Transfer |  |
| A20.5.1 | Opening |  |
| A20.5.2 | Closing |  |
| A20.6 | Reference or setting ranges |  |
| A20.7 | Valve gap (Hot & Cold) |  |
| A20.7.1 | Inlet |  |
| A20.7.2 | Exhaust |  |
| A20.8 | Distribution by ports |  |
| A20.8.1 | Volume of crank-case cavity with piston at TDC |  |
| A20.8.2 | Description of reed valve if any with drawing |  |
| A20.8.3 | Description (with drawing) of inlet ports, scavenging and exhaust ports with corresponding timing. (The drawing should include one representing the inner surface of the cylinder) |  |
| **A21.0** | **Lubrication system** |  |
| A21.1 | Description of system |  |
| A21.2 | Lubrication oil capacity lit |  |
| A21.3 | Position of lubricant reservoir |  |
| A21.4 | Lubricating oil grade |  |
| A21.5 | Feed system(pump, injection in to intake mixing with fuel etc.,) |  |
| A21.6 | Lubricating pump |  |
| A21.6.1 | Make |  |
| A21.6.2 | Type |  |
| A21.7 | Mixture with fuel : yes/no, and if yes % |  |
| A21.8 | Oil cooler : yes/no, and if yes Drawings/ makes & types |  |
| **A22.0** | **Electrical equipment** |  |
| A22.1 | Generator/alternator characteristics (specify tolerance) or |  |
| A22.1.1 | Make |  |
| A22.1.2 | Type |  |
| **A23.0** | **Other engine driven auxiliaries** |  |

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| A23.1 | Enumeration & brief description,  if necessary | | |  |
| **A24.0** | **Idling System** | | |  |
| A24.1 | Idling speed (rpm) (specify the tolerance) | | |  |
| A24.2 | Description of settings and relevant requirements | | |  |
| **A25.0** | **Additional requirements** | | |  |
| A25.1 | Maximum permitted depression of air intake at characteristic place, in kPa (Specify the location of measurement) | | |  |
| A25.2 | Exhaust back pressure at maximum Gross power and location of measurement (kPa) | | |  |
| A25.3 | Effective volume of exhaust-System (specify the tolerance & range) in liters (from exhaust manifold / TC outlet to tail pipe end), Enclose the exhaust system drawing and indicate the volume of each parts clearly. | | |  |
| A25.4 | Moment of inertia of combined flywheel & transmission at condition when no gear is engaged | | |  |
| A25.5 | Maximum rated speed (Specify the tolerance) | | |  |
| A25.6 | Minimum rated speed (Specify the tolerance) | | |  |
| A25.7 | Power absorbed by fan (kW) (specify the tolerance) | | |  |
| A25.8 | Max. Gross torque on bench (Nm@ rpm) | | |  |
| A25.9 | Declared speed and powers of the engine submitted for type approval (Speeds to be agreed with the testing agency) | | |  |
|  | **Measurement point\*** | **Engine speed rpm** | **Gross Power kW\*\*** |  |
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|  | \*See Chapter 3 of Part IV of Doc.MoSRTHST/CMVR/TAP115/116 Issue No 3. | | | |
|  | \*\*Gross power according to Chapter 6 of Part IV of Doc.MoSRTHST/CMVR/TAP115/116 Issue No 3. | | | |
| **A26.0** | **Exhaust system** | | |  |
| A26.1 | Silencer, Number, Type and make | | |  |
| A26.2 | Identification mark (If proprietary) / Part No. | | |  |
| A26.3 | Internal dia. of exhaust pipe | | |  |
| A26.4 | Description (with a general arrangement dimensional drawing of exhaust system along with its routing indicating the lengths of exhaust pipe, tail pipe and exhaust outlet location) | | |  |

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| A26.5 | Minimum distance between exhaust pipe(s) and the fuel line |  |
| **A27.0** | **Additional emission control devices, such as catalytic converter etc. (if any & if not covered by another heading)** |  |
| A27.1 | Catalyser make, Number |  |
| A27.2 | Identification Mark / Part No. |  |
| A27.3 | Type of catalytic action (One/two/three way) |  |
| A27.4 | Total charge of precious metal (g/vehicle) |  |
| A27.5 | Relative concentration (%) |  |
| A27.5.1 | Platinum |  |
| A27.5.2 | Rhodium |  |
| A27.5.3 | Palladium |  |
| A27.6 | Substrate (Monolythic metal/ Ceramic/ honeycomb) |  |
| A27.7 | Cell density (cells per sq. inch) |  |
| A27.8 | Type of casing for catalyser |  |
| A27.9 | Diagram indicating the arrangement and position of catalytic converter w.r.t. exhaust manifold) |  |
| A27.10 | **Electronic Control Unit (ECU)** |  |
| A27.10.1 | Make |  |
| A27.10.2 | Identification mark |  |
| A27.10.3 | Calibration Identification No. |  |
| A27.11 | **Secondary Air Injection** |  |
| A27.11.1 | Make |  |
| A27.11.2 | Identification mark |  |
| A27.12 | **Exhaust Gas Recirculating System** |  |
| A27.12.1 | Make |  |
| A27.12.2 | Type |  |
| A27.12.3 | Identification mark |  |
| **28.0** | **Fuel tank (Metallic/Non Metallic)** |  |
| 28.1 | Name of producer |  |
| 28.2 | Material |  |
| 28.3 | Capacity |  |
| 28.4 | Position |  |
| 28.5 | Test report for non-metallic fuel tank (if provided) |  |
| **29.0** | **Transmission system** |  |
| 29.1 | Mechanism from engine to transmission |  |
| 29.2 | Reduction ratio from engine to transmission |  |
| 29.3 | **Clutch** |  |
| 29.3.1 | Name of producer |  |
| 29.3.2 | Type |  |
| 29.3.3 | Control system |  |
| 29.4 | **Facing** |  |
| 29.4.1 | Name of producer |  |
| 29.4.2 | Dimension (mm) |  |
| 29.4.3 | Area (cm2) |  |
| 29.4.4 | Number of operating faces |  |
| 29.4.5 | Material |  |
| 29.5 | Transmission clutch fluid capacity |  |
| 29.6 | **Booster type** |  |
| 29.6.1 | Name of producer |  |
| 29.6.2 | Type |  |
| **30.0** | **Control system** |  |
| 30.1 | **Gear ratio** |  |
| 30.1.1 | 1st |  |
| 30.1.2 | 2nd |  |
| 30.1.3 | 3rd |  |
| 30.1.4 | 4th |  |
| 30.1.5 | 5th |  |
| 30.1.6 | 6th |  |
| 30.1.7 | Reverse 1st |  |
| 30.2 | **Sub transmission** |  |
| 30.2.1 | Type |  |
| 30.3 | **Gear ratio** |  |
| 30.3.1 | High |  |
| 30.3.2 | Low |  |
| 30.4 | Propeller shaft |  |
| 30.5 | **Length inside & outside diameter, mm** |  |
| 30.5.1 | 1st |  |
| 30.5.2 | 2nd |  |
| 30.5.3 | 3rd |  |
| 30.5.4 | 4th |  |
| 30.6 | **Universal joint** |  |
| 30.6.1 | Type |  |
| 30.6.2 | Number |  |
| 30.7 | **Crown wheel** |  |
| 30.7.1 | Type |  |
| 30.7.2 | Reduction ratio |  |
| 30.8 | **Differential** |  |
| 30.8.1 | Type |  |
| 30.9 | **Running system** |  |
| 30.9.1 | Front axle |  |
| 30.9.1.1 | Type |  |
| 30.9.1.2 | Toe-in (mm) |  |
| 30.9.1.3 | Camber angle |  |
| 30.9.1.4 | Caster angle |  |
| 30.9.1.5 | King pin angle |  |
| 30.9.1.6 | Trial (mm) |  |
| 30.9.2 | Rear axle |  |
| 30.9.2.1 | Type |  |
| 30.9.2.2 | Toe-in (mm) |  |
| 30.9.2.3 | Camber angle |  |
| 30.9.2.4 | Caster angle |  |
| 30.9.2.5 | King pin angle |  |
| 30.9.2.6 | Trial (mm) |  |
| **31.0** | **Steering system** |  |
| 31.1 | Type |  |
| 31.2 | Steering wheel Position |  |
| 31.3 | Outside diameter mm |  |
| 31.4 | Maximum number of rotations of steering wheel from lock to lock |  |
| 31.5 | Type of axis & joint |  |
| 31.6 | Steering gear type |  |
| 31.7 | Steering gear ratio |  |
| 31.8 | **Steering angle** |  |
| 31.8.1 | Inside |  |
| 31.8.2 | Outside |  |
| 31.9 | **Booster** |  |
| 31.9.1 | Name of producer |  |
| 31.9.2 | Type |  |
| 31.9.3 | Kind of oil |  |
| 31.9.4 | Oil capacity (l) |  |
| 31.10 | **Locking device** |  |
| 31.10.1 | Name of producer |  |
| 31.10.2 | Type |  |
| 31.10.3 | Mounting position |  |
| **32.0** | **Tyres** |  |
| 32.1 | **No. and arrangement of wheels** |  |
| 32.1.1 | Front |  |
| 32.1.2 | Rear |  |
| 32.1.3 | Others |  |
| 32.2 | **Tyre type (Radial/cross ply), size & ply rating** |  |
| 32.2.1 | Front wheel |  |
| 32.2.2 | Rear wheel |  |
| 32.2.3 | Other |  |
| 32.3 | **Rolling radius (mm)** |  |
| 32.3.1 | Static |  |
| 32.3.2 | Dynamic (if data is available) |  |
| 32.4 | **Inflation pressure – Unladen (kg/cm2 / kPa)** |  |
| 32.4.1 | Front |  |
| 32.4.2 | Rear |  |
| 32.4.3 | Other |  |
| 32.5 | **Inflation pressure – Laden (kg/cm2 / kPa )** |  |
| 32.5.1 | Front |  |
| 32.5.2 | Rear |  |
| 32.5.3 | Other |  |
| 32.6 | Makes: |  |
| 32.7 | Tread Wear Indicator, Provided (Yes/No) |  |
| 32.8 | Month & Year code of manufacture, Provided (Yes/No) |  |
| 32.9 | Maximum loading capacity, Provided (Yes/No) |  |
| **33.0** | **Wheel rim** |  |
| 33.1 | Size |  |
| 33.1.1 | Front |  |
| 33.1.2 | Rear |  |
| 33.1.3 | Others |  |
| 33.2 | Name of manufacturer |  |
| 33.3 | Identification mark |  |
| 33.4 | Pitch circle dia. of mounting bolts (mm) |  |
| 33.5 | Number of mounting bolts |  |
| 33.6 | Material (Steel/ Aluminum alloy etc.) |  |
| **34.0** | **Braking system** |  |
| 34.1 | **Service brake (Description with Brake circuit diagram)** |  |
| 34.1.1 | Name of producer |  |
| 34.1.2 | Type |  |
| 34.2 | **Secondary brake (Description)** |  |
| 34.2.1 | Name of producer |  |
| 34.2.2 | Type |  |
| 34.3 | **Control system & braking wheel** |  |
| 34.4 | **Dimensions of lining or pad, ( L x W x t )** |  |
| 34.4.1 | Front wheels (mm) |  |
| 34.4.2 | Rear wheels (mm) |  |
| 34.5 | **Area of lining or pad (cm2 )** |  |
| 34.5.1 | Front wheels (cm2) |  |
| 34.5.2 | Rear wheels (cm2) |  |
| 34.6 | **Brake drum or disc effective diameter (mm)** |  |
| 34.6.1 | Front wheel |  |
| 34.6.2 | Rear wheel |  |
| 34.7 | **Lining or pad** |  |
| 34.7.1 | Name of producer |  |
| 34.7.2 | Material (Asbestos / Asbestos free) |  |
| 34.8 | **Master cylinder or brake valve** |  |
| 34.8.1 | Name of producer |  |
| 34.8.2 | Type |  |
| 34.9 | Inner diameter of master cylinder (mm) |  |
| 34.10 | Type of supply tank |  |
| 34.11 | Inner diameter of wheel cylinder or brake piston cap |  |
| 34.11.1 | Front wheel |  |
| 34.11.2 | Rear wheel |  |
| 34.12 | **Booster** |  |
| 34.12.1 | Name of producer |  |
| 34.12.2 | Type |  |
| 34.12.3 | Magnification |  |
| 34.13 | Air compressor & others |  |
| 34.14 | Vacuum or air |  |
| 34.15 | Air pressure (kg/cm2) |  |
| 34.16 | Type of vacuum pump or air compressor |  |
| 34.17 | Type of pressure regulator |  |
| 34.18 | Tank |  |
| 34.18.1 | Position |  |
| 34.18.2 | Capacity (l) |  |
| 34.19 | **Brake pipe** |  |
| 34.19.1 | Name of producer |  |
| 34.19.2 | Material |  |
| 34.19.3 | Rust proof treatment |  |
| 34.20 | **Brake hose (Hydraulic)** |  |
| 34.20.1 | Make |  |
| 34.20.2 | Identification mark / Part Number |  |
| 34.30.3 | Length of hose (mm) |  |
| 34.20.4 | Nominal bore diameter (mm) |  |
| 34.20.5 | End fitting type |  |
| 34.20.6 | Material |  |
| 34.21 | **Brake fluid** |  |
| 34.21.1 | Name of manufacturer |  |
| 34.21.2 | Trade name |  |
| 34.21.3 | Specification / grade as per Indian standard |  |
| 34.22 | Braking force (stepping force kg) |  |
| 34.23 | Type of braking force control system |  |
| 34.24 | Warning device for braking |  |
| 34.24.1 | Type |  |
| 34.25 | Operation pressure (kg./cm2 ) |  |
| 34.26 | Type of safety device |  |
| 34.27 | Parking brake |  |
| 34.27.1 | Name of producer |  |
| 34.27.2 | Type |  |
| 34.27.3 | Braking wheel |  |
| 34.28 | **Lining** |  |
| 34.28.1 | Name of producer |  |
| 34.28.2 | Dimension of lining or pad (L x W x t) |  |
| 34.28.2.1 | Front wheel (mm) |  |
| 34.28.2.2 | Rear wheel (mm) |  |
| 34.28.3 | Area of lining pad |  |
| 34.28.3.1 | Front |  |
| 34.28.3.2 | Rear |  |
| 34.28.4 | Material |  |
| 34.29 | Diameter of brake drum, mm |  |
| 34.30 | Braking force (Operation force kg.) |  |
| 34.31 | Auxiliary brake |  |
| 34.31.1 | Type |  |
| 34.31.2 | Performance |  |
| 34.32 | **Emergency brake** |  |
| 34.32.1 | Type |  |
| 34.32.2 | Performance |  |
| **35.0** | **Suspension system** |  |
| 35.1 | **Front axle** |  |
| 35.1.1 | Type of suspension |  |
| 35.1.2 | Type of spring |  |
| 35.1.3 | Dimension of main spring (mm) |  |
| 35.1.3.1 | Stack |  |
| 35.1.3.2 | Flat length |  |
| 35.1.3.3 | Free camber |  |
| 35.1.3.4 | Dimension of auxiliary spring |  |
| 35.2 | **Rear axle** |  |
| 35.2.1 | Type of suspension |  |
| 35.2.2 | Type of spring |  |
| 35.2.3 | Dimension of main spring |  |
| 35.2.3.1 | Stack |  |
| 35.2.3.2 | Flat length |  |
| 35.2.3.3 | Free camber |  |
| 35.2.3.4 | Dimension of auxiliary spring |  |
| 35.3 | **Type of shock absorber** |  |
| 35.3.1 | Front wheel |  |
| 35.3.2 | Rear wheel |  |
| 35.4 | **Type of stabilizer** |  |
| 35.4.1 | Front wheel |  |
| 35.4.2 | Rear wheel |  |
| **36.0** | **Chassis frame** |  |
| 36.1 | Type |  |
| 36.2 | Cross sectional view |  |
| 36.3 | Dimension, mm |  |
| 36.4 | Type of side protection device |  |
| **37.0** | **Windscreen wiping system** |  |
| 37.1 | **Wind screen wiper** |  |
| 37.1.1 | Type (manual/power) |  |
| 37.1.2 | No. of wipers |  |
| 37.2 | **Wiper motor** |  |
| 37.2.1 | Name of manufacturer |  |
| 37.2.2 | Type and identification |  |
| 37.2.3 | Rated voltage |  |
| 37.2.4 | Number of sweep Frequencies |  |
| 37.2.5 | Highest sweep frequency (cycles/min) |  |
| 37.2.6 | Lowest sweep frequency (cycles/min) |  |
| 37.3 | **Wiper arm** |  |
| 37.3.1 | Length |  |
| 37.3.2 | Manufacturer and Identification |  |
| 37.4 | **Wiper blade** |  |
| 37.4.1 | Length |  |
| 37.4.2 | Manufacturer and Identification |  |
| 37.4.3 | Rubber material |  |
| 37.5 | Type of fixing (as per IS 7827) |  |
| 37.6 | H point |  |
| 37.7 | Windscreen washing system |  |
| 37.8 | Type |  |
| 37.9 | Make |  |
| 37.10 | Defroster |  |
| 37.11 | Type |  |
| 37.12 | Make |  |
| 37.13 | Drawing indicating the seat back angle, seat travel, H point, Rake angle ,F point, steering wheel position and the related dimensions (Ref : Figure 1 and Figure 2 of AIS-011) |  |

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| **38.0** | **Equipment for safety** |  |
| 38.1 | **Seat belt anchorages** |  |
| 38.1.1 | Name of producer |  |
| 38.1.2 | Type |  |
| 38.1.3 | Number |  |
| 38.1.4 | Drawing showing anchorage points and details |  |
| 38.2 | **Seat belt** |  |
| 38.2.1 | Name of producer |  |
| 38.2.2 | Type |  |
| 38.2.3 | Number |  |
| 38.3 | **Head restraint** |  |
| 38.3.1 | Name of producer |  |
| 38.3.2 | Type |  |
| 38.3.3 | Number |  |
| 38.4 | Type of room safety device |  |
| 38.5 | Type of air conditioner |  |
| 38.6 | Position of emergency exit |  |
| 38.7 | Type of device preventing vehicle starting with door opened |  |
| **39.0** | **Safety Glass** |  |
| 39.1 | **Front wind shield** |  |
| 39.1.1 | Name of producer |  |
| 39.1.2 | Type |  |
| 39.1.3 | Thickness, mm |  |
| 39.1.4 | Radius of curvature if curved |  |
| 39.2 | **Glasses other than front wind shield** |  |
| 39.2.1 | Name of producer |  |
| 39.2.2 | Type |  |
| 39.2.3 | Thickness |  |
| 39.2.4 | Radius of curvature if curved |  |
| **40.0** | **Rear view mirror** |  |
| 40.1 | **Left** |  |
| 40.1.1 | Name of producer |  |
| 40.1.2 | Type & Class of mirror |  |
| 40.1.3 | Dimension & radius of curvature (mm) |  |
| 40.2 | **Right** |  |
| 40.2.1 | Name of producer |  |
| 40.2.2 | Type & Class of mirror |  |
| 40.2.3 | Dimension & radius of curvature (mm) |  |
| 40.3 | **Inside** |  |
| 40.3.1 | Name of producer |  |
| 40.3.2 | Type & Class of mirror |  |
| 40.3.3 | Dimension & radius of curvature (mm) |  |
| **40.4** | **Camera Monitoring devices (if fitted)** |  |
| 40.4.1 | Name of producer |  |
| 40.4.2 | Type |  |
| 40.4.3 | Position |  |
| **41.0** | **Horn** |  |
| 41.1 | Name of producer |  |
| 41.2 | Type |  |
| 41.3 | Operating voltage |  |
| 41.4 | Identification No. / Part No. |  |
| 41.5 | Number |  |
| **42.0** | **Controls (Specify method of operation)** |  |
| 42.1 | Ignition |  |
| 42.2 | Horn |  |
| 42.3 | Lamps (Head lamp, Tail lamp, Parking lamp and Number plate lamp) |  |
| 42.4 | Turn signal |  |
| 42.5 | Transmission shift lever |  |
| 42.6 | Wind shield wiper |  |
| 42.7 | High beam/low beam |  |
| 42.8 | Parking brake |  |
| 42.9 | Master switch for electrical |  |
| 42.10 | Hazard warning signal |  |
| 42.11 | Service Brake |  |
| 42.12 | Accelerator Pedal (Floor hinged/hanging type) |  |
| 42.13 | Others |  |
| **43.0** | **Visual displays and tell tales (ISO:6011:2003 &**  **IS/ISO 6405- Part 1 &2)Complies (yes/no)** |  |
|  | (Indicate the type of tell tales provided and whether they are symbols or letters) | |
| 43.1 | Head lamp – upper / lower control |  |
| 43.2 | Ignition cut-off |  |
| 43.3 | Turn signal |  |
| 43.4 | Fuel Gauge |  |
| 43.5 | Engine coolant temperature |  |
| 43.6 | Low oil pressure |  |
| 43.7 | High beam indicator |  |
| 43.8 | Electrical charge indicator |  |
| 43.9 | Brake failure |  |
| 43.10 | Battery Charging |  |
| 43.11 | Engine oil |  |
| 43.12 | Horn |  |
| 43.13 | Speedometer |  |
| 43.14 | Odometer |  |
| **44.0** | **Auto lamps (bulbs)** |  |
| 44.1 | **Head lamp bulb (main and dip)** |  |
| 44.1.1 | Make |  |
| 44.1 | Designation as per AIS-034 |  |
| 44.2 | **Parking Lamp bulb – Front** |  |
| 44.2.1 | Make |  |
| 44.3 | **Designation as per AIS-034** |  |
| 44.4 | **Parking Lamp bulb – Rear** |  |
| 44.4.1 | Make |  |
| 44.4.2 | Designation as per AIS-034 |  |
| 44.5 | **Direction indicator lamp bulb - front** |  |
| 44.5.1 | Make |  |
| 44.5.2 | Designation as per AIS-034 |  |
| 44.6 | **Direction indicator lamp bulb - rear** |  |
| 44.6.1 | Make |  |
| 44.6.2 | Designation as per AIS-034 |  |
| 44.7 | **Direction indicator lamp bulb - side** |  |
| 44.7.1 | Make |  |
| 44.7.2 | Designation as per AIS-034 |  |
| 44.8 | **Front Position Lamp bulb** |  |
| 44.8.1 | Make |  |
| 44.8.2 | Designation as per AIS-034 |  |
| 44.9 | Rear Position Lamp ( tail lamp )Bulb |  |
| 44.9.1 | Make |  |
| 44.9.2 | Designation as per AIS-034 |  |
| 44.10 | **Stop lamp bulb** |  |
| 44.10.1 | Make |  |
| 44.10.2 | Designation as per AIS-034 |  |
| 44.11 | **Number plate lamp bulb** |  |
| 44.11.1 | Make |  |
| 44.11.2 | Designation as per AIS-034 |  |
| 44.12 | End out Marker bulb |  |
| 44.12.1 | Make |  |
| 44.12.2 | Designation as per AIS-034 |  |
| 44.13 | **Reversing lamp bulb** |  |
| 44.13.1 | Make |  |
| 44.13.2 | Designation as per AIS-034 |  |
| 44.14 | Stop Lamp Bulb (S3) |  |
| 44.14.1 | Make |  |
| 44.14.2 | Designation as per AIS-034 |  |
| 44.15 | Front Fog Lamp Bulb |  |
| 44.15.1 | Make |  |
| 44.15.2 | Designation as per AIS-034 |  |
| 44.16 | **Rear Fog Lamp Bulb** |  |
| 44.16.1 | Make |  |
| 44.16.2 | Designation as per AIS-034 |  |
| 44.17 | **Side Marker Lamp Bulb** |  |
| 44.17.1 | Make |  |
| 44.17.2 | Designation as per AIS-034 |  |
| **45.0** | **Lighting equipment** |  |
| 45.1 | **Head lamp** |  |
| 45.1.1 | Main beam |  |
| 45.1.1.1 | Make |  |
| 45.1.1.2 | Type of lens (Glass / Plastic) |  |
| 45.1.1.3 | Identification No. / Part No. |  |
| 45.1.1.4 | Number and Colour of Lens |  |
| 45.1.2 | Dipped beam |  |
| 45.1.2.1 | Make |  |
| 45.1.2.2 | Type of lens (Glass / Plastic) |  |
| 45.1.2.3 | Identification No. / Part No. |  |
| 45.1.2.4 | Number and Colour of Lens |  |
| 45.2 | Front Fog Lamp |  |
| 45.2.1 | Make |  |
| 45.2.2 | Type of lens (Glass / Plastic) |  |
| 45.2.3 | Identification No. / Part No. |  |
| 45.2.4 | Number and Colour of Lens |  |
| 45.3 | **Rear Fog Lamp** |  |
| 45.3.1 | Make |  |
| 45.3.2 | Type of lens (Glass / Plastic) |  |
| 45.3.3 | Identification No. / Part No. |  |
| 45.3.4 | Number and Colour of Lens |  |
| 45.4 | **Side Marker lamps** |  |
| 45.4.1 | Make |  |
| 45.4.2 | Type of lens (Glass / Plastic) |  |
| 45.4.3 | Identification No. / Part No. |  |
| 45.4.4 | Number and colour of Lens |  |
| 45.5 | **Registration Plate lamp** |  |
| 45.5.1 | Make |  |
| 45.5.2 | Type of lens (Glass / Plastic) |  |
| 45.5.3 | Identification No. / Part No. |  |
| 45.5.4 | Number and colour of Lens |  |
| 45.6 | **Position lamp / Parking Lamp - Front** |  |
| 45.6.1 | Front Position Lamp |  |
| 45.6.1.1 | Make |  |
| 45.6.1.2 | Type of lens (Glass / Plastic) |  |
| 45.6.1.3 | Identification No. / Part No. |  |
| 45.6.1.4 | Number and colour of Lens |  |
| 45.6.2 | **Front Parking Lamp** |  |
| 45.6.2.1 | Make |  |
| 45.6.2.2 | Type of lens (Glass / Plastic) |  |
| 45.6.2.3 | Identification No. / Part No. |  |
| 45.6.2.4 | Number and colour of Lens |  |
| 45.7 | **Position lamp / Parking Lamp - Rear** |  |
| 45.7.1 | **Rear Position Lamp** |  |
| 45.7.1.1 | Make |  |
| 45.7.1.2 | Type of lens (Glass / Plastic) |  |
| 45.7.1.3 | Identification No. / Part No. |  |
| 45.7.1.4 | Number and colour of Lens |  |
| 45.7**.**2 | **Rear Parking Lamp** |  |
| 45.7.2.1 | Make |  |
| 45.7.2.2 | Type of lens (Glass / Plastic) |  |
| 45.7.2.3 | Identification No. / Part No. |  |
| 45.7.2.4 | Number and colour of Lens |  |
| 45.8 | **Stop lamp (S1 / S2)** |  |
| 45.8.1 | Make |  |
| 45.8.2 | Type of lens (Glass / Plastic) |  |
| 45.8.3 | Identification No. / Part No. |  |
| 45.8.4 | Number and colour of Lens |  |
| 45.9 | **Stop lamp (S3) for M1 category** |  |
| 45.9.1 | Make |  |
| 45.9.2 | Type of lens ( Glass / Plastic ) |  |
| 45.9.3 | Identification No. / Part No. |  |
| 45.9.4 | Number and colour of lens |  |
| 45.10 | **Reversing lamp** |  |
| 45.10.1 | Make |  |
| 45.10.2 | Type of lens (Glass / Plastic) |  |
| 45.10.3 | Identification No. / Part No. |  |
| 45.10.4 | Number and colour of Lens |  |
| 45.11 | **Direction indicator Lamp** |  |
| 45.11.1 | Front |  |
| 45.11.1.1 | Make |  |
| 45.11.1.2 | Type of lens (Glass / Plastic) |  |
| 45.11.1.3 | Identification No. / Part No. |  |
| 45.11.1.4 | Number and colour of Lens |  |
| 45.11.2 | Rear |  |
| 45.11.2.1 | Make |  |
| 45.11.2.2 | Type of lens (Glass / Plastic) |  |
| 45.11.2.3 | Identification No. / Part No. |  |
| 45.11.2.4 | Number and colour of Lens |  |
| 45.11.3 | Side |  |
| 45.11.3.1 | Make |  |
| 45.11.3.2 | Type of lens (Glass / Plastic) |  |
| 45.11.3.3 | Identification No. / Part No. |  |
| 45.11.3.4 | Number and colour of Lens |  |
| 45.11.4 | Type of flasher |  |
| 45.12 | **Hazard warning signal** |  |
| 45.12.1 | Front |  |
| 45.12.1.2 | Make |  |
| 45.12.1.3 | Type of lens ( Glass / Plastic ) |  |
| 45.12.1.4 | Identification No. / Part No. |  |
| 45.12.1.5 | Number and Colour of lens |  |
| 45.12.2 | Rear |  |
| 45.12.2.1 | Make |  |
| 45.12.2.2 | Type of lens ( Glass / Plastic ) |  |
| 45.12.2.3 | Identification No. / Part No. |  |
| 45.12.2.4 | Number and Colour of lens |  |
| 45.12.3 | Side |  |
| 45.12.3.1 | Make |  |
| 45.12.3.2 | Type of lens ( Glass / Plastic ) |  |
| 45.12.3.3 | Identification No. / Part No. |  |
| 45.12.3.4 | Number and Colour of lens |  |
| 46.0 | **Reflector** |  |
| 46.1 | Front |  |
| 46.1.1 | Name of producer |  |
| 46.1.2 | Type & identification |  |
| 46.1.3 | Number and colour |  |
| 46.1.4 | Performance |  |
| 46.2 | Rear |  |
| 46.2.1 | Name of producer |  |
| 46.2.2 | Type & identification |  |
| 46.2.3 | Number and colour |  |
| 46.2.4 | Performance |  |
| 46.3 | Side |  |
| 46.3.1 | Name of producer |  |
| 46.3.2 | Type & identification |  |
| 46.3.3 | Number and colour |  |
| 46.3.4 | Performance |  |
| 46.4 | Yellow flasher |  |
| 46.4.1 | Name of producer |  |
| 46.4.2 | Type & identification |  |
| 46.4.3 | Number and colour |  |
| 46.4.4 | Performance |  |
| 46.5 | Warning device horn |  |
| 46.5.1 | Name of producer |  |
| 46.5.2 | Type & identification |  |
| 46.5.3 | Number |  |
| 46.5.4 | Performance |  |
| 46.6 | Visibility ensuring device |  |
| **47.0** | **Meters** |  |
| 47.1 | **Speedometer** |  |
| 47.1.1 | Name of producer |  |
| 47.1.2 | Model |  |
| 47.1.3 | Type |  |
| 47.1.4 | Performance & error |  |
| 47.2 | **Odometer** |  |
| 47.2.1 | Name of producer |  |
| 47.2.2 | Model |  |
| 47.2.3 | Type |  |
| 47.2.4 | Performance & error |  |
| 47.3 | **Tachograph** |  |
| 47.3.1 | Name of producer |  |
| 47.3.2 | Model |  |
| 47.3.3 | Type |  |
| 47.3.4 | Performance & error |  |
| 47.4 | **Pressure gauge** |  |
| 47.4.1 | Name of producer |  |
| 47.4.2 | Model |  |
| 47.4.3 | Type |  |
| 47.4.4 | Performance |  |
| 47.5 | **Engine speed indicator** |  |
| 47.5.1 | Name of producer |  |
| 47.5.2 | Model |  |
| 47.5.3 | Type |  |
| 47.5.4 | Performance |  |
| 47.6 | **Fire extinguisher** |  |
| 47.6.1 | Name of producer |  |
| 47.6.2 | Model |  |
| 47.6.3 | Type |  |
| 47.6.4 | Performance |  |
| 47.7 | **Pressure container** |  |
| 47.7.1 | Name of producer |  |
| 47.7.2 | Capacity of producer |  |
| 47.7.3 | Max. Pressure for use (kg/cm2) |  |
| 47.7.4 | Material |  |
| 47.8 | List of spare tools normally given with the vehicle |  |
| 48.0 | Minimum access dimensions as per IS:10689:1993/ISO:2860:2011  Complies (yes/no) |  |
| 49.0 | Access systems as per IS/ISO: 2867:2011  Complies (yes/no) |  |
| 49.1 | Drawing indicating compliance to Steps, Primary access, Alternate exit path and opening, maintenance opening, handrail and handholds, to be submitted |  |
| 50.0 | Guards as per IS/ISO3457:2003 Complies (yes/no) |  |
| 50.1 | Drawing indicating compliance to Barrier guards, Fenders, Fan guards, Thermal guards, Hose guards to be submitted |  |
| 51.0 | Visual Display as per IS/ISO: 6011:2003 |  |
| 52.0 | Operator Control as per IS/ISO 10968: 2004  Complies (yes/no) |  |
| 53.0 | Drawing indicating Operators seat-Dimensions and Requirements as per IS/ISO 11112:1995 |  |
| 54.0 | Articulated Frames compliance to ISO:10570:2014(Yes/No) |  |
| 55.0 | Lift Arm Support Device compliance to ISO:10533:1992(Yes/No) |  |
| 56.0 | Roll Over Protective Structure  provided (Yes/No)  Compliance to IS/ISO 3471:2008 |  |
| 56.1 | Material |  |
| 56.2 | Part No/ID No |  |
| 56.3 | Drawing of ROPS indication dimensions and cross sections |  |
| 57.0 | Drawing indicating Seat Index Point as per IS/ISO: 5353:1995 |  |
| 58.0 | Drawing with overall dimensions of operator enclosure as per IS/ISO 3411:2007 |  |
| 59.0 | Falling Object Protective Structure  provided (Yes/No)  Compliance to IS/ISO 3449:2005 |  |
| 59.1 | Material |  |
| 59.2 | Part No/ID No |  |
| 59.3 | Drawing of FOPS indication dimensions and cross sections |  |
| 59.4 | Impact Protection Level(Level 1/ Level 2) |  |
| 60 | Operator field of view as per IS/ISO 5006:2006 |  |
| 60.1 | Devices installed in a machine (Mirror, Camera etc.) |  |
| 60.2 | Drawing indicating visibility test locations, test results of the static tests for visibility test (direct and indirect view including the masking on the visibility test circle) |  |
| 61.0 | Zones of control-Drawings indicating reach zone and comfort zone as per IS 11252:1993// ISO 6682:1986 |  |
| 62.0 | Operator’s seat vibration compliance to IS/ISO:7096:2000 (Yes/No) |  |
| 63.0 | Roll Over Protective Structure for wheeled excavators provided (Yes/No) |  |
| 63.1 | Compliance to IS/ISO 12117-2:2008 |  |
| 63.2 | Material |  |
| 63.3 | Part No/ID No |  |
| 63.4 | Drawing of ROPS indication dimensions and cross sections |  |
| 64.0 | Electro Magnetic Compatibility as per ISO 13766:2006(Yes/No) |  |
| 65.0 | Noise Levels complied (Yes/No) |  |
| 65.1 | Operator Position(dB)-Static & Dynamic - IS/ISO 6394 :2008& IS/ISO 6396 : 2008 |  |
| 65.2 | Machine (dB)- Static & Dynamic- IS/ISO 6393 :2008& IS/ISO 6395 : 2008 |  |
| **65.0** | **Additional information, if any** |  |

|  |  |
| --- | --- |
| **2.0** | **Page 190/227, Table 18,** |
|  | Substitute following new rule 50 before rule 100: |

**Table 18 of AIS-007 (Revision 5)**

**LIST OF COMPONENT TEST REPORTS / CERTIFICATES FOR**

**AGRICULTURAL TRACTORS / CONSTRUCTION EQUIPMENT VEHICLES**

|  |  |  |  |
| --- | --- | --- | --- |
| **Rule No.** | **Subject** | **Test Report Nos.** | **If certificate is not available likely date of submission of test report** |
| 50 | High Security Registration Plate **(HSRP)** |  |  |
| 100 | Safety Glass |  |  |
| 1. Windscreen |
| 1. Side |
| 1. Rear |
| (For Construction Equipment Vehicles) |
| 104 A | Reflex Reflector |  |  |
| 1. White, Front |
| 1. Amber, side |
| 1. Red, Rear |
| Retro Reflective Tape or Paint |
| 104B(2) | Reflex Reflector  1. Rear, Red |  |  |
| 119 | Horns Horn Installation |  |  |
| 124(A)1 | Automotive Lamps  Bulbs used for: |  |  |
| 1. Head light main & dip. |
| 1. Parking light |
| 1. Direction indicator lamp |
| 1. Tail lamp |
| 1. Reversing lamp |
| 1. Stop lamp |
| 1. Rear registration mark indicating lamp |
| 1. Top light |
| 124A(2) | Lighting Signalling & Indicating Systems: |  |  |
| Head Light: |
| Fog Light (As applicable): |
| Rear License Plate Light: |
| Rear Position Light: |
| Tail Light: |
| Stop Light: |
| Directional Indicator Light: |
| Front : |
| Rear : |
| Side : |
| Parking Light: |
| Reversing Light: |
| High Mounted Stop Light: |
| Rear Warning Triangle  (Slow moving emblem) (As applicable) |
| 124A(3) | Hydraulic Brake Hose |  |  |
| 124A(4) | Hydraulic Brake Fluid |  |  |
| 124A(5) | Tow Hook(As applicable) |  |  |
| 124A(6) | Fuel Tank |  |  |
| 124A(7) | Wheel Nuts & Hub Caps(As applicable) |  |  |
| 125A(1) | Seat belt and seat belt anchorages |  |  |
| 125A(2) | external rear view mirror |  |  |
| **Note :**   1. Please enclose test report copies wherever required. 2. In case samples are submitted to the testing agency for testing, please provide reference docket no. | | | |

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ON BEHALF OF

AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER

CENTRAL MOTOR VEHICLE RULES - TECHNICAL STANDING COMMITTEE

SET-UP BY

MINISTRY OF ROAD TRANSPORT & HIGHWAYS

(DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS)

GOVERNMENT OF INDIA

1st August 2018