

DIRECTIVES

COMMISSION DIRECTIVE 2013/60/EU

of 27 November 2013

amending for the purposes of adapting to technical progress, Directive 97/24/EC of the European Parliament and of the Council on certain components and characteristics of two or three-wheel motor vehicles, Directive 2002/24/EC of the European Parliament and of the Council relating to the type-approval of two or three-wheel motor vehicles and Directive 2009/67/EC of the European Parliament and of the Council on the installation of lighting and light-signalling devices on two- or three-wheel motor vehicles

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

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⁽¹⁾ and in particular Article 7 thereof,

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⁽²⁾ and in particular Article 17 thereof,

Having regard to Directive 2009/67/EC of the European Parliament and of the Council of 13 July 2009 on the installation of lighting and light-signalling devices on two or three-wheel motor vehicles⁽³⁾ and in particular Article 4 thereof,

Whereas:

(1) The Union is a contracting party to the Agreement of the United Nations Economic Commission for Europe (UNECE) concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted to and/or used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions ('Revised 1958 Agreement')⁽⁴⁾. In order to simplify the type-approval legislation of the Union in line with the recommendations of the final report entitled 'CARS 21: A Competitive Automotive Regulatory System for the 21st century', it is appropriate to amend EU Directives by the incorporation into Union law and application of additional UNECE Regulations in current type-approval legislation of L-category vehicles without reducing the

level of protection. To reduce the administrative burden associated with the type-approval procedures, vehicle manufacturers should be allowed to seek type-approval in accordance with the relevant UNECE regulations referred to in Article 1 of this Directive.

- (2) In the transitional period until the date on which UNECE Regulation No 41 on noise emissions of motorcycles⁽⁵⁾ is made obligatory in Regulation (EU) No 168/2013 of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles⁽⁶⁾, it is appropriate that, for new vehicle types, the sound requirements for motorcycles set out in Chapter 9 of Directive 97/24/EC and in the fourth series of amendments to UNECE Regulation No 41, including the associated sound limits set-out in Annex 6 to that UN Regulation, be regarded as equivalent.
- (3) In view of the disproportionately high level of hydrocarbon and carbon monoxide emissions produced by vehicle categories L1e, L2e and L6e (two- and three-wheel mopeds, and light quadricycles) it is appropriate to revise environmental test type I (tailpipe emissions after cold start) by including emission measurements starting directly after cold start in order better to reflect real-world use and the significant proportion of pollutant emissions produced directly after cold start while the engine warms up. The changes in the emission laboratory test procedure should be reflected in the administrative provisions, in particular in the changes as regards to the entries on the Certificate of Conformity (CoC) and of the measurement test results sheet in Directive 2002/24/EC.
- (4) In order to ensure a level playing field for all manufacturers and for the sake of equal environmental performance of L1e, L2e and L6e category vehicles in terms of crankcase gas emissions it is also appropriate to request the vehicle manufacturer, when applying for a new type approval, to state explicitly that zero emissions stem from the crankcase gas ventilation system for these

⁽¹⁾ OJ L 226, 18.8.1997, p. 1.

⁽²⁾ OJ L 124, 9.5.2002, p. 1.

⁽³⁾ OJ L 222, 25.8.2009, p. 1.

⁽⁴⁾ OJ L 346, 17.12.1997, p. 81.

⁽⁵⁾ OJ L 317, 14.11.2012, p. 1.

⁽⁶⁾ OJ L 60, 2.3.2013, p. 52.

vehicle categories, implying that the crankcase is properly sealed and that the crankcase gasses are not being discharged directly into the ambient atmosphere throughout the vehicle's useful life.

- (5) In order to be coherent with UNECE lighting and light-signalling installation requirements for L-category vehicles and to improve their visibility, new types of such vehicles should be equipped with lights that switch on automatically in compliance with UNECE Regulations No 74 (L1e vehicles)⁽¹⁾ and No 53 (L3e motorcycles)⁽²⁾ or with dedicated day-time running lights (DRL) complying with the relevant requirements of UNECE Regulation No 87⁽³⁾. For all other subcategories of L-category vehicles, an automatic switching on of lighting shall be installed or at the choice of the manufacturer, dedicated day-time running lights that automatically switch on.
- (6) This Directive should explicitly introduce the Euro level for category L1e, L2e and L6e vehicles falling in the scope of Directive 2002/24/EC. Certificates of Conformity for vehicles with an emission approval in accordance with previous provisions should continue to be allowed to indicate the Euro level on a voluntary basis.
- (7) The measures provided for in this Directive are in accordance with the opinion of the Technical Committee for Adaptation to Technical Progress.
- (8) In order to enable the adoption by Member States of the laws, regulations and administrative provisions necessary to comply with this Directive within the deadline established therein, it should enter into force on the day following that of its publication,

HAS ADOPTED THIS DIRECTIVE:

Article 1

Directive 97/24/EC is amended as follows:

- (1) Article 4(1) of Directive 97/24/EC is replaced by the following:

'1. In accordance with the provisions of Article 11 of Directive 2002/24/EC, the equivalence shall be recognised of the requirements of Chapter 1 (tyres), Chapter 2 (lighting and light-signalling devices), Chapter 4 (rear-view mirrors), Annex III to Chapter 9 (permissible sound level and exhaust system requirements for motorcycles) and Chapter 11 (safety belts) annexed to this Directive and those of UNECE Regulations Nos 30⁽¹⁾, 54⁽²⁾, 64⁽³⁾ and 75⁽⁴⁾ in respect of tyres, 3⁽⁵⁾, 19⁽⁶⁾, 20⁽⁷⁾, 37⁽⁸⁾, 38⁽⁹⁾, 50⁽¹⁰⁾, 53⁽¹¹⁾, 56⁽¹²⁾, 57⁽¹³⁾, 72⁽¹⁴⁾, 74⁽¹⁵⁾ and 82⁽¹⁶⁾ in respect of lighting and light-signalling devices, 81⁽¹⁷⁾ in

respect of rear-view mirrors, 16⁽¹⁸⁾ in respect of safety belts and 41⁽¹⁹⁾ in respect of noise emissions from motorcycles.

- (¹) E/ECE/TRANS/505/REV 1/ADD 29.
 (²) E/ECE/TRANS/505/REV 1/ADD 53.
 (³) E/ECE/TRANS/505/REV 1/ADD 63.
 (⁴) E/ECE/TRANS/505/REV 1/ADD 74.
 (⁵) E/ECE/TRANS/324/ADD 2.
 (⁶) E/ECE/TRANS/324/REV 1/ADD 18.
 (⁷) E/ECE/TRANS/324/REV 1/ADD 19.
 (⁸) E/ECE/TRANS/505/REV 1/ADD 36.
 (⁹) E/ECE/TRANS/324/REV 1/ADD 37.
 (¹⁰) E/ECE/TRANS/505/REV 1/ADD 49.
 (¹¹) E/ECE/TRANS/505/REV 1/ADD 52/Rev.2.
 (¹²) E/ECE/TRANS/505/REV 1/ADD 55.
 (¹³) E/ECE/TRANS/505/REV 1/ADD 56.
 (¹⁴) E/ECE/TRANS/505/REV 1/ADD 71.
 (¹⁵) E/ECE/TRANS/505/REV 1/ADD 73/Rev.2/Amend.1.
 (¹⁶) E/ECE/TRANS/505/REV 1/ADD 81.
 (¹⁷) E/ECE/TRANS/505/REV 1/ADD 80.
 (¹⁸) E/ECE/TRANS/505/REV 1/ADD 15.
 (¹⁹) E/ECE/TRANS/505/Rev.1/Add.40/Rev.2.;

- (2) Annexes I, II and IV to Chapter 5 of Directive 97/24/EC are amended in accordance with Annex I to this Directive.

Article 2

Annexes IV and VII to Directive 2002/24/EC are amended in accordance with Annex II to this Directive.

Article 3

Annexes I to VI to Directive 2009/67/EC are amended in accordance with Annex III to this Directive.

Article 4

1. With effect from 1 July 2014 Member States shall refuse, on grounds relating to measures to counter air pollution and functional safety, to grant for any EC type-approval for new types of a two or three-wheel motor vehicle which does not comply with Directives 2002/24/EC and 97/24/EC as amended by this Directive.

2. With effect from 1 July 2014, Certificates of Conformity shall be issued for vehicles complying with the provisions of Directive 97/24/EC as amended by point 1 of Annex II to this Directive.

Article 5

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 30 June 2014 at the latest. They shall communicate to the Commission the relevant text of those provisions forthwith.

When Member States adopt such measures, these shall contain a reference to this Directive or be accompanied by such a reference on their official publication. Member States shall determine how such a reference is to be made.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

⁽¹⁾ OJ L 166, 18.6.2013, p. 88.

⁽²⁾ OJ L 166, 18.6.2013, p. 55.

⁽³⁾ OJ L 164, 30.6.2010, p. 46.

Article 6

This Directive shall enter into force on the day following that of its publication in the *Official Journal of the European Union*.

Article 7

This Directive is addressed to the Member States.

Done at Brussels, 27 November 2013.

For the Commission
The President
José Manuel BARROSO

ANNEX I

Annexes I, II and IV to Chapter 5 of Directive 97/24/EC are amended as follows:

(1) Annex I to Chapter 5 of Directive 97/24/EC is amended as follows:

(a) points 2.2 to 2.2.1.2.2 are replaced by the following:

2.2. Description of tests

2.2.1. The category L1e, L2e or L6e vehicle in compliance with Euro 3 emissions shall be subjected to Type I and II tests, as specified below:

2.2.1.1. Type I test (average emissions of gaseous pollutants in a congested urban area after cold start)

2.2.1.1.1. The test vehicle is placed on a chassis dynamometer equipped with a brake and a flywheel. The following test procedure shall be carried out:

2.2.1.1.1.1. A cold test phase 1 lasting a total of 448 seconds and comprising four elementary cycles is carried out without interruption;

2.2.1.1.1.2. A warm test phase 2 shall follow cold test phase 1 without delay, lasting a total of 448 seconds and comprising four elementary cycles. The warm test phase 2 shall be carried out without interruption;

2.2.1.1.1.3. Each elementary cycle in cold test phase 1 or in warm test phase 2 shall comprise of seven operations (idle, acceleration, steady speed, deceleration, steady state, deceleration, idle). During both cold and warm test phases the exhaust gases shall be diluted with fresh air to ensure that the flow volume of the mixture remains constant.

2.2.1.1.1.4. In the type I test:

2.2.1.1.1.4.1. A continuous flow of samples of the mixture of exhaust gas and dilution air shall be collected in bag No 1 collected during cold phase 1. A continuous flow of samples of the exhaust gases and dilution air mixture shall be collected in a separate bag No 2 collected during warm phase 2. The concentrations of carbon monoxide, total hydrocarbons, oxides of nitrogen and carbon dioxide in bag No 1 and bag No 2 shall be determined separately one after the other;

2.2.1.1.1.4.2. The total volume of the mixture in each bag shall be measured and added up to produce the total bag volume;

2.2.1.1.1.4.3. At the end of each test phase the distance effectively travelled is recorded from the total shown on the cumulative revolution counter driven by the roller.

2.2.1.1.2. The test is carried out in accordance with the test procedure described in Appendix 1. The gases are collected and analysed according to the methods laid down.

2.2.1.1.3. Subject to the provisions of point 2.2.1.1.4, the test is carried out three times. The total mass of carbon monoxide, hydrocarbons and nitrogen oxides obtained in each test shall be less than the Euro 3 limit values set out in the table below.

2.2.1.1.3.1. *Table 1*

Euro 3 emission limits for vehicle categories L1e, L2e and L6e

Component type-approval and conformity of production	
CO (g/km)	HC + NO _x (g/km)
L ₁	L ₂
1 ⁽¹⁾	1,2

⁽¹⁾ The limit for the mass of CO shall be 3,5 g/km in the case of three-wheel mopeds (L2e) and light quadricycles (L6e).

2.2.1.1.3.2. However, one of the three results for each of the abovementioned pollutants may exceed the limit value prescribed for the moped concerned by a maximum of 10 %, provided the arithmetical mean of the three results is less than the prescribed limit value. If more than one pollutant exceeds the prescribed limit values, it is immaterial whether this occurs in the same test or in different tests.

- 2.2.1.1.4. The number of tests prescribed in point 2.2.1.1.3 is reduced under the conditions described below, where V_1 is the result of the first test and V_2 is the result of the second test for each of the pollutants referred to in that point.
- 2.2.1.1.4.1. Only one test is required if $V_1 \leq 0,70$ L for all the pollutants concerned.
- 2.2.1.1.4.2. Only two tests are required if $V_1 \leq 0,85$ L for all the pollutants concerned and if, for at least one pollutant, $V_1 > 0,70$ L. In addition, for each of the pollutants concerned, V_2 shall be such that $V_1 + V_2 < 1,70$ L and $V_2 < L$.
- 2.2.1.1.5. A category L1e, L2e or L6e vehicle complying with the Euro 3 test type I limits set out in point 2.2.1.1.3.1 and the test type I requirements set out in this Annex shall be approved as Euro 3 compliant.
- 2.2.1.2. Type II test (carbon monoxide and unburnt hydrocarbons emissions at idling speed).
- 2.2.1.2.1. The mass of carbon monoxide and the mass of unburnt hydrocarbons emitted with the engine at idling speed are measured for one minute.
- 2.2.1.2.2. This test shall be carried out in accordance with the procedure described in Appendix 2.;

(b) in Appendix 1, points 4.2 to 4.2.3 are replaced by the following:

‘4.2. **Gas-collection equipment**

The gas-collection equipment shall consist of the following components (see Sub-appendices 2 and 3):

- 4.2.1. A device to collect all the exhaust gases produced during the test, whilst maintaining atmospheric pressure at the moped exhaust outlet (s);
- 4.2.2. A tube connecting the exhaust-gas collection equipment and the exhaust-gas sampling system. This connecting tube and the gas collection equipment shall be made of stainless steel, or of another material which will not affect the composition of the gases collected and will resist their temperature;
- 4.2.3. A device to suck in the diluted gases. This device shall guarantee constant flow of a sufficient volume to ensure that all the exhaust gases are sucked in;;

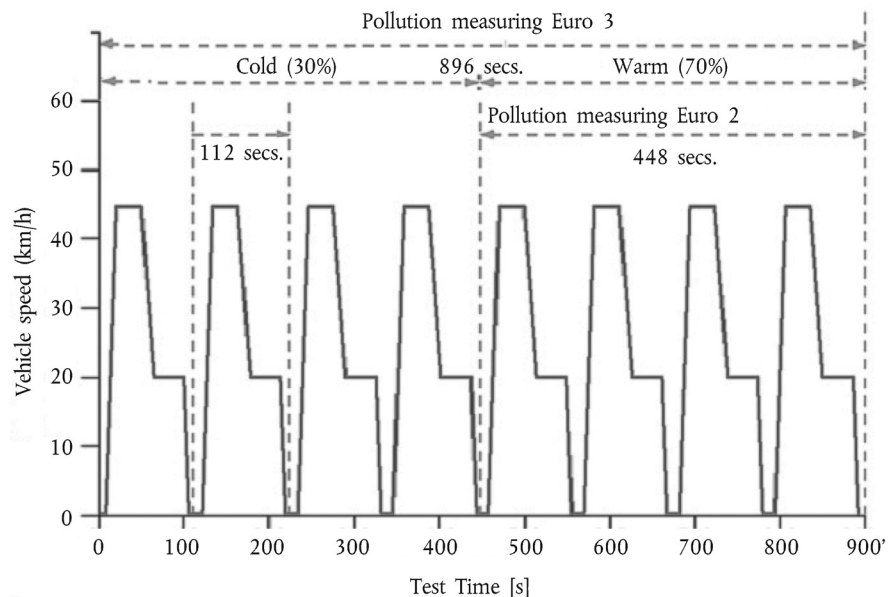
(c) in Appendix 1, points 4.2.4 to 4.2.8 are replaced by the following:

- ‘4.2.4. A sampling probe attached to the outside of the gas-collection device which can collect a constant sample of the dilution air using a pump, a filter and a flow meter for the duration of the test;
- 4.2.5. A sampling probe directed upstream of the flow of diluted gases to sample the mixture for the duration of the test at a constant rate of flow using, if necessary, a filter, a flow meter and a pump. The minimum rate of flow of the gases in the two sampling systems described above shall be at least 150 l/h;
- 4.2.6. Three-way valves on the sampling circuits described above to direct the flow of samples either to the atmosphere or to their respective sampling bags for the duration of the test;
- 4.2.7. Leak-tight sampling bags to collect the mixture of exhaust gas and dilution air. These shall be unaffected by the pollutants concerned and of sufficient capacity not to disrupt the normal flow of sampling. There shall be at least one separate sampling bag (bag No 1) for cold test phase 1 and one separate sampling bag (bag No 2) for warm test phase 2;
- 4.2.7.1. These sampling bags shall each have an automatic sealing device which can be closed rapidly and tightly, either on the sampling circuit or on the analysis circuit at the end of the test.

- 4.2.7.1.1. The sealing device on bag No 1 shall close after 448 seconds after the start of the type I test.
- 4.2.7.1.2. The sealing device on bag No 2 shall immediately open subsequent to the sealing of bag No 1 and close again 896 seconds after the start of the type I test;
- 4.2.8. There shall be a method of measuring the total volume of diluted gases passing through the sampling device during the test. The exhaust dilution system shall comply with the requirements of Appendix 2 to Chapter 6 of Annex I to UNECE Regulation No 83.
- 4.2.9.

Figure 1

Pollutant emission sampling for Euro 3 as compared with Euro 2 for an L1e, L2e or L6e category vehicle



- (d) in Appendix 1 the following point 4.3.3 is inserted:

‘4.3.3 The analytical equipment shall be capable of measuring independently the mixture sample of exhaust gases and dilution air captured in bags No 1 and 2.’;

- (e) in Appendix 1 points 5.4 to 5.4.3 are replaced by the following:

‘5.4. **Conditioning of the test vehicle**

- 5.4.1. The tyre pressure of the test vehicle shall be as stated by the manufacturer for normal road use. However, if the diameter of the rollers is less than 500 mm, the pressure in the tyres may be increased by 30-50 %.
- 5.4.2. The fuel tank(s) shall be drained through the drain(s) provided and charged with the test fuel specified in Annex IV.
- 5.4.3. The test vehicle shall be moved to the test area and the following operations shall be performed:’;

- (f) in Appendix 1, the following points 5.4.3.1 to 5.4.3.5 are inserted:

- ‘5.4.3.1. The test vehicle shall be driven or pushed onto a chassis dynamometer and operated through the test cycle set out in 2.1 The test vehicle need not be cold, and may be used to set dynamometer power.
- 5.4.3.2. The load on the driving wheel shall be within ± 3 kg of the load on a vehicle in normal road use, with a driver weighing $75 \text{ kg} \pm 5 \text{ kg}$, sitting in an upright position.
- 5.4.3.3. Practice runs over the test cycle set out in 2.1 may be performed at test points, provided an emission sample is not taken, to determine the minimum throttle action required to maintain the proper speed-time relationship.

- 5.4.3.4. Before being placed in the soak area the test vehicle shall undergo four consecutive operating cycles as set out in 2.1, each lasting 112 seconds. This preconditioning test cycle shall be performed with the dynamometer settings laid down in 5.1 and 5.2 Measurement of the tailpipe emissions is not required for this preconditioning test cycle.
- 5.4.3.5. Within five minutes of the completion of preconditioning, the test vehicle shall be removed from the dynamometer and driven or pushed to the soak area to be parked. The ambient temperature in the soak area shall be controlled at $298\text{ K} \pm 5\text{ K}$. The vehicle shall be stored for not less than six hours and not more than 36 hours prior to the cold start type I test or until the engine oil temperature T_{Oil} , the coolant temperature T_{Coolant} or the sparkplug seat/gasket temperature T_{SP} (only for air cooled engines) equals the air temperature of the soak area. The test report shall indicate which of the criteria has been selected.;

(g) in Appendix 1, points 7.1 to 7.1.3 are replaced by the following:

7.1. **Sampling**

- 7.1.1. Sampling begins as soon as the test commences, as indicated in point 6.2.2.
- 7.1.2. Bags Nos 1 and 2 shall be hermetically sealed and follow the sealing sequence set out in point 4.2.7.1 They shall not be connected during cold test phase 1 or warm test phase 2.
- 7.1.3. At the end of the final cycle the device for collecting the diluted exhaust gases and the dilution air shall be closed and the gases produced by the engine diverted into the atmosphere.;

(h) in Appendix 1, point 7.2.4 is replaced by the following:

- 7.2.4. The concentrations of HC, CO and NO_x and CO_2 in the samples of diluted exhaust gases and in the bags collecting the dilution air are determined from the values shown or recorded by the measuring equipment by applying the relevant calibration curves.;

(i) in Appendix 1, points 8 to 8.4.1 are replaced by the following:

8. DETERMINATION OF THE QUANTITY OF GASEOUS POLLUTANTS EMITTED

- 8.1. The masses of CO_2 and gaseous pollutants CO, HC, NO_x shall be determined separately for bag Nos 1 and 2 in accordance with points 8.2 to 8.6.
- 8.2. The mass of carbon monoxide gas emitted during the test is determined by means of the formula:

$$CO_m = V \cdot d_{CO} \cdot \frac{CO_c}{10^6}$$

where:

- 8.2.1. CO_m is the mass of carbon monoxide emitted during the test, expressed in g/km, separately to be calculated for each phase;
- 8.2.2. S_x is the distance actually travelled expressed in km, obtained by multiplying the total number of revolutions shown on the revolution counter by the circumference of the roller,

where:

$X = 1$ for cold phase 1;

$X = 2$ for warm phase 2.

- 8.2.3. d_{CO} is the density of carbon monoxide at a temperature of 273,2 K (0 °C) and at a pressure of 101,3 kPa ($= 1,250 \cdot 10^3\text{ g/m}^3$);
- 8.2.4. CO_c is the volume concentration of carbon monoxide in the diluted gases, expressed in parts per million (ppm) and corrected to take account of the pollution of the dilution air:

$$CO_c = CO_e - CO_d \cdot \left(1 - \frac{1}{DF}\right)$$

where:

- 8.2.4.1. CO_e is the concentration of carbon monoxide, measured in ppm, in the sample of diluted gases collected in bag S_a .
- 8.2.4.2. CO_d is the concentration of carbon monoxide, measured in ppm, in the sample of dilution air collected in bag S_b .
- 8.2.4.3. DF is the coefficient defined in 8.6.
- 8.2.5. V is the volume, expressed in m^3 /phase, of diluted gases at reference temperature 273,2 K (0 °C) and reference pressure 101,3 kPa:

$$V = V_0 \cdot \frac{N \cdot (P_a - P_i) \cdot 273,2}{101,3 \cdot (T_p + 273,2)}$$

where:

- 8.2.5.1. V_0 is the volume of gas displaced by pump P_1 during one rotation expressed in m^3 /revolution. This volume is a function of the differential pressures between the inlet and outlet sections of the pump itself;
- 8.2.5.2. N is the number of rotations made by pump P_1 during the four elementary test cycles of each phase;
- 8.2.5.3. P_a is the atmospheric pressure expressed in kPa;
- 8.2.5.4. P_i is the mean value, expressed in kPa, during performance of the drop in pressure in the inlet section of pump P_1 ;
- 8.2.5.5. T_p (°C) is the value of the temperature of the diluted gases measured in the inlet section of pump P_1 .
- 8.3. The mass of unburned hydrocarbons emitted through the moped's exhaust during the test is calculated by means of the formula:

$$HC_m = V \cdot d_{HC} \cdot \frac{HC_c}{10^6}$$

where:

- 8.3.1. HC_m is the mass of hydrocarbons emitted during the test, expressed in g, separately to be calculated for each phase;
- 8.3.2. S_X is the distance defined in 8.2.2;
- 8.3.3. d_{HC} is the density of hydrocarbons at a temperature of 273,2 K (0 °C) and a pressure of 101,3 kPa (for petrol (E5) ($C_{11}H_{1,89}O_{0,016}$)) (= 631 g/m^3);
- 8.3.4. HC_c is the concentration of the diluted gases expressed in ppm carbon equivalent and corrected to take account of the dilution air:

$$HC_c = HC_e - HC_d \cdot \left(1 - \frac{1}{DF}\right)$$

where:

- 8.3.4.1. HC_e is the concentration of hydrocarbons, expressed in ppm carbon equivalent, in the sample of diluted gases collected in bag S_a ;
- 8.3.4.2. HC_d is the concentration of hydrocarbons, expressed in ppm carbon equivalent, in the sample of dilution air collected in bag S_b ;
- 8.3.4.3. DF is the coefficient defined in 8.6.
- 8.3.5. V is the volume defined in 8.2.5.

- 8.4. The mass of oxides of nitrogen emitted through the moped's exhaust during the test is calculated by means of the formula:

$$NO_{xm} = V \cdot d_{NO_2} \cdot \frac{NO_{xc} \cdot K_h}{10^6}$$

where:

- 8.4.1. NO_{xm} is the mass of oxides of nitrogen emitted during the test, expressed in g, separately to be calculated each phase;

(j) in Appendix 1, the following points 8.4.2 to 8.6.3 are inserted:

- 8.4.2. S_x is the distance defined in 8.2.2;

- 8.4.3. d_{NO_2} is the density of the oxides of nitrogen in the exhaust gases, in NO_2 equivalent, at a temperature of 273,2 K (0 °C) and a pressure of 101,3 kPa (= 2,050 103 g/m³);

- 8.4.4. NO_{xc} is the concentration of oxides of nitrogen in the diluted gases, expressed in ppm and corrected to take account of the dilution air:

$$NO_{xc} = NO_{xe} - NO_{xd} \cdot \left(1 - \frac{1}{DF}\right)$$

where:

- 8.4.4.1. NO_{xe} is the concentration of oxides of nitrogen, expressed in ppm, in the sample of diluted gases collected in bag S_a ;

- 8.4.4.2. NO_{xd} is the concentration of oxides of nitrogen, expressed in ppm, in the sample of dilution air collected in bag S_b ;

- 8.4.4.3. DF is the coefficient defined in 8.6.

- 8.4.5. K_h is the correction factor for humidity

$$K_h = \frac{1}{1 - 0,0329 \cdot (H - 10,7)}$$

where:

- 8.4.5.1. H is the absolute humidity in grams of water per kg of dry air (in g/kg)

$$H = \frac{6,2111 \cdot U \cdot P_d}{P_a - P_d \cdot \frac{U}{100}}$$

where:

- 8.4.5.1.1. U is the humidity content expressed as a percentage;

- 8.4.5.1.2. P_d is the saturated water-vapour pressure, expressed in kPa, at the test temperature;

- 8.4.5.1.3. P_a is the atmospheric pressure in kPa.

- 8.4.6. V is the volume defined in 8.2.5.

- 8.5. Carbon dioxide (CO_2)

The mass of carbon dioxide emitted by the vehicle's exhaust during the test shall be calculated by means of the following formula:

$$CO_{2m} = V \cdot d_{CO_2} \cdot \frac{CO_{2c}}{10^2}$$

where:

- 8.5.1. CO_{2m} is the mass of carbon dioxide emitted during the test part, in g, separately to be calculated for each phase;
- 8.5.2. S_X is the distance defined in 8.2.2;
- 8.5.3. V is the volume defined in 8.2.5;
- 8.5.4. d_{CO_2} is the density of the carbon dioxide at a temperature of 273,2 K (0 °C) and a pressure of 101,3 kPa, $d_{CO_2} = 1,964 \cdot 10^3 \text{ g/m}^3$;
- 8.5.5. CO_{2c} is the concentration of diluted gases, expressed in per cent carbon dioxide equivalent, corrected to take account of the dilution air by the following equation:

$$CO_{2c} = CO_{2e} - CO_{2d} \left(1 - \frac{1}{DF} \right)$$

where:

- 8.5.5.1. CO_{2e} is the concentration of carbon dioxide expressed in per cent, in the sample of diluted gases collected in bag(s) S_A ;
- 8.5.5.2. CO_{2d} is the concentration of carbon dioxide expressed in per cent, in the sample of dilution air collected in bag(s) S_B ;
- 8.5.5.3. DF is the coefficient defined in 8.6.
- 8.6. DF is a coefficient expressed by means of the formula:

$$DF = \frac{13,4}{C_{CO_2} + (C_{HC} + C_{CO}) \cdot 10^{-4}} \text{ for petrol (E5)}$$

where:

- 8.6.1. C_{CO_2} = concentration of CO_2 in the diluted exhaust gas contained in the sampling bags, expressed in per cent volume;
- 8.6.2. C_{HC} = concentration of HC in the diluted exhaust gas contained in the sampling bags, expressed in ppm carbon equivalent;
- 8.6.3. C_{CO} = concentration of CO in the diluted exhaust gas contained in the sampling bags, expressed in ppm.;

(k) in Appendix 1, point 9 is replaced by the following:

'9. Presentation of test results:

The (average) result of the cold phase is named R_{X1} (in g), the (average) result of the warm phase is named R_{X2} (in g). Using these emission results the final type I test result R_X (in g/km) shall be calculated by means of the following equation:

$$R_X = \frac{(R_{X_Cold} \cdot 0,3 + R_{X_Warm} \cdot 0,7)}{S_T} \text{ in g/km}$$

Where:

$X = \text{HC, CO, NO}_x \text{ or CO}_2$

$R_{HC_Cold} = HC_{\text{mass_cold_phase_1}}$ (in g) and $R_{HC_Warm} = HC_{\text{mass_warm_phase_2}}$ (in g), see formula in point 8.3

$R_{CO_Cold} = CO_{\text{mass_cold_phase_1}}$ (in g) and $R_{CO_Warm} = CO_{\text{mass_warm_phase_2}}$ (in g), see formula in point 8.2

$R_{NOx_Cold} = NO_{x\text{mass_cold_phase_1}}$ (in g) and $R_{NOx_Warm} = NO_{x\text{mass_warm_phase_2}}$ (in g), see formula in point 8.4

$R_{CO2_Cold} = CO_{2\text{mass_cold_phase_1}}$ (in g) and $R_{CO2_Warm} = CO_{2\text{mass_warm_phase_2}}$ (in g): see formula in point 8.5

S_T : total test distance = $S_1 + S_2$ actually covered by the L1e, L2e or L6e test vehicle in the cold phase 1 and in the warm phase 2 of the entire test cycle.;

(l) in Appendix 1, the following point 10 is added:

'10. Fuel consumption

The fuel consumption shall be calculated using the test results from point 9 as follows:

$$FC = \frac{0,118}{D} \cdot [(0,848 \cdot R_{HC}) + (0,429 \cdot R_{CO}) + (0,273 \cdot R_{CO_2})]$$

where:

FC = the fuel consumption in litre per 100 km;

D = the density of the test fuel in kg/l at 288,2 K (15 °C).;

(m) the following Appendix 3 is added:

'Appendix 3

Crankcase gas emissions and interpretation of CO₂ emission and fuel consumption test results

1. Zero crankcase gas emissions shall be emitted from the type-approved vehicle of categories L1e, L2e and L6e. Crankcase gas emissions shall not be discharged directly into the ambient atmosphere from any L-category vehicle throughout its useful life.
2. Interpretation of CO₂ emission and fuel consumption test type I results of categories L1e, L2e and L6e vehicles
 - 2.1. The CO₂ and fuel consumption values adopted as the type-approval value shall be as declared by the manufacturer provided this is not exceeded by more than four per cent by the value measured by the technical service. The measured value may be lower without any limitations.
 - 2.2. If the measured value of CO₂ and fuel consumption exceeds the manufacturer's declared CO₂ value and fuel consumption by more than four per cent another test is run on the same vehicle.
 - 2.3. If the average of the two test results does not exceed the manufacturer's declared value by more than four per cent the value declared by the manufacturer is taken as the type-approval value.
 - 2.4. If the average of the two test results still exceeds the declared value by more than four per cent, a final test is run on the same vehicle. The average of the three test results is taken as the type-approval value.;

(2) point 2.2.1.1.7 of Annex II to Chapter 5 of Directive 97/24/EC is amended as follows:

'2.2.1.1.7. The recorded data are completed in the relevant sections of the document referred to in Annex VII of Directive 2002/24/EC. The appropriate Euro level shall be entered in point 46.2 of Annex IV to Directive 2002/24/EC in accordance with the rules set out in the footnote to this point.;

(3) Annex IV to Chapter 5 of Directive 97/24/EC is replaced by the following:

'ANNEX IV

SPECIFICATIONS FOR THE REFERENCE FUELS

Petrol (E5) and diesel (B5) reference fuels shall be specified in accordance with section A of Annex IX to Commission Regulation (EC) No 692/2008 (*);

(*) OJ L 199, 28.7.2008, p. 1.'

ANNEX II

(1) Annex IV to Directive 2002/24/EC is amended as follows:

(a) point 46 is amended as follows:

‘46. Exhaust emissions ⁽¹¹⁾

46.1. Euro level:(1, 2, or 3) ⁽¹²⁾

46.2. Type I test: CO: g/km HC: g/km NO_x g/km HC + NO_x:
g/km ⁽¹³⁾

46.3. Type II test: CO ⁽¹³⁾: g/min HC ⁽¹³⁾: g/min

CO ⁽¹⁴⁾: % vol

Visible air pollution caused by an engine with compression ignition:

corrected value of absorption coefficient: m⁻¹

(b) footnotes 12, 13 and 14 are added in Annex IV to Directive 2002/24/EC:

‘⁽¹²⁾ Depending on the number of the relevant Directive and the latest amending act applicable to the approval, compliance with the Euro level 1, 2 or 3 shall be determined as follows:

Indication of the Euro level if the approval authority so chooses, for approvals granted before the following date: 11 December 2013.

In Table 2.2.1.1.3 of Annex I to Chapter 5 of Directive 97/24/EC, compliance with the first row of limit values shall mean compliance with the “Euro 1” level and compliance with the second row of limit values shall mean compliance with the “Euro 2” level;

Full compliance with Annex I to Chapter 5 of Directive 97/24/EC, which includes compliance with the “Euro 2” level combined with the test methodology set-out in Annex I to Commission Directive 2013/60/EU (OJ L 329, 10.12.2013, p. 15), shall mean compliance with the “Euro 3” level;

In Table 2.2.1.1.5 of Annex II to Chapter 5 of Directive 97/24/EC, compliance with:

— the rows of limit values in part A of Table 2.2.1.1.5 concerning class I (< 150 cm³) and class II (≥ 150 cm³), shall mean compliance with the “Euro 2” level;

— the rows of limit values in part B of Table 2.2.1.1.5 concerning class I (< 150 cm³) and class II (≥ 150 cm³), shall mean compliance with the “Euro 3” level;

— the rows of limit values in part C of Table 2.2.1.1.5 concerning class I (v_{max} < 130 km/h) and class II (v_{max} ≥ 130 km/h), shall mean compliance with the “Euro 3” level.

⁽¹³⁾ Only for L1e, L2e and L6e category vehicles complying with the provisions of Directive 97/24/EC, as amended by Directive 2013/60/EU.

⁽¹⁴⁾ For L-category vehicles within the scope of Article 1 of Directive 2002/24/EC, with the exception of L1e, L2e and L6e vehicles.’

(2) Annex VII to Directive 2002/24/EC is amended as follows:

(a) points 2 to 2.2 are replaced by the following:

‘2. Results of the emission tests

Number of the relevant Directive and its amending acts applicable to the type-approval. In the case of a Directive with two or more implementation stages, also the implementation stage and the Euro level shall be indicated:

Variant/version:

Euro level ⁽¹⁾:

2.1. Type I test

CO: g/km

HC ⁽³⁾: g/kmNO_x ⁽³⁾: g/kmHC + NO_x ⁽²⁾: g/kmCO₂ ⁽²⁾: g/kmFuel consumption ⁽²⁾: l/100km

2.2. Type II

CO (g/min) ⁽²⁾HC (g/min) ⁽²⁾CO (% vol) ⁽³⁾ at normal idle speedSpecify the idle speed ⁽³⁾ ⁽⁴⁾:CO (% vol) ⁽³⁾ at high idle speedSpecify the idle speed ⁽³⁾ ⁽⁴⁾:Engine oil temperature ⁽³⁾ ⁽⁵⁾:

(b) the footnotes in Annex VII to Directive 2002/24/EC are amended as follows:

'(1) See footnote 12 in Annex IV.

(2) Only for L1e, L2e and L6e category vehicles.

(3) For L-category vehicles within the scope of Article 1 of Directive 2002/24/EC with the exception of L1e, L2e and L6e vehicles.

(4) Mention the measurement tolerance.

(5) Applicable for four-stroke engines only.'

ANNEX III

Annexes I to VI to Directive 2009/67/EC are amended as follows:

(1) The List of Annexes is amended as follows:

- (a) references to Appendices 1 and 2 of Annex II are deleted;
- (b) references to Appendices 1 and 2 of Annex IV are deleted;

(2) Annex I is amended as follows:

(a) in Part A, the following points 16 to 18 are added:

‘16. *daytime running lamp*

means a lamp facing in a forward direction used to make the vehicle more easily visible when driving during daytime;

17. *stop/start system*

means an automatic stop and start of the engine to reduce the amount of idling, thereby reducing fuel consumption, pollutant and CO₂ emissions;

18. *Vehicle master control switch*

means the device by which the vehicle's on-board electronics system is brought from being switched off, as is the case when a vehicle is parked without the driver being present, to normal operation mode’;

(b) in Part B, point 10 is replaced by the following:

‘10. The electrical connections must be such that the front position lamp or the dipped-beam headlamp, if there is no front position lamp, the rear position lamp and the rear registration-plate lamp can only be switched on and off simultaneously.

Vehicles shall be fitted with either:

- daytime running lamps, or
- dipped-beam headlamps which are automatically switched on when the vehicle master control switch has been activated.’;

(c) in Part B, point 11 is replaced by the following:

‘11. In the absence of specific requirements, the electrical connections shall be such that the main-beam headlamp, the dipped-beam headlamp and the fog lamps cannot be switched on until the lamps referred to in the first paragraph of point 10 have also been switched on. This requirement does not apply, however, to main-beam and dipped-beam headlamps when their optical warnings consist of the intermittent lighting-up at short intervals of the main-beam headlamp, or the intermittent lighting-up at short intervals of the dipped-beam headlamp, or the alternate lighting-up at short intervals of the main-beam and dipped-beam headlamps.’;

(d) in Part B, the following points 15 to 17 are added:

‘15. Vehicles of category L1e and L3e may be fitted with additional rear and side retro-reflective devices and materials provided that these do not impair the effectiveness of the mandatory lighting and light-signalling devices. In particular, luggage compartments and saddle bags may be fitted with retro-reflective materials, provided that these are of the same colour as the lighting device at that location.

16. No vehicle shall be fitted with auxiliary light sources which emit light that can be directly and/or indirectly observed under normal driving conditions, other than those for the purpose of illuminating controls, tell-tales and indicators or the occupant compartment.

17. Where automatically switched-on headlamp or daytime running lamp activation is linked to the running of an engine, this shall be construed as being linked to the activation of the master control switch. In particular this applies for vehicles with electric or other alternative propulsion systems and vehicles equipped with an automatic engine stop/start system.’;

(3) Annex II is amended as follows:

(a) points 1 to 1.2 are replaced by the following:

‘1. Vehicles of category L1e shall meet all the relevant requirements of UNECE Regulation No 74. Vehicles with a maximum vehicle design speed of ≤ 25 km/h shall meet all the relevant requirements as prescribed for vehicles with a maximum vehicle design speed of > 25 km/h.

- 1.1. Vehicles of category L1e shall, in the absence of specific requirements for vehicles of that category, be fitted with a rear registration plate lamp.
- 1.2. In the absence of specific requirements in UNECE Regulation No 74, vehicles of category L1e may be fitted with daytime running lamps which are activated instead of automatically switched-on headlamps and which comply with the requirements in points 6.15 to 6.15.7 of Annex III.;
- (b) Appendices 1 and 2, are deleted;
- (c) Appendix 3 is renumbered as Appendix 1 and the reference thereto in the List of Annexes is amended accordingly;
- (d) Appendix 4 is renumbered as Appendix 2 and the reference thereto in the List of Annexes is amended accordingly;
- (e) in Appendix 2, the following point 5.7 is inserted:
- ‘5.7. Rear registration plate lamp’;
- (f) in Appendix 2, point 6.3 is replaced by the following:
- ‘6.3. Daytime running lamp: yes/no (*)’;
- (4) Annex III is amended as follows:
- (a) the following point 1.8 is inserted:
- ‘1.8. Rear registration plate lamp’;
- (b) point 2.3. is replaced by the following:
- ‘2.3. Daytime running lamp’;
- (c) point 6.1.10 is replaced by the following:
- ‘6.1.10. Circuit-closed tell-tale: mandatory if the driving beam headlamp is fitted (non-flashing blue tell-tale).’;
- (d) the following point 6.1.11 is inserted:
- ‘6.1.11. Other requirements:
- driving-beam headlamps of vehicles which tend to lean in corners may be fitted with a horizontal inclination adjustment system (HIAS) as defined in paragraph 2.25 of UNECE Regulation No 53, provided all relevant requirements of that Regulation applying to HIAS are met,
 - the combined value of the maximum intensity of all driving-beam headlamps which can be activated at the same time shall not exceed 430 000 cd, which corresponds to a reference value of 100.’;
- (e) point 6.2.3.1 is replaced by the following:
- ‘6.2.3.1. In width:
- a single independent passing-beam headlamp may be fitted above, below or to one side of another front lamp. If lamps are stacked on top of each other, the reference centre of the passing-beam headlamp shall be located within the longitudinal median plane of the vehicle. If they are side by side, their reference centres shall be symmetrical in relation to the longitudinal median plane of the vehicle,
 - a single independent passing-beam headlamp which is reciprocally incorporated with another front lamp shall be fitted in such a way that its reference centre lies within the longitudinal median plane of the vehicle. However, if the vehicle is fitted with another front lamp alongside the passing-beam headlamp, the reference centre of the two lamps shall be symmetrical in relation to the longitudinal median plane of the vehicle,
 - two passing-beam headlamps of which none, one or both are reciprocally incorporated with another front lamp shall be fitted in such a way that their reference centres are symmetrical in relation to the longitudinal median plane of the vehicle,
 - where there are two passing-beam headlamps, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.’;
- (f) point 6.2.11 is replaced by the following:
- ‘6.2.11. Other requirements:
- passing-beam headlamps of vehicles which tend to lean in corners may be fitted with a horizontal inclination adjustment system (HIAS) as defined in paragraph 2.25 of UNECE Regulation No 53, provided all relevant requirements of that Regulation applying to HIAS are met,

- passing-beam headlamps of which the lowest point of the light-emitting surface is 0,8 m or less above the ground shall be adjusted to an initial aiming inclination of between – 1,0 % and – 1,5 %. The precise value may be declared by the manufacturer,
 - passing-beam headlamps of which the lowest point of the light-emitting surface is between 0,8 m and 1,0 m above the ground shall be adjusted to an initial aiming of inclination of between – 1,0 % and – 2,0 %. The precise value may be declared by the manufacturer,
 - passing-beam headlamps of which the lowest point of the light-emitting surface is 1,0 m or more above the ground shall be adjusted to an initial aiming inclination of between – 1,5 % and – 2,0 %. The precise value may be declared by the manufacturer,
 - for passing-beam headlamps with a light source with an objective luminous flux not exceeding 2 000 lumen and an initial inclination of between – 1,0 % and – 1,5 %, the vertical inclination shall remain between – 0,5 % and – 2,5 % under all loading conditions. The vertical inclination shall remain between – 1,0 % and – 3,0 % if the initial inclination is set between – 1,5 % and – 2,0 %. An external adjusting device may be used to satisfy the requirements, provided no tools other than those provided with the vehicle are needed,
 - for passing-beam headlamps with a light source with an objective luminous flux exceeding 2 000 lumen and an initial inclination of between – 1,0 % and – 1,5 %, the vertical inclination shall remain between – 0,5 % and – 2,5 % under all loading conditions. The vertical inclination shall remain between – 1,0 % and – 3,0 % if the initial inclination is set between – 1,5 % and – 2,0 %. A headlamp levelling device may be used to satisfy the requirements of this point, provided its operation is fully automatic and the response time is less than 30 seconds.;
- (g) the following point 6.2.11.1 is inserted:
- ‘6.2.11.1. Testing conditions:
- the inclination requirements in point 6.2.11 shall be verified as follows:
 - vehicle with its mass in running order and a mass of 75 kg simulating the driver,
 - vehicle fully laden with the mass distributed so as to attain the maximum axle loads as declared by the manufacturer for this loading condition,
 - vehicle with a mass of 75 kg simulating the driver and additionally laden so as to attain the maximum permissible rear axle load as declared by the manufacturer; however, the front axle load shall be as low as possible in this case,
 - before any measurement is made, the vehicle shall be rocked three times and then moved backwards and forwards for at least a complete wheel revolution.;
- (h) point 6.4.1 is replaced by the following:
- ‘6.4.1. Number:
- one or two, in the case of vehicles of an overall width not exceeding 1 300 mm,
 - two, in the case of vehicles of an overall width exceeding 1 300 mm,
 - an additional stop lamp of category S3 or S4 (i.e. central high mounted stop lamp) may be fitted, provided all relevant requirements of UNECE Regulation No 48 applying to the installation of such stop lamps on vehicles of category M1 are met.;
- (i) point 6.5.3.1 is replaced by the following:
- ‘6.5.3.1. In width:
- a single independent front position lamp may be fitted above, below or to one side of another front lamp. If lamps are stacked on top of each other, the reference centre of the front position lamp shall be located within the longitudinal median plane of the vehicle. If they are side by side, their reference centres shall be symmetrical in relation to the longitudinal median plane of the vehicle,
 - a single independent front position lamp which is reciprocally incorporated with another front lamp shall be fitted so that its reference centre lies within the longitudinal median plane of the vehicle. However, if the vehicle is fitted with another front lamp alongside the front position lamp, the reference centres of the two lamps shall be symmetrical in relation to the longitudinal median plane of the vehicle,

- two front position lamps of which none, one or both are reciprocally incorporated with another front lamp shall be fitted so that their reference centres are symmetrical in relation to the longitudinal median plane of the vehicle,
 - where there are two front position lamps, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.;
- (j) point 6.6.3.1 is replaced by the following:
- ‘6.6.3.1. In width:
- a single rear position lamp shall be installed on the vehicle so that the reference centre of the rear position lamp is located within the longitudinal median plane of the vehicle,
 - two rear position lamps shall be installed on the vehicle so that the reference centres of the rear position lamps are symmetrical in relation to the longitudinal median plane of the vehicle,
 - in the case of vehicles with two rear wheels and of an overall width exceeding 1 300 mm, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.;
- (k) point 6.7.3.1 is replaced by the following:
- ‘6.7.3.1. In width:
- if there is a single rear retro-reflector, this shall be installed on the vehicle so that its reference centre is located within its longitudinal median plane,
 - if there are two rear retro-reflectors, these shall be installed on the vehicle so that their reference centres are symmetrical in relation to its longitudinal median plane,
 - if there are two rear retro-reflectors, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.;
- (l) the following points 6.15 to 6.15.7 are added:
- ‘6.15. Daytime running lamp
- 6.15.1. Number:
- one or two, in the case of vehicles of an overall width not exceeding 1 300 mm,
 - two, in the case of vehicles of an overall width exceeding 1 300 mm.
- 6.15.2. Arrangement:
- no specific requirements.
- 6.15.3. Position:
- 6.15.3.1. In width:
- a single independent daytime running lamp may be fitted above, below or to one side of another front lamp. If lamps are stacked on top of each other, the reference centre of the daytime running lamp shall be located within the longitudinal median plane of the vehicle. If they are side by side, their reference centres shall be symmetrical in relation to the longitudinal median plane of the vehicle,
 - a single independent daytime running lamp which is reciprocally incorporated with another front lamp shall be fitted so that its reference centre lies within the longitudinal median plane of the vehicle. However, if the vehicle is fitted with another front lamp alongside the daytime running lamp, the reference centres of the two lamps shall be symmetrical in relation to the longitudinal median plane of the vehicle,
 - two daytime running lamps of which none, one or both are reciprocally incorporated with another front lamp shall be fitted so that their reference centres are symmetrical in relation to the longitudinal median plane of the vehicle,
 - the inward edges of the light-emitting surfaces shall be at least 500 mm apart in the case of vehicles of an overall width exceeding 1 300 mm.
- 6.15.3.2. In height:
- a minimum of 250 mm and a maximum of 1 500 mm above the ground.
- 6.15.3.3. In length:
- at the front of the vehicle. This requirement is considered to have been met if the light emitted disturbs the driver neither directly nor indirectly by reflection off the rear-view mirrors and/or other reflective surfaces on the vehicle.

6.15.3.4. Distance:

- if the distance between the front direction indicator lamp and the daytime running lamp is 40 mm or less, the electrical connections of the daytime running lamp on the relevant side of the vehicle shall be such that either:
 - it is switched off, or
 - its luminous intensity is reduced to a level not exceeding 140 cd,

during the entire period (both on and off cycle) of activation of the relevant front direction indicator lamp.

6.15.4. Geometric visibility:

- $\alpha = 10^\circ$ upwards and 10° downwards,
- $\beta = 20^\circ$ to the left and to the right if there is only one daytime running lamp,
- $\beta = 20^\circ$ outwards and 20° inwards if there are two daytime running lamps.

6.15.5. Orientation:

- to the front; may move in line with the steering angle of any handlebars.

6.15.6. Electrical connections:

- all daytime running lamps shall light up when the master control switch is activated; however, they may remain off under the following conditions:
 - the automatic transmission control is in the park position,
 - the parking brake is activated, or
 - prior to the vehicle being set in motion for the first time after each manual activation of the master control switch and the vehicle's propulsion system,
- daytime running lamps may be manually deactivated; however, this shall be possible only at a vehicle speed not exceeding 10 km/h. The lamps shall be automatically reactivated when the vehicle speed exceeds 10 km/h or when the vehicle has travelled more than 100 m,
- daytime running lamps shall be deactivated automatically when:
 - the vehicle is shut down by means of the master control switch,
 - the front fog lamps are activated,
 - the headlamps are activated, except when they are used to give intermittent luminous warnings at short intervals, and
 - in ambient lighting conditions of less than 1 000 lux where the indicated speed on the vehicle's speedometer is still clearly legible (e.g. when speedometer illumination is always on) and the vehicle is not fitted with a non-flashing green tell-tale in compliance with point 6.5.9 or a dedicated green circuit-closed tell-tale for the daytime running lamp identified by the appropriate symbol. In such a case, the passing-beam headlamps and the lighting devices required in point 11 of Annex I Section B shall be automatically activated simultaneously within two seconds of the ambient lighting level dropping below 1 000 lux. If the ambient lighting conditions subsequently reach a level of at least 7 000 lux, the daytime running lamps shall be automatically reactivated, while the passing-beam headlamps and the lighting devices required in point 11 of Annex I Section B shall be deactivated simultaneously within five to 300 seconds (i.e. fully automatic light switching is required if the driver has no visible indication and stimulus to activate normal lighting when it is dark).

6.15.7. Circuit-closed tell-tale:

- optional.;

(m) in Appendix 4, the following point 5.8 is inserted:

'5.8. Rear registration plate lamp.;

(n) in Appendix 4, point 6.4 is replaced by the following:

'6.4. Daytime running lamp: yes/no (*);

(5) Annex IV is amended as follows:

(a) point 1. is replaced by the following:

'1. Vehicles of category L3e shall meet all the relevant requirements of UNECE Regulation No 53, with the exception of point 5.14.9.';

(b) Appendices 1 and 2 are deleted;

(c) Appendix 3 is renumbered as Appendix 1 and the reference thereto in the List of Annexes is amended accordingly;

(d) Appendix 4 is renumbered as Appendix 2 and the reference thereto in the List of Annexes is amended accordingly;

(e) in Appendix 2, the following point 6.5 is added:

'6.5. Daytime running lamp: yes/no (*);'

(6) Annex V is amended as follows:

(a) the following point 2.5 is added:

'2.5. Daytime running lamp';

(b) point 6.1.11 is replaced by the following:

'6.1.11. Other requirements:

- driving-beam headlamps of vehicles which tend to lean in corners may be fitted with a horizontal inclination adjustment system (HIAS) as defined in paragraph 2.25 of UNECE Regulation No 53, provided all relevant requirements of that Regulation applying to HIAS are met,
- the combined value of the maximum intensity of all driving-beam headlamps which can be activated at the same time shall not exceed 430 000 cd, which corresponds to a reference value of 100.';

(c) the following points 6.13 to 6.13.7 are added:

'6.13. Daytime running lamp

6.13.1. Number:

- one or two, in the case of vehicles of an overall width not exceeding 1 300 mm,
- two, in the case of vehicles of an overall width exceeding 1 300 mm.

6.13.2. Arrangement:

- no specific requirements.

6.13.3. Position:

6.13.3.1. In width:

- a single independent daytime running lamp may be fitted above, below or to one side of another front lamp. If lamps are stacked on top of each other, the reference centre of the daytime running lamp shall be located within the longitudinal median plane of the vehicle. If they are side by side, their reference centres shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- a single independent daytime running lamp which is reciprocally incorporated with another front lamp shall be fitted so that its reference centre lies within the longitudinal median plane of the vehicle. However, if the vehicle is fitted with another front lamp alongside the daytime running lamp, the reference centres of the two lamps shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- two daytime running lamps of which none, one or both are reciprocally incorporated with another front lamp shall be fitted so that their reference centres are symmetrical in relation to the longitudinal median plane of the vehicle,
- the inward edges of the light-emitting surfaces shall be at least 500 mm apart in the case of vehicles of an overall width exceeding 1 300 mm.

6.13.3.2. In height:

- a minimum of 250 mm and a maximum of 1 500 mm above the ground.

6.13.3.3. In length:

- at the front of the vehicle. This requirement is considered to have been met if the light emitted disturbs the driver neither directly nor indirectly by reflection off the rear-view mirrors and/or other reflective surfaces on the vehicle.

6.13.3.4. Distance:

- if the distance between the front direction indicator lamp and the daytime running lamp is 40 mm or less, the electrical connections of the daytime running lamp on the relevant side of the vehicle shall be such that either:
 - it is switched off, or
 - its luminous intensity is reduced to a level not exceeding 140 cd,during the entire period (both on and off cycle) of activation of the relevant front direction indicator lamp.

6.13.4. Geometric visibility:

- $\alpha = 10^\circ$ upwards and 10° downwards,
- $\beta = 20^\circ$ to the left and to the right if there is only one daytime running lamp,
- $\beta = 20^\circ$ outwards and 20° inwards if there are two daytime running lamps.

6.13.5. Orientation:

- to the front; may move in line with the steering angle of any handlebars.

6.13.6. Electrical connections:

- all daytime running lamps shall light up when the master control switch is activated; however, they may remain off under the following conditions:
 - the automatic transmission control is in the park position,
 - the parking brake is activated, or
 - prior to the vehicle being set in motion for the first time after each manual activation of the master control switch and the vehicle's propulsion system,
- daytime running lamps may be manually deactivated; however, this shall be possible only at a vehicle speed not exceeding 10 km/h. The lamps shall be automatically reactivated when the vehicle speed exceeds 10 km/h or when the vehicle has travelled more than 100 m,
- daytime running lamps shall in each case be deactivated automatically when:
 - the vehicle is shut down by means of the master control switch,
 - the front fog lamps are activated,
 - the headlamps are activated, except when they are used to give intermittent luminous warnings at short intervals, and
 - in ambient lighting conditions of less than 1 000 lux where the indicated speed on the vehicle's speedometer is still clearly legible (e.g. when speedometer illumination is always on) and the vehicle is not fitted with a non-flashing green tell-tale in compliance with point 6.5.9 or a dedicated green circuit-closed tell-tale for the daytime running lamp identified by the appropriate symbol. In such a case, the passing-beam headlamps and the lighting devices required in point 11 of Annex I Section B shall be automatically activated simultaneously within two seconds of the ambient lighting level dropping below 1 000 lux. If the ambient lighting conditions subsequently reach a level of at least 7 000 lux, the daytime running lamps shall be automatically reactivated, while the passing-beam headlamps and the lighting devices required in point 11 of Annex I Section B shall be deactivated simultaneously within five to 300 seconds (i.e. fully automatic light switching is required if the driver has no visible indication and stimulus to activate normal lighting when it is dark).

6.13.7. Circuit-closed tell-tale:

- optional;

(d) in Appendix 4, the following point 6.5 is added:

'6.5. Daytime running lamp: yes/no (*)';

(7) Annex VI is amended as follows:

(a) point 2.4 is replaced by the following:

'2.4. Daytime running lamp';

(b) point 6.1.11 is replaced by the following:

‘6.1.11. Other requirements:

- driving-beam headlamps of vehicles which tend to lean in corners may be fitted with a horizontal inclination adjustment system (HIAS) as defined in paragraph 2.25 of UNECE Regulation No 53, provided that all relevant requirements of that Regulation applying to HIAS are met;
- the combined value of the maximum intensity of all driving-beam headlamps which can be activated at the same time shall not exceed 430 000 cd, which corresponds to a reference value of 100.’;

(c) point 6.2.3.1 is replaced by the following:

‘6.2.3.1. In width:

- a single independent passing-beam headlamp may be fitted above, below or to one side of another front lamp. If lamps are stacked on top of each other, the reference centre of the passing-beam headlamp shall be located within the longitudinal median plane of the vehicle. If they are side by side, their reference centres shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- a single independent passing-beam headlamp which is reciprocally incorporated with another front lamp shall be fitted in such a way that its reference centre lies within the longitudinal median plane of the vehicle. However, if the vehicle is fitted with another front lamp alongside the passing-beam headlamp, the reference centres of the two lamps shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- two passing-beam headlamps of which none, one or both are reciprocally incorporated with another front lamp shall be fitted in such a way that their reference centres are symmetrical in relation to the longitudinal median plane of the vehicle,
- where there are two passing-beam headlamps, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.’;

(d) point 6.2.11 is replaced by the following:

‘6.2.11. Other requirements:

- passing-beam headlamps of vehicles which tend to lean in corners may be fitted with a horizontal inclination adjustment system (HIAS) as defined in paragraph 2.25 of UNECE Regulation No 53, provided that all relevant requirements of that Regulation applying to HIAS are met,
- passing-beam headlamps of which the lowest point of the light-emitting surface is 0,8 m or less above the ground shall be adjusted to an initial aiming inclination of between $-1,0\%$ and $-1,5\%$. The precise value may be declared by the manufacturer,
- passing-beam headlamps of which the lowest point of the light-emitting surface is between 0,8 m and 1,0 m above the ground shall be adjusted to an initial aiming inclination of between $-1,0\%$ and $-2,0\%$. The precise value may be declared by the manufacturer,
- passing-beam headlamps of which the lowest point of the light-emitting surface is 1,0 m or more above the ground shall be adjusted to an initial aiming inclination of between $-1,5\%$ and $-2,0\%$. The precise value may be declared by the manufacturer,
- for passing-beam headlamps with a light source with an objective luminous flux not exceeding 2 000 lumen and an initial inclination of between $-1,0\%$ and $-1,5\%$, the vertical inclination shall remain between $-0,5\%$ and $-2,5\%$ under all loading conditions. The vertical inclination shall remain between $-1,0\%$ and $-3,0\%$ if the initial inclination is set between $-1,5\%$ and $-2,0\%$. An external adjusting device may be used to satisfy the requirements, provided that no tools other than those provided with the vehicle are needed,
- for passing-beam headlamps with a light source with an objective luminous flux exceeding 2 000 lumen and an initial inclination of between $-1,0\%$ and $-1,5\%$, the vertical inclination shall remain between $-0,5\%$ and $-2,5\%$ under all loading conditions. The vertical inclination shall remain between $-1,0\%$ and $-3,0\%$ if the initial inclination is set between $-1,5\%$ and $-2,0\%$. A headlamp levelling device may be used to satisfy the requirements of this paragraph, provided its operation is fully automatic and the response time is less than 30 seconds.’;

(e) the following point 6.2.11.1 is inserted:

‘6.2.11.1. Testing conditions:

- the inclination requirements in point 6.2.11 shall be verified as follows:
 - vehicle with its mass in running order and a mass of 75 kg simulating the driver,
 - vehicle fully laden with the mass distributed so as to attain the maximum axle loads as declared by the manufacturer for this loading condition,
 - vehicle with a mass of 75 kg simulating the driver and additionally laden so as to attain the maximum permissible rear axle load as declared by the manufacturer; however, the front axle load shall be as low as possible in this case,
 - before any measurement is made, the vehicle shall be rocked three times and then moved backwards and forwards for at least a complete wheel revolution.’;

(f) point 6.4.1 is replaced by the following:

‘6.4.1. Number:

- one or two, in the case of vehicles of an overall width not exceeding 1 300 mm,
- two, in the case of vehicles of an overall width exceeding 1 300 mm,
- an additional stop lamp of category S3 or S4 (i.e. central high mounted stop lamp) may be fitted, provided all relevant requirements of UNECE Regulation No 48 applying to the installation of such stop lamps on vehicles of category M1 are met.’;

(g) point 6.5.3.1 is replaced by the following:

‘6.5.3.1. In width:

- a single independent front position lamp may be fitted above, below or to one side of another front lamp. If lamps are stacked on top of each other, the reference centre of the front position lamp shall be located within the longitudinal median plane of the vehicle. If they are side by side, their reference centres shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- a single independent front position lamp which is reciprocally incorporated with another front lamp shall be fitted so that its reference centre lies within the longitudinal median plane of the vehicle. However, if the vehicle is fitted with another front lamp alongside the front position lamp, the reference centres of the two lamps shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- two front position lamps of which none, one or both are reciprocally incorporated with another front lamp shall be fitted so that their reference centres are symmetrical in relation to the longitudinal median plane of the vehicle,
- where there are two front position lamps, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.’;

(h) point 6.6.3.1 is replaced by the following:

‘6.6.3.1. In width:

- a single rear position lamp shall be installed on the vehicle so that the reference centre of the rear position lamp shall be located within the longitudinal median plane of the vehicle,
- two rear position lamps shall be installed on the vehicle so that the reference centres of the rear position lamps are symmetrical in relation to the longitudinal median plane of the vehicle,
- in the case of vehicles with two rear wheels and of an overall width exceeding 1 300 mm, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.’;

(i) point 6.12.3.1. is replaced by the following:

‘6.12.3.1. In width:

- if there is a single rear retro-reflector, this shall be installed on the vehicle so that its reference centre is located within its longitudinal median plane,
- if there are two rear retro-reflectors, these shall be installed on the vehicle so that their reference centres are symmetrical in relation to its longitudinal median plane,
- if there are two rear retro-reflectors, the lateral distance between the outward edges of the light-emitting surfaces and the outermost edges of the vehicle shall not exceed 400 mm.’;

(j) the following points 6.14 to 6.14.7 are added:

‘6.14. Daytime running lamp

6.14.1. Number:

- one or two, in the case of vehicles of an overall width not exceeding 1 300 mm,
- two, in the case of vehicles of an overall width exceeding 1 300 mm.

6.14.2. Arrangement:

- no specific requirements.

6.14.3. Position:

6.14.3.1. In width:

- a single independent daytime running lamp may be fitted above, below or to one side of another front lamp. If lamps are stacked on top of each other, the reference centre of the daytime running lamp shall be located within the longitudinal median plane of the vehicle. If they are side by side, their reference centres shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- a single independent daytime running lamp which is reciprocally incorporated with another front lamp shall be fitted so that its reference centre lies within the longitudinal median plane of the vehicle. However, if the vehicle is fitted with another front lamp alongside the daytime running lamp, the reference centres of the two lamps shall be symmetrical in relation to the longitudinal median plane of the vehicle,
- two daytime running lamps of which none, one or both are reciprocally incorporated with another front lamp shall be fitted so that their reference centres are symmetrical in relation to the longitudinal median plane of the vehicle,
- the inward edges of the light-emitting surfaces shall be at least 500 mm apart in the case of vehicles of an overall width exceeding 1 300 mm.

6.14.3.2. In height:

- a minimum of 250 mm and a maximum of 1 500 mm above the ground.

6.14.3.3. In length:

- at the front of the vehicle. This requirement is considered to have been met if the light emitted disturbs the driver neither directly nor indirectly by reflection off the rear-view mirrors and/or other reflective surfaces on the vehicle.

6.14.3.4. Distance:

- if the distance between the front direction indicator lamp and the daytime running lamp is 40 mm or less, the electrical connections of the daytime running lamp on the relevant side of the vehicle shall be such that either:
 - it is switched off, or
 - its luminous intensity is reduced to a level not exceeding 140 cd,during the entire period (both on and off cycle) of activation of the relevant front direction indicator lamp.

6.14.4. Geometric visibility:

- $\alpha = 10^\circ$ upwards and 10° downwards,
- $\beta = 20^\circ$ to the left and to the right if there is only one daytime running lamp,
- $\beta = 20^\circ$ outwards and 20° inwards if there are two daytime running lamps.

6.14.5. Orientation:

- to the front; may move in line with the steering angle of any handlebars.

6.14.6. Electrical connections:

- all daytime running lamps shall light up when the master control switch is activated; however, they may remain off under the following conditions:
 - the automatic transmission control is in the park position,

- the parking brake is activated, or
- prior to the vehicle being set in motion for the first time after each manual activation of the master control switch and the vehicle's propulsion system,
- daytime running lamps may be manually deactivated; however, this shall be possible only at a vehicle speed not exceeding 10 km/h. The lamps shall be automatically reactivated when the vehicle speed exceeds 10 km/h or when the vehicle has travelled more than 100 m;
- daytime running lamps shall in each case be deactivated automatically when:
 - the vehicle is shut down by means of the master control switch,
 - the front fog lamps are activated,
 - the headlamps are activated, except when they are used to give intermittent luminous warnings at short intervals, and
 - in ambient lighting conditions of less than 1 000 lux where the indicated speed on the vehicle's speedometer is still clearly legible (e.g. when speedometer illumination is always on) and the vehicle is not fitted with a non-flashing green tell-tale in compliance with point 6.5.9 or a dedicated green circuit-closed tell-tale for the daytime running lamp identified by the appropriate symbol. In such a case, the passing-beam headlamps and the lighting devices required in point 11 of Annex I Section B shall be automatically activated simultaneously within two seconds of the ambient lighting level dropping below 1 000 lux. If the ambient lighting conditions subsequently reach a level of at least 7 000 lux, the daytime running lamps shall be automatically reactivated, while the passing-beam headlamps and the lighting devices required in point 11 of Annex I Section B shall be deactivated simultaneously within five to 300 seconds (i.e. fully automatic light switching is required if the driver has no visible indication and stimulus to activate normal lighting when it is dark).

6.14.7. Circuit-closed tell-tale:

- optional;

(k) in Appendix 4, point 6.5 is replaced by the following:

'6.5. Daytime running lamp: yes/no (*)';
