

## ANNEX I

Complete list of information for the purpose of EC type-approval of vehicles

3. POWER PLANT <sup>(9)</sup> (In the case of a vehicle that can run either on petrol, diesel, etc., or also in combination with another fuel, items shall be repeated <sup>(+)</sup>)
  - 3.2. Internal combustion engine
    - 3.2.1. Specific engine information
      - 3.2.1.1. Working principle: positive ignition/compression ignition, four stroke/two stroke <sup>(1)</sup>
      - 3.2.1.2. Number and arrangement of cylinders:
        - 3.2.1.2.1. Bore <sup>(†)</sup>: ... mm
        - 3.2.1.2.2. Stroke <sup>(†)</sup>: ... mm
        - 3.2.1.2.3. Firing order:
      - 3.2.1.3. Engine capacity <sup>(8)</sup>: ... cm<sup>3</sup>
      - 3.2.1.4. Volumetric compression ratio <sup>(2)</sup>:
      - 3.2.1.5. Drawings of combustion chamber, piston crown and, in the case of positive ignition engines, piston rings:
      - 3.2.1.6. Normal engine idling speed <sup>(2)</sup>: ... min<sup>-1</sup>
        - 3.2.1.6.1. High engine idling speed <sup>(2)</sup>: ... min<sup>-1</sup>
      - 3.2.1.7. Carbon monoxide content by volume in the exhaust gas with the engine idling <sup>(2)</sup>: ... % as stated by the manufacturer (positive ignition engines only)
      - 3.2.1.8. Maximum net power <sup>(†)</sup>: ... kW at ... min<sup>-1</sup> (manufacturer's declared value)
      - 3.2.1.9. Maximum permitted engine speed as prescribed by the manufacturer: ... min<sup>-1</sup>
      - 3.2.1.10. Maximum net torque <sup>(†)</sup>: ... Nm at ... min<sup>-1</sup> (manufacturer's declared value)
    - 3.2.2. Fuel: Diesel oil/Petrol/LPG/NG/Ethanol <sup>(1)</sup> ...
      - 3.2.2.1. RON, leaded:
      - 3.2.2.2. RON, unleaded:
      - 3.2.2.3. Fuel tank inlet: restricted orifice/label <sup>(1)</sup>
    - 3.2.3. Fuel tank(s)
      - 3.2.3.1. Service fuel tank(s)
        - 3.2.3.1.1. Number, capacity, material:
        - 3.2.3.1.2. Drawing and technical description of the tank(s) with all connections and all lines of the breathing and venting system, locks, valves, fastening devices:

3.2.3.1.3. Drawing clearly showing the position of the tank(s) in the vehicle:

3.2.3.2. Reserve fuel tank(s)

3.2.3.2.1. Number, capacity, material:

3.2.3.2.2. Drawing and technical description of the tank(s) with all connections and all lines of the breathing and venting system, locks, valves, fastening devices:

3.2.3.2.3. Drawing clearly showing the position of the tank(s) in the vehicle:

3.2.4. Fuel feed

3.2.4.1. By carburettor(s): yes/no <sup>(1)</sup>

3.2.4.1.1. Make(s):

3.2.4.1.2. Type(s):

3.2.4.1.3. Number fitted:

3.2.4.1.4. Adjustments <sup>(2)</sup>

3.2.4.1.4.1.	Jets: ...	Or the curve of fuel delivery plotted against the air flow and settings required to keep to the curve
3.2.4.1.4.2.	Venturis: ...	
3.2.4.1.4.3.	Float-chamber level: ...	
3.2.4.1.4.4.	Mass of float: ...	
3.2.4.1.4.5.	Float needle: ...	

3.2.4.1.5. Cold start system: manual/automatic <sup>(1)</sup>

3.2.4.1.5. Operating principle(s):

3.2.4.1.5. Operating limits/settings <sup>(1)</sup> <sup>(2)</sup>

3.2.4.2. By fuel injection (compression ignition only): yes/no <sup>(1)</sup>

3.2.4.2.1. System description:

3.2.4.2.2. Working principle: direct injection/pre-chamber/swirl chamber <sup>(1)</sup>

3.2.4.2.3. Injection pump

3.2.4.2.3. Make(s):

3.2.4.2.3. Type(s):

3.2.4.2.3. Maximum fuel delivery <sup>(1)</sup> <sup>(2)</sup>: ... mm<sup>3</sup>/stroke or cycle at a pump speed of: ... min<sup>-1</sup>  
<sup>1</sup> or, alternatively, a characteristic diagram:

3.2.4.2.3. Injection timing <sup>(2)</sup>:

3.2.4.2.3. Injection advance curve <sup>(2)</sup>:

3.2.4.2.3. Calibration procedure: test bench/engine <sup>(1)</sup>

3.2.4.2.4. Governor

3.2.4.2.4. Type:

3.2.4.2.4. Cut-off point

3.2.4.2.4. Cut-off point under load: ... min<sup>-1</sup>

3.2.4.2.4. Cut-off point without load: ... min<sup>-1</sup>

3.2.4.2.5. Injection piping

3.2.4.2.5. Length: ... mm

3.2.4.2.5. Internal diameter: ... mm

3.2.4.2.6. Injector(s)

3.2.4.2.6. Make(s):

3.2.4.2.6. Type(s):

3.2.4.2.6. Opening pressure <sup>(2)</sup>: ... kPa or characteristic diagram <sup>(2)</sup>:

3.2.4.2.7. Cold start system

3.2.4.2.7. Make(s):

3.2.4.2.7. Type(s):

3.2.4.2.7. Description:

3.2.4.2.8. Auxiliary starting aid

3.2.4.2.8. Make(s):

3.2.4.2.8. Type(s):

3.2.4.2.8. System description:

3.2.4.2.9. Electronic control unit

3.2.4.2.9. Make(s):

3.2.4.2.9. Description of the system:

3.2.4.3. By fuel injection (positive ignition only): yes/no <sup>(1)</sup>

3.2.4.3.1. Working principle: intake manifold (single-/multi-point <sup>(1)</sup>)/direct injection/other (specify) <sup>(1)</sup>

3.2.4.3.2. Make(s):

3.2.4.3.3. Type(s):

3.2.4.3.4. System description

3.2.4.3.4.1.	Type or number of the control unit: ...	In the case of systems other than continuous injection give equivalent details.
3.2.4.3.4.2.	Type of fuel regulator: ...	
3.2.4.3.4.3.	Type of air-flow sensor: ...	
3.2.4.3.4.4.	Type of fuel distributor: ...	
3.2.4.3.4.5.	Type of pressure regulator: ...	
3.2.4.3.4.6.	Type of micro switch: ...	
3.2.4.3.4.7.	Type of idling adjustment screw: ...	
3.2.4.3.4.8.	Type of throttle housing: ...	
3.2.4.3.4.9.	Type of water temperature sensor: ...	

3.2.4.3.4.10. Type of air temperature sensor: ...

3.2.4.3.4.11. Type of air temperature switch: ...

3.2.4.3.5. Injectors: opening pressure <sup>(2)</sup>: ... kPa or characteristic diagram:

3.2.4.3.6. Injection timing:

3.2.4.3.7. Cold start system

3.2.4.3.7. Operating principle(s):

3.2.4.3.7. Operating limits/settings <sup>(1)</sup> <sup>(2)</sup>:

3.2.4.4. Feed pump

3.2.4.4.1. Pressure <sup>(2)</sup>: ... kPa or characteristic diagram <sup>(2)</sup>:

3.2.5. Electrical system

3.2.5.1. Rated voltage: ... V, positive/negative ground <sup>(1)</sup>

3.2.5.2. Generator

3.2.5.2.1. Type:

3.2.5.2.2. Nominal output: ... VA

3.2.6. Ignition

3.2.6.1. Make(s):

3.2.6.2. Type(s):

3.2.6.3. Working principle:

3.2.6.4. Ignition advance curve <sup>(2)</sup>:

- 3.2.6.5. Static ignition timing (<sup>2</sup>): ... degrees before TDC
- 3.2.6.6. Contact-point gap (<sup>2</sup>): ... mm
- 3.2.6.7. Dwell-angle (<sup>2</sup>): ... degrees
- 3.2.7. Cooling system: liquid/air (<sup>1</sup>)
  - 3.2.7.1. Nominal setting of the engine temperature control mechanism
  - 3.2.7.2. Liquid
    - 3.2.7.2.1. Nature of liquid:
    - 3.2.7.2.2. Circulating pump(s): yes/no (<sup>1</sup>)
    - 3.2.7.2.3. Characteristics: or
    - 3.2.7.2.3. Make(s):
    - 3.2.7.2.3. Type(s):
    - 3.2.7.2.4. Drive ratio(s):
    - 3.2.7.2.5. Description of the fan and its drive mechanism:
  - 3.2.7.3. Air
    - 3.2.7.3.1. Blower: yes/no (<sup>1</sup>)
    - 3.2.7.3.2. Characteristics: or
    - 3.2.7.3.2. Make(s):
    - 3.2.7.3.2. Type(s):
    - 3.2.7.3.3. Drive ratio(s):
- 3.2.8. Intake system
  - 3.2.8.1. Pressure charger: yes/no (<sup>1</sup>)
    - 3.2.8.1.1. Make(s):
    - 3.2.8.1.2. Type(s):
    - 3.2.8.1.3. Description of the system (e. g. maximum charge pressure: ... kPa; wastegate if applicable):
  - 3.2.8.2. Intercooler: yes/no (<sup>1</sup>)
  - 3.2.8.3. Intake depression at rated engine speed and at 100 % load
    - minimum allowable: ... kPa
    - maximum allowable: ... kPa
  - 3.2.8.4. Description and drawings of inlet pipes and their accessories (plenum chamber, heating device, additional air intakes, etc.):

- 3.2.8.4.1. Intake manifold description (include drawings and/or photos):
- 3.2.8.4.2. Air filter, drawings: or
- 3.2.8.4.2. Make(s):
- 3.2.8.4.2. Type(s):
- 3.2.8.4.3. Intake silencer, drawings: or
- 3.2.8.4.3. Make(s):
- 3.2.8.4.3. Type(s):
- 3.2.9. Exhaust system
- 3.2.9.1. Description and/or drawing of the exhaust manifold:
- 3.2.9.2. Description and/or drawing of the exhaust system:
- 3.2.9.3. Maximum allowable exhaust back pressure at rated engine speed and at 100 % load:  
... kPa
- 3.2.9.4. Exhaust silencer(s): For front, centre, rear silencer: construction, type, marking; where relevant for exterior noise: reducing measures in the engine compartment and on the engine:
- 3.2.9.5. Location of the exhaust outlet:
- 3.2.9.6. Exhaust silencer containing fibrous materials:
- 3.2.10. Minimum cross-sectional areas of inlet and outlet ports:
- 3.2.11. Valve timing or equivalent data
- 3.2.11.1. Maximum lift of valves, angles of opening and closing, or timing details of alternative distribution systems, in relation to dead centres:
- 3.2.11.2. Reference and/or setting ranges <sup>(1)</sup>:
- 3.2.12. Measures taken against air pollution
- 3.2.12.1. Device for recycling crankcase gases (description and drawings):
- 3.2.12.2. Additional anti-pollution devices (if any, and if not covered by another heading)
- 3.2.12.2. Catalytic converter: yes/no <sup>(1)</sup>
- 3.2.12.2. Number of catalytic converters and elements:
- 3.2.12.2. Dimensions, shape and volume of the catalytic converter(s):
- 3.2.12.2. Type of catalytic action:
- 3.2.12.2. Total charge of precious metals:
- 3.2.12.2. Relative concentration:
- 3.2.12.2. Substrate (structure and material):
- 3.2.12.2. Cell density:

- 3.2.12.2.1 ~~8~~ Type of casing for the catalytic converter(s):
- 3.2.12.2.1 ~~9~~ Location of the catalytic converter(s) (place and reference distance in the exhaust line):
- 3.2.12.2.1 ~~10~~ Heat shield: yes/no <sup>(1)</sup>
- 3.2.12.2.2 ~~1~~ Oxygen sensor: yes/no <sup>(1)</sup>
- 3.2.12.2.2 ~~2~~ Type:
- 3.2.12.2.2 ~~2~~ Location:
- 3.2.12.2.2 ~~3~~ Control range:
- 3.2.12.2.3 ~~3~~ Air injection: yes/no <sup>(1)</sup>
- 3.2.12.2.3 ~~3~~ Type (pulse air, air pump, etc.):
- 3.2.12.2.4 ~~4~~ Exhaust gas recirculation: yes/no <sup>(1)</sup>
- 3.2.12.2.4 ~~4~~ Characteristics (flow rate, etc.):
- 3.2.12.2.5 ~~5~~ Evaporative emissions control system: yes/no <sup>(1)</sup>
- 3.2.12.2.5 ~~5~~ Detailed description of the devices and their state of tune:
- 3.2.12.2.5 ~~5~~ Drawing of the evaporative control system:
- 3.2.12.2.5 ~~5~~ Drawing of the carbon canister:
- 3.2.12.2.5 ~~5~~ Mass of dry charcoal: ... grams
- 3.2.12.2.5 ~~5~~ Schematic drawing of the fuel tank with indication of capacity and material:
- 3.2.12.2.5 ~~5~~ Drawing of the heat shield between tank and exhaust system:
- 3.2.12.2.6 ~~6~~ Particulate trap: yes/no <sup>(1)</sup>
- 3.2.12.2.6 ~~6~~ Dimensions, shape and capacity of the particulate trap:
- 3.2.12.2.6 ~~6~~ Type and design of the particulate trap:
- 3.2.12.2.6 ~~6~~ Location (reference distance in the exhaust line):
- 3.2.12.2.6 ~~6~~ Method or system of regeneration, description and/or drawing:
- 3.2.12.2.7 ~~7~~ On-board-diagnostic (OBD) system: yes/no <sup>(1)</sup>
- 3.2.12.2.7 ~~7~~ Written description and/or drawing of the MI:
- 3.2.12.2.7 ~~7~~ List and purpose of all components monitored by the OBD system:
- 3.2.12.2.7 ~~7~~ Written description (general working principles) for
  - 3.2.12.2.7.3.1 ~~1~~ Positive-ignition engines <sup>(1)</sup>
  - 3.2.12.2.7.3.1.1 ~~1~~ Catalyst monitoring <sup>(1)</sup>:
  - 3.2.12.2.7.3.1.2 ~~2~~ Misfire detection <sup>(1)</sup>:

- 3.2.12.2.73.2.1.3 Oxygen sensor monitoring (<sup>1</sup>):
- 3.2.12.2.73.2.1.4 Other components monitored by the OBD system (<sup>1</sup>):
- 3.2.12.2.73.2.2 Compression-ignition engines (<sup>1</sup>):
- 3.2.12.2.73.2.1.1 Catalyst monitoring (<sup>1</sup>):
- 3.2.12.2.73.2.2 Particulate trap monitoring (<sup>1</sup>):
- 3.2.12.2.73.2.3 Electronic fuelling system monitoring (<sup>1</sup>):
- 3.2.12.2.73.2.4 Other components monitored by the OBD system (<sup>1</sup>):
- 3.2.12.2.74 Criteria for MI activation (fixed number of driving cycles or statistical method):
- 3.2.12.2.75 List of all OBD output codes and formats used (with explanation of each):
- 3.2.12.2.80 Other systems (description and operation):
- 3.2.13. Location of the absorption coefficient symbol (compression ignition engines only):
- 3.2.14. Details of any devices designed to influence fuel economy (if not covered by other items):
- 3.2.15. LPG fuelling system: yes/no (<sup>1</sup>)
  - 3.2.15.1. EC type-approval number according to Directive 70/221/EEC (when the Directive will be amended to cover tanks for gaseous fuels.):
  - 3.2.15.2. Electronic engine management control unit for LPG fuelling
    - 3.2.15.2.1 Make(s):
    - 3.2.15.2.2 Type(s):
    - 3.2.15.2.3 Emission-related adjustment possibilities:
  - 3.2.15.3. Further documentation
    - 3.2.15.3.1 Description of the safeguarding of the catalyst at switch-over from petrol to LPG or back:
    - 3.2.15.3.2 System lay-out (electrical connections, vacuum connections compensation hoses, etc.):
    - 3.2.15.3.3 Drawing of the symbol:
- 3.2.16. NG fuelling system: yes/no (<sup>1</sup>)
  - 3.2.16.1. EC type-approval number according to Directive 70/221/EEC (when the Directive will be amended to cover tanks for gaseous fuels):
  - 3.2.16.2. Electronic engine management control unit for NG fuelling
    - 3.2.16.2.1 Make(s):
    - 3.2.16.2.2 Type(s):

3.2.16.2. Emission-related adjustment possibilities:

3.2.16.3. Further documentation

3.2.16.3.1. Description of the safeguarding of the catalyst at switch-over from petrol to NG or back:

3.2.16.3.2. System lay-out (electrical connections, vacuum connections compensation hoses, etc.):

3.2.16.3.3. Drawing of the symbol: