Technical standards relating to the type-approval, registration and periodic inspections of systems comprising conversion kits using gaseous fuels (liquefied petroleum gas – LPG, compressed natural gas – CNG and liquefied natural gas - LNG) intended for installation on spark-ignition and compression-ignition motor vehicles, and technical standards for periodic inspections of components on vehicles using gaseous fuels.

The Minister for Infrastructure and Transport

HAVING REGARD TO Directive 97/24/EC of the European Parliament and of the Council of 17 June 1997 on certain components and characteristics of two- or three-wheel motor vehicles;
HAVING REGARD TO Directive 2002/24/EC of the European Parliament and of the Council of 18 March 2002 relating to the type-approval of two- or three-wheel motor vehicles and repealing Council Directive 92/61/EEC, as amended and supplemented;
HAVING REGARD TO Commission Directive 2001/116/EC of 20 December 2001 adapting to technical progress Council Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers, as amended and supplemented;
HAVING REGARD TO Directive 2005/64/EC of the European Parliament and of the Council of 26 October 2005 on the type-approval of motor vehicles with regard to their reusability, as amended and supplemented;
HAVING REGARD TO Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the type-approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, as amended and supplemented;
HAVING REGARD TO Regulation (EU) No. 168/2013 of the European Parliament and of the Council of 15 January 2013 on the type-approval and market surveillance of two- or three-wheel motor vehicles and quadricycles, as amended and supplemented;
HAVING REGARD TO Commission Delegated Regulation (EU) No. 134/2014 of 16 December 2013 supplementing Regulation (EU) No. 168/2013 of the European Parliament and of the Council with regard to environmental performance requirements for powertrains and amending Annex V thereto, as amended and supplemented;
HAVING REGARD TO Commission Delegated Regulation (EU) No. 44/2014 of 21 November 2013 supplementing Regulation (EU) No. 168/2013 of the European Parliament and of the Council with regard to the vehicle construction and general requirements for the approval of two- or three-wheel vehicles and quadricycles, as amended and supplemented;
HAVING REGARD to Regulation (EU) 2018/858 of the European Parliament and of the Council of 30 May 2018 on the type-approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, and of subsequent amendments and additions;
HAVING REGARD TO Directive 2001/56/EC of the European Parliament and of the Council of 27 September 2001 relating to the heating of motor vehicles and their trailers, amending Council Directive 70/156/EEC and repealing Council Directive 78/548/EEC;
HAVING REGARD TO UN Regulation (UNECE) No. 67 laying down: '*uniform requirements concerning:*
I. the type-approval of specific components of vehicles of categories M and N that use liquefied petroleum gas for their propulsion system;

II. the type-approval of vehicles belonging to categories M and N fitted with specific components for the use of liquefied petroleum gases in their propulsion system, with regard to the installation of such components';

HAVING REGARD TO UN Regulation (UNECE) No. 110 laying down: '*Uniform provisions concerning the approval of:*

I. specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) for the propulsion system;

II. vehicles with regard to the installation of specific components of a type approved for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG) in the propulsion system';

HAVING REGARD TO UN Regulation (UNECE) No. 115 laying down: '*Uniform provisions concerning the type-approval of:*

I. LPG (liquefied petroleum gas) conversion systems intended for installation on motor vehicles to enable the use of LPG in the propulsion system;

II. CNG (compressed natural gas) conversion systems intended for installation on motor vehicles to enable the use of CNG in the propulsion system';

HAVING REGARD TO UN Regulation (UNECE) No. 122 laying down: '*Uniform technical prescriptions concerning the type-approval of vehicles of categories M, N and O with regard to heating systems'*;

HAVING REGARD TO UN Regulation (UNECE) No. 143 laying down: '*Regulation on uniform provisions concerning the type-approval of retrofit systems for heavy-duty dual-fuel engines (HDDF-ERS) to be installed on diesel engines and heavy-duty* vehicles'**;**

Having regard to UN Regulation (UNECE) No. 155 laying down: '*Uniform provisions concerning the type-approval of vehicles with regard to computer security and IT security management system'*;

HAVING REGARD TO Commission Regulation (EC) No. 692/2008 of 18 July 2008 implementing and amending Regulation (EC) No. 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with regard to emissions from passenger cars and light commercial vehicles (Euro 5 and Euro 6) and access to vehicle repair and maintenance information, as subsequently amended and supplemented;

HAVING REGARD TO Commission Regulation (EU) 2017/1151 of 1 June 2017 supplementing Regulation (EC) No. 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with regard to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No. 692/2008 and Commission Regulation (EU) No. 1230/2012, and repeals Commission Regulation (EC) No. 692/2008 and subsequent amendments and additions;

HAVING REGARD TO Law No. 122 of 5 February 1992 on '*Provisions on road traffic safety and the regulation of vehicle repair activities*' and subsequent amendments and additions;

HAVING REGARD to the New Highway Code approved by Legislative Decree No. 285 of 30 April 1992, as subsequently amended and supplemented, and, in particular, Article 75, paragraph 3-bis, first sentence, which provides that '*The Minister of Infrastructure and Transport shall lay down, by decree, specific rules for the national approval of systems, components and technical units, and the appropriate procedures for their installation as replacement or supplementary parts for vehicles, on new or in-circulation types of cars and motorcycles*'.

HAVING REGARD TO the Regulations for the execution and implementation of the New Highway Code, approved by Presidential Decree No. 495 of 16 December 1992, as amended and supplemented;

HAVING REGARD TO *the Ministerial Decree of 12 September 1925 containing 'Regulations for the testing and periodic inspection of containers intended for the transport by rail of compressed, liquefied or dissolved gases'.*

HAVING REGARD TO Decree No. 277 of 2 May 2001 of the Minister of Transport and Navigation containing '*Provisions concerning the type-approval procedures for motor vehicles, trailers, agricultural machinery,*

construction machinery and their systems, components and technical units' and subsequent amendments and additions;

HAVING REGARD TO the Decree of the Minister of Transport of 28 April 2008 *implementing 'Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 on the type-approval of motor vehicles and their trailers, and of systems, components and* separate technical units intended for such vehicles' and subsequent amendments and additions;

HAVING REGARD TO the decree of the Minister of Infrastructure and Transport of 8 January 2021, ref. No. 8, as subsequently amended and supplemented, containing '*innovations regarding the verification of changes to the construction and functional characteristics of vehicles and the updating of the vehicle registration* certificate', which implements the provisions of Article 78(1) of Legislative Decree No. 285 of 30 April 1992 concerning the types of changes to construction and functional characteristics for which an inspection and test are not required;

HAVING REGARD TO the decree of the Ministry of Sustainable Infrastructure and Mobility of 13 May 2022, ref. no. 144, setting out '*Procedures for the reconditioning of cylinders issued in accordance with Regulation No. 110 of the United Nations Economic Commission for Europe (UN R110) and the identification of entities responsible for reconditioning in order to simplify the execution of such reconditioning'* and subsequent amendments and additions;

HAVING REGARD to the definition of the service life of CNG and LNG tanks set out in UN (UNECE) Regulation No. 110;

TAKING INTO ACCOUNT that point 4.1.4 of Annex 3A to UN (UNECE) Regulation No. 110 provides that periodic inspections shall be carried out in accordance with national regulations and that point 1 of Annex 3B to the same regulation '*defines the minimum requirements applicable to refillable tanks for liquids'*;

CONSIDERING that it is necessary to issue national regulations to govern the frequency of decommissioning/scrapping and the periodic re-certification of containers (cylinders or tanks) for CNG (compressed natural gas) and LNG (liquefied natural gas);

CONSIDERING that point 1.3 of UN (UNECE) Regulation No. 115 '*does* not *apply to the procedures, checks and inspections intended to verify the correct installation of conversion systems on vehicles, since in this regard reliance is placed on the competence of the contracting party where the vehicle is* registered' and that, therefore, it is necessary to regulate the installation and maintenance of such conversion systems;

CONSIDERING that it is also necessary to regulate the installation and maintenance of conversion systems type-approved in accordance with UN (UNECE) Regulation No. 143;

CONSIDERING the possibility of reducing pollution caused by vehicles using internal combustion engines by utilising gaseous fuels;

CONSIDERING the need to systematically organise, also following the updating of EU and international legislation, the technical provisions relating to type-approval, registration and periodic inspections of systems comprising conversion systems using gaseous fuels (liquefied petroleum gas – LPG, compressed natural gas – CNG and liquefied natural gas - LNG) intended for installation on already type-approved spark-ignition and compression-ignition motor vehicles;

CONSIDERING the need to regulate the installation of fuel systems using gaseous fuels on vehicles not currently covered by international standards, namely motorcycles with spark-ignition engines and motor vehicles with compression-ignition engines;

CONSIDERING the need to regulate, pursuant to the aforementioned Article 75, paragraph 3-bis, of Legislative Decree No. 285 of 30 April 1992, the procedures for national approval of LPG (liquefied petroleum gas), CNG (compressed natural gas) and LNG (liquefied natural gas) conversion systems for in-service vehicles of categories L, M and N;

HAVING REGARD to the existence of international standards recognised by Italy, namely UN (UNECE) Regulation No. 115, which lays down requirements for LPG (liquefied petroleum gas) and CNG (compressed natural gas) conversion systems intended for installation on motor vehicles, and UN (UNECE) No. 143, which

lays down uniform provisions concerning the type-approval of retrofit systems for heavy-duty dual-fuel engines (HDDF-ERS) to be installed on diesel engines and heavy-duty vehicles;

HAVING REGARD to the previous national legislation governing the type-approval, installation and replacement of certain components of fuel systems using gaseous fuels, and to the need to update such legislation in line with new requirements and international standards that have since come into force;

HAVING COMPLETED the procedure for the provision of information on technical standards and regulations laid down in Law No. 317 of 21 June 1986;

Decrees:

Article 1
(Scope of application)

1. This decree applies to conversion systems to be fitted to vehicles already in circulation that use gaseous fuels, and sets out the procedures for:
   a. national type-approval of the systems;
   b. the installation procedures for systems type-approved pursuant to this decree, in accordance with UN (UNECE) Regulation No. 115 or UN (UNECE) Regulation No. 143;
   c. the updating of the single vehicle registration and ownership document and the registration certificate for mopeds**;**
   d. the deregistration/scrapping and periodic re-certification of tanks and cylinders fitted to vehicles using gaseous or liquefied fuels;
   e. requirements for heating systems in accordance with UN Regulation (UNECE) No. 122 for vehicles of categories M, N, and O.
2. Systems consisting of conversion installations may be of the following types:
   A. '*LPG conversion systems*' intended for installation on vehicles (motorcycles and motor vehicles) with spark-ignition internal combustion engines to enable the use of LPG in the propulsion system;
   B. '*NG conversion* systems' are intended for installation on vehicles (motorcycles and motor vehicles) with spark-ignition internal combustion engines to enable the use of CNG and LNG in the propulsion system;
   C. 'Dual-fuel LPG conversion systems' are intended for installation on vehicles with compression-ignition internal combustion engines to enable the simultaneous use of both diesel and LPG in the propulsion system;
   D. 'Dual-fuel CNG conversion systems' are intended for installation on compression-ignition internal combustion engine vehicles to enable the simultaneous use of both diesel and CNG in the propulsion system;
   E. '*Dual-fuel LNG conversion* systems' are intended for installation on motor vehicles with a compression-, self-igniting internal combustion engine to enable the simultaneous, mixed supply of diesel and LNG to the propulsion system.
3. The systems referred to in points A and B of paragraph 2 may be installed on the following international categories of vehicles:
   a. vehicles of category L and type-approved in accordance with Directive 2002/24/EC or Regulation (EU) No. 168/2013;
   b. Vehicles of categories M1, M_2, $N_1$and N_2 with a reference mass of up to 2,610 kg or 2,840 kg if falling within the limits set out in Article 2(2) of Regulation (EC) No. 715/2007 and type-approved in accordance with Directive 2001/116/EC or Directive 2007/46/EC or Regulation (EU) 2018/858.

4. The systems referred to in points C, D and E of paragraph 2 may be installed on vehicles of categories M and N type-approved in accordance with Directive 2001/116/EC or Directive 2007/46/EC or Regulation (EU) 2018/858;
5. Vehicles on which conversion systems may be installed must be registered in Italy in accordance with Article 93 or Article 97 of Legislative Decree Law No. 285 of 30 April 1992, subject to the provisions of Article 12(3) and (4).
6. Vehicles on which conversion systems may be installed must be registered in Italy in accordance with Article 93 or Article 97 of Legislative Decree No. 285 of 30 April 1992.

Article 2
(Definitions)

1. The following definitions and their explanations are used in this decree:

a) '*field of application*': the vehicle families on which the systems referred to in Article 1 may be installed in accordance with the requirements set out in Article 11;
b) '*approval authority*': Division 3 of the Directorate-General for Motor Vehicles;
c) '*technical service'*: the Higher Research Centre, Testing of Motor Vehicles and Equipment, a Vehicle Test Centre and Division 3 of the Directorate-General for Motor Vehicles;
d) '*system manufacturer*': the natural or legal person who, before the approval authority, is responsible for all aspects of the approval or authorisation procedure, for ensuring conformity of production, and is also responsible for market surveillance issues relating to the systems produced, regardless of whether that natural or legal person is directly involved in all stages of the design and manufacture of the system subject to the approval procedure;
e) '*representative of the system manufacturer*': the natural or legal person established in Italy who, duly appointed by the manufacturer, represents the manufacturer before the type-approval authority and acts on its behalf in the matters covered by this decree;
f) '*importer*': a natural or legal person established in Italy who places on the market a conversion system built in a third country;
g) '*installer*': a company meeting the criteria set out in Annex 22 and carrying out vehicle repair activities – Mechatronics section, pursuant to Article 1 of Law No. 122 of 5 February 1992;
h) '*single-fuel gas vehicle*': a vehicle with a single-fuel spark-ignition engine that runs primarily on LPG or NG, but which may also be fitted with a petrol system used only in the event of an emergency or for starting, with a petrol tank capacity not exceeding 15 litres in the case of vehicles of categories M and N and 5 litres in the case of vehicles of categories L6e and L7e;
i) '*bifuel vehicle*': a vehicle with a spark-ignition engine fitted with a gas storage system and a separate petrol storage system, with a capacity exceeding 15 litres in the case of vehicles of categories M and N and 5 litres in the case of vehicles of category L, and designed to operate using only one fuel at a time. The simultaneous use of both fuels is limited in quantity or duration.
j) '*dual-fuel vehicle*': a vehicle with a compression-ignition engine fitted with a gas storage system and a separate diesel storage system, with a capacity exceeding 15 litres and designed to operate using a mixed and simultaneous supply of diesel and LPG or diesel and NG. The two fuels are metered separately, so the quantities of the two fuels consumed relative to each other may vary depending on the vehicle's operation.
k) '*LPG*': liquefied petroleum gas.
'LPG A' and 'LPG B' are the reference fuels used for vehicle testing, as defined in Annex B3, Tables A3/8 of UN (UNECE) Regulation No 154 and in Appendix 2 of Annex II to EU Regulation No 134/2014;
l) '*GN':* natural gas or methane, which may be stored in the form of:

'*CNG'*: compressed natural gas or methane in the gaseous state, i.e.
'*LNG'*: liquefied natural gas or methane in liquid form;
'G20' and 'G25' are the reference fuels used for vehicle testing, as defined in Annex B3, Tables A3/9 and A3/11 of UN (UNECE) Regulation No 154 and in Appendix 2 of Annex II to EU Regulation No 134/2014;

m) '*ECU*': electronic control unit for systems using LPG or NG;
n) '*original* vehicle' means a vehicle prior to the installation of the conversion system;
o) '*master-slave system*': a conversion system in which the LPG or NG electronic control unit (ECU) is capable of translating the petrol control strategy of the ECU into LPG or NG operation;
p) '*LPG conversion system or LPG conversion system or LPG conversion unit'*: a type of conversion system intended for installation on motor vehicles referred to in paragraph 3 of Article 1 to enable the use of LPG;
q) '*NG conversion system or NG conversion system or NG conversion unit'*: a type of conversion system intended for installation on motor vehicles referred to in paragraph 3 of Article 1 to enable the use of CNG or LNG;
r) '*LPG dual-fuel conversion system or LPG dual-fuel conversion system or LPG dual-fuel':* a type of conversion system intended for installation on compression-ignition motor vehicles referred to in paragraph 4 of Article 1 to enable the simultaneous use of both diesel and LPG. The two fuels are metered separately, so the quantity of one fuel consumed relative to the other may vary depending on the vehicle's operation; however, at the end of the test cycle, the percentage of gas used must not be less than that specified in Annex 5.
The conversion system must ensure that there is at least one setting of its control systems at which the torque and power curves of the engine running on diesel alone or on diesel-LPG are such as to comply with the requirements set out in Annex 5;
s) '*dual-fuel GN conversion system or dual-fuel GN conversion system or dual-fuel GN':* a type of conversion system intended for installation on compression-ignition motor vehicles referred to in paragraph 4 of Article 1 to enable the simultaneous use of a mixture of diesel and CNG or diesel and LNG. The two fuels are metered separately, so the quantity of one fuel consumed relative to the other may vary depending on the vehicle's operation; however, at the end of the test cycle, the percentage of gas used shall not be less than that specified in Annex 5.
The conversion system shall ensure that there is at least one setting of its control systems whereby the torque and power curves of the engine running on diesel alone or on diesel-NG are such as to comply with the requirements set out in Annex 5;
t) '*functional chain*': a set of devices/components, the minimum list of which is set out in Annex 1, type-approved in accordance with UN (UNECE) Regulation No. 67, in the case of LPG-fuelled systems, or in accordance with UN (UNECE) Regulation No. 110, in the case of CNG or LNG-fuelled systems;
u) '*type of LPG, NG or dual-fuel conversion system of an approved type'*: systems may be considered to belong to the same type if they do not differ from one another in respect of the following characteristics:
    i. the manufacturer of the conversion system;
    ii. the fuel used in the conversion system (LPG, LNG or CNG);
    iii. the installation manual referred to in Article 4(5)(g);
    iv. the end-user operation and maintenance manual referred to in Article 4(5)(h);
    v. the type of ECU from the same manufacturer or other types provided as alternatives by the manufacturer of the conversion system;
    vi. assessment of any changes to the type-approval of the vehicle on which the conversion system is installed;
v) 'variant': a type of LPG, LNG or CNG conversion system that groups together types of systems

conversion systems that share at least the following design features:

i. the type of pressure regulator/vaporiser from the same manufacturer or other types provided as alternatives by the manufacturer of the conversion system;
ii. the type of vehicle engine fuel system (injection: direct or indirect, 'single-point' or 'multi-point') on which the retrofit system is installed;
iii. the type of gas supply system from the same manufacturer (induction mixer, injection device, vapour or liquid, "single-point" or "multi-point" injection system) or other types alternatively provided for by the manufacturer of the conversion system;
iv. the standard types of sensors and actuators or other alternative types specified by the manufacturer of the conversion system;
v. the type or types of fuel container (cylinder or tank) (i.e. liquid LPG/vapour pressure dispensing, gaseous LPG dispensing, liquid LPG/ -pressurised dispensing via a pump, pressurised CNG or LNG dispensing), the safety devices and accessories of the fuel tank, as prescribed by UN Regulation (UNECE) No. 67, or UN Regulation (UNECE) No. 110, as applicable;
vi. devices for mounting the fuel container (cylinder or tank);
vii. ECU configuration;
viii. the basic software principles and control strategy;
ix. in the case of L-category vehicles, the vehicle type;

w) '*certificate of* conformity' means the document issued by the system manufacturer or their representative certifying that the conversion system produced complies with the type of conversion system type-approved and drawn up in accordance with the model set out in Annex 2;

x) '*parent vehicle*': a vehicle selected as the vehicle on which to carry out tests to verify compliance with the requirements of this decree, and to which the vehicles belonging to a family refer.

y) '*regulatory plate':* a plate or label, prepared by the manufacturer of the conversion system and affixed by the installer, indicating the main technical characteristics necessary for the identification of the conversion system, as illustrated in Annex 6. The manufacturer may include a two-dimensional barcode (QR code) on the regulatory label, containing the information referred to in Article 4(5)(g) (installation manual) and Article 4(5)(h) (end-user operation and maintenance manual);

z) '*OBD*': an on-board diagnostic system in a vehicle that is connected to the engine and is capable of detecting a fault and, where appropriate, indicating its occurrence via a warning system; identifying the likely location of the fault using information stored in a computer's memory; and communicating this information externally;

aa) '*family member*': a vehicle that shares with its parent vehicle the essential characteristics set out in Annex 8 to this decree. The definition of the family is based on the characteristics of the original, i.e. unmodified, vehicle;

bb) '*vehicle family':* a group of vehicles on which the same system, having the characteristics set out in Annex 8 of this decree, can be installed;

cc) '*registration document':* the single vehicle registration and ownership document or the moped registration certificate, depending on the type of vehicle;

dd) '*cylinder':* any container used to store compressed natural gas, as defined in UNECE (UN) Regulation No. 110;

ee) '*tank':* any container used to store liquefied petroleum gas or liquefied natural gas, as defined in UNECE (UN) Regulations No. 67 and No. 110;

ff) 'Secure Gateway (SGW)' is the set of electronic components that act as a 'firewall' or 'gateway' between the vehicle's electronic systems and the outside world (e.g. diagnostic tools, the Internet).Its main function is to monitor and filter incoming and outgoing data traffic to protect the vehicle from cyberattacks and unauthorised access;

gg) ‘CSMS’: the cybersecurity management system as defined in point 2.3 of UN (UNECE) Regulation No. 155.

Article 3

(Requirements for systems type-approved in accordance with UN (UNECE) Regulations No. 115, No. 143 or No. 122)

1. Conversion systems approved in accordance with UN (UNECE) Regulation No. 115 or UN (UNECE) Regulation No. 143 and heating systems approved in accordance with UN (UNECE) Regulation No. 122 shall be installed in accordance with the provisions of Article 11 of this decree.

2. Manufacturers of conversion systems compliant with UN (UNECE) Regulation No. 143 shall notify the Directorate-General for Motor Vehicles – Division 3, either directly or through their representative, of the list of workshops authorised to install the system.

3. Manufacturers of conversion systems compliant with UN (UNECE) Regulation No. 143 shall notify the Directorate-General for Motor Vehicles – Division 3, either directly or through their representative, of the list of workshops authorised to install the system.

Article 4

(National approval)

1. The application for type-approval of a conversion system shall be submitted by the manufacturer or their representative to a technical service, in accordance with the provisions of Article 5 of the Decree of the Minister of Transport and Navigation No. 277 of 2 May 2001.
2. Following a favourable outcome of the suitability assessment, each conversion system shall be type-approved, with any extensions of type-approval referred to in Article 7(5)(c) of the Decree of the Minister of Transport and Navigation No. 277 of 2 May 2001, in relation to one or more vehicle families.
3. Each approved conversion system shall be assigned a number in accordance with the scheme provided for in Annex IV to Ministerial Decree No. 277 of 2 May 2001, as amended.

   In particular, the first character of the first field is ‘N’, since it is a national type-approval and the first character of the second field is ‘D’.

   The character follows the four-digit number:

   a) ‘GPL‘ if it is a conversion system referred to in Article 2(1)(p);
   b) ‘CNG or LNG‘ in the case of a conversion system referred to in Article 2(1)(q);
   c) ‘DPL‘ if it is a conversion system as referred to in Article 2, paragraph 1, letter r) with dual diesel-LPG fuel supply;
   d) ‘DNC‘ if it is a conversion system referred to in Article 2(1)(s) with dual diesel-CNG fuel supply;
   e) ‘DNL‘ if it is a conversion system referred to in Article 2(1)(s) with dual diesel-LNG fuel supply

   An example of a possible type-approval number for an LPG conversion system, issued in 2026, is as follows: NAD U xxxx/LPG (where ‘x’ is a numeric character from 0001 to 9999).

4. Upon completion of the procedure referred to in this Article, the type-approval authority shall issue the type-approval certificate for the conversion system, including any extensions, in accordance with the model set out in Annexes 3 and 4.
5. The application for type-approval shall be accompanied by the following documents, digitally signed by the applicant, and the following specific data:

   a) description of the processing system with all relevant information, including the type-approval numbers of each component referred to in Annex 1 (functional chain);

b) information sheet, as set out in Annexes 9 and 10, depending on the type of conversion system;
c) description of the parent vehicle or vehicles on which the tests intended to verify compliance with the requirements of this decree will be carried out;
d) a copy of the certificate of conformity, as set out in Annex 2, together with a list of persons authorised to sign the certificate and a statement regarding their roles within the company;
e) description of all modifications made to the original parent vehicle, only in the case of a dual-fuel configuration;
f) verification of compliance with the specifications for the installation of conversion systems referred to in Article 11;
g) installation manual for the conversion system on the parent vehicle or vehicles, as referred to in Annex 11, or an abridged version thereof where the manufacturer provides for the presence of a two-dimensional barcode (QR code) on the statutory plate;
h) end-user operation and maintenance manual, as set out in Annex 12, or a reduced version thereof where the manufacturer provides for the presence of a two-dimensional barcode (QR code) on the statutory plate;
i) facsimile of the statutory plate referred to in Article 2, paragraph 1, point (y);
j) in the case of DPL, DNC and DNL conversion systems, the list of workshops authorised by the system manufacturer to carry out installation;
k) declaration, as set out in Annex 24, regarding compliance with the requirements of Article 5;
l) a sample of the conversion system, correctly installed on the parent vehicle(s) on which the necessary tests are to be carried out;
m) certificates of payments made according to the rates indicated in the tables annexed to Law No. 870 of 1 December 1986 and subsequent updates, as well as those made for the payment of stamp duties.

6. The type-approval authority shall compile the documents referred to in points (a), (b), (d), (g), (h), (i) and (j) of paragraph 5 of this Article into a type-approval dossier.
7. The transformation systems shall remain valid as long as the type-approvals of the components of which they are constituted are valid. At the expiry date of the type-approval of at least one component, the conversion system may no longer be produced. Systems already placed on the market may be marketed and installed.

Article 5

(General characteristics of the conversion system required for type-approval)

1. Each conversion system shall be designed, constructed and fitted in such a way that, under normal conditions of use and in relation to the stresses to which it may be subjected, it does not entail, for the original vehicle, any modifications other than those necessary for the installation of the system itself or the modification of the active and passive safety devices of the original vehicle, which are mandatory for type-approval. In particular, following the installation of the conversion system, the vehicle shall continue to comply with all the provisions relating to pollutant emissions under which the vehicle's type-approval was originally granted and shall comply with the same limit values for atmospheric pollutant emissions with reference to the tests set out in Annex 5.Any modification to the active and passive safety devices of the original vehicle that are mandatory for type-approval, and which is deemed acceptable by the technical service, shall entail the repetition of the corresponding tests already carried out during the type-approval of the original vehicle.

2. Conversion systems shall be designed not to interfere with the vehicle's cybersecurity systems on which they are installed, provided that the vehicle complies with UN (UNECE) Regulation No. 155.
3. The assessment required under paragraph 2 of this article is deemed to have been met in the following cases:
    a) conversion systems that comply with the instructions issued by the vehicle manufacturer regarding the methods of data communication via the security gateway, or
    b) conversion systems whose connection for retrieving the information, on the CAN bus or other sensors/actuators, necessary for their correct operation, is established, either via an additional connector or a direct connection, on the OBD diagnostic socket used to communicate outside the vehicle via diagnostic tools that use standard communication protocols specified by the original vehicle manufacturer, and the signals necessary for the system's operation are retrieved directly from the sensors/actuators.

Article 6

(Amendment to the type-approval of a conversion system)

1. Any amendment to the type-approval of the conversion system shall be notified to the approval authority through a technical service, enclosing the duly amended pages of the type-approval file, clearly indicating on each amended page the nature of the amendment and the date of the new issue. The system manufacturer or its representative shall also prepare an updated, consolidated version of the documents that constitute the amended type-approval file.
2. A modification is considered a 'revision' where the information contained in the type-approval file changes without the need to repeat inspections or tests, or where information contained in the type-approval file that has been incorrectly reported needs to be updated.
3. A modification is considered an 'extension' if the data recorded in the type-approval file has changed and one of the following cases applies:
    a) further inspections or tests are required;
    b) any of the information contained in the type-approval certificate, with the exception of its attachments, has changed;
    c) new requirements relating to the system set out in UN (UNECE) Regulation No. 67 or UN (UNECE) Regulation No. 110 become applicable.
4. In the case of DPL, DNC and DNL conversion systems, notification by the system manufacturer or its representative, in accordance with the procedures set out in paragraph 1, of the updated list of workshops authorised to install the systems they manufacture does not require updating the information package.
5. For conversion schemes and adaptation schemes already in place on the date of entry into force of this decree, the provisions of Article 17(1), (2), (3), (4) and (5) shall apply.

Article 7

(Requirements for manufacturers of conversion systems)

1. The system manufacturer or its representative shall be responsible for the type-approval of the conversion system referred to in Article 4 and for the conformity of production of all its components.
2. For each conversion system manufactured in accordance with the approved type, the manufacturer shall issue a certificate of conformity, as referred to in Article 2(1)(w), and a regulatory plate as referred to in Article 2(1)(y).

3. For each approved system, the conversion system manufacturer shall draw up and make available the installation requirements referred to in Article 11, including general indications and any specific requirements.
4. Each conversion system produced shall be accompanied by information on installation, use and maintenance, in accordance with Article 4(5)(g) and (h), and, where possible, disposal, intended for the installer and the user. The processing system is also accompanied by instructions and warnings.
5. The manufacturer assigns each conversion kit produced a serial number consisting of 5 numeric characters followed by four numeric characters indicating the year of manufacture, separated by the character '/'.
6. The manufacturer of DPL, DNC and DNL conversion systems shall authorise conversion system installers who meet the requirements set out in Annex 22 to this decree and shall promptly notify the type-approval authority of the updated list of authorised workshops referred to in Article 4(5)(j).

Article 8

(Conformity of production)

1. Manufacturers of conversion systems are subject to the system for monitoring the conformity of the production process and the product with the type-approved model, in accordance with the decree of 21 April 2009 of the Head of the Department for Transport, Navigation and Information and Statistical Systems.

Article 9

(Final cessation of production)

1. In the event of the definitive cessation of production of a type of conversion system type-approved in accordance with this decree, the holder of the type-approval shall inform the type-approval authority within three months of the cessation.

Article 10

(Requirements for technical services)

1. Technical services shall receive applications for type approval and for modifications to conversion systems.
2. Having examined the documentation submitted by the manufacturer of the conversion system, the technical service shall carry out the checks and tests specified in Annex 5 on one or more vehicles representative of the family for which the conversion system is intended.
3. Upon completion of the procedure, the technical service shall submit to the type-approval authority the type-approval dossier for the conversion system, comprising:
    a) information sheet and drawings;
    b) report of checks and tests;
    c) Certified copy of the certificate of conformity referred to in Article 4(5)(d);
    d) installation manual referred to in Article 4(5)(g);
    e) end-user operation and maintenance manual referred to in Article 4(h);
    f) further information regarding the operation of the processing system;
    g) copies of the type-approval certificates for the devices comprising the conversion system;

h) draft type-approval certificate for the conversion system, drawn up in accordance with Annex 3 or 4, depending on the type of conversion system;
i) list of workshops authorised to carry out the installation of the system, as referred to in point (j) of paragraph 5 of Article 4.

Section 11.

(Requirements for the installation on vehicles of conversion systems subject to national type-approval or pursuant to UN (UNECE) Regulations No. 115 or No. 143, or for the installation of heating systems pursuant to UN (UNECE) Regulation No. 122, or for the restoration of vehicles following the removal of conversion systems, and for the updating of the vehicle registration document)

1. The installation of the conversion system on vehicles or of the heating system on vehicles shall be carried out in accordance with the provisions of Annexes 13, 14, 15, 16 and 17.
2. The installation of the system does not alter the vehicle's original characteristics for the purposes of its category and subcategory.
3. The installer of the conversion system on the vehicle shall first verify the compatibility of the system's installation on the vehicle and, following installation, issue a declaration in accordance with the provisions of Annex B to the Ministerial Decree of 8 January 2021, as amended by Annex 19 of this decree, which forms an integral and essential part thereof, certifying that the installation has been carried out to the highest standards and in compliance with the installation requirements laid down by the manufacturer of the conversion system.
4. The installer of the conversion system shall provide the vehicle owner with the end-user operation and maintenance manual referred to in Article 4(5)(h), and information regarding changes to the vehicle's technical characteristics, such as the reference mass.
5. The installer of the conversion system shall affix the statutory plate referred to in Article 2(1)(y) and secure it to the vehicle structure, preferably near the vehicle registration plate.
6. The removal of the conversion system and the subsequent restoration to its original condition shall be carried out in accordance with the provisions of Annex B to the Ministerial Decree of 8 January 2021, as amended by Annex 19 to this Decree, which forms an integral and substantial part thereof.
7. The installation of heating systems that comply with UN (UNECE) Regulation No. 122 shall be carried out in accordance with Annex 20 of this decree.
8. The deregistration/scrapping of tanks intended exclusively for heating systems, installed at the factory by the vehicle manufacturer, shall follow the procedures set out in Article 14.
9. The presence of tanks for a heating system fitted by the manufacturer from the outset shall be recorded on the vehicle registration and ownership document in accordance with the provisions of Annex 20.

Section 12.

(Administrative requirements for users)

1. The installation of a conversion system on a vehicle that is already registered requires the updating of the registration document, in accordance with Article 78 of the New Highway Code and in accordance with the procedures laid down in the Ministerial Decree of 8 January 2021, as amended by Annex 19 to this decree, which forms an integral and substantial part thereof.

2. The removal of a conversion system or the installation or removal of a heating system on a vehicle already registered requires the updating of the registration document, in accordance with Article 78 of the New Highway Code, in accordance with the procedures laid down in the Ministerial Decree of 8

January 2021, as amended by Annex 19 to this decree, which forms an integral and substantial part thereof.

3. In the case of vehicles of categories M and N, the installation of a conversion system on a vehicle prior to its registration or on a vehicle considered new within the meaning of Regulation (EU) 2018/858 (Annex II, Part I, Appendix 2) shall be submitted, in accordance with Article 45 of Regulation (EU) 2018/858, by the vehicle owner, the manufacturer, the manufacturer's representative or the importer, to a Motor Vehicle Registration Office.In such cases, the installation of a conversion system is considered a relevant alternative requirement pursuant to Article 45 of Regulation (EU) 2018/858 for the purposes of applying for national individual type-approval. Any requests to reclassify vehicles into a category other than their original one, where permissible under current provisions, may only be made after registration.

4. In the case of category L vehicles, the installation of a conversion system on a vehicle prior to its registration must be submitted to a Motor Vehicle Registration Office in accordance with Article 75 of the Highway Code. Any requests to reclassify vehicles into a category other than their original one, where permissible under current provisions, may only be made after registration.

Section 13.

(Traffic requirements)

1. Vehicles modified by the installation of a conversion system must not exceed the maximum laden mass stated on the registration document. Compliance with this requirement, including any reduction in the number of passengers and/or luggage carried, is the responsibility of the vehicle's driver. The system installer shall provide the user with all information regarding changes to the vehicle's technical specifications, including changes to the reference mass, as required by Article 11(3) of this decree.

Section 14.

(Replacement of components in conversion systems; periodic replacement and/or refurbishment of tanks and cylinders)

1. The components of a conversion system, with the exception of tanks and cylinders, may not be replaced except with others specified in the type-approval dossier for that type of system.
2. The decommissioning/scrapping and the frequency of re-certification of containers (cylinders or tanks), approved in accordance with UN (UNECE) Regulation No. 67 (in the case of LPG), UN (UNECE) No. 110 or national standards (in the case of NG fuel), which are present on vehicles, and their potential service life, are set out in Annex 7.
3. The decommissioning/scrapping of tanks and cylinders and the re-certification of CNG cylinders and LNG tanks shall be carried out under the responsibility of the owners of the vehicles on which they are installed and shall be performed in accordance with the provisions of paragraph 2.
4. The procedures for updating the vehicle registration document following the deregistration/scrapping of tanks and cylinders and the re-certification of CNG cylinders and LNG tanks shall be carried out by installers in accordance with the procedures set out in the Ministerial Decree of 8 January 2021, as amended by Annex 19 to this decree, which forms an integral and substantial part thereof.
5. The frequency and procedures for the deregistration/scrapping of tanks and cylinders, and for the reconditioning of CNG cylinders and LNG tanks, are set out in Annex 7 to this decree.
6. The replacement of containers (cylinders or tanks) shall be carried out by an installer meeting the requirements set out in Annex 22.

Article 15

(Replacement of components of fuel systems on vehicles originally type-approved as single-fuel vehicles or with dual LPG or NG fuel systems, or used on systems type-approved in accordance with UN (UNECE) *Regulations No. 115 or No. 143)*

1. No modifications may be made to the fuel systems of vehicles originally type-approved as mono-fuel or bi-fuel vehicles without the manufacturer's authorisation, except as provided for in paragraph 2.
2. The replacement of the original containers (cylinders or tanks) and the components attached thereto is permitted without the need for authorisation from the vehicle manufacturer, even for other components, even if not specified in the vehicle type-approval documentation, subject to the conditions set out in Annex 18.

Section 16.

(Recognition of systems approved by other Member States of the European Union or of the European Economic Area)

1. Systems equivalent to conversion kits, type-approved in accordance with national legislation by Member States of the European Union or the European Economic Area, are subject to verification of product safety and user protection requirements.

2. The verification referred to in paragraph 1 shall be carried out by a technical service at the request of the manufacturer of the conversion system or its legal representative, based on appropriate documentation issued by the State that granted the type-approval. The latter shall be recognised at the national level only if, upon examination of the documentation, it is evident that the characteristics required for type-approval, the system's safety conditions, and user protection are equivalent to or exceed those required by this decree.

3. The type-approval authority shall carry out the recognition of equivalence referred to in paragraph 1 on the basis of the report referred to in paragraph 2 of this Article.

Article 17

(Final provisions)

1. All provisions relating to conversion systems using gaseous fuels issued prior to the entry into force of this decree shall no longer apply, except as provided for in the following paragraphs.
2. In the event of an update or extension of type approvals for conversion systems already issued prior to the entry into force of this decree, the test procedures set out in Annex 5 shall apply, and the manufacturer of the conversion system shall submit the documentation required by Article 4, paragraph 7.
3. Manufacturers of conversion systems already authorised, falling within the characteristics set out in Article 1 of this decree, shall, within one year of the entry into force of this decree, update the type-approval number of the system by applying for a new one in accordance with the provisions of Article 4(5), and shall issue the regulatory plate referred to in Article 2(1)(y). After this deadline, conversion systems for which an update to the type-approval number has not been requested cannot be placed on the market until the manufacturer has started and finished the procedure mentioned above. This does not apply to systems already owned by installers, which can be installed within two years of this decree coming into force.

4. Conversion systems authorised in accordance with the regulations in force prior to this decree coming into effect, and which do not fall within the characteristics set out in Article 1 of this decree, may be manufactured, installed and updated in accordance with the provisions that were previously applicable.
5. In the event of an update to the type approvals for systems consisting of Type B CNG conversion kits, as referred to in Article 1 and authorised in accordance with the Ministry of Infrastructure and Transport's previous provisions, the manufacturer shall use all components that are type-approved in accordance with UN Regulation (UNECE) No. 110. However, cylinders may be type-approved in accordance with current national standards.
6. The Annexes constitute an integral part of this Decree. The Directorate-General for Motor Vehicles shall update them by means of its own measure.
7. Any reference to UN (UNECE) regulations refers to the latest series of amendments/updates applicable under EU legislation.
8. In type-approval certificates issued in accordance with pre-existing standards for vehicles in categories M and N, the reference to containers is to be understood as recommended by the manufacturers of the conversion systems. The installer shall use different containers, provided they are type-approved, depending on the type of conversion system, in accordance with UN Regulation (UNECE) No. 67, UN Regulation (UNECE) No. 110, or the national standards in force for CNG-1 tanks.
9. The following words are added to paragraph 5 of Article 2 of the Ministerial Decree of 8 January 2021: 'By order of the Director of the Directorate-General for Motor Vehicles, the aforementioned procedure may be carried out electronically'.
10. Annex 19 to this decree updates Annexes A, B and C to the Ministerial Decree of 8 January 2021; it forms an integral part thereof and shall enter into force, insofar as applicable, 15 days after its publication in the Official Gazette.
11. Annexes 7, 18, 20, 21, 22 and 23 shall enter into force, insofar as applicable, 15 days after the publication of this decree in the Official Gazette.
12. *Point c (qualified personnel meeting the requirements set out in Annex 23*) referred to in Annex 22 shall enter into force 24 months after the publication of this decree in the Official Gazette.
13. This decree, insofar as not provided for in the preceding paragraphs, shall enter into force one year after its publication in the Official Gazette; however, at the request of the manufacturer of the conversion systems, the provisions of Article 7 may be immediately applicable.

This Decree shall be published in the Official Gazette.

The Minister

List of Annexes

Annex 1	Devices in the functional chain.
Annex 2	Model certificate of conformity.
Annex 3	Template for type-approval certificate for LPG and DPL conversion systems.
Annex 4	Template for Type-approval Certificate for CNG, LNG, DNC and DNL conversion systems.
Annex 5	Required type-approval tests.
Annex 6	Regulatory plate for the LPG/CNG/DPL/LNG/DNC/DNL conversion system.
Annex 7	Frequency of re-certification – deregistration/scrapping of containers (cylinders or tanks).
Annex 8	Parameters defining a family of vehicles on which to install the same conversion system
Annex 9	Information sheet template for a liquefied petroleum gas (LPG) conversion system, DPL (dual fuel).
Annex 10	Information sheet template for a CNG (compressed/liquefied natural gas)/DNC/DNL (dual fuel) conversion system
Annex 11	Installation manual.
Annex 12	End-user operation and maintenance manual.
Annex 13	Requirements for the installation of LPG and DPL conversion systems on motor vehicles.
Annex 14	Requirements for the installation of CNG (compressed/liquefied natural gas) and DNC/DNL (dual-fuel CNG) conversion systems on motor vehicles.
Annex 15	Additional requirements for the installation of LPG/CNG conversion systems on motorcycles.
Annex 16	Requirements for securing LPG and CNG tanks.
Annex 17	Leak test procedures for LPG/CNG/LNG conversion systems installed on vehicles.
Annex 18	Replacement of the original containers (cylinders or tanks) and the components attached to them without the need for authorisation from the vehicle manufacturer.
Annex 19	Update of Annex A (Part 1) and Annexes B and C of the Decree of the Minister of

	Infrastructure and Transport of 8 January 2021.
Annex 20	Requirements for the installation of heating systems in accordance with UN (UNECE) Regulation No. 122 on vehicles of categories M, N and O.
Annex 21	Entry in the vehicle registration document for tanks fitted as standard and intended for heating systems.
Annex 22	Requirements for installers of conversion systems.
Annex 23	Requirements for personnel authorised to carry out technical operations on vehicles for the installation of LPG/CNG/LNG/DPL/DNC/DNL conversion systems (type-approved in accordance with national regulations or UNECE (UN) Regulations Nos. 115, 122 and 143) or for the replacement of containers (cylinders or tanks) fitted to vehicles.
Annex 24	Manufacturer's declaration regarding modifications made to a vehicle following the installation of a conversion system.

Annex 1

Functional chain devices

Part A

LPG conversion systems for installation on vehicles and motorcycles with positive ignition
(Article 1, paragraph 2, points A and C)

All components must be type-approved in accordance with UN (UNECE) Regulation No. 67 where such approval is required.

COMPONENTS	Presence
LPG tank(s)	Obligatory [5]
80% shut-off valve [1]	Obligatory [5]
Level indicator [1]	Obligatory [5]
Pressure relief valve (PRV)/Pressure limiter (fuse) [1]	Obligatory [5]
Remote-controlled safety valve with flow-limiting valve [1]	Obligatory [5]
Pressure regulator and vaporiser, which can be combined with each other [2]	Obligatory [6]
Remote-controlled shut-off valve [2]	Obligatory [5]
Charging unit/filling nozzle	Obligatory [5]
Remote-controlled service valve with flow relief valve (solenoid valve)	Obligatory
Gas injection device or mixer [4]	Obligatory
Electronic Control Unit (ECU)	Obligatory
Rigid and flexible gas pipes and gas transport connections between LPG system components [3] [4]	Obligatory
Safety device or thermal fuse (PRD) [1] [2]	mandatory only if the pressure relief valve (PRV) has a flow rate of less than 17.7 m^3/min
Watertight container to protect accessories attached to the fuel tank/Watertight ventilation chamber [1]	Optional
Non-return valve [1]	Optional
Gas pipe pressure relief valve	Optional
Gas metering unit	Optional
LPG filter unit	Optional

Pressure or temperature sensor	Optional
LPG pump	Optional
Power isolator for the tank (actuators/fuel pump/fuel level sensor)	Optional
Service coupling	Optional
Power distributor	Optional

(1) Components that can be combined with each other

(2) Components that can be combined with each other.

(3) Type approval in accordance with UN (UNECE) Regulation No. 67 is not required for copper or steel pipes.

(4) Type-approval in accordance with UN Regulation (UNECE) No. 67 is not required if the component is installed in the part of the system where the pressure is less than 20 kPa.

(5) The component must be present in the functional chain. Therefore, it must be fitted by the installer. In the case of vehicles of categories M and N, the manufacturer and type of the component need not be indicated in the type-approval certificate issued by the manufacturer of the conversion system, as the latter recommends them. Where the manufacturer recommends components, the installer may, however, fit different components, provided they are type-approved in accordance with UN Regulation (UNECE) No. 67. For L-category vehicles, the conversion system manufacturer shall specify the manufacturer, brand, type, and capacity of the tanks to be used.

(6) The evaporator is optional for L-category vehicles.

The system may include connections between the various LPG components, a fuel selection system and an electrical system, which, pursuant to UN Regulation (UNECE) No. 67, are not subject to type-approval.
Additional components necessary for engine operation may be installed in the part of the system where the pressure is less than 20 kPa.

Part B

CNG conversion systems to be installed on vehicles and motorcycles with spark-ignition engines (Article 1, paragraph 2, points B and D)

All components must be type-approved in accordance with UN (UNECE) Regulation No. 110, where such approval is required.

COMPONENTS	Presence
CNG cylinder(s) [1] [5]	Obligatory [4]
pressure gauge or fuel level indicator	Obligatory [4]
overpressure safety device (PRD — thermal fuse)	Obligatory [4]
automatic cylinder valve	Obligatory [4]
manual valve	Obligatory [4]
pressure regulator	Obligatory
gas flow regulator	Obligatory
flow limiter	Obligatory [4]
gas supply device	Obligatory
filling unit or nozzle	Obligatory [4]
gas hoses [2]	Obligatory
rigid gas pipes [3]	Obligatory
electronic control unit	Obligatory
fittings;	Obligatory
airtight ventilation chamber for components installed in the boot and in the passenger compartment. The sealed ventilation chamber, which is not fire-resistant, may cover the overpressure relief device (PRD)	Obligatory [4]
non-return valve or check valve	Optional
pressure relief valve (PRV)	Optional
CNG filter	Optional
pressure and/or temperature sensor	Optional
fuel selection system and electrical circuit	Optional
fuel line	Optional

The system may include connections between the various CNG components, a fuel selection system and an electrical system, which, pursuant to UN Regulation (UNECE) No. 110, are not subject to type-approval.

Additional components necessary for the operation of the engine that can be installed in the part of the system where the pressure is less than 20 kPa are eligible

(1) For category L vehicles, only CNG 1-type cylinders may be used.

(2) Type-approval in accordance with UN Regulation (UNECE) No. 110 is not required for copper or steel pipes.

(3) Type-approval in accordance with UN Regulation (UNECE) No. 110 is not required if the component is installed in the part of the system where the pressure is less than 20 kPa.

(4) The component must be present in the functional chain. Therefore, it must be fitted by the installer. For vehicles in categories M and N, the manufacturer and type of the component need not be indicated by the conversion system manufacturer in the type-approval certificate, as the latter merely recommends them. Where the manufacturer recommends components, the installer may, however, fit different components, provided they are type-approved in accordance with UN Regulation (UNECE) No. 110, except for CNG-1 tanks, which may also be type-approved in accordance with applicable national standards. For L-category vehicles, the conversion system manufacturer shall specify the manufacturer, brand, type, and capacity of the tanks to be used.

(5) Only cylindrical cylinders may be used.

.

Part C

LNG conversion systems for installation on vehicles with spark-ignition engines (Article 1(2)(E)).

All components must be type-approved for LNG use in accordance with UN (UNECE) Regulation No. 110, where such approval is required.

COMPONENTS	Presence
LNG tank(s)	Obligatory [3]
heat exchanger — LNG vaporiser	Obligatory [3]
LNG pressure relief valve (PRV)	Obligatory [3]
LNG pressure and/or temperature sensor	Obligatory [3]
LNG drainage system	Obligatory
LNG non-return or check valve	Obligatory [3]
LNG filling unit or nozzle	Obligatory
gas hoses [1]	Obligatory
rigid gas pipes [2]	Obligatory
LNG valve (manual)	Obligatory
fittings for LNG	Obligatory
electronic control unit	Obligatory
pressure gauge or fuel gauge for LNG	Obligatory
electronic control unit;	Obligatory
natural gas detector or sealed ventilation chamber, for M-category vehicles	Obligatory
LNG pressure regulator	Obligatory
LNG feed pump	Optional
LNG level indicator	Optional
fuel selection system and electrical circuit	Optional
natural gas detector	Optional
airtight ventilation chamber	Optional
LNG filter	Optional
pressure and/or temperature sensor	Optional
fuel selection system and electrical circuit	Optional
fuel line	Optional

The system may include connections between the various LNG components, a fuel selection system and an electrical system, which, pursuant to UN Regulation (UNECE) No. 110, are not subject to type-approval.

Additional components necessary for engine operation may be installed in the part of the system where the pressure is less than 20 kPa.

Components of LNG-fuelled vehicles downstream of the heat exchanger/vaporiser (gas phase) shall be considered as components for CNG fuelling.

(1) Type-approval in accordance with UN (UNECE) Regulation No. 110 is not required for copper or steel pipes.

(2) Type-approval in accordance with UN Regulation (UNECE) No. 110 is not required if the component is installed in the part of the conversion system where the pressure is less than 20 kPa.

(3) The component must be present in the functional chain. Therefore, it is fitted by the installer. The manufacturer and type of the component may not be specified in the conversion system's type-approval certificate, as they are merely recommended by the conversion system manufacturer. Where the manufacturer recommends components, the installer may, however, fit different components, provided they are type-approved in accordance with UN Regulation (UNECE) No. 110.

Annex 2

Model certificate of conformity

Maximum format: A4 (210 × 297 mm) or folded to A4 size

[Sequence number]	[Year]

Certificate of conformity of a national processing system to:

A. liquefied petroleum gas (LPG)

B. dual liquefied petroleum gas (LPG) supply

C. compressed natural gas (CNG)

D. liquefied natural gas (LNG)

E. dual compressed natural gas (CNG) fuel system

F. dual liquefied natural gas (LNG) supply [(1)]

The undersigned: [..... (surname, first name and role)]

State the following transformation system:

Manufacturer or brand/trade name .....

Name and address of manufacturer .....

Name and address of the manufacturer's authorised representative, if any .....

Transformation system serial number: .....

Consisting of the following components (and any alternatives):

1. Container(s) (Tank(s) - Cylinder(s)) [(1)(2)]
   a) Manufacturer(s)
   b) Brand and model
   c) UN (UNECE) approval No. 67/110/national [(1)]
   d) Capacity
2. Ventilation airlock (if applicable) [(2)]
   a) Manufacturer/Brand
   b) Type
   c) Type approval number

d) Vaporiser/pressure regulator [(1)]
   a) Manufacturer/Brand
   b) Type
   c) Type approval number

3. Pressure relief valve(s)[(1) (2)]

a) Number of valves
b) Type approval number

4. Gas injection device or injector [(1)]
   a) Manufacturer/Brand
   b) Type approval number
   c) Type
5. Gas mixer [(1)]
   a) Manufacturer/Brand
   b) Type approval number
   c) Type
6. Electronic control unit [(1)]
   a) Manufacturer/Brand
   b) Type

complies in all respects with:

- type/variant ……

- NAD approval ……. (*type-approval number, including the extension number*)

- date of issue: ……

It is also declared that the vehicle families for which it is suitable are [(1)] :

A) type of LPG conversion system:

Motor vehicles with engines complying with EC Directive 98/69.

- total engine capacity (cm^3): ……;
- fuel control and management system (carburettor, injection): ……;
- presence of a supercharging system ……. (yes/no) [(1)].
- Compliance with the following EC directives and EU regulations on exhaust emissions:

……

Motor vehicles with engines complying with EC Regulation 692/2008.

- Power per cylinder (kW): ……;
- Catalytic converter type: ……;
- With/without air injection: ……[(1)]
- With/without exhaust gas recirculation: ……[(1)]
- Fuel supply mode and combustion process: ……
- Compliance with the following EC directives and EU regulations on exhaust emissions:

……

Motor vehicles with engines complying with EU Regulation 2017/1151.

- Power per cylinder (kW): ……;
- Catalytic converter type: ……;

- With/without air injection: ……. [1]
- With/without exhaust gas recirculation: ……. [1]
- fuel supply mode and combustion process: ……;
- Compliance with UN (UNECE) Regulation No. 155 YES/NO [1]

- Compliance with the following EC directives and EU regulations on exhaust emissions: ……;

Motor vehicles complying with Directive 2002/24 or Regulation 168/2013.

- Category / Subcategory
- Power per cylinder (kW) ……;.
- Engine timing: ……;
- Fuel control and management system ……;
- Fuel supply mode and combustion process: ……;
- Supercharging: ……. (yes/no) [1];
- Compliance with the following EC directives and EU regulations on exhaust emissions: ……

B) **Type of DPL conversion system**:

- Engine capacity range (cm^3)

- combustion cycle (two-stroke, four-stroke, rotary engine)

- Cylinder configuration (V-type, in-line, radial, other)
- emissions control system:
  - type of exhaust gas after-treatment (DOC, SRC, DPF, etc.)
  - air injection mode (with/without)
  - exhaust gas recirculation (EGR) mode (with/without)
  - Other
- Compliance with the following EC directives and EU regulations on exhaust emissions: ……

C) Type of natural gas conversion system:

Motor vehicles with engines complying with EC Directive 98/69.

- total engine capacity (cm^3);

- fuel control and management system (carburettor, injection);

- Presence of supercharging system ……. (yes/no) [1].

- Compliance with the following EC directives and EU regulations on exhaust emissions: ……

Motor vehicles with engines complying with EC Regulation 692/2008.

- Power per cylinder (kW);

- Catalytic converter type: ……;
- With/without air injection: ……[(1)]
- With/without exhaust gas recirculation: ……[(1)]
- Fuel supply mode and combustion process: ……
- Compliance with the following EC directives and EU regulations on exhaust emissions: ……

Motor vehicles with engines complying with EU Regulation 2017/1151.

- Power per cylinder (kW) ……;
- Catalytic converter type: ……;
- With/without air injection: …… [(1)]
- With/without exhaust gas recirculation: ……[(1)];
- Compliance with UN (UNECE) Regulation No. 155 YES / NO [(1)]
- Compliance with the following EC directives and EU regulations on exhaust emissions: ……

Motor vehicles complying with Directive 2002/24 or Regulation (EU) No. 168/2013.

- Category / Subcategory
- Power per cylinder (kW) ……;.
- Engine timing: ……;
- Fuel control and management system ……;
- Supercharging: ……;
- Fuel supply mode and combustion process: ……
- Compliance with the following EC directives and EU regulations on exhaust emissions:… ……

D) Type of DNC/DNL conversion system [(1)] :

- Engine capacity range (cm^3): ……

- combustion cycle (two-stroke, four-stroke, rotary engine): …

- Cylinder configuration (V-type, in-line, radial, other): ……
- emissions control system:
  - type of exhaust gas after-treatment (DOC, SRC, DPF, etc.): ……
  - Air injection mode (with/without): ……
  - Exhaust gas recirculation (EGR) mode (with/without): ……
  - other: ……
- Compliance with the following EC directives and EU regulations on exhaust emissions: ……

(1) Cross out the option that does not apply

(2) Components recommended by the system manufacturer for LPG/DPL conversion systems installed on vehicles of categories M and N. The use of other, non-recommended components is permitted provided that, depending on the type of system, they are type-approved in accordance with UN (UNECE) Regulation No.67 or UN (UNECE) Regulation No. 110 and, in the case of cylinders, also type-approved in accordance with national standards.

(Place) (date) …….. signature: ……..

Annex 3

Model national type-approval certificate for LPG and DPL conversion systems

Ministry of Infrastructure and Transport

Department of Transport and Navigation
Directorate-General For Motor Vehicles
Division 3 – Technical rules for vehicles

National type-approval certificate for a conversion system to:

- **liquefied petroleum gas (LPG);**
- **dual liquefied petroleum gas (LPG) supply.** (1)

(Article 3, paragraph 6, of Ministerial Decree……)

Certificate regarding (1)

a) INITIAL TYPE-APPROVAL
b) EXTENDED TYPE-APPROVAL
c) REVISION OF TYPE-APPROVAL
d) DENIED TYPE-APPROVAL
e) WITHDRAWN TYPE-APPROVAL
f) DISCONTINUATION OF PRODUCTION

of an LPG/LPG conversion system (1) pursuant to Ministerial Decree No. ……

Type-approval No. NAD xxxx LPG/DPL (1) Extension/Revision No. ……

(already authorised by provision No……., for systems authorised under the previous legislation – *Article 17(3) of Ministerial Decree* ……) (1)

Designation:

Reason for extension/revision (1):

1. Components of the LPG/LPG conversion system (1) (including alternatives)

1. a Tank (4):
   i. Manufacturer
   ii. Type approval number
   iii. Configuration
   iv. Type
   v. Dimensions
   H. (Toroidale)
   D. (Cylindrical) [mm]

1.b Accessories fitted to the tank (4):
   i. Gas shut-off valve at 80% fill
   ii. Level indicator

iii. Overpressure relief valve (discharge valve)

iv. Overpressure safety device

v. Remote-controlled service valve with flow-limiting valve

vi. With/Without LPG fuel pump[1]

vii. Multi-valve, including the following accessories:

viii. Ventilation chamber/Airtight chamber

ix. Power isolator (pump/actuators) [1]

1.c Fuel pump

1.d Vaporiser/pressure regulator [1]

1.e Shut-off valve

1.f Non-return valve

1.g Gas pipe pressure relief valve

1.h Service connection

1.i Flexible hose

1.l Remote filling nozzle

1.m Gas injection device or injector

1.n Gas metering unit

1.o Gas mixer

1.p Electronic control unit

1.q Pressure and temperature sensors [1]

1.r LPG filters

1.s Petrol/LPG switch

* Rigid pipes for connecting LPG components are permitted and are not subject to type approval.

2. Manufacturer or brand/trade name:

3. Manufacturer's name and address:

4. Name and address of the manufacturer's authorised representative, if any:

5. Date of submission for type-approval:

6. Technical service responsible for type-approval tests:

7. Date of test report/inspection report issued by the technical service:

8. Number of the test report/inspection report issued by the technical service:

9. Remarks:

10. Type-approval is granted/extended/revoked/refused [1]

11. Where applicable, reasons for extension/revision [1]

12. Vehicles on which the retrofit system can be installed:

12.1. Emissions regulations:

12.2. OBD system requirements:

13. The conversion system is of the master/slave type yes/no [1]

14. Place:

15. Date:

15. Signature/Name: …… (digital format only)

16. Attached is a list of the documents constituting the type-approval file-and which are filed with the type-approval authority.

(1) Cross out the option that does not apply

Addendum

(Type-approval No…… Extension/Revision No……)

1. Parent vehicles

Vehicle No.	1	2	3
Manufacturer / Trademark / Trade name:			
Type/Variant/Version:			
Type approval:			
Category:			
Emission limits			
Power			
Engine capacity			
Type of pollution control system:			
Vehicle complying with UN Regulation (UNECE) no 155 YES / NO [1]			

2. Test results:

a) power ratio $_{LPG}$ /power $_{petrol}$: [2]

b) fuel-to-torque ratio $_{diesel + LPG}$ torque $_{diesel}$: [3];

c) ratio $N_{diesel+LPG}$ /N $_{diesel}$ …… ,

where N is the number of revolutions at maximum power;

d) ratio of maximum power at the speeds referred to in point (c): [3]

e) fuel consumption ratio $_{LPG}$ /fuel consumption $_{diesel}$: [3]

3. Vehicle families for which this type of LPG conversion system is suitable:

Motor vehicles complying with EC Directive 98/69.

- Total engine capacity range (cm^3):
- fuel control and management system (carburettor, injection):
- Presence of a supercharging system (yes/no) [1].

Compliance with the following EC directives and EU regulations on exhaust emissions:

Vehicles complying with Regulation (EC) No. 692/2008 (NEDC cycle).

- Power range per cylinder (kW):
- Catalytic converter type:
- With/without air injection: (1)
- With/without exhaust gas recirculation: (1)
- Fuel supply mode and combustion process:
- Compliance with the following EC directives and EU regulations on exhaust emissions:

Vehicles compliant with EU Regulation 2017/1151 (WLTP cycle).

- Power range per cylinder (kW):
- Catalytic converter type:
- With/without air injection: (1)
- With/without exhaust gas recirculation: (1)
- fuel supply mode and combustion process:
- Compliance with UN (UNECE) Regulation No. 155 YES / NO (1)
- Compliance with the following EC directives and EU regulations on exhaust emissions:

Motorcycles complying with Directive 2002/24/EC or Regulation (EU) No. 168/2013.

- Category / Subcategory:
- Power per cylinder (kW):
- Engine timing:
- Fuel control and management system:
- Fuel supply mode and combustion process:
- Supercharging:
- Compliance with the following EC directives and EU regulations on exhaust emissions:

4. Vehicle families for which the DPL conversion system is suitable (1):

- Engine capacity range (cm^3):

- combustion cycle (two-stroke, four-stroke, rotaryengine) (1):

- cylinder configuration (V-type, in-line, radial, other) (1):
- emissions control system:
  - type of exhaust gas after-treatment (DOC, SRC, DPF, etc.) (1):
  - Air injection mode (with/without) (1):
  - Exhaust gas recirculation (EGR) mode (with/without) (1):
  - other:
- Compliance with the following EC directives and EU regulations on exhaust emissions:

(1) Cross out the option that does not apply.
(2) for LPG systems.
(3) for DPL systems.

(4) For vehicles in categories M and N, components recommended by the system manufacturer. The use of other components not included in the recommended list is permitted, provided they are type-approved in accordance with UN Regulation (UNECE) No. 67.

ANNEX 4

Model Type-approval Certificate for CNG, LNG, DNC and DNL conversion systems

Ministry of Infrastructure and Transport

Department of Transport and Navigation
Directorate-General For Motor Vehicles
Division 3 – Technical rules for vehicles

National type-approval certificate for a conversion system to:

- compressed natural gas (CNG);
- liquefied natural gas (LNG);
- dual compressed natural gas (CNG) fuel system;
- dual liquefied natural gas (LNG) supply. (1)

(Article 3, paragraph 65, of Ministerial Decree DD ……)

Certificate regarding (1)

a) INITIAL TYPE-APPROVAL
b) EXTENDED TYPE-APPROVAL
c) REVISION OF TYPE-APPROVAL
d) DENIED TYPE-APPROVAL
e) WITHDRAWN TYPE-APPROVAL
f) DISCONTINUATION OF PRODUCTION

of a CNG/LNG/DNC/DNL conversion system (1) pursuant to Ministerial Decree No. ……

Type-approval No. NAD xxxx CNG/LNG/DNC/DNL (1) Extension/Revision No. ……

(already authorised by provision No……., for systems authorised under the previous legislation – *Article 17(3) of Ministerial Decree* ……) (1)

Designation:

Reason for extension / revision:

1. Components of the CNG/LNG/DNC/DNL conversion system (1) (including alternatives)
1. a Container (Tank - Cylinder) (1) (2) (3) (4)

i. Manufacturer
ii. Type approval number
iii. Configuration
iv. Type
v. Dimensions
D. (Cylindrical) [mm] (3)

1.b Accessories fitted to the Container (Tank - Cylinder)[(1)(4)]:

- Pressure gauge or fuel level gauge for LNG tanks
- Pressure relief valve (discharge valve):
- Remote-controlled automatic valve with flow restrictor
- Overpressure safety device
- Gas-tight compartment

1.c Pressure regulator

1.d Automatic shut-off valve

1.e Non-return valve

1.f Fuel hose

1.g Fuel filler neck

1.h Gas/air mixer (injector) (1)

1.i Gas flow regulator

1.l Gas/air mixer (carburettor) (1)

1.m Electronic control unit

1.n Pressure and temperature sensors

1.o CNG/LNG filters [(1)]

* Rigid pipes for connecting CNG/LNG/DNC/DNL components are permitted and are not subject to type approval.

2. Manufacturer or brand/trade name:

3. Manufacturer's name and address:

4. Name and address of the manufacturer's authorised representative, if any:

5. Date of submission for type-approval:

6. Technical service responsible for type-approval tests:

7. Date of test report/inspection report issued by the technical service:

8. Number of the test report/inspection report issued by the technical service:

9. Remarks:

10. Type-approval is granted/refused/extended/withdrawn [(1)]

11. Where applicable, reasons for extension/correction [(1)]:

12. Vehicles on which the conversion system can be installed

12.1. Emissions regulations:

12.2 OBD system requirements:

13. The conversion system is of the master/slave type yes/no [(1)]

14. Place:

15. Date:

16. Signature/Name: ..... (digital format only)

17. A list of documents included in the approval file and submitted to the approval-issuing authority is attached.

(1) Cross out the option that does not apply.

(2) When installing on motorcycles, only a CNG1 tank may be used.

(3) Only cylindrical tanks may be used (Article 1, paragraph 6).

(4) For vehicles in categories M and N, components recommended by the system manufacturer. The use of other non-recommended components is permitted, provided they are type-approved in accordance with UN Regulation (UNECE) No. 110, except for CNG-1 tanks, which may also be type-approved in accordance with applicable national standards.

Addendum

(Type approval No…… Extension No……)

1. Parent vehicles

Vehicle No.	1	2	3
Manufacturer / Trademark / Trade name:			
Type/Variant/Version:			
Type approval:			
Category:			
Emission limits			
Power / Cylinder capacity [2]			
Type of pollution control system:			
Vehicle compliant with UN (UNECE) Regulation No. 155 YES/NO [1]			

2. Test results:

(a) power ratio $_{NG}$ /power $_{petrol}$: [2];

(b) torque ratio $_{diesel+NG}$/torque $_{diesel}$: [3];

(c) N ratio $_{diesel+NG}$ /N $_{diesel}$:

where N is the number of revolutions at maximum power;

(d) ratio of maximum power at the speeds referred to in point (c): [3];

(e) fuel consumption ratio $_{GN}$ /fuel consumption $_{diesel}$: [3]

3. Vehicle categories for which the CNG/LNG conversion system is suitable:

Motor vehicles complying with EC Directive 98/69.

- total engine capacity (cm^3):
- fuel control and management system (carburettor, injection):
- presence of a supercharging system …… (yes/no) [1].

Compliance with the following EC directives and EU regulations on exhaust emissions

_____

Motor vehicles complying with Regulation (EC) No. 692/2008.

- Power per cylinder (kW):
- Catalytic converter type:
- With/without air injection: [1]
- With/without exhaust gas recirculation: [1]
- Fuel supply mode and combustion process:

- Compliance with the following EC directives and EU regulations on exhaust emissions:

_____

Motor vehicles complying with EU Regulation 2017/1151.

- Power per cylinder (kW):
- Catalytic converter type:
- With/without air injection: (1)
- With/without exhaust gas recirculation: (1)
- Compliance with UN (UNECE) Regulation No. 155 YES / NO (1)

- Compliance with the following EC directives and EU regulations on exhaust emissions:

_____

Motorcycles complying with Directive 2002/24/EC or Regulation (EU) No. 168/2013.

- Category / Subcategory
- Power per cylinder (kW):
- Engine timing:
- Fuel control and management system:
- Supercharging:
- Fuel supply mode and combustion process;
- Compliance with UN (UNECE) Regulation No. 155 YES / NO (1)

- Compliance with the following EC directives and EU regulations on exhaust emissions:

_____

4. Vehicle families for which the DNC/DNL conversion system is suitable (1):

- Engine capacity range (cm^3):

- combustion cycle (two-stroke, four-stroke, rotary engine):

- Cylinder configuration (V-type, in-line, radial, other):
- emissions control system:
  - type of exhaust gas after-treatment (DOC, SRC, DPF, etc.):
  - Air injection mode (with/without):
  - Exhaust gas recirculation (EGR) mode (with/without) (1):
  - other: ……
- Compliance with UN (UNECE) Regulation No. 155 YES / NO (1)

- Compliance with the following EC directives and EU regulations on exhaust emissions:

_____

(1) Cross out the option that does not apply
(2) for NG systems
(3) for DNC systems

Annex 5

Type-approval tests planned

Compliance with a directive or regulation allows the conversion system to be used on all engines that comply with previous directives or regulations, in accordance with the vehicle family defined in Article 2(1) (bb).

A) Vehicles M_1, M_2, N_1 and N_2 with a reference mass of up to 2,610 kg or 2,840 kg if falling within the limits set out in paragraph 2 of Article 2 of Regulation (EC) No. 715/2007 and complying with Directive 70/220/EEC as amended by Directive 98/69/EC.

Tests to be carried out:

a) type I test, as referred to in Annex III to EC Directive No. 98/69 and subsequent amendments;

b) verification that the conversion system meets the requirements of the vehicle's original OBD (*master-slave* architecture)

A *master-slave* transformation system meets the following requirements:

i. the petrol ECU remains active for engine management in both petrol and LPG/NG modes;

ii. during petrol operation, the petrol OBD remains the vehicle's sole on-board diagnostic system;

iii. during LPG/NG operation, the petrol OBD continues to monitor the original emission-related components, except for those not in use;

iv. during LPG/NG operation, the LPG/NG ECU shall monitor only the LPG/NG system components related to emissions and their electrical connections.

c) proof, provided by the system manufacturer, that no further modifications have been made to the vehicle, other than those strictly necessary for the operation of the conversion system, as provided for in Article 5 of this decree;

d) further checks for dual-fuel conversion systems,

compliance check:

i. reduction in CO_2 emissions, measured using the cycle referred to in point (a), compared with the type-approval values [(5)], of not less than 5% when using LPG (as the average of the two technical gases) and 8% when using NG (as the average of the two technical gases);

ii. ratio of maximum torque $_{\text{diesel + LPG (or NG)}}$ /maximum torque $_{\text{diesel}}$: [(3)]

iii. ratio of maximum power $_{\text{diesel + LPG (or NG)}}$/maximum power $_{\text{diesel}}$: [(4)]

iv. the existence of at least one setting of the control systems whereby the torque and power curves of the engine fuelled solely by diesel or by diesel/LPG (or NG) are such as to comply with the following requirements:

1) at the same engine speed (±5%), the ratio of torque on diesel/LPG (or NG) to torque on diesel only is between 0.9 and 1.1 for all test speeds,

2) the ratio of the maximum power speed on diesel/LPG (or NG) to that on diesel alone is between 0.95 and 1.05,

3) the ratio between the maximum power outputs at the speeds referred to in point 3) is between 0.9 and 1.1.

B) Vehicles M_1, M_2, N_1 and N_2 with a reference mass of up to 2,610 kg or 2,840 kg if falling within the limits set out in paragraph 2 of Article 2 of Regulation (EC) No. 715/2007 and complying with Regulation (EC) No. 692/2008 and subsequent regulations (Euro 5 and subsequent), including NOVC-OVC hybrid vehicles (NEDC test cycle)

Tests to be carried out:

a) Type 1 test as referred to in Annex III to Regulation (EC) No. 692/2008 'Verification of average tailpipe emissions under ambient conditions';
b) Type 2 test as referred to in Annex IV, Appendix 1 of Regulation (EC) No. 692/2008 'Measurement of carbon monoxide emissions at idle speeds (normal and high)';
c) proof, provided by the system manufacturer, that no further modifications have been made to the vehicle, other than those strictly necessary for the operation of the conversion system, as provided for in Article 5 of this decree;
d) further checks for dual-fuel conversion systems,

compliance check:

i. reduction in CO_2 emissions, measured using the cycle referred to in point (a), compared with the type-approval values [5], of not less than 5% when using LPG (as the average of the two technical gases) and 8% when using NG (as the average of the two technical gases);
ii. ratio of maximum torque $_{\text{diesel + LPG (or NG)}}$ /maximum torque $_{\text{diesel}}$: [3]
iii. Ratio of maximum power $_{\text{diesel + LPG (or NG)}}$/ maximum power $_{\text{diesel}}$:[4];
iv. the existence of at least one setting of the control systems whereby the torque and power curves of the engine fuelled solely by diesel or by diesel/LPG (or NG) are such as to comply with the following requirements:
    1) at the same engine speed (±5 %), the ratio of torque on diesel/LPG (or NG) to torque on diesel alone is between 0.9 and 1.1 for all test speeds,
    2) the ratio between the engine speed at maximum power on diesel/LPG (or CNG) and on diesel alone is between 0.95 and 1.05,
    3) the ratio between the maximum power outputs at the speeds referred to in point 3) is between 0.9 and 1.1.

The aforementioned tests are carried out using the reference fuels specified in Annex IX of Regulation (EC) No. 692/2008, in accordance with the test procedures set out in the relevant reference regulation.

To determine the pollutant emission values to be compared with the prescribed limits, the arithmetic means of the values measured in tests conducted with the extreme reference fuels are used.

The Type 2 test is optional.

C) Vehicles M_1, M_2, N1, and N2 with a reference mass of up to 2,610 kg or 2,840 kg if falling within the limits set out in paragraph 2 of Article 2 of Regulation (EC) No. 715/2007 and complying with Regulation (EU) 2017/1151 and subsequent amendments. NOVC – OVC hybrid vehicles (Euro 5 and subsequent) (WLTP test cycle)

Tests to be carried out:

a) Type 1 test as referred to in Annex XXI of Regulation (EU) 2017/1151;
b) engine power test as referred to in UN (UNECE) Regulation No. 85 [2];
c) verification that the conversion system meets the requirements of the vehicle's original OBD (Master-Slave architecture)

A *master-slave* transformation system meets the following requirements:

v. the petrol ECU remains active for engine management in both petrol and LPG/NG modes;
vi. during petrol operation, the petrol OBD remains the vehicle's sole on-board diagnostic system;
vii. during LPG/CNG operation, the petrol OBD continues to monitor the original emission-related components, with the exception of those not in use;
viii. During LPG/NG operation, the LPG/NG ECU must monitor only the emission-related components of the LPG/NG system and their electrical connections.

d) proof, provided by the system manufacturer, that no modifications have been made to the vehicle other than those strictly necessary for the operation of the conversion system, as provided for in Article 5 of this decree;

e) further checks for dual-fuel conversion systems:
    1) verification of compliance with the minimum LPG/CNG consumption and its adjustment, whereby the torque and power curves of the engine fuelled solely by diesel or by diesel/LPG (or CNG) are such as to comply with the following requirements:
    2) at the same engine speed (±5 %), the ratio of torque on diesel/LPG (or NG) to torque on diesel alone is between 0.9 and 1.1 for all test speeds,
    3) the ratio of the maximum power speed on diesel/LPG (or NG) to that on diesel alone is between 0.95 and 1.05,
    4) the ratio between the maximum power outputs at the speeds referred to in point 3) is between 0.9 and 1.1.

D) Motorcycles with positive-ignition engines, complying with Directive 2002/24/EC.

Tests to be carried out:

- Type I test (measurement of average exhaust emissions) as referred to in Chapter V of Annex II to Directive 97/24/EC, using the two LPG fuels A and LPG B with the reference characteristics defined in Annex IX, point 1, of Directive 98/77/EC.
- Continuous rated power test as referred to in Annex II to Directive 95/1/EC: (2)

E) **Motorcycles with positive-ignition engines complying with EU Regulation 168/2013 (5).**

Tests to be carried out:

a) Type I test (Exhaust emissions following a cold start) as referred to in Annex V to Regulation (EU) No. 168/2013;
b) Type VIII test (OBD environmental test) as set out in Annex V to Regulation (EU) No. 168/2013;
c) verification referred to in Appendix 12 of Annex II to Regulation (EU) No. 134/2014;
d) Continuous rated power test referred to in Appendices 2.1 and 2.2 of Annex X to Delegated Regulation (EU) No. 134/2014 (2);
e) check master/slave ECU;
a *master-slave* transformation system meets the following requirements:
    i. the petrol ECU remains active for engine management in both petrol and LPG modes.
    ii. during petrol operation, the petrol OBD remains the vehicle's sole on-board diagnostic system;
    iii. during LPG operation, the petrol OBD continues to monitor the original emission-related components, with the exclusion of those not in use;
    iv. During LPG operation, the LPG ECU monitors only the emission-related components of the LPG system and their electrical connections.
f) Demonstration by the system manufacturer that no modifications have been made to the vehicle other than those strictly necessary for the operation of the conversion system, as provided for in Article 5 of this decree.

F) M and N vehicles, with compression-ignition engines, with a reference mass exceeding 2,610 kg and with engines complying with Directives 2005/55/EC or 2005/78/EC, using dual-fuel conversion systems.

Tests to be carried out:
a) Type 1 test in accordance with the ETC and ESC procedures set out in Annex A to UN (UNECE) Regulation No. 49;
b) engine power test as referred to in Directive 80/1269/EEC or UN (UNECE) Regulation No. 85 (2);

c) verification of compliance with the minimum LPG/CNG consumption requirement, whereby the torque and power curves of the engine fuelled solely by diesel or by diesel/LPG (or CNG) are such as to comply with the following requirements:
    1. at the same engine speed (±5%), the ratio between torque on diesel/LPG (or CNG) and torque on diesel alone is between 0.9 and 1.1 for all test speeds,
    2. the ratio between the engine speed at maximum power on diesel/LPG (or CNG) and on diesel alone is between 0.95 and 1.05,
    3. the ratio between the maximum power outputs at the speeds referred to in point 3) is between 0.9 and 1.1.

G) M and N vehicles, with compression-ignition engines, with a reference mass exceeding 2,610 kg and with engines complying with Regulation (EU) No. 595/2009 and subsequent amendments, using dual-fuel conversion systems.

Tests to be carried out:

a) Type 1 test using the WHSC and WHTC procedures set out in Annex 4D to UN (UNECE) Regulation No. 49;
b) engine power test in accordance with UN (UNECE) Regulation No. 85 [(2)];
c) on-board diagnostics (for Euro VI vehicles only), OBD operation as referred to in Annex X to Regulation (EU) No. 582/2011;
d) check master/slave ECU;

a *master-slave* transformation system meets the following requirements:

i. the petrol ECU remains active for engine management in both petrol and LPG/NG modes;
ii. during petrol operation, the petrol OBD remains the vehicle's sole on-board diagnostic system;
iii. during LPG/CNG operation, the petrol OBD continues to monitor the original emission-related components, with the exception of those not in use;
iv. During LPG/NG operation, the LPG/NG ECU monitors only the LPG/NG system components related to emissions and their electrical connections.

e) verification of compliance with the minimum LPG/NG consumption limit, and adjustment thereof, such that the torque and power curves of the engine fuelled solely by diesel or by diesel/LPG (or NG) comply with the following requirements:
    i. at the same engine speed (±5%), the ratio of torque on diesel/LPG (or NG) to torque on diesel only is between 0.9 and 1.1 for all test speeds,
    ii. the ratio of the maximum power speed on diesel/LPG (or NG) to that on diesel alone is between 0.95 and 1.05,
    iii. the ratio between the maximum power outputs at the speeds referred to in point 3) is between 0.9 and 1.1.
f) demonstration by the system manufacturer that no modifications have been made to the vehicle beyond those strictly necessary for the operation of the conversion system, as provided for in Article 5 of this decree

The type-approval values are those stated on the Certificate of Conformity for the test vehicle, where available, or, where not available, those obtained from a specific test conducted using diesel fuel only.

In all tests carried out, unless otherwise specified, compliance with the provisions of the legislation under which the parent vehicle/engine was type-approved must be verified.

(1) Unless expressly stated otherwise, the tests are to be carried out using LPG A and LPG B fuels in the case of LPG conversion systems, and G20 and G25 in the case of NG conversion systems.
(2) The power test is optional.

(3) The ratio of maximum torque $_{\text{diesel + LPG (or NG)}}$to maximum torque $_{\text{diesel is}}$ greater than or equal to 0.7;

(4) The ratio of maximum power $_{\text{for LPG (or NG) to that for petrol (or diesel) for type approval}}$ is greater than or equal to 0.7.

Annex 6

Regulatory plate for the LPG/CNG/LNG/DPL/DNC/DNL conversion system

1. The manufacturer's regulatory plate consists of:

   a) a rectangular plate of metal,
   or
   b) a rectangular self-adhesive label.

2. The metal plates are secured with rivets or equivalent fasteners.
3. The sticker must be able to detect tampering or fraud and self-destroy when trying to remove it.
4. The following information is indelibly printed on the statutory plate in the order indicated, within a clearly defined rectangle:

   a) manufacturer's name;
   b) conversion system approval number;
   c) the trade name of the conversion system;
   d) any two-dimensional barcode (QR code) containing the end-user installation and/or user and maintenance manuals, or instructions on how to download them.

5. The font size of the information referred to in paragraph 3(a) and (c) shall be at least 2 mm. The font size of the information referred to in paragraph 3(b) shall be at least 4 mm.

6. The manufacturer shall affix any additional information below or alongside the prescribed information, outside the clearly defined rectangle containing only the information prescribed in paragraph 4.

7. The manufacturer's statutory plate shall be securely affixed in a clearly visible and easily accessible position, preferably in conjunction with the vehicle registration plate.

8. The position is chosen so that the plate is affixed to a part that is not subject to replacement whilst the vehicle is in use.

Annex 7

Frequency of re-certification – decommissioning/scrapping of containers (cylinders or tanks)

Part I - Frequency of re-certification – deregistration/scrapping of containers (cylinders or tanks)

The decommissioning/scrapping and periodic re-certification of containers (cylinders or tanks), however installed (in accordance with national regulations, UNECE (UN) No. 115, No. 122, No. 143 or on vehicles type-approved from the outset as mono-fuel/bi-fuel/dual-fuel LPG/NG) takes place at the intervals indicated in the table below.

The updating of the vehicle registration document, where required, shall be carried out in accordance with the provisions of the Decree of the Ministry of Infrastructure and Transport of 8 January 2021, as amended by Annex 19 to this decree, which forms an integral and substantial part thereof.

Containers (cylinders/tanks)	Approval in accordance with the standard	Maximum interval between deregistration/scrapping and re-registration (years). Unless otherwise specified by the manufacturer of the container (tank or cylinder) or by other regulations.	Methods
CNG	National regulations (DGM)	Regeneration: 5 deregistration/scrapping: 40	DM 12.09.1925 DM 16.02.1983 PRESIDENTIAL DECREE No. 404 of 09.11.1991
LPG	UN (UNECE) No. 67	deregistration/scrapping: 10	UN (UNECE) No. 67
GNC 1 - GNC 2 – GNC3 - GNC 4	UN (UNECE) No. 110	regeneration: 4 deregistration/scrapping: 20	ONU (UNECE) 110 Decree No. 144 of 13 May 2022 of the Ministry of Sustainable Infrastructure and Mobility.
LNG	UN (UNECE) No. 110	Regeneration: 10 de-registration/scrapping: subject to conditions of use	UN (UNECE) 110 Annex 3B, point 2.1.3

The effective date for reclassification/deletion operations is:

- **containers approved in accordance with national regulations**: dates can be deduced from the markings on the container itself;
- **containers compliant with UN (UNECE) Regulations No. 67 and No. 110, fitted to vehicles from the outset**: date of first registration;
- **containers compliant with UN (UNECE) Regulations No. 67 and fitted to vehicles after first registration or replacing existing containers**: date of fitting to the vehicle;
- **Containers compliant with UN (UNECE) Regulations No. 110 installed on vehicles after their first registration or replacing existing containers**: the date of installation on the vehicle if the cylinders/tanks are new, or the date of re-certification of the containers in accordance with the provisions of the Ministerial Decree. 13 May 2022, if the cylinders are not new.

Annex 8

Parameters defining a family of vehicles on which to install the same conversion system

1) **LPG or NG conversion system for use on vehicles with positive-ignition engines type-approved in accordance with Directive (EC) 98/69:**

- same limits for atmospheric pollutant emissions with reference to the tests referred to in Directive (EC) 98/69:
  i) Annex III – Type I (emissions testing);
  ii) engine capacity within a range of ± 25% of the parent vehicle;
- same type of fuel control and management system (carburettor, injection);
- presence or absence of a supercharging system.

***2) LPG or NG conversion system for use on vehicles* with *spark-ignition* engines *type-approved in accordance* with Regulation (EC) No. 692/2008 (NEDC cycle) or Regulation (EU) No. 1151/2017 (WLTP cycle):**

- the same limits for atmospheric pollutants as those specified in the Type 1 test, as set out in Annex III to Regulation (EC) No. 692/2008 (NEDC cycle) or in Annex XXI to Regulation (EU) 2017/1151 (WLTP cycle), depending on the type-approval of the parent vehicle;
- same emission control system:
  - same type of catalytic converter, if fitted (three-way, oxidation, NOX reduction);
  - same air injection mode (with or without);
  - same exhaust gas recirculation (EGR) mode (with or without);
  - same fuel supply mode and combustion process (injection: direct or indirect, 'single-point' or 'multi-point');
- same type of engine used (internal combustion, NOVC hybrid, OVC hybrid). Provided the other parameters are met, it is possible to extend the fuel type (internal combustion, NOVC hybrid, OVC hybrid) to the others if tests are conducted on engines of that fuel type.
- if the gas fuel system is equipped with a single injector for the entire engine, the type-approval power output is between 0.7 and 1.15 times that of the parent vehicle's engine;
- if the gas supply system is equipped with a metering unit for each cylinder: the type-approved power output of each cylinder (maximum power divided by the number of cylinders) is between 0.7 and 1.15 times that of each cylinder (maximum power divided by the number of cylinders) of the parent vehicle's engine.

In the case of multiple parent vehicles with type-approval power ratings of P1 and P2, respectively (where P1 < P2), all engines with a type-approval power output falling within the range 0.7*P1 to 1.15*P2 may be included in the family.

If the vehicle under test is not equipped with air injection or exhaust gas recirculation, engines with such devices are nevertheless permitted;

3) LPG or CNG conversion system for use on L-category motorcycles type-approved in accordance with Directive (EC) 2002/24 or Regulation (EU) 168/2013:

- same type, category and subcategory as the parent vehicle;
- the same type of fuel control and management system (injection or carburettor system);
- same number of engine cylinders (two or four);

- same fuel supply mode and combustion process (injection: direct or indirect, 'single-point' or 'multi-point');
- same limits for atmospheric pollutants with reference to the Type I test (check of average exhaust emissions) referred to in Chapter V, Annex II of Directive (EC) 97/24, using the two LPG fuels with the reference specifications defined in Annex IX, point 1 of Directive (EC) 98/77 or as set out in Annex V of Regulation (EU) No. 168/2013, depending on the vehicle type-approval;
- if the gas supply system is fitted with a metering unit for each cylinder, the type-approved power output of each cylinder (maximum power divided by the number of cylinders) must be between 0.7 and 1.15 times that of each cylinder (maximum power divided by the number of cylinders) of the parent vehicle's engine;

In the case of multiple parent vehicles with type-approved power outputs of P1 and P2, respectively (where P1 < P2), it is possible to include in the family all engines with a type-approved power output falling within the range 0.7*P1 to 1.15*P2;

4) LPG or CNG dual-fuel conversion system for use on vehicles with positive-ignition engines type-approved in accordance with Directive (EC) 98/69:

- same limits for atmospheric pollutants with reference to the tests referred to in Directive (EC) 98/69:
  a. Annex III – Type I (measurement of average exhaust emissions following a cold start);
  ~~b.~~ Annex IV – Type II (carbon monoxide emissions at idling speed);
- engine capacity within a range of ± 25% of the parent vehicle;
- same type of fuel control and management system (carburettor, injection);
- presence or absence of a supercharging system;

5) **LPG or CNG dual-fuel conversion system for use on vehicles with compression-ignition engines type-approved in accordance with Regulation (EC) No. 692/2008 (NEDC cycle) or Regulation (EU) 2017/1151 (WLTP cycle)** or Regulation (EU) No. 595/2009 and subsequent amendments, and type-approved without applying UN (UNECE) 155 using dual-fuel conversion systems:

- same combustion cycle (two-stroke, four-stroke, rotary engine);
- same cylinder configuration (V-type, in-line, radial, others);
- same limits for atmospheric pollutants with reference to the Type 1 test, of which (depending on engine type):
  - Annex III to Regulation (EC) No. 692/2008 (NEDC cycle);
  - Annex XXI of Regulation (EU) 2017/1151 (WLTP cycle);
  - Annex 4D of UN Regulation (UNECE) No. 49 (WHSC and WHTC cycles);
- same emission control system:
- same type of exhaust gas after-treatment system (e.g. DOC, SCR, DPF, etc.);
- same air injection mode (with or without);
- same exhaust gas recirculation (EGR) mode (with or without);
- if the engine has a displacement of ≥ 0.75 dm^3 per cylinder, the difference between the respective unit displacements is between 0.75 and 1.15 times that of the parent vehicle's engine;
- if the engine has a displacement of < 0.75 dm^3 per cylinder, the difference between the respective unit displacements is between 0.7 and 1.30 times that of the parent engine.

If an engine has been type-approved without a post-treatment system as a parent engine or as a component of the family, the same engine, once fitted with an oxidation catalyst, may be included in the same engine family, provided that it does not require the use of a fuel with different characteristics.

If the engine requires the use of a fuel with specific characteristics (for example, if it is fitted with a particulate trap that requires the presence of special additives in the fuel to carry out regeneration), the decision to include it in the same family is based on the technical data provided by the manufacturer. These elements must indicate that the expected emission level of the equipped engine corresponds to the limit value for the unequipped engine.

If an engine has been type-approved with a post-treatment system as a parent engine or as part of a family whose parent engine is equipped with the same post-treatment system, the same engine without a post-treatment system shall not be included in the same engine family.

Annex 9

Information sheet template for an LPG (liquefied petroleum gas)/DPL (dual fuel LPG) conversion system (reference to Annex 3A of UN (UNECE) Regulation No. 115, adapted to national procedures)

COMPLETE LIST OF INFORMATION TO BE PROVIDED FOR THE PURPOSES OF TYPE-APPROVAL OF AN LPG/DPL CONVERSION SYSTEM(1) INSTALLED ON A VEHICLE

1. Description of the parent vehicle(s)

1.1. Manufacturer's name and address:

1.2. Category and type identification:

1.3. Chassis No. (V.I.N.) of the vehicle:

1.4. Certification number:

1.5. Identification of the type of internal combustion engine:

1.5.1. Principle of operation and thermodynamic cycle:

1.5.2. Naturally aspirated/supercharged:

1.5.3. Engine capacity:

1.5.4. Catalytic converter type:

1.5.5. Ignition system type:

2. Description of the LPG conversion system

2.1. Trademark or trade name owner:

2.2. Identification of type/variant(s):

2.3. Drawings/flow diagrams of the vehicle installation:

2.4. Master-slave system: yes/no (1)

2.5. Vaporiser/pressure regulator (s)

2.5.1. Brands:

2.5.2. Types:

2.5.3. Certification number:

2.5.4. Identification:

2.5.5. Drawings:

2.5.6. Number of main adjustment points:

2.5.7. Description of the adjustment principle at the main adjustment points:

2.5.8. Number of idle adjustment points:

2.5.9. Description of the adjustment principles at the minimum adjustment points:

2.5.10. Other adjustment options: if any, what are they (description and diagrams):

2.5.11. Operating pressure(s) [2]: …….. kPa

2.6. Mixer: yes/no [1]

2.6.1. Certification number:

2.6.2. Brand:

2.6.3. Type:

2.6.4. Drawings:

2.6.5. Installation location (attach drawing(s)):

2.6.6. Adjustment options:

2.6.7. Operating pressure(s) [2]: ……. kPa

2.7. Gas dosing unit: yes/no [1]

2.7.1. Certification number:

2.7.2. Brand:

2.7.3. Type:

2.7.4. Drawings:

2.7.5. Installation location (attach drawing(s)):

2.7.6. Adjustment options:

2.7.7. Operating pressure(s) [2]:……. kPa

2.8. Gas injection device(s) or injector(s): yes/no [1]

2.8.1. Brands:

2.8.2. Types:

2.8.3. Identification:

2.8.4. Operating pressure(s) [2]:……. kPa

2.8.5. Installation diagrams:

2.9. Electronic Control Unit (ECU)

2.9.1. Brand:

2.9.2. Type / serial number:

2.9.3. Installation location:

2.9.4. Adjustment options:

2.10. Tank(s) [4]

2.10.1. Brands

2.10.2. Type(s) (include drawings):

2.10.3. Number of tanks:

2.10.4 Capacity: …….. litres

2.10.5. LPG pump in the tank: yes/no [1]

2.10.6. Certification number:

2.11. LPG tank accessories [4]

2.11.1. 80 per cent gas shut-off valve

2.11.1.1. Brand:

2.11.1.2. Type:

2.11.1.3. Operating principle: float/other [1] (include description or drawings)

2.11.2. Level indicator

2.11.2.1. Brand:

2.11.2.2. Type:

2.11.2.3. Operating principle: float/other [1] (include description or drawings)

2.11.3. Pressure relief valve (discharge valve):

2.11.3.1. Brand:

2.11.3.2. Type:

2.11.4. Pressure relief device

2.11.4.1. Brand:

2.11.4.2. Type:

2.11.5. Remote-controlled service valve with flow restrictor (SOLENOID VALVE)

2.11.5.1. Brand:

2.11.5.2. Type:

2.11.6. Multi-valve: yes/no [1]

2.11.6.1. Brand:

2.11.6.2. Type:

2.11.6.3. Multivalve description (include drawings):

2.11.7. Ventilation chamber (SEALED CHAMBER):

2.11.7.1. Brand:

2.11.7.2. Type:

2.11.8. Power supply bushing (fuel pump/actuators)

2.11.8.1. Brand:

2.11.8.2. Type:

2.11.8.3. Drawings:

2.12. Fuel pump (LPG): yes/no[1]

2.12.1. Brand:

2.12.2. Type:

2.12.3. Fuel pump mounted in the LPG tank: yes/no[1]

2.12.4. Operating pressure(s) [2]: ……. kPa

2.13. Shut-off valve/non-return valve/pressure relief valve for gas pipe: yes/no [1]

2.13.1. Brand:

2.13.2. Type:

2.13.3. Description and drawings:

2.13.4. Operating pressure(s) [2]: ……. kPa

2.14. Filling nozzle [1]

2.14.1. Brand:

2.14.2. Type:

2.14.3. Description and drawings

2.15. Flexible or rigid fuel pipe(s)

2.15.1. Brands:

2.15.2. Types:

2.15.3. Description:

2.15.4. Operating pressure(s) [2]:……. kPa

2.16. Pressure and temperature sensor(s) [1]

2.16.1. Brands:

2.16.2. Types:

2.16.3. Description:

2.16.4. Operating pressure(s) [2]:…… kPa

2.17. LPG filter(s) [1]

2.17.1. Brands:

2.17.2. Types:

2.17.3. Description:

2.17.4. Operating pressure(s) [2]: ……. kPa

2.18. Service connection(s) (single-fuel vehicle without a device to restore functionality under degraded conditions) [1]

2.18.1. Brand:

2.18.2. Type:

2.18.3. Installation descriptions and diagrams

2.20. Additional documentation

2.20.1. Description of the LPG system and physical protection of the catalytic converter when switching from petrol to LPG or vice versa

2.20.2. System configuration (electrical connections, suction ducts, compensation ducts, etc.):

2.20.3. Symbol representation:

2.20.4. Adjustment data

2.21. Cooling system: (liquid/air) (1)

2.21.1. Description of the system/diagrams relating to the LPG system

2.22 refuelling units (3)

2.19.1. Manufacturer:

2.19.2. Type:

2.19.3. Approval/certification:

2.24 LPG filter (3)

2.19.1. Manufacturer:

2.19.2. Type:

2.19.3. Approval/certification:

2.19.4. Installation description and diagrams:

2.19.5. Operating pressure: ……. kPa

24.5 Diesel/LPG switch (3)

2.24.1. Manufacturer:

2.24.2. Type:

2.24.3. Approval/certification:

(1) Delete as appropriate.

(2) Specify the tolerance.

(3) Applies to DPLs

(4) In the case of retrofit systems installed on vehicles of categories M and N, the component is recommended by the system manufacturer. The use of other non-recommended components is permitted provided they are type-approved in accordance with UN Regulation (UNECE) No. 67. In the case of LPG conversion systems installed on L-category vehicles, the type, brand, and capacity of the tank used (and any alternatives) must be specified, and its position on the vehicle.

Annex 10

Template for a data sheet for a CNG (compressed natural gas / liquefied natural gas) / DNC / DNL (dual fuel) conversion system (referring to Annex 3B of UN (UNECE) Regulation No 115, adapted to national procedures)

COMPLETE LIST OF INFORMATION TO BE PROVIDED FOR THE PURPOSES OF TYPE-APPROVAL OF A CNG/LNG/DNC/DNL CONVERSION SYSTEM[(1)] INSTALLED ON A VEHICLE

1. Description of the parent vehicle(s)

1.1. Manufacturer's name and address:

1.2. Category and type identification:

1.3. Chassis No. (V.I.N.) of the vehicle:

1.4. Certification number:

1.5. Identification of the type of internal combustion engine

1.5.1. Principle of operation and thermodynamic cycle:

1.5.2. Naturally aspirated/supercharged:

1.5.3. Engine capacity:

1.5.4. Catalytic converter type:

1.5.5. Ignition system type:

2. Description of the CNG conversion system

2.1. Trademark or trade name owner:

2.2. Identification of type/variant(s):

2.3. Drawings/flow diagrams of the vehicle installation:

2.4. Master-slave system: yes/no [(1)]

2.4.1 Solution integrated into the vehicle's OBD system (description, if applicable): [(3)]

2.5. Pressure regulator

2.5.1. Brand:

2.5.2. Type:

2.5.3. Certification number:

2.5.4. Identification:

2.5.5 Drawings:

2.5.6. Number of main adjustment points:

2.5.7. Description of the adjustment principle at the main adjustment points

2.5.8. Number of idle adjustment points:

2.5.9. Description of the adjustment principles at the minimum adjustment points:

2.5.10. Other adjustment options: if any, what are they (description and diagrams):

2.5.11. Operating pressure(s) [2]:..... kPa

2.6. Gas/air mixer (carburettor): yes/no [1]

2.6.1. Number:

2.6.2. Brand:

2.6.4. Type:

2.6.5. Drawings:

2.6.5. Installation location (attach drawing(s))

Adjustment options:

2.6.7. Operating pressure(s) [2]: .....kPa

2.7. Gas flow regulator: yes/no [1]

2.7.1. Number:

2.7.2. Brand:

2.7.3. Type:

2.7.4. Drawings:

2.7.5. Installation location (attach drawing(s)):

2.7.6. Adjustment options:

2.7.7. Operating pressure(s) [2]: ..... kPa

2.7.8. Gas metering unit (injection rail): yes/no [3

2.8. Gas/air mixer (injector): yes/no [1]

2.8.1. Brand:

2.8.2. Type:

2.8.3. Identification:

2.8.4. Operating pressure(s) [2]: ..... kPa

2.8.5. Installation diagrams:

2.9. Electronic Control Unit (ECU)

2.9.1. Brand:

2.9.2. Type / serial number:

2.9.3. Installation location:

2.9.4. Adjustment options:

2.10. LPG tank(s) [4]

2.10.1. Brand:

2.10.2. Type (attach drawings, if available):

2.10.3. Number of tanks:

2.10.4. Capacity: …….. litres

2.10.5. Certification number:

2.11. GN tank accessories [4]

2.11.1. Level or pressure gauge

2.11.1.1. Brand:

2.11.1.2. Type:

2.11.2. Pressure relief valve (discharge valve) [1] [4]

2.11.2.1. Brand:

2.11.2.2. Type:

2.11.3. Overpressure device [4]

2.11.3.1. Brand:

2.11.3.2. Type:

2.11.4. Remote-controlled automatic valve with flow-limiting valve [4]

2.11.4.1. Brand:

2.11.4.2. Type:

2.11.5. Gas-tight container [4]

2.11.5.1. Brand:

2.11.5.2. Type:

2.12. Automatic valve/check valve: yes/no [1][4]

2.12.1. Brand:

2.12.2. Type:

2.12.3. Description and drawings:

2.12.4. Operating pressure(s) [2]: ……. kPa

2.13. Filling nozzle [1][4]

2.13.1. Brand:

2.13.2. Type:

2.13.3. Description and drawings:

2.14. Fuel lines and hose(s) [4]

2.14.1. Brand:

2.14.2. Type:

2.14.3. Description:

2.14.4. Operating pressure(s) [2]:..... kPa

2.15. Pressure and temperature sensor(s) [1]

2.15.1. Brand:

2.15.2. Type:

2.15.3. Description:

2.15.4. Operating pressure(s) [2]:..... kPa

2.16. CNG filter [1][4]

2.16.1. Brand:

2.16.2. Type:

2.16.3. Description:

2.16.4. Operating pressure(s) [2]:..... kPa

2.17. Service connection(s) (single-fuel vehicle without a device to restore functionality under degraded conditions) [1]

2.17.1. Brands:

2.17.2. Types:

2.17.3. Installation descriptions and diagrams:

2.19. Additional documentation

2.19.1. Description of the NG system and physical protection of the catalytic converter when switching from petrol to NG or vice versa:

2.19.2. System diagram (electrical circuits, intake pipes, compensation pipes, etc.):

2.19.3. Symbol representation:

2.19.4. Adjustment data:

2.20. Cooling system: (liquid/air) [1]

2.20.1. System description/diagrams relating to the GN system:

(1) Delete as appropriate.

(2) Specify the tolerance.

(3) Applies to DNCs and DNLs.

(4) In the case of retrofit systems installed on vehicles of categories M and N, the component is recommended by the system manufacturer. The use of other non-recommended components is permitted, provided they are type-approved in accordance with UN Regulation (UNECE) No. 110, except for CNG-1 tanks, which may also be type-approved in accordance with applicable national standards. In the case of CNG con-

version systems fitted to L-category vehicles, the type, brand, and capacity of the tank used (and any alternatives) must be specified, as well as its position on the vehicle.

Annex 11

Installation manual

Reference to UN (UNECE) Regulation No. 115, paragraph 7.1, adapted to national procedures

7.1. Installation manual for the conversion system installed on the vehicle

7.1.1. Area of application

This section lists the minimum requirements contained in the installation manual.

7.1.2. List of reference standards

7.1.3. General obligations

7.1.3.1. The purpose of the installation manual is to guide the installer through the correct procedures for fitting LPG/CNG systems.

7.1.3.2. The manufacturer of the conversion system draws up the installation manual.

7.1.3.3. The installation manual forms part of the conversion system and is therefore supplied with each conversion kit.

7.1.3.4. The installation manual is provided in at least Italian and either French or German if delivered to regions or provinces where multilingualism applies.

7.1.3.5. The installation manual may be divided into two parts:

Part I: a) Section containing a description of the sample processing system;

b) Section containing the list of components indicated as alternatives by the manufacturer of the conversion system.

Part II: Part containing the installation instructions for a specific vehicle.

7.1.3.6. The installation manual for the parent vehicle(s) shall be submitted to the approval authority.

7.1.4. Content of Part I, Section a) of the installation manual

7.1.4.1. Description of the conversion system:

7.1.4.1.1. Operating principles of the transformation system.

7.1.4.1.2. Operating principles of each component of the transformation system.

7.1.4.2. Verification that the installation is carried out correctly

7.1.4.2.1. The installation manual sets out the detailed procedures and actions the installer must carry out to verify that the system has been installed to operate safely and that all installation instructions have been followed.

7.1.4.3. Starting procedures

7.1.4.3.1. The installation manual explains the start-up procedures that the installer must carry out.

7.1.4.4. instruction for maintenance

7.1.4.4.1. The installation manual contains the maintenance schedule, which specifies all routine maintenance tasks (by type) that must be carried out on both individual components and the system throughout their service life (depending on time and the number of kilometres travelled by the vehicle).

7.1.4.4.2. The installation manual specifies the technical skills required for installing and maintaining the system.

7.1.4.5. System malfunction

7.1.4.5.1. The installation manual outlines the steps to take in the event of a system malfunction.

7.1.4.6. Diagnosis

7.1.4.6.1. If the conversion kit includes a diagnostic system, the installation manual provides a detailed description of the system and outlines corrective actions to take in the event of a malfunction.

7.1.5. Content of part II of the installation manual

7.1.5.1. Conversion system identification:

7.1.5.1.1. Conversion system approval number;

7.1.5.1.2. Vehicle category;

7.1.5.1.3. Engine type;

7.1.5.1.4. Engine capacity/Power;

7.1.5.1.5. Transmission type;

7.1.5.1.6. Conversion type (LPG or CNG);

7.1.5.1.7. Number of assembly instructions;

7.1.5.1.8. General diagram of the conversion system containing the following information for each component:

a) identification number;

b) manufacturer’s code;

c) type-approval, if applicable;

d) for containers (cylinders or tanks): capacity/manufacturer/type/expiry date or date of deregistration/scrapping, if applicable.

7.1.5.1.9. Description (including drawings, if applicable) of the devices for mounting the tank on the vehicle.

7.1.5.2. Assembly instructions:

7.1.5.2.1. Assembly instructions for all components, including diagrams or photographs clearly showing the arrangement of the individual components in the engine compartment.

7.1.5.2.2. Drawing or photograph showing the exact position where the installer affixes the conversion system type-approval plate (included in the conversion kit).

7.1.5.2.3. A scheme of the electrical system clearly indicating the mechanical components to which the cables are to be connected.

7.1.5.2.4. Position and mounting of the LPG/CNG tank for category L vehicles.

Annex 12

End-user operation and maintenance manual

(reference to UN (UNECE) Regulation No. 115, point 7.2, adapted to national procedures)

7.2. End-user operation and maintenance manual

7.2.1. Area of application

This section sets out the minimum requirements for the end-user manual for the maintenance of LPG, CNG, LNG, DPL, DNC, or DNL systems.

7.2.2. General requirements:

7.2.2.1. The purpose of the end-user operation and maintenance manual is to inform the end-user about the characteristics and safety features of the installed LPG/CNG/LNG/DPL/DNC/DNL systems.

7.2.2.2. The manufacturer of the conversion system draws up the end-user operation and maintenance manual.

7.2.2.3. The system manufacturer shall include in the manual all the information necessary for the correct use and safe operation of LPG/CNG/LNG/DPL/DNC/DNL systems.

7.2.2.4. The end-user operation and maintenance manual is considered an integral part of the LPG/CNG/LNG/DPL/DNC/DNL system and is therefore supplied with said system.

7.2.2.5. The end-user operation and maintenance manual is written in Italian and in French or German if supplied in regions or provinces where multilingualism applies.

7.2.2.6. The end-user operating and maintenance manual specifies the type, version and year of manufacture of the product to which it refers.

7.2.2.7. The end-user operation and maintenance manual provides all the information relating to use in extreme environmental conditions.

7.2.3. Contents of the end-user operation and maintenance manual:

7.2.3.1. Technical specifications

The end-user operation and maintenance manual shall contain at least the following information:

a) operating characteristics;

b) performance under normal operating conditions;

c) extreme environmental conditions.

7.2.3.2. Safety instructions:

The user manual contains warnings regarding health and safety hazards; these warnings are classified as follows:

a) TIPS for optimal use of the system;

b) WARNING: regarding potential issues arising from improper use

c) WARNINGS regarding personal injury or damage to property in the event of failure to follow the procedures indicated.

Where used, safety symbols comply with the International System (SI) and their meaning is clearly specified in the end-user's operation and maintenance manual.

The user manual specifies the correct procedures to follow when the vehicle is repainted and placed in a drying oven.

7.2.3.3. Description of LPG/CNG/LNG/DPL/DNC/DNL systems.

The user manual clearly describes the purpose, use and function of all components of LPG/CNG/LNG/DPL/DNC/DNL systems.

7.2.3.4. Initial use and adjustment of LPG/CNG/LNG/DPL/DNC/DNL systems.

The end-user operation and maintenance manual contains all the information the end-user needs for initial use and/or for adjusting the system.

7.2.3.5. Use of LPG/CNG/LNG/DPL/DNC/DNL systems.

7.2.3.5.1. Refuelling of LPG/CNG/LNG/DPL/DNC/DNL systems.

The end-user operation and maintenance manual outlines the steps to follow when filling LPG/CNG/LNG tanks. Particular attention is paid to the maximum fill level, set at 80 per cent for LPG/LNG, and to the use of the self-service system, where provided and authorised.

7.2.3.5.2. Switch over between fuels

The end-user operation and maintenance manual clearly describes the procedure for switching from one fuel to an alternative fuel, setting out the sequence of operations.

7.2.3.5.3. Opening/closing the manual valves

If the system is fitted with manual valves, the user manual specifies the correct procedure for operating these valves.

7.2.3.5.4. Level indicator

The user manual indicates the location of the fuel gauge, for example, on the dashboard or on the fuel tank. The meaning of the indicated level is clearly explained to the user, with particular attention to the maximum fill level, which for LPG is 80 per cent.

7.2.3.5.5. Maintenance

If the system requires maintenance, the user manual specifies the frequency and type of work to be carried out, including the frequency of decommissioning or reconditioning containers (cylinders or tanks), as indicated in Annex 7 of this decree.

7.2.3.5.6. Anomalies and repair

The user manual specifies the actions to be taken in the event of system faults.

If the system is equipped with a diagnostic system, the user manual describes it and outlines the correct actions to take.

7.2.3.5.7. Product scrapping

The user manual sets out the precautions to be taken when removing the conversion system from the vehicle, instructions for correct disposal, the relevant regulations, and the responsible authorities/associations.

Annex 13

Requirements for the installation of LPG (liquefied petroleum gas) and DPL (dual fuel LPG) conversion systems on motor vehicles

(reference to UN (UNECE) Regulation No. 67, paragraph 17, *adapted to national procedures)*

17. REQUIREMENTS RELATING TO THE INSTALLATION OF SPECIFIC COMPONENTS FOR POWERING A VEHICLE'S ENGINE WITH LPG

17.1. General

17.1.1. The LPG system installed on the vehicle is designed so that the maximum operating pressure for which it is type-approved cannot be exceeded.

17.1.2. Each component of the system requires individual type-approval in accordance with Part I of UN Regulation (UNECE) No. 67.

17.1.3. The materials used in the system are compatible with LPG use.

17.1.4. All parts of the system are securely fastened.

17.1.5. The LPG system has no leaks.

17.1.6. The LPG system is installed to be thoroughly protected against damage from vehicle component movement, collisions, stone chips, vehicle loading and unloading, or shifting loads.

17.1.7. The LPG system is not connected to any accessory that is not strictly necessary for the correct operation of the vehicle's engine.

17.2. Other requirements.

17.2.1. No component of the LPG system, including the protective materials forming part of such components, shall protrude beyond the external surface of the vehicle, with the exception of the filler neck, which may protrude by a maximum of 10 mm from the nominal line of the bodywork.

17.2.2. With the exception of the LPG tank, in no section of the vehicle shall any component of the LPG system, including protective materials forming part of such components, protrude beyond the lower edge of the vehicle unless another part of the vehicle is situated lower down, within a radius of 150 mm.

17.2.3. No component of the LPG system shall be located less than 100 mm from the exhaust pipe or a similar heat source, unless it is adequately shielded from the heat.

17.4. Fuel tank installation

17.4.1. The fuel tank is permanently fitted to the vehicle and is located outside the engine compartment.

17.4.2. The fuel tank is installed in the correct position in accordance with the manufacturer's instructions.

17.4.3. The fuel tank is installed in such a way that there are no metal-to-metal contact points other than the tank's mounting points.

17.4.4. The fuel tank has permanent fixing points that secure it to the vehicle; it may also be secured with a special frame fitted with straps.

17.4.5. With the vehicle in running order, the tank is at least 200 mm above the road surface.

17.4.5.1. The provisions of point 17.4.5 shall not apply if the tank is fitted with appropriate front and side guards and if no part of it protrudes below the level of such protective structure.

17.4.6. The fuel tank(s) shall be mounted and secured in such a way that, when full, the accelerations specified below are absorbed (without any damage):

Vehicles belonging to categories **M_1 and M_2**:

(a) 20 g in the direction of travel;

b) 8 g perpendicular to the direction of travel.

It is the installer's responsibility to demonstrate, through practical testing or by calculation, compliance with the above requirements.

The above requirements are deemed to be met if the installer complies with the provisions of Annex 16 to this decree.

17.5. Other provisions relating to the fuel tank

17.5.1. If more than one LPG tank is connected to a single supply pipe, each tank shall be fitted with a non-return valve downstream of the remotely operated safety valve; a pressure-relief valve shall also be installed in the supply pipe downstream of the non-return valve. A suitable filter must also be fitted upstream of the non-return valve(s) to prevent them from becoming clogged.

17.5.2. The non-return valve and the pressure relief valve for pipes are not required if the back-pressure of the remotely controlled safety valve exceeds 500 kPa in the closed position. In this case, the control device for the remotely controlled safety valves must be designed so that it is never possible to open more than one valve at a time. The time available to switch between tanks is limited to 2 minutes.

17.6. Fuel tank accessories

17.6.1. Remote-controlled safety valve with a flow-limiting valve on the tank

17.6.1.1. The remote-controlled safety valve with a flow-limiting valve is installed directly on the fuel tank, without any intermediate fittings.

17.6.1.2. The remote-controlled safety valve with a flow-limiting valve is designed to close automatically when the engine stops, regardless of the ignition switch position, and to remain closed until the engine is started.

17.6.1.3. Notwithstanding the provisions of paragraph 17.6.1.2, in liquid injection systems, if it is necessary to recirculate the fuel to clear the system of any vapour lock, the remotely controlled safety valve with flow restrictor may be kept open for up to 10 seconds before starting the engine in LPG mode.

17.6.1.4. Notwithstanding the provisions of paragraph 17.6.1.2, the remotely controlled safety valve may remain in the open position during controlled shutdown phases.

17.6.1.5. If the remotely controlled safety valve is closed during controlled shutdown phases, it shall comply with the requirements set out in paragraph 4.7 of Annex 3 to UN Regulation (UNECE) No. 67.

17.6.2. Spring-loaded pressure relief valve in the tank.

17.6.2.1. The spring-loaded pressure relief valve is installed in the fuel tank: it is connected to the area where the fuel is in a gaseous state and vents into the surrounding atmosphere. The spring-loaded pressure relief valve vents into the sealed container if the sealed container meets the requirements set out in paragraph 17.6.5 of UN Regulation (UNECE) No. 67.

17.6.3. 80 % gas shut-off valve

17.6.3.1. The automatic fuel level limiter is suitable for the fuel tank on which it is mounted and is installed in a position that ensures the tank is not filled to more than 80 % capacity.

17.6.4. Level indicator

17.6.4.1. The level indicator is suitable for the fuel tank on which it is mounted and is installed in a suitable position.

17.6.5. Watertight tank housing

17.6.5.1. A watertight housing shall be fitted to the fuel tank to protect the tank fittings and shall meet the requirements set out in paragraphs 17.6.5.2 to 17.6.5.5, unless the tank is installed outside the vehicle and its fittings are protected from dust and water.

17.6.5.2. The watertight container has a direct connection to the atmosphere, possibly via a flexible connecting pipe and a through-hose.

17.6.5.3. The ventilation opening of the sealed container faces downwards at the point of exit from the vehicle. However, it must not open into a wheel arch or towards a heat source such as exhaust pipes.

17.6.5.4. The flexible connectors and ducts passing through the bottom of the vehicle body, used for ventilating the watertight compartment, have a minimum clear opening of 450 mm^2. If a gas pipe, another pipe, or electrical wires are fitted inside the flexible connection pipe and the through-hull conduit, the clear opening must still be at least 450 mm^2.

17.6.5.5. The sealed enclosure and flexible connecting hoses are gas-tight at 10 kPa with the openings closed and show no permanent deformation, with a maximum permissible leakage of 100 cm^3/h.

17.6.5.6. The flexible connecting hose is secured to the gas-tight container and the through-conduit in such a way as to be gas-tight.

17.12. Pressure relief valve

17.12.1. The pressure relief device shall be fitted to the tank(s) in such a way that it vents into the leak-proof container, where required, provided that such container meets the requirements of paragraph 17.6.5.

17.13 No modifications to the position and mounting of the vehicle's original fuel tank are permitted unless authorised by the vehicle manufacturer.

Part II - (provisions relating to the type-approval of the electronic control unit)

(Reference: UN (UNECE) Regulation No. 67, Annex 14)

This Annex sets out the provisions relating to the type-approval of the electronic control unit.

ELECTRONIC CONTROL UNIT

1. Any device that controls the engine's LPG demand and automatically closes the remotely controlled safety valve(s), the shut-off valves and the fuel pump of the LPG system in the event of a fuel supply line rupture and/or accidental engine shutdown shall be regarded as an electronic control unit.

2. The response time of the safety shut-off valves following an accidental engine shutdown shall not exceed 5 seconds.

2.1. Notwithstanding the provisions of points 1 and 2, the remotely controlled safety valve(s) and shut-off valves may remain open during controlled shutdown phases.

3. The electronic control unit shall comply with the relevant standards relating to electromagnetic compatibility (EMC) as set out in UN Regulation (UNECE) No. 10.

4. A fault in the vehicle's electrical system shall not cause a valve to open uncontrollably.

5. The electronic control unit's output circuit is deactivated when the power supply is interrupted or removed.

Annex 14

Requirements for the installation of CNG (compressed/liquefied natural gas) and DNC/DNL (dual-fuel CNG) conversion systems on motor vehicles.

(reference to UN (UNECE) Regulation No. 110, paragraph 18, and Annex 4H *adapted to national procedures)*

Part I - General requirements (paragraph 18)

18. REQUIREMENTS CONCERNING THE INSTALLATION OF SPECIFIC COMPONENTS FOR THE USE OF COMPRESSED NATURAL GAS OR LIQUEFIED NATURAL GAS IN A VEHICLE'S PROPULSION SYSTEM

18.1. General requirements

18.1.1. The vehicle's LPG conversion system operates correctly and safely at the operating pressure and temperatures for which it was designed and type-approved

18.1.2. All system components are covered by type approval for individual parts or multifunctional components, in accordance with Part I of UN Regulation (UNECE) No. 110, except for CNG cylinders, which may also be type-approved in accordance with applicable national standards.

18.1.3. The materials used in the system are compatible with NG, as applicable.

18.1.4. All system components are securely fastened.

18.1.5. The GN system is pressurised to the operating pressure and subjected to a leak test, using a surface-active agent without forming bubbles for three minutes, or using a method proven equivalent, in accordance with Presidential Decree No. 16 of 10 January 1984.

18.1.6. The GN system is installed to provide the best protection against damage caused, for example, by the movement of vehicle components, collisions, stone chips, vehicle loading and unloading operations, or movement of the transported load.

18.1.7. No accessories are connected to the GN system except those strictly necessary for the correct operation of the vehicle's engine.

18.1.7.1. Subject to the provisions of point 18.1.7, vehicles may be fitted with a heating system for the passenger compartment and/or the load compartment connected to the NG system.

18.1.7.2. The heating system referred to in point 18.1.7.1 is authorised if the technical service responsible for conducting the type-approval tests considers that it is adequately protected and does not affect the correct operation of the standard NG system.

18.2. Other requirements

18.2.1. No component of the NG system, including protective materials forming part of such components, shall protrude beyond the vehicle's outline, with the exception of the filling unit, which may protrude by a maximum of 10 mm from its base.

18.2.2. Adequate heat shielding from adjacent components must be provided, and no component of the CNG system shall be located less than 100 mm from the exhaust pipe or a similar heat source, unless it is adequately shielded from the heat.

18.4. Installation of containers (cylinders or tanks).

18.4.1. The containers (cylinders or tanks) are permanently installed on the vehicle. They are not installed in the engine compartment.

18.4.2. The containers (cylinders or tanks) are installed so that there is no metal-to-metal contact, except at the fixing points of the container(s) and/or tank(s).

18.4.3. When the vehicle is in running order, the fuel containers (cylinders or tanks) must be at least 200 mm above the road surface.

18.4.3.1. The provisions of point 18.4.3 shall not apply if the containers (cylinders or tanks) are suitably protected at the front and sides and if no part of them protrudes below the protective structure itself.

18.4.4. Fuel containers (cylinders or tanks) shall be mounted and secured in such a way that, when full, they can withstand without damage the stresses resulting from the following accelerations:

Vehicles in categories M_1 and N_1:

(a) 20 g in the direction of travel;

b) 8 g perpendicular to the direction of travel

Vehicles in categories M_2 and N_2:

(a) 10 g in the direction of travel

b) 5 g perpendicular to the direction of travel

Vehicles in categories M_3 and N_3:

(a) 6.6 g in the direction of travel

b) 5 g perpendicular to the direction of travel

It is the installer's responsibility to demonstrate, through practical testing or by calculation, compliance with the above requirements.

The above requirements are deemed to be met if the installer complies with the provisions of Annex 16 to this decree.

18.5. Accessories fitted to the CNG container(s)

18.5.1. Automatic cylinder valve

18.5.1.1 An automatic valve is fitted directly to each container, where required by the type approval of CNG systems.

18.5.1.2. The cylinder's automatic valve operates so that the gas supply is cut off simultaneously with the engine being switched off, regardless of the ignition switch position, and remains cut off until the engine is running. A delay of two (2) seconds is permitted for the diagnostic phase.

18.5.1.3. Subject to the provisions of point 18.5.1.2, the cylinder's automatic valve may remain in the open position during controlled shut-off phases.

18.5.1.4. If the cylinder's automatic valve is closed during controlled extinguishing phases, that valve shall comply with the requirements set out in point 2.2.4 of Annex 4A to UN Regulation (UNECE) No. 110.

18.5.2. Pressure relief device (PRD)

18.5.2.1. The pressure relief device (PRD — fusible link) shall be fitted to the CNG container(s) in such a way that it vents into the sealed vent chamber, provided that the latter complies with the requirements of point 18.5.5.

18.5.3. Flow-limiting valve on the CNG container

18.5.3.1. The flow restrictor is fitted to the CNG tank on the cylinder's automatic valve.

18.5.4. Manual valve

18.5.4.1. A manual valve is fitted to the CNG cylinder and can be integrated with the automatic valve.

18.5.5. Pressurised ventilation chamber mounted on the CNG container(s)

18.5.5.1. A sealed ventilation chamber shall be fitted to the CNG container above the fittings and shall comply with the requirements set out in points 18.5.5.2 to 18.5.5.5, unless the CNG container is installed outside the vehicle.

18.5.5.2. The sealed ventilation chamber shall, if necessary, be in direct communication with the atmosphere via a flexible connecting hose and a through-hose made of CNG-resistant material.

18.5.5.3. The ventilation opening of the sealed chamber must not discharge onto the wheel arch or towards a heat source such as the exhaust pipe.

18.5.5.4. The flexible hoses and ducts passing through the bottom of the vehicle body, used to ventilate the sealed ventilation chamber, shall have a minimum clear opening of 450 mm^2.

18.5.5.5. The pressure-tight ventilation chamber fitted to the fittings and flexible connecting hoses of the CNG container(s) shall withstand a pressure of 10 kPa without showing any permanent deformation. In this case, a dispersion of no more than 100 cm^3 per hour is acceptable.

18.5.5.6. The flexible connecting pipe is secured to the airtight ventilation chamber and the through-duct using clamps or other means to ensure a tight seal.

18.5.5.7. The sealed ventilation chamber contains all the components located in the boot or passenger compartment.

18.5.6. PRD (pressure-activated)

18.5.6.1. The pressure-activated PRD is triggered and vents gas independently of the fusible-link PRD.

18.5.6.2. The pressure-activated PRD is attached to the container(s) in such a way as to vent into the sealed ventilation chamber, provided that the latter meets the requirements of paragraph 18.5.5.

18.6. Accessories attached to LNG tanks

18.6.1. Automatic valve

18.6.1.1. An automatic valve is installed directly in the supply line on each LNG tank (in a protected position).

18.6.1.2. The cylinder's automatic valve operates so that the gas supply is cut off simultaneously with the engine being switched off, regardless of the ignition switch position, and remains cut off until the engine is running. A delay of two (2) seconds is permitted for the diagnostic phase.

18.6.1.3. Subject to the provisions of paragraph 18.6.1.2, the automatic valve may remain in the open position during controlled shutdown procedures.

18.6.1.4. If the automatic valve is closed during controlled shutdown phases, it shall comply with the requirements set out in point 2.2.4 of Annex 4A.

18.6.2. Flow limiting valve. The flow-limiting valve is installed inside or directly on the LNG tank (in a protected position).

18.6.3. Overpressure safety valve (primary). The outlet of the primary overpressure safety valve is connected to an open vent system that discharges the gas upwards. Care must be taken to prevent any blockage or freezing of the vent pipe. The primary LNG overpressure safety valve does not vent into the sealed ventilation chamber (if fitted).

18.6.4. Overpressure safety valve (secondary) The secondary overpressure safety valve releases gas directly from its outlet. Care must be taken to protect against water ingress and damage. The secondary pressure relief valve is not connected to the same discharge pipe as the primary pressure relief valve. The secondary LNG overpressure relief valve does not vent into the venting chamber (if fitted).

18.6.5. Manual fuel shut-off valve. The manual fuel shut-off valve can be installed directly on the LNG tank (in a protected position). It is easily accessible. The manual fuel shut-off valve can be integrated into the automatic valve.

18.6.6. Manual steam shut-off valve. The manual steam shut-off valve can be installed directly on the LNG tank (in a protected position). It is easily accessible.

18.6.7. Vent pipe or connector. The vent pipe or connector may be fitted inside the LNG tank or on top of it (in a protected position). It is easily accessible. The vent connector is suitable for use at the temperatures specified in Annex 5o of UN Regulation (UNECE) No. 110

18.6.8. Drainage management system. The primary overpressure safety valve is connected to a ventilation flue that extends upwards. The outlets of the primary and secondary safety valves are protected against blockages caused by dirt, debris, snow, ice and/or water. The ventilation flue is of sufficient size to prevent a reduction in flow rate caused by a pressure drop. The gas discharged from the ventilation duct or the secondary safety valve must not blow onto enclosed areas, other vehicles, external air intake systems (e.g. air conditioning systems), air intakes or engine exhaust systems. In

the case of a dual-tank system, the outlet pipes from the primary safety valve for each tank may be connected to a common flue.

18.7. Rigid and flexible gas pipes

18.7.1. Rigid CNG pipes are seamless and made of stainless steel or steel coated with a corrosion-resistant material.

18.7.1.1. Rigid pipes for LNG are made of austenitic stainless steel or copper and are seamless.

18.7.2. The rigid CNG pipe may be replaced with a flexible hose for classes 0, 1 or 2.

18.7.2.1. The rigid LNG pipe may be replaced with a flexible pipe if used for Class 5.

18.7.3. The flexible hose for CNG and LNG shall comply with the relevant requirements set out in Annex 4B to UN Regulation (UNECE) No. 110.

18.7.4. The rigid pipes are secured in such a way that they are not subject to vibrations or mechanical stress.

18.7.5. Flexible hoses for CNG and/or LNG are secured in such a way that they are not subject to vibrations or mechanical stress.

18.7.6. At the fixing point, rigid or flexible pipes shall be fitted in such a way that there is no metal-to-metal contact.

18.7.7. Rigid and flexible pipes are not located near the vehicle's lifting points (where the jack is used).

18.7.8. Where pipes pass through holes or similar openings, they are fitted with protective material.

18.7.9. LNG pipes are insulated or otherwise protected in areas where low temperatures may harm other components and/or people.

18.8. Gas connections between components.

18.8.1. Welded or brazed fittings and compression fittings with a bite-off surface are not permitted for CNG. Bite-on compression fittings are not permitted for LNG.

18.8.2. Only stainless steel fittings shall be used for stainless steel pipes.

18.8.3. CNG fittings are made from corrosion-resistant material.

18.8.4. Rigid pipes are connected using suitable fittings, such as two-piece compression fittings for steel pipes and double-cone fittings.

18.8.5. The number of fittings must be kept to a minimum.

18.8.6. All fittings are positioned to make them easy to inspect.

18.8.7. Inside the passenger compartment or in a closed boot, the pipes are no longer than is reasonably necessary and, in any case, must be protected by a sealed ventilation chamber.

18.8.7.1. The provisions of point 18.8.7. shall not apply if the vehicle is of category M2 or M3 and the pipes and fittings are fitted with a CNG-resistant protective sheath and are in direct connection with the atmosphere.

18.9. Automatic valve

18.9.1. For CNG systems, an additional automatic valve may be fitted to the fuel line, as close as possible to the pressure regulator.

18.9.2. For LNG systems, an automatic valve is installed as close as possible after the vaporiser.

18.10. Filling unit or nozzle

18.10.1. The filling unit is secured so that it cannot rotate and is protected against dust and water.

18.10.2. Where, due to a lack of suitable space, the CNG/LNG container or tank is fitted in the passenger compartment or in a closed boot, the refuelling unit is located outside the vehicle or in the engine compartment.

18.10.3. For vehicles of categories M_1 and $N_{1,}$ the CNG filling unit (filler neck) shall comply with the design specifications set out in Figure 1 of Annex 4F to UN (UNECE) Regulation No. 110.

18.10.4. For vehicles of categories M_2, M_3, N_2, and N_3 the CNG filling unit (filler neck) shall comply with the design specifications set out in Figures 1 or 2 of Annex 4F to UN (UNECE) Regulation No. 110, or the design specifications set out in Figure 1 of Annex 4F to UN (UNECE) Regulation No. 110, for CNG only.

18.11. Fuel selection system and electrical system

18.11.1. The electrical components of the CNG/LNG system are protected against potential overloads.

18.11.2. Multi-fuel vehicles are equipped with a fuel selection system that prevents both the flow of gaseous fuel into the petrol or diesel tank and the flow of petrol or diesel into the gaseous fuel tank, even in the event of a fuel selection system failure.

18.11.3. The measurements must be demonstrated during type-approval.

18.11.4. The electrical connections and components housed in the sealed ventilation chamber must be constructed in such a way that no sparks can be generated.

18.12. The LNG system is designed to prevent LNG entrapment.

18.13. The LNG system for M-category vehicles is fitted with a natural gas detector and/or a sealed ventilation chamber. The LNG system for vehicles of category N may be fitted with a natural gas detector if the fuel storage tank and associated piping are mounted outside the vehicle and there is no possibility of gas capture (see point 18.12). If the fuel storage tank is located inside the load compartment of a vehicle of category N, a natural gas detector and/or a sealed ventilation chamber is required. 19.

18.14 No modifications to the position and mounting of the vehicle’s original fuel tank are permitted unless authorised by the vehicle manufacturer.

Part II - (provisions relating to the type-approval of the electronic control unit)

(Reference: UN (UNECE) Regulation No. 110, Annex 4H)

1. This Annex sets out the provisions relating to the type-approval of the electronic control unit.

2. ELECTRONIC CONTROL UNIT

2.1. The electronic control unit is any device that controls the supply of CNG/LNG to the engine and commands the closure of the automatic valve in the event of engine shutdown, a break in a fuel supply line, engine stalling, or a collision.

2.1.1. Subject to the provisions of point 2.1, the automatic valve may remain in the open position during controlled shutdown procedures.

2.2. The delay in closing the automatic valve after the engine has stopped shall not exceed 5 seconds.

2.3. The electronic control unit is equipped with an automatic ignition timing adjustment mechanism, either built into the electronic control unit itself or separate.

2.4. The electronic control unit can be fitted with ‘dummy’ injectors to ensure the petrol electronic control unit operates correctly when running on CNG.

2.5. The electronic control unit is designed to operate at the temperatures specified in Annex 5O of UN Regulation (UNECE) No. 110.

2.6 The electronic control unit complies with the relevant standards relating to electromagnetic compatibility (EMC) set out in UN (UNECE) Regulation No. 10.

Annex 15

Additional requirements for the installation of LPG/CNG conversion systems on motorcycles

In addition to the requirements set out in Annexes 13 and 14, where applicable, the systems fitted to motorcycles must comply with the following additional conditions:

1. System components or parts thereof that may be located externally to the bodywork shall comply with the following requirements:

   a) shall not have any sharp or pointed parts which, due to their shape, size, orientation and hardness, increase the risk or severity of injury to a person struck by the vehicle;

   b) do not have parts likely to snag people or objects,

   c) no protruding part has a fillet radius of less than 2.5 mm. This requirement does not apply to parts that protrude less than 5 mm from the surrounding outer surface; the corners of these outward-facing parts shall be chamfered, unless the resulting protrusions are less than 1.5 mm.

   d) protruding parts made of pliable materials shall have a radius of curvature of less than 2.5 mm;

2. The tanks are secured to prevent rubbing during vehicle movement; this requirement may be met by placing non-sparking, non-hygroscopic material between the tank and the mounting system.

3. The distance between the silencer, the motor vehicle's exhaust pipes and the LPG/CNG tank and its accessories shall not be less than 50 mm. If this distance is less than the prescribed minimum but still greater than 30 mm, a partition made of thermally insulating material or material with equivalent characteristics, with a minimum thickness of 1 mm, shall be inserted between the components;

4. Access to the tank's shut-off valves, reading the level indicator, and viewing the tank's identification details must be easy.

   Access to the tank shut-off valves and reading the level gauge and the tank identification details is straightforward. For CNG tanks, identification is carried out via a label issued by the inspection body (SFBM S.p.A.), which is completed in full and handed over to the vehicle owner. Alternatively, the level indicator may be fitted with a repeater positioned to be visible from the driver's seat;

5. No modifications are permitted to the position and mounting of the motorcycle's original fuel tank other than those specified by the motorcycle manufacturer, unless authorised by the manufacturer;

6. The petrol tank and the LPG/CNG tank are not in direct contact;

7. To carry out the installation, small openings may be cut in the vehicle floor panel (excluding structural stiffening elements such as box sections, deep-drawn parts, etc.), fitting closing flaps where possible. This operation does not require the vehicle manufacturer's approval;

8. Accessories attached to the tank, with the exception of the sealed ventilation chamber and its connecting hoses, are positioned in such a way that, within a radius of 30 mm, there are no:

   a) chassis components,

   b) vehicle suspension components,

c) petrol tank,

d) valves and rigid components of the braking system;

9. The gearbox is:

a) fixed directly, or indirectly via other components, to the inner walls of the bodywork or to the motorcycle chassis (anchoring to the engine or to components connected to it is prohibited),

b) installed at a distance of not less than 50 mm from the exhaust pipes and silencers; where this distance is less than the prescribed minimum but greater than 30 mm, a partition made of thermally insulating material or material with equivalent characteristics, with a minimum thickness of 1 mm, must be inserted between the components;

10. The fuel line to the tank must not be routed through the motorcycle's wheel arch. Where compliance with this provision is technically impossible, the section of pipe that is nevertheless housed within the wheel arch shall be limited to the minimum necessary, and the pipe shall be fitted with a protective sheath or suitable protection against accidental impacts that external objects could cause;

11. Connections subject to vibration or movement are made using flexible joints, or alternative technical solutions are adopted which do not, under safe conditions, impede relative movement between the rigid parts of the system;

12. The filling device may be external to the motorcycle (in which case the requirements set out in point 2 apply) or housed directly on the multi-valve; in either case, it must be easily accessible to ensure easy filling.

13. The switching device is positioned so as to be easily operated;

14. The tank is installed:

a) permanently in an internal compartment of the vehicle in such a way as to be sufficiently protected from the consequences of collisions;

b) with permanent fixing points securing it to the vehicle. The tank may also be secured to the vehicle by structural elements and straps. It can also be fitted flush against the inner wall of the bodywork, without the need to remove any external parts of the bodywork;

c) so as to withstand the following simulated decelerations:

i. 20 g in the direction of travel;

ii. 8 g perpendicular to the direction of travel;

d) So as not to significantly alter the vehicle’s centre of gravity, as specified by the manufacturer.

15. the motorcycle, in running order, must not exceed the maximum laden mass stated on the registration document. In full compliance with the above provisions regarding current regulations, any installation requirements provided by the manufacturers of the vehicles and components must also be observed;

Annex 16

Requirements relating to the securing of LPG (liquefied petroleum gas) and NG (compressed or liquefied natural gas) tanks

(reference to UN (UNECE) Regulation No. 115, Annex 5, adapted to national procedures)

1. The requirements of UN (UNECE) Regulation No. 67, relating to the securing of LPG tanks, the requirements of UN (UNECE) No. 110 concerning the securing of containers (cylinders or tanks approved either under Regulation No. 110 or under national standards) for NG, and the requirements for the securing of tanks on motorcycles set out in Annex 15 to this decree are considered to be met if the tank is secured to the vehicle by means of, at least:

1.1. in the case of a cylindrical tank: two tank clamps with at least two bolts per clamp;

1.2. in the case of a toroidal tank:

- four bolts in the case of clamping band fastening;

- two bolts when fixing directly to the bodywork, without clamps or;

1.3. suitable washers or plates if the body panels at that point are single-thickness.

Assuming that the grade of the material used for the clamps is Fe 370 and the fixing bolts are grade 8.8, the minimum dimensions to be observed are as follows:

Container capacity (cylinder or tank) (litres)	Minimum dimensions of washers or plates (mm)	Minimum dimensions of bands (mm)	Minimum bolt diameter (mm)
Up to 85	Round: 30 × 1.5	20 × 3,0	8
	Round: 25 × 2.5	30 × 1,5	8
85 - 100	Round: 30 × 1.5	30 × 2,5	10
	Round: 25 × 2.5	20 × 3 (*)	8 (*)
100 - 150	Round: 50 × 2.0	50 × 6,0	12
	Round: 30 × 3.0	50 × 3 (**)	10 (**)
Over 150	In accordance with UN (UNECE) Regulation No. 67 for LPG and UN (UNECE) Regulation No. 110 for CNG/LNG.		

(*) In this case, the container (cylinder or tank) is secured with at least three straps.

(**) In this case, the container (cylinder or tank) is secured with at least four straps.

1. If the straps also support the weight of the fuel tank, at least three straps are provided.

2. The straps must ensure that the fuel container (cylinder or tank) does not slip, rotate or move.

3. A layer of protective material, such as rubber, felt, leather or plastic, is placed between the fuel container (cylinder or tank) and the straps. However, there are no compressible materials at the point where the washers or plates are attached to the vehicle body.

4. CONTAINER BASE (CYLINDER OR TANK)

4.1. If the container (cylinder or tank) is secured to the vehicle by means of a base, the base, clamps, washers or plates and bolts used shall comply with the requirements set out in points 1 to 5.

4.2. If a cylindrical container (cylinder or tank) is installed longitudinally on the vehicle, a transverse connecting element shall be fitted at the front of the mounting base to prevent the tank from sliding. This cross-member is:

4.2.1. of a thickness at least equal to that of the base;

5.2.2. at least 30 mm high and with the top at least 30 mm higher than the bottom of the tank;

5.2.3. as close as possible to the tapered bottom of the tank, or set back from it.

‘Installed longitudinally’ means that the axis of the cylindrical container (cylinder or tank) forms an angle of not more than 30 degrees with respect to the longitudinal median plane of the vehicle.

Annex 17

Leak test procedures for LPG (liquefied petroleum gas) and NG (compressed or liquefied natural gas) conversion systems
(reference to UN (UNECE) Regulation No. 115, Annex 4)

Once installation is complete, the installer, in order to ensure the safe and proper operation of the system:

i. check that the installation has been carried out correctly and that all installation instructions have been followed, in accordance with the detailed procedures and steps described in the installation manual;

ii. carry out the start-up procedures, as illustrated in the installation manual;

iii. fills the LPG/CNG/LNG system and checks, using a gas detector or a fluid detector, for any leaks in all the system's fittings and connections. The solenoid valves must be in the open position so that all system components are under operating pressure. No leakage is permitted.

Annex 18

Replacement of the original containers (cylinders or tanks) and the components attached to them without the need for authorisation from the vehicle manufacturer (Article 15)

A container (cylinder or tank) may be used in place of the containers specified by the vehicle manufacturer if:

a) it is type-approved in accordance with UN (UNECE) Regulation No. 67 for LPG and in accordance with UN (UNECE) Regulation No. 110 for NG;
b) uses the same vehicle mounting system and the same anchor points on the vehicle structure as specified by the vehicle manufacturer. The shape of the replacement container (cylinder or tank) must be the same as that specified by the vehicle manufacturer. The capacity and geometric dimensions may have a tolerance of ± 10 %;
c) For cylinders intended to contain CNG, all the requirements set out in Ministerial Decree No. 144 of 13 May 2022 must also be complied with.

Please note that any accessories attached to the container (cylinder or tank), if not specified in the type-approval of the replacement container, may be replaced with others that are specified in the type-approval of the new container installed.
These accessories may also be incorporated into a single multi-valve, the type approval for which is also included in that of the container (cylinder or tank). It should be noted that the type approval for a container type may specify more than one multivalve.

Annex 19

Update of Annex A (Part 1) and Annexes B and C of the Decree of the Minister of Infrastructure and Transport of 8 January 2021

Modifications to vehicles for which the update of the Single Document of Circulation and Ownership is not subject to inspection and testing

(article 17, (10))

Update to Annex A to the Ministerial Decree 8 January 2021

Part 1 (Article 1, paragraph 2)

Modifications to vehicles for which the update of the Single Document of Circulation and Ownership is not subject to inspection and testing

1. Replacement of an LPG/CNG/LNG container (cylinder or tank) fitted to a vehicle (type-approved from the outset as mono-fuel/bi-fuel/dual-fuel LPG/NG or forming part of a conversion system or heating system);
2. Fitting or removal of a tow bar on vehicles of international categories M1 and N1;
3. Installation to replace a ball coupling mounted on the drawbar of trailers of international category O intended to be towed by vehicles of international categories M1 and N1;
4. Installation or removal of dual controls for vehicles to be used for driving lessons (only vehicles in international category M1 and self-drive hire);
5. Installation or removal of adaptations for driving vehicles by drivers with disabilities:
    a) steering wheel knob;
    b) service control unit;
    c) reversal of accelerator and brake pedals in a configuration mirroring the original;
    d) relocation of control levers (lights, windscreen wipers, etc.);
    e) wide-angle interior rear-view mirror;
    f) additional exterior rear-view mirror;
6. Installation of wheel systems as required by the regulations referred to in the Decree of the Minister of Infrastructure and Transport No. 20 of 10 January 2013;
7. Installation of mechanical coupling devices not suitable for towing on vehicles of international categories M1 and N1;
8. Installation of glass partitions or panels or glazing on vehicles of international categories M2 and M3 belonging to classes A, I and II, intended for regular public transport;
9. Removal of LPG/CNG/LNG/DPL/DNC/DNL conversion systems installed after registration;
10. Installation of LPG/CNG/LNG/DPL/DNC/DNL conversion systems;
11. Installation of heating systems compliant with UN (UNECE) Regulation No. 122.

Update of Annex B to the Ministerial Decree 8 January 2021

(Article 2(5))

Detailed information sheet and declaration *template*

1. Replacement of an LPG/CNG/LNG container (cylinder or tank) fitted to a vehicle (originally type-approved as LPG/LNG monofuel, dual fuel, or forming part of a bifuel or monofuel fuel system or a heating system);

1.1. Declaration concerning the replacement of an LPG/CNG/LNG tank on a vehicle originally type-approved with an LPG/CNG/LNG fuel system or originally equipped with a heating system.

[workshop letterhead]

The undersigned ……. , born in ……. on ……. , in my capacity as ……. of the company ……. , with registered office in ……. , VAT number or tax code ……., registered with the Chamber of Commerce ……., section …….

with UMC identification code No. …….

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

the replacement on the vehicle

registration …….

Chassis No. (V.I.N..)…….

the container (cylinder/tank) (1) LPG/CNG/LNG(1) present on the vehicle and installed by the vehicle manufacturer, having:

- brand and model…….
- UN type-approval No. 67/110/national (1)……
- serial number……
- capacity ……. l
- location …….
- shape (cylindrical/toroidal) (1)……

with other container (cylinder/tank) (1) brand new/used (1)(3):

- brand and model……
- UN type-approval No. 67/110/national (1)……
- serial number……
- capacity ……. l
- location …….

- shape (cylindrical/toroidal) [1].....

Further declares:

- that the replacement container (cylinder/tank) [1] falls within the limits set out in Annex 18 of the Ministerial Decree of ……..
- that they have replaced/have not replaced [1] the fittings attached to the container (cylinder/tank) [1] listed in the type-approval dossier for the container (cylinder/tank) [1] and specified below:
  - ……
  - ……
- that, for the securing of the container (cylinder/tank) [1] installed in place of the original one, and of the sealed ventilation chamber (where provided), the same anchoring system as that of the original tank and the same anchoring points on the vehicle were used, without in any way altering the original strength;
- that it has complied with all applicable regulations in this regard, and in particular those concerning:
  - the securing of the container (cylinder/tank) [1] and the sealed ventilation chamber (where provided);
  - the strength of the supports and anchor points on the vehicle;
  - the characteristics of the piping;
- that it has complied with all applicable regulations in this regard, and in particular those concerning:
  - the fixing of the tanks and the airtight ventilation chamber (where provided);
  - the strength of the supports and anchor points on the vehicle;
  - the characteristics of the piping;
- that, for securing the container (cylinder/tank) [1] installed in place of the original one, and the sealed ventilation chamber (where provided), the same anchoring system was used as for the original container (cylinder/tank) [1] and the same anchoring points on the vehicle, without in any way altering its original strength;
- that, following installation, a leak test has been carried out in accordance with the requirements of Annex 17 of the Ministerial Decree of ……., to ensure that there are no gas leaks;
- that the work has been carried out to the highest standards and in accordance with the specifications provided by both the vehicle manufacturer and the container manufacturer (cylinder/tank) [1].
- that they meet the requirements set out in Annex 22 of the Ministerial Decree ……..
- that the following personnel carried out the replacement authorised in accordance with Annex 23 of Ministerial Decree ……..:
  ……

Place and data signature (in full and legible)

Attaches hereto:
– copy of identity document [2]
– certificate of conformity for the container(s) (cylinder/tank) [1] installed, where applicable.
– copy of theattestation/certificate of qualified personnel meeting the requirements set out in Annex 23 of Ministerial Decree ……

(1) cross out the text not of interest
(2) not necessary if digitally signed
(3) used containers may only be used for systems utilising CNG

1.2 Declaration concerning the replacement of a container (cylinder/tank) for LPG/CNG/LNG forming part of an LPG/CNG/LNG conversion system or a heating system installed on a vehicle already registered.

[workshop letterhead]

The undersigned ..... born in ..... on ..... in my capacity as ..... of the company ..... with its registered office in ..... VAT number or tax reference number ..... registered with the Chamber of Commerce .....section ……,
with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

the replacement on the vehicle
registration ……
Chassis No. (V.I.N..)…… ,

of the container (cylinder/tank) (1) LPG/CNG/LNG (1) fitted to the vehicle and forming part of the conversion system/heating system (1)

- named:
- type:

having:

- brand and model……
- UN type-approval No. 67/110/national (1)……
- serial number……
- capacity ……. l
- location ……
- shape (cylindrical/toroidal) (1)……

with other container (cylinder/tank) (1) brand new/used (1)(3):

- brand and model……
- UN type-approval No. 67/110/national (1)……
- serial number……
- capacity …… l
- location ……
- shape (cylindrical/toroidal) (1)……

Further declares:

- that the replacement container (cylinder/tank) (1) is one of those covered by the type-approval of the conversion system or the heating system installed on the vehicle itself (where specified in the type-approval certificate and available on the market) or is UN (UNECE) No. 67/110/national type-approved(1);

- that they have replaced/have not replaced [2] the accessories attached to the tank listed in the type-approval dossier for the container (cylinder/tank) [1] and specified below:
  - .....
  - .....
- that, for securing the container (cylinder/tank) [1] installed in place of the original one, and the sealed ventilation chamber (where provided), the same anchoring system was used as for the original container (cylinder/tank) [1] and the same anchoring points on the vehicle, without in any way altering its original strength;
- that it has complied with all applicable regulations in this regard, and in particular those concerning:
  - the fixing of the tanks and the airtight ventilation chamber (where provided);
  - the strength of the supports and anchor points on the vehicle;
  - the characteristics of the piping;
- that, following installation, a leak test has been carried out in accordance with the requirements of Annex 17 of Ministerial Decree ....., to ensure that there are no gas leaks;
- that the work has been carried out to the highest standards and in compliance with the requirements provided by both the vehicle manufacturer and the tank manufacturer;
- that they meet the requirements set out in Annex 22 of the Ministerial Decree .....
- that the following personnel carried out the replacement authorised in accordance with Annex 23 of Ministerial Decree .....:
  .....

Place and data signature (in full and legible)

Attaches hereto:
– copy of identity document [2]
– certificate of conformity for the container(s) (cylinder/tank) [1] installed, or a copy of the plate(s) [1] issued by the inspection body.
– copy of theattestation/certificate of qualified personnel meeting the requirements set out in Annex 23 of the Ministerial Decree.....

(1) cross out the text not of interest.
(2) not necessary if digitally signed.
(3) Used containers may only be used for CNG-powered systems.

2. Installation or removal of tow bars on vehicles of international categories M_1 and N_1.

[workshop letterhead]

The undersigned …… born in …… on …… in my capacity as …… of the company …… with registered office in …… VAT number or tax code …… registered with the Chamber of Commerce …… section ……
with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed/removed (1) on the vehicle
registration……
Chassis No. (V.I.N..)……

the tow bar

- type: ……
- class: ……
- type-approval No. ……
- value D: …… (kg)
- vertical load: …… (kg)

FURTHER DECLARES

- that the aforementioned hitch is one of those specified for the vehicle's functional type;
- that all the requirements provided by both the vehicle manufacturer and the manufacturer of the towing device have been complied with, and all other applicable technical requirements, with particular reference to the anchorage points, fasteners and tightening torques (1);
- that they have correctly positioned/removed (1) the identification plate;
- that the work has been carried out to the highest standard and in accordance with the instructions provided by both the vehicle manufacturer and the device manufacturer.

Place and data signature (in full and legible)

Attaches hereto:

- copy of the identity document (2)
- type-approval certificate and related annex
- manufacturer's clearance (if applicable)

(1) cross out the statement that does not apply

(2) not required if digitally signed

3. Installation to replace a ball coupling mounted on the drawbar of international category O trailers intended to be towed by vehicles of international categories M_1 and N_1.

[workshop letterhead]

The undersigned …… born in …… on …… in my capacity as …… of the company …… with its registered office in …… VAT number or tax reference number …… registered with the Chamber of Commerce …… section ……

with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed/removed (1) on the vehicle

registration……
Chassis No. (V.I.N.) ……

the ball joint

- type: ……
- class: ……
- type-approval No. ……
- value D: …… (kg)
- vertical load: …… (kg)

FURTHER DECLARES

- that the aforementioned ball joint is one of those specified for the vehicle's functional type;
- that all requirements provided by both the vehicle manufacturer and the ball coupling manufacturer have been complied with, and all other applicable technical requirements, with particular reference to the mounting points, fasteners and tightening torques (1);
- that they have correctly positioned/removed (1) the identification plate;
- that the work has been carried out to the highest standard and in accordance with the instructions provided by both the vehicle manufacturer and the device manufacturer.

Place and data signature (in full and legible)

Attaches hereto:

- copy of the identity document (2)
- type-approval certificate and related annex.
- manufacturer's authorisation (if applicable).

(1) cross out the statement that does not apply

(2) not required if digitally signed

4) Installation or removal of dual controls for vehicles to be used for driving practice

(only vehicles in the international category M_1 and self-drive hire).

[workshop letterhead]

The undersigned ..... born in..... on..... in my capacity as ..... of the company..... with registered office at ..... VAT number or tax code ..... registered with the Chamber of Commerce .....section ....., with UMC identification code No. .....

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed/removed (1) on the vehicle registration ..... Chassis No. (V.I.N..)..... ,

dual controls for driving lessons and private use (delete the "private" entry if for driving school use only).

Further declares,

- that the Ministry of Infrastructure and Transport-CSRPAD has approved the installed device with report No..... dated..... (where issued)
- that the work has been carried out to the highest standards and in accordance with the specifications provided by both the vehicle manufacturer and the device manufacturer.

Place and data signature (in full and legible)

Attaches hereto:

- copy of the identity document (2)
- certificate of origin for the device (where applicable).
- manufacturer's clearance (where required).

(1) cross out the text not of interest

(2) not necessary if digitally signed

(3)

5) Installation or removal of adaptations for the driving of vehicles by drivers with disabilities.

[workshop letterhead]

The undersigned ……., born in ……. on ……., in my capacity as ……. of the company ……. with registered office in ……. , VAT number or tax code ……. , registered with the Chamber of Commerce ……. , section …….

with UMC identification code No. …….

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed/removed [(1)] on the vehicle

registration …….

Chassis No. (V.I.N.) …….

the following adjustments/modifications to the following original commands:

a) steering wheel knob;
b) service control unit;
c) reversal of the accelerator and brake pedals in a configuration mirroring the original;
d) relocation of control levers (lights, windscreen wipers, etc.);
e) wide-angle interior rear-view mirror;
f) additional exterior rear-view mirror;
g) ……,

FURTHER DECLARES

- that the installed device has been approved by the Ministry of Infrastructure and Transport-CSRPAD with report No. …….of ……. (where issued);
- that the installation has been carried out to the highest standards and in compliance with the specifications provided by the system manufacturer and those of the vehicle manufacturer

Place and date signature (in full and legible)

Attaches hereto:

- copy of the identity document [(2)]
- certificate of origin for the device (where applicable).
- manufacturer's approval (where required).

(1) Cross out the statement that does not apply

(2) Not required if digitally signed

6) installation of the wheel systems required by the regulations referred to in Decree No. 20 of the Minister of Infrastructure and Transport of 10 January 2013.

[workshop letterhead]

The undersigned ..... born in ..... on ..... in my capacity as ..... of the company ..... with its registered office in ..... VAT number or tax reference number ..... registered with the Chamber of Commerce .....section ……,
with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed on the vehicle
registration number ……
Chassis No. (V.I.N.) …… ,

the wheel system identified by type-approval number……
and comprising the following elements:

- Wheel ……
- Measure ……
- Tyres ……

Further declares:

- that the wheel system fitted is one of those specified for the vehicle's functional type;
- that the installation has been carried out to the highest standards and in accordance with the specifications provided by the system manufacturer and those of the vehicle manufacturer.

Place and data signature (in full and legible)

Attaches hereto:
- copy of identity document (1).
- a copy of the wheel system conformity certificate.

(1) not necessary if digitally signed

7) Installation of mechanical coupling devices is not suitable for towing on vehicles of international categories M_1 and N_1.

[workshop letterhead]

The undersigned …… born in …… on ……in my capacity as …… of the company …… with its registered office in …… VAT number or tax reference number …… registered with the Chamber of Commerce …… section ……

with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed on the vehicle

registration ……

Chassis No. (V.I.N.) ……

with a mechanical coupling device not intended for towing and usable exclusively for securing removable luggage racks and ski racks as referred to in Article 1 of the Ministerial Decree 19 December 2024, No. 328, in accordance with the manufacturer's instructions for the vehicle and the coupling device.

FURTHER DECLARES

- that the installation has been carried out in accordance with the following requirements: ……
- that the maximum load applicable to the ball is: …… kg.

Place and data signature (in full and legible)

Attaches hereto:

- copy of identity document [(1)]
- copy of the vehicle manufacturer's specifications.
- certificate of conformity for the coupling device.
- a copy of the installation diagram for the coupling device.

(1) not necessary if digitally signed

8) Declaration regarding the installation/non-installation of bulkheads or partition panels on the bus

[workshop letterhead]

The undersigned …… , born in …… on ……..in my capacity as …… of the company ……. with registered office in …… , VAT number or tax code ……. registered with the Chamber of Commerce ……. section …… with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed/has been unable to install (1) the partition or dividing panel on the bus with …… chassis (VIN) no. …… , using the following components:

- Glass/Glazing approved in accordance with UN (UNECE) Regulation No.43 with approval number ……;
- other material …… (to be specified, where applicable, indicating UN (UNECE) approval number No.118).
- that the bulkhead or partition has been installed in a workmanlike manner, and in particular:
  - it has been properly secured, ensuring access to the driver's seat and compliance with regulations on emergency exits;
  - the installation was carried out in compliance with the requirements provided by the vehicle manufacturer and with the specific regulations relating to vehicles of the categories M_2 and M_3;
  - It was not possible to install the bulkhead or partition panel for the following technical reasons……

Place and date signature (in full and legible)

Attaches hereto:

- copy of the identity document (2)
- copy of the vehicle manufacturer’s specifications.
- certificate of conformity for the coupling device.
- a copy of the installation diagram for the coupling device.

(1) cross out the text not of interest

(2) not necessary if digitally signed

9) Removal of conversion system LPG/CNG/LNG/DPL/DNC /DNL and restoration of original fuel supply.

[workshop letterhead]

The undersigned …… born in…… on …… , in my capacity as …… of the company …… , with registered office in…… VAT number or tax code …… registered with the Chamber of Commerce ……section ……, with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has removed from the vehicle
registration ……
Chassis No. (V.I.N.) …… ,

all components of the conversion system to

- liquefied petroleum gas (LPG)
- compressed natural gas (CNG)
- liquefied natural gas (LNG)
- Dual Fuel LPG (DPL)
- Dual Fuel CNG (DNC)
- Dual Fuel LNG (DNL) (1)

identified as follows:

A) Where the type-approval number of the conversion system is shown on the single document of circulation and ownership/vehicle registration certificate:
   - Brand (3):
   - Name (3):
   - Type-approval number (3):
   - Type/Variant (3):

B) Case where the type-approval number of the conversion system is NOT present on the single document of circulation and ownership/vehicle registration certificate

1. Tank(s)
   a) Manufacturer(s)
   b) Brand and model
   c) UN (UNECE) approval No. 67/110/national (1)
   d) serial number
   e) Capacity
   f) Location
2) Vaporiser/pressure regulator (1)
   a) Manufacturer/Brand
   b) Type
   c) Type approval number

Further declares:

- that the identification plate (where present) has been correctly removed;
- to have restored the original petrol/diesel fuel supply[(1)];
- that they meet the requirements set out in Annex 22 of the Ministerial Decree ……..
- that the following personnel carried out the removal authorised in accordance with Annex 23 of Ministerial Decree ……..:

Place and data signature (in full and legible)

Attaches hereto:

- copy of identity document [(2).]

- copy of the attestation/certificate of qualified personnel meeting the requirements set out in Annex 23 of the Ministerial Decree……..

(1) cross out the text not of interest

(2) not necessary if digitally signed

10) Installation of LPG/CNG/LNG/DPL/DNC/DNL conversion systems.

[workshop letterhead]

The undersigned ..... , born in ..... on ..... , in my capacity as ..... of the company ..... with registered office in ..... , VAT number or tax code ..... registered with the Chamber of Commerce....., section ....., with UMC identification code No. .....

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed on the vehicle
registration .....
Chassis No. (V.I.N..)..... ,

the conversion system for

- liquefied petroleum gas (LPG)
- compressed natural gas (CNG)
- liquefied natural gas (LNG)
- Dual Fuel LPG (DPL)
- Dual Fuel CNG (DNC)
- Dual Fuel LNG (DNL) (1)

Brand:
Designation:
Approval number:
Type/Variant
Serial number:

whose main components are:

1. Container(s) (cylinder/tank) (1)
   a) Manufacturer(s)
   b) Brand and model
   c) UN No. 67/110/national approval (1)
   d) Serial number
   e) Capacity
   f) Location
2. Pressurised ventilation chamber (if applicable)
   a) Manufacturer/Brand
   b) Type
   c) Type approval number
3. Vaporiser/pressure regulator (1)
   a) Manufacturer/Brand
   b) Type
   c) Type approval number
4. Pressure relief valve(s) (1)

a) Number of valves
b) Type approval number

5. Gas injection device or injector [1]
   a) Manufacturer
   b) Type approval number
   c) Type
6. Gas mixer [1]
   a) Manufacturer
   b) Type approval number
   c) Type
7. Electronic control unit [1]
   a) Manufacturer/Brand
   b) Type
   c) Type approval number

- that the vehicle falls within the family for which the conversion system installed in the vehicle has been approved;
- that the conversion system is compatible with the vehicle on which it has been installed;
- that the container(s) (cylinder/tank) [1] [3] is/are not brand new,
- inspection (for container (cylinder/tank) [1] not new):

  SFBM report/label [1] n..... issued on ..... by .....
- that it has complied with all applicable regulations in this regard, and in particular those concerning:
  i. the securing of containers (cylinders/tanks) [1] and the airtight ventilation chamber (where provided);
  ii. the strength of the supports and anchor points on the vehicle;
  iii. the characteristics of the piping.
  iv. that the anchorage of the container(s) (cylinder/tank) [1] is such as to ensure resistance to the prescribed stresses and accelerations of the vehicle;
  v. any specifications issued by the manufacturers of the vehicle and the components used;
- that, following the installation of the conversion system specified above, a leak test has been carried out in accordance with the requirements of Annex 17 of Ministerial Decree ....., to ensure that there are no gas leaks;
- in the case of DPL, DNC and DNL conversion systems, authorisation has been granted by the manufacturer of the conversion system for its installation;
- that they meet the requirements set out in Annex 22 of the Ministerial Decree .....
- that the following personnel carried out the installation authorised in accordance with Annex 23 of Ministerial Decree .....:
  .....

- in the part of the conversion system where pressures are below 20 kPa, the following components have been installed (for s not subject to type-approval in accordance with UN Regulation No. 67 or UN Regulation No. 110): ……

Place and data signature (in full and legible)

Attaches hereto:
- copy of identity document [2]
– certificate of conformity for the container(s) (cylinder/tank) [1] installed,where applicable.
- a copy of the conversion system scheme
- a copy of the list of authorised repairers of the conversion system manufacturer, valid on the date of installation of the system (where required).
copy of theattestation/certificate of qualified personnel meeting the requirements set out in Annex 23 of the Ministerial Decree……..

1. cross out the text not of interest
2. not necessary if digitally signed
3. used containers may only be used for systems utilising CNG

11) Installation of a heating system compliant with UN (UNECE) Regulation No. 122.

[workshop letterhead]

The undersigned …… , born in …… on……, in my capacity as…… of the company …… with registered office in …… , VAT number or tax code …… , registered with the Chamber of Commerce…… section ……., with UMC identification code No. ……

Aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents, pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

DECLARES

that he/she has installed on the vehicle
registration number ……
Chassis No. (V.I.N..)…… ,

the heating system;

Brand:

Designation:

UN (UNECE) type-approval number 122 n……

whose main components are:

Tank(s)

g) Manufacturer(s)
h) Brand and model
i) UN (UNECE) approval No. 67/110 (1)
j) serial number
k) Capacity
l) Location

Other ……

Further declares:

- that he/she has installed the heating system, the tank and the associated fittings on the vehicle specified above in a workmanlike manner, in accordance with UN (UNECE) Regulation No 122 and in compliance with the specifications of the system manufacturer and the vehicle manufacturer or the attached technical report;
- that the tank mountings are designed to ensure resistance to the prescribed stresses;
- that the tank and its accessories are brand new;
- that the system has been checked for safety and functionality with a positive result, having carried out the checks required by regulations and legal provisions;
- that he/she has provided the client with the operating and maintenance instructions for the installed heating system;
- that they meet the requirements set out in Annex 22 of the Ministerial Decree ……
- that the installation was carried out by personnel qualified in accordance with Annex 23 of Ministerial Decree ……

Place and date signature (in full and legible)

Attaches hereto:
- copy of the identity document [2]
- certificate of conformity for the installed tank(s).
- Vehicle manufacturer’s approval of the heating system’s specifications and installation diagram. As an alternative to the manufacturer’s approval, a technical report may be submitted, comprising the installation diagram, the components and materials to be used, drawn up in accordance with Article 236 of the implementing regulation of the Highway Code by a person authorised to do so, certifying that the modification in question can be carried out.
- schematic diagram of the heating system showing the position of the tank and components, and, where applicable, the approval details of all devices used.
- Copy of thecertificate for qualified personnel meeting the requirements set out in Annex 23 of Ministerial Decree……..

(1) cross out the text not of interest
(2) not necessary if digitally signed

Update to Annex C of the Ministerial Decree 8 January 2021

(Article 2(2))

PRODUCT SPECIFICATION

The undersigned …… born in …… on …… ……

resident at …… street …… in my capacity as …… of the Company

…… with registered office in…… VAT number or tax code ……

By signing these regulations, the undersigned requests the registration of their vehicle repair workshop with the Motor Vehicle Registration Office of …… for operations involving modifications to the construction or functional characteristics that require the updating of the single document of registration and ownership/vehicle registration certificate and for which an inspection and test of the vehicle concerned is not required pursuant to Article 78 of Legislative Decree No. 285 of 30 April 1992, and listed in Annex A to the Decree of the Minister of Infrastructure and Transport of 8 January 2021, as amended and supplemented (hereinafter referred to as the 'Decree').

To this end, being aware of the penalties provided for in Article 76 of Presidential Decree No. 445/2000 in the event of false declarations and falsification of documents

DECLARES

pursuant to and for Article 47 of the same Presidential Decree No. 445/2000:

- to carry out vehicle repair activities pursuant to Law No. 122 of 5 February 1992, and to be registered with the Chamber of Commerce of …… under No. …… for the following activities……
- to possess the skills, abilities and knowledge required to carry out, to the highest standard, the modifications listed in Annex 19 of the decree ….. and specified below [4]:

1. Replacement of an LPG/CNG/LNG container (cylinder or tank) fitted to a vehicle (whether originally type-approved as LPG/LNG monofuel, dual fuel, or forming part of a bifuel or monofuel fuel system or a heating system) [1][2];
2. installation or removal of a tow bar on vehicles in the international categories M1 and N.
3. Installation to replace a ball coupling mounted on the drawbar of trailers of international category O intended to be towed by vehicles of international categories M_1 and N_1;
4. installation or removal of dual controls for vehicles to be used for driving lessons (only vehicles in international category M1 and self-drive hire);
5. installation or removal of adaptations for the driving of vehicles by drivers with disabilities;
6. installation of wheel systems as required by the regulations referred to in the Decree of the Minister of Infrastructure and Transport No. 20 of 10 January 2013;
7. installation of mechanical coupling devices not suitable for towing on vehicles of international categories M_1 and N_1;
8. installation of glass partitions or panels or glazing on vehicles of international categories M2 and M3 belonging to classes A, I and II, intended for regular public transport;

9. removal of LPG/CNG/LNG/DPL/DNC/DNL conversion systems and restoration of the original fuel system [(1)(2)(3)];
10. Installation of LPG/CNG/LNG/DPL/DNC/DNL conversion systems [(1)(2)(3)];
11. Installation of heating systems in accordance with UN (UNECE) Regulation No. 122 [(1)(2)];

- to have an organisation characterised by adequate human and material resources;
- to possess the minimum equipment specified in standard UNI 11832-1:2021 'Subsection: CNG, LPG and LNG systems', for the activities described above in points 1, 9, 10 and 11 [(3)];
- to meet the requirements set out in Annexes 22 and 23 of the Ministerial Decree …… for the activities described above in points 1, 9, 10 and 11 [(3)];
- to be familiar with and to operate in accordance with the relevant technical requirements;
- to ensure continuous updating with regard to the standards and technical requirements falling within their sector of activity and the scope of the decree, with particular reference to the provisions issued by the Ministry of Infrastructure and Transport – Directorate-General for Motor Vehicles;
- to accept and undertake to comply with the requirements of these specifications and those set out in the decree;
- that the workshop's contact details are as follows:

telephone: …….. email address: …….. PEC (if applicable): ……..

Specifically,

UNDERTAKES

- to carry out the work to the highest standard, in compliance with the relevant technical regulations in force, the provisions issued by the General Directorate for Motor Vehicles, the manufacturer's specifications for the vehicle being modified, and in accordance with the instructions in the installation manual provided by the manufacturer of any components or devices installed;
- to issue, in the manner and form prescribed, the documentation required by the Ministerial Decree of 8 January 2021;
- to provide the vehicle owner with all the information necessary for subsequent formalities for the purpose of updating the single vehicle registration and ownership document or the moped registration certificate;
- to keep the register required by the Ministerial Decree of 8 January 2021 and to store it securely;
- to notify any changes to the workshop's organisational structure, regarding aspects regulated by the specifications and/or relating to the data filed with the Motor Vehicle Registration Office of ……., including the authorisations obtained as described above and their validity status;
- to inform the person concerned that the vehicle subject to modifications may be subject to random checks by the Motor Vehicle Registration Offices;
- to allow inspections by officials of the Motor Vehicle Registration Authority at any time.

Finally,

DECLARES

to be aware that, without prejudice to civil, criminal and administrative liability, should any irregularities be found regarding compliance with the rules which he has undertaken to observe, the identification code will be withdrawn. He will therefore no longer be able to carry out the activities provided for in Article 78, paragraph 1, second sentence, of Legislative Decree No. 285 of 30 April 1992.

date…….. stamp and signature (in full and legible) ……..

(1) activities for which you self-certify that you meet the requirements of Annex 22 of Ministerial Decree ……..
(2) activities for which the Attestation/Certificate of qualified personnel referred to in point C) of Annex 22 of Ministerial Decree…….. is attached
(3) Delete if not applicable.
(4) Indicate the types of modifications for which the workshop is qualified.

attach:

- copy of a valid identity document
- self-certification of registration with the Chamber of Commerce

- copy of the manufacturer’s list of workshops authorised to install LPG/CNG/LNG/DPL/DNC/DNL systems.

Annex 20

Requirements for the installation of heating systems in accordance with UN (UNECE) Regulation No. 122 on vehicles of categories M, N and O.

The installation of a heating system approved in accordance with UN (UNECE) Regulation No. 122, not intended to power the engine, on a vehicle of international category M, N or O, shall be carried out under the following conditions:

1. it is carried out by an installer meeting the requirements set out in Part I of Annex 22 to this decree;
2. meets the requirements laid down in UN Regulation (UNECE) No. 122, point 5.3;
3. is carried out only on vehicles registered in Italy in accordance with Article 93 of Legislative Decree No. 285 of 30 April 1992;
4. This is carried out, in accordance with Article 236 of the implementing regulations of the Highway Code, with a certificate of approval from the vehicle manufacturer in accordance with the template set out in the appendix or, alternatively, with a technical report, signed by an authorised person, certifying that the modification in question can be carried out;
5. the procedure set out in Article 11(1) of this decree shall be followed.

The installation of a heating system is recorded on the single vehicle registration and ownership document by means of a label issued by a Motor Vehicle Registration Office following an application by the entitled parties and in accordance with the procedures laid down in the Ministerial Decree of 8 January 2021, by means of a label bearing the following annotation: '*Retrofit for the installation of an LPG tank, compliant with UN (UNECE) Regulation No. 67, not intended for engine fuel supply (Brand, Type-approval, Serial number, Capacity in litres)*'.

Following the installation of a heating system, the user concerned submits an application to a UMC using form DTT 2119, attaching proof of payment of fee N004, and encloses the installer's declaration with the application.

On the basis of the declaration received, the UMC prints an administrative update label, to be affixed to the vehicle registration document, bearing the following note: '*Update for the fitting of an LPG tank, compliant with UN (UNECE) Regulation No. 67, not intended for engine fuel supply (Brand, Type-approval, Serial number, Capacity in litres)*'

Appendix to Annex 20

Facsimile of the vehicle manufacturer's authorisation

[Builder's letterhead]

Al .....

.....

Subject: Vehicle .....

Chassis (V.I.N.) No. .....

Approval .....

The undersigned ..... , born in ..... on ..... , in my capacity as ..... of the company .....

DECLARES

a) that a permanently installed LPG tank, approved in accordance with UN (UNECE) Regulation No. 67, and related accessories, not intended for engine fuel supply, may be fitted to the vehicle in question;
b) the installation of the tank and all associated components must be carried out, in accordance with UN Regulation (UNECE) No. 122, in accordance with the requirements specified below: ……;
c) The following components must be used: ……;
d) The vehicle must be made compliant with type ..... approved by certificate No. ..... , for which the assembly diagram and the list of components to be used are attached.

Points (c) and (d) are optional and may not be necessary.

Date .....

Signature

(signatory

for declarations of conformity)

Annex 21

Note on the circulation document for tanks present from the outset and intended for heating systems

The annotation regarding the presence of one or more tanks intended for the storage of LPG not intended for engine fuel is made solely for the purpose of enabling the checks, provided for in Annex A to Presidential Decree No. 340 of 24 October 2003, to be carried out by staff at distribution facilities.

Users wishing to update the vehicle's single registration and ownership document must submit an application to a UMC using form DTT 2119, attaching proof of payment of fee N004, and enclosing a declaration from the vehicle manufacturer confirming the presence of the tank(s) installed on the vehicle from the outset, intended for heating systems and not for powering the engine.

On the basis of the declaration received, in accordance with the procedures laid down by the Directorate-General for Motor Vehicles, an administrative update label shall be printed and affixed to the vehicle registration document, bearing the following annotation: '*Vehicle originally fitted with a fuel tank complying with UN Regulation (UNECE) No. 67, not intended for engine fuel supply*'.

Annex 22

Requirements for conversion system installers

An installer, as defined in Article 2(1)(g) of this decree, in order to assume technical responsibility for:

- the correct and safe installation of a conversion system approved in accordance with Article 4 of this decree pursuant to UN (UNECE) Regulation No. 115 or UN (UNECE) Regulation No. 122 or UN (UNECE) Regulation No. 143;
- for the installation/replacement of containers (cylinders or tanks) fitted to vehicles,

meets the following requirements:

a) carries out vehicle repair activities – Mechatronics section, pursuant to Article 1 of Law No. 122 of 5 February 1992;
b) possesses the minimum equipment specified in standard UNI 11832-1:2021 'Subsection: CNG, LPG and LNG systems';
c) has qualified personnel meeting the requirements set out in Annex 23 of this decree;
d) is authorised by the manufacturer of the processing system, in the case of DPL, DNC and DNL processing systems.

Annex 23

Requirements for personnel authorised to carry out technical operations on vehicles for the installation of LPG/CNG/LNG/DPL/DNC/DNL conversion systems (type-approved in accordance with national regulations or UNECE (UN) Regulations Nos. 115, 122 and 143) or for the replacement of containers (cylinders or tanks) fitted to vehicles.

A. Personnel authorised to carry out technical work on vehicles for the installation of conversion systems or heating systems using Liquefied Petroleum Gas (LPG), Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG), dual-fuel LPG (DPL), dual-fuel CNG (DNC) or dual-fuel LNG (DNL), or for the replacement of containers (cylinders or tanks), must possess the following minimum knowledge:

a) Be able to install conversion kits using the necessary resources, equipment and tools;
b) Be able to check the setup and operation of tools and equipment, ensuring their routine maintenance;
c) Be able to check the conformity of components and/or the conversion kit;
d) Be able to identify and rectify any defects in the work carried out that are reported by customers;
e) Ability to work with the workshop manager to identify the causes of non-conformities and propose appropriate corrective actions;
f) Be able to apply techniques and methods to carry out vehicle inspections;
g) Be able to interpret data and technical data sheets;
h) Be able to monitor leak tests;
i) Be able to use documentation (including digital) such as: manuals, diagrams, drawings, procedures, bills of materials and specific instructions for various tasks;
j) Knowing how to identify the tools and the sequence of tasks to be carried out;
k) Knowing how to use appropriate equipment for diagnosis and monitoring;
l) Be able to recognise the suitability and conformity of components in accordance with the vehicle type-approval.

B. Staff authorised to carry out technical operations on vehicles for the replacement of containers (cylinders or tanks) must possess the following minimum knowledge:

a) Be able to identify and rectify any defects in the work carried out that are reported by customers;
b) Ability to work with the workshop manager to identify the causes of non-conformities and propose appropriate corrective actions;
c) Be able to apply techniques and methods to carry out vehicle inspections;
d) Be able to carry out leak tests;
e) Knowing how to identify the tools and the sequence of tasks to be carried out;
f) Knowing how to use appropriate equipment for diagnosis and monitoring;
g) Be able to recognise the suitability and conformity of components in accordance with the vehicle type-approval.

To that end:

- holds a valid qualification as a technical manager for the installation of CNG and LPG systems as referred to in clause 6.4.2.1 of standard UNI 11623-1:2016, or
- holds the qualification of 'Technical Manager of Workshop' as referred to in clause 4.2 of ISO 23684, or
- has been trained by a manufacturer of conversion systems, exclusively for the installation of conversion systems approved by the system manufacturer-or for the installation of heating systems as referred to in UNECE Regulation No. 122 or the replacement of containers (cylinders or tanks) or

- has been trained by a manufacturer of vehicles holding type-approval for bifuel or dual-fuel vehicles, exclusively for the replacement of containers (cylinders or tanks).

Please note that:

1. Manufacturers of processing systems, in relation to basic training and subsequent refresher courses, organise training courses exclusively for the purpose of training qualified personnel:
   - to install systems of their own manufacture or those of another manufacturer of conversion systems who has entrusted them with a specific task and provided the relevant information regarding the training to be delivered;
   - to install heating systems referred to in UNECE Regulation No. 122;
   - to replace containers (cylinders or tanks).
2. Vehicle manufacturersorganise training courses exclusively for the purpose of training personnel authorised solely to replace containers (cylinders or tanks);
3. Accredited bodies authorised to issue the certificates referred to in standard UNI 11623-1:2016 or standard ISO 23684 shall notify the Directorate-General for Motor Vehicles – Division 3, every six months, of the authorised persons to whom certification has been issued, renewed or withdrawn.

The training provided by the manufacturers of conversion systems includes:

- Initial basic training consisting of a theoretical course of at least 15 hours and a practical course of at least 9 hours, as set out in parts A), B) and C) below, to be carried out in person;
- A periodic refresher course of at least 6 hours every four years, as specified in the following part D), to be carried out remotely:

Part A) Theoretical course of at least 15 hours [(1)]

a) An overview of the operation of engines and fuels used in the automotive sector;
b) An overview of LPG and CNG fuels;
c) Exhaust emissions and abatement systems
d) Types of conversion systems;
e) Principles, mechanisms and operating parameters of engines and fuel systems;
f) Types and characteristics of the main components of fuel systems;
g) Knowledge of the operation of computerised diagnostic and calibration systems;
h) Operation of the various components that make up the engine conversion system for LPG and CNG operation;
i) Use, maintenance and updating of equipment used in diagnostics and repair work;
j) Procedures and techniques for identifying faults;
k) Issues related to incorrectly performed work or vehicle system faults;
l) Procedures for the safe handling, treatment and emptying of CNG cylinders and LPG and LNG tanks;
m) Information on fire safety measures;
n) Specific risks associated with the work environment and methods of prevention and protection;
o) Measuring and control instruments (use, maintenance and calibration techniques);
p) Penalties for non-compliance with installation and testing procedures;
q) Vehicle registration documents, their purpose and how to find the information needed to match the appropriate conversion systems to the vehicle.
r) Regulations, both national and international, relating to the installation and maintenance of LPG and CNG conversion systems.

Part B) Practical course of at least 9 hours [(1)]

a) Detailed physical illustration of CNG and LPG conversion systems;
b) Inspection of the conversion kit (including CNG cylinders and LPG tanks) and the associated installation and user manuals;
c) Correct fitting and/or replacement of the various components;
d) Practical exercises in assembling transformation systems or parts thereof;
e) Practical exercises in checking the fuel system;
f) Practical exercises on electrical connections;
g) Practical exercises on the correct use of portable equipment for detecting gas leaks from the transformer system and, where necessary, carrying out hydraulic tests;
h) Practical exercises on the correct use of diagnostic equipment;
i) Safety regulations to be followed when working on *LPG/CNG/LNG/DPL/DNC/DNL* conversion systems.

Part C) Additional knowledge required to qualify for the installation of NG systems (theoretical/practical course of at least 6 hours).

Topics relating to the installation of power transformation systems using GN, including specific safety measures.

Part D) Refresher courses for personnel authorised to carry out technical operations on vehicles, who have completed a training course provided by a conversion system manufacturer.

1) The latest anti-pollution regulations relating to the installation of conversion systems using LPG and NG;
2) Fuel systems: market updates and new technologies;
3) The most common errors during installation;
4) Miscellaneous.

Training provided by vehicle manufacturers holding type-approval for bi-fuel or dual-fuel vehicles, exclusively for the installation and/or replacement of containers (cylinders or tanks), includes:

- Initial basic training consisting of a theoretical course of at least 3 hours and a practical course of at least 3 hours, as set out in parts A) and B) below, to be carried out in person;
- A periodic refresher course of at least 3 hours, to be held every four years, as specified in Part C below, which may also be conducted remotely.

Part A) Theoretical course of at least 3 hours [(1)]

a) Types and characteristics of containers (cylinders and tanks);
b) Procedures and techniques for identifying faults;
c) Issues related to incorrectly performed work or vehicle system faults;
d) Procedures for the safe handling, treatment and emptying of CNG cylinders and LPG and LNG tanks;
e) Information on fire safety measures;
f) Specific risks associated with the work environment and methods of prevention and protection;
g) Penalties for non-compliance with installation and testing procedures;
h) Vehicle registration documents, their purpose and how to find the information needed to match the appropriate conversion systems to the vehicle.

Part B) Practical course of at least 3 hours [(1)]

a) Correct assembly and/or replacement of various containers (cylinders and tanks);
b) Practical exercises on the correct use of portable equipment for detecting gas leaks from the transformer system and, where necessary, carrying out hydraulic tests;
c) Practical exercises on the correct use of diagnostic equipment;

Part C) Refresher courses for personnel authorised to carry out technical operations on vehicles, who have completed a training course provided by a vehicle manufacturer holding type-approval for bi-fuel or dual-fuel vehicles.

1. Fuel systems: market updates and new technologies;
2. The most common errors during installation;
3. Miscellaneous.

Competence of instructors.

Every course, whether initial training or refresher training, is delivered by instructors authorised by the certifying authority, which has previously verified their competence.

The competence of the instructors must be consistent with the topics covered and is demonstrated by:

- an appropriate Curriculum Vitae (e.g. educational background or technical and scientific publications or presentations given on the subject at conferences, etc.) and/or
- proven experience in professional activities relating to the subject and in training activities.

The training provider is required to notify the Directorate-General for Motor Vehicles – Division 3, using the form (Form A) set out below, at least 30 days prior to the start date; the Directorate-General must approve this within 7 days prior to the start date:

- the type of courses they intend to deliver;
- the course tutors and their expertise;
- course content and duration of individual sections;
- list of participants.

Assessment of candidates.

Within 7 days of the end of the course, the trainer assesses the candidates by means of a written and a practical test.

To sit the exam, candidates must attend at least 90% of the lessons.

The written test consists of a multiple-choice test, with questions covering all areas relating to the subjects covered in the training course (for each question, at least four answers are provided, only one of which is correct – excluding ‘true/false’ or ‘yes/no’ questions) and having the following characteristics:

- For the initial training course aimed at the installation of processing systems and/or containers, at least 30 questions with a duration not exceeding 60 minutes;
- For the initial training course on the installation and/or replacement of containers, at least 10 questions lasting no longer than 30 minutes;
- For the refresher course on the installation of transformer systems and/or containers, at least 15 questions lasting no longer than 45 minutes;

- For the refresher course on the installation and/or replacement of containers, at least 5 questions lasting no longer than 15 minutes.

The practical test, lasting at least 30 minutes, consists of verifying that the candidate has the ability to:

a) correctly assemble and/or dismantle the components of a transformation system and/or
b) Identify malfunctions and/or
c) safe handling, treatment and emptying of containers (cylinders and tanks) and/or
d) correctly use the equipment and tools required to safely carry out work related to the installation/ replacement of processing systems and/or
e) correctly use the software required to adjust an installed power distribution system.

The tasks set for the candidate during the test are recorded by the trainer.

The assessment forms and the form completed during the practical test are kept by the trainers for at least 5 years and, upon request by the approval authority, forwarded to it.

Communications from the training provider to the approval authority.

Within 7 days of the assessment of candidates, the training provider shall submit the list of candidates who have successfully completed the training course, attaching the forms used for the assessment of candidates.

(1) The number of hours must be increased in relation to the topics covered.

MODEL A

To the Ministry of Infrastructure and Transport
Directorate-General For Motor Vehicles
DIVISION 3 – Technical rules for vehicles
PEC: dg.mot-div3@pec.mit.gov.it

Subject: Application for the establishment of a training course on the installation of gas conversion systems approved in accordance with Ministerial Decree……

The undersigned…… , born in
……. on…… , tax code:
……
Legal representative, or their delegate, of the MANUFACTURER of the vehicles/conversion systems: ……..
……
Headquartered in: ……
Holder of the following type-approvals for:

- conversion systems: ……
- Vehicles type-approved from the outset as monofuel/bifuel/dual fuel: …… [(1)]

REQUESTS

In accordance with Annex 23 of the Ministerial Decree ……., to establish an initial training/refresher course [(1)] on the subject of

- o installation of processing systems;
- o installation/replacement of containers (cylinders or tanks) [1) (2]

Approved in accordance with:

- o national regulations, Ministerial Decree ……;
- o UN (UNECE) Regulation No. 67;
- o UN (UNECE) Regulation No. 110;
- o UN (UNECE) Regulation No. 115;
- o UN (UNECE) Regulation No. 122;
- o UN (UNECE) Regulation No. 143;
- o systems using LNG[(1) (2)];

At: ……
……
Teaching materials, resources and equipment used:
……
……
……

List of Teachers
……
……
……
……

Number of course hours:……..

DECLARES:

to be informed, in accordance with and for the purposes of Legislative Decree 196/03 and subsequent amendments and additions, that the personal data collected will be processed, including by electronic means, exclusively within the scope of the proceedings for which this declaration is made.

Date _____ digitally signed by the legal representative/agent

_____

Attaches hereto:
- Copy of teaching staff CV

1. cross out the text not of interest

2. It is possible to deliver multiple courses simultaneously

Annex 24

(*Manufacturer's declaration regarding modifications made to a vehicle following the installation of a conversion system*)

Facsimile

[Builder's letterhead]

Subject: Conversion system:

Type approval (if granted) ……

Manufacturer:……

Brand: ……

Type……

I, the undersigned…… born in…… on …… in my capacity as …… of the company ……

DECLARES

that the processing system referred to above:

- does not make any modifications to the vehicles other than those strictly necessary for its installation and complies with all the provisions relating to pollutant emissions under which the vehicle's type-approval was originally granted;
- complies with the same limit values for atmospheric pollutant emissions with reference to the tests specified in Annex 5 of Ministerial Decree ……;
- compliant/NOT compliant (1) with the instructions issued by the vehicle manufacturer regarding the procedures for data communication via the security gateway;
- designed so as not to interfere NOT to interfere (1) with the systems implemented for the cybersecurity of the vehicle on which it is installed, where the vehicle complies with UN (UNECE) Regulation No. 155.

Date ……

Signature

(signatory

for declarations of conformity)

(1) Cross out the statement that does not apply

(2) Not required if digitally signed