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COMMISSION DIRECTIVE

of 17 July 1989

adapting to technical progress Council Directives 70/157/EEC, 70/220/EEC, 72/245/EEC, 72/306/EEC, 80/1268/EEC and 80/1269/EEC relating to motor vehicles

(89/491/EEC)

(OJ L 238, 15.8.1989, p. 43)

Amended by:

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Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007

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**COMMISSION DIRECTIVE****of 17 July 1989****adapting to technical progress Council Directives 70/157/EEC, 70/220/EEC, 72/245/EEC, 72/306/EEC, 80/1268/EEC and 80/1269/EEC relating to motor vehicles**

(89/491/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 70/157/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles ⁽¹⁾, as last amended by Directive 87/354/EEC ⁽²⁾, and in particular Article 3 thereof,

Having regard to Council Directive 70/220/EEC of 20 March 1970 on the approximation of the laws of the Member States relating to measures to be taken against air pollution by emissions from motor vehicles ⁽³⁾, as last amended by Directive 88/436/EEC ⁽⁴⁾, and in particular Article 5 thereof,

Having regard to Council Directive 72/245/EEC of 20 June 1972 on the approximation of the laws of the Member States relating to the suppression of radio interference produced by spark-ignition engines fitted to motor vehicles ⁽⁵⁾, and in particular Article 4 thereof,

Having regard to Council Directive 72/306/EEC of 2 August 1972 on the approximation of the laws of the Member States relating to the measures to be taken against the emission of pollutants from diesel engines for use in vehicles ⁽⁶⁾, and in particular Article 4 thereof,

Having regard to Council Directive 80/1268/EEC of 16 December 1980 on the approximation of the laws of the Member States relating to the fuel consumption of motor vehicles ⁽⁷⁾, and in particular Article 3 thereof,

Having regard to Council Directive 80/1269/EEC of 16 December 1980 on the approximation of the laws of the Member States relating to the engine power of motor vehicles ⁽⁸⁾, as last amended by Directive 88/195/EEC ⁽⁹⁾, and in particular Article 3 thereof,

Whereas Council Directive 88/76/EEC ⁽¹⁰⁾ amending Directive 70/220/EEC introduces requirements relating to the use of unleaded petrol; whereas the adaptation of existing engines to this petrol necessitates in many cases technical modifications which are relevant to the compliance with the abovementioned Directives; whereas it

⁽¹⁾ OJ No L 42, 23. 2. 1970, p. 16.

⁽²⁾ OJ No L 192, 11. 7. 1987, p. 43.

⁽³⁾ OJ No L 76, 6. 4. 1970, p. 1.

⁽⁴⁾ OJ No L 214, 6. 8. 1988, p. 1.

⁽⁵⁾ OJ No L 152, 6. 7. 1972, p. 15.

⁽⁶⁾ OJ No L 190, 20. 8. 1972, p. 1.

⁽⁷⁾ OJ No L 375, 31. 12. 1980, p. 36.

⁽⁸⁾ OJ No L 375, 31. 12. 1980, p. 46.

⁽⁹⁾ OJ No L 92, 9. 4. 1988, p. 50.

⁽¹⁰⁾ OJ No L 36, 9. 2. 1988, p. 1.

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appears appropriate to facilitate the administrative handling of the resulting amendments of the type-approval of the vehicles concerned in the interests of rapidly increasing use of unleaded petrol; whereas it appears also necessary to render more precise the specifications of Directive 88/76/EEC preventing vehicles equipped with emission control devices which would be adversely affected by leaded petrol, to be refuelled with such petrol; whereas it appears equally appropriate to introduce the new reference fuel for diesel engines specified in this Directive into Directive 72/306/EEC relating to the smoke emissions of such engines; whereas it appears advisable to align on this occasion the technical provisions of Directive 80/1269/EEC relating to engine power to those of the corresponding Regulation of the Economic Commission for Europe;

Whereas it is desirable to introduce the amendments contained in the present Directive as soon as possible into the national laws concerned as they are particularly needed during the transitional period where vehicles conceived for the use of leaded petrol and vehicles requiring unleaded petrol will co-exist;

Whereas the provisions of this Directive are in accordance with the opinion of the Committee for the Adaptation to Technical Progress of the Directives on Motor Vehicles,

HAS ADOPTED THIS DIRECTIVE:

Article 1

The undermentioned Directives are hereby amended in accordance with the Annexes to this Directive:

- Directive 70/157/EEC is amended in accordance with Annex I,
- Directive 70/220/EEC is amended in accordance with Annex II,
- Directive 72/245/EEC is amended in accordance with Annex III,
- Directive 72/306/EEC is amended in accordance with Annex IV,
- Directive 80/1268/EEC is amended in accordance with Annex V,
- Directive 80/1269/EEC is amended in accordance with Annex VI.

Article 2

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than 1 January 1990. They shall forthwith inform the Commission thereof.

Article 3

This Directive is addressed to the Member States.

▼B*ANNEX I***AMENDMENTS TO ANNEX I TO DIRECTIVE 70/157/EEC**

6 is added as follows:

‘6. EXTENSION OF EEC TYPE APPROVAL

6.1. **Vehicle types modified to run on unleaded petrol**

6.1.1. Approval of a vehicle type modified and/or adjusted solely for the purpose of making it capable of running on unleaded petrol, as specified in Directive 85/210/EEC, shall be extended when the manufacturer certifies, subject to the approval of the authority granting type approval, that the sound level for the modified vehicle shall not exceed the limiting values specified in 5.2.2.1.

6.2. **Vehicle types modified for any other purpose**

6.2.1. Approval of a vehicle type may be extended to vehicle types differing with regard to the characteristics listed in Annex III if the authority granting type approval considers that the modifications made are not likely to have any substantial adverse effect on the sound level of the vehicle.’

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*ANNEX III***AMENDMENTS TO ANNEX I TO DIRECTIVE 72/245/EEC**

8 is added as follows:

‘8. **EXTENSION OF EEC TYPE APPROVAL**

8.1. **Vehicle types modified to run on unleaded petrol**

8.1.1. Approval of a vehicle type modified and/or adjusted solely for the purpose of making it capable of running on unleaded petrol, as specified in Directive 85/210/EEC, shall be extended when the manufacturer certifies, subject to the radio interference suppression for the modified vehicles remain within the limits for conformity of production, as specified in 9 to this Annex.

8.2. **Vehicles types modified for any other purpose**

8.2.1. Approval of a vehicle type may be extended to vehicle types differing with regard to the characteristics listed in 2.2 to this Annex if the authority granting type approval considers that the modification made are not likely to have any substantial adverse effect on the radio interference suppression of the vehicle.’



ANNEX IV

AMENDMENTS TO ANNEX V TO DIRECTIVE 72/306/EEC

Annex V is replaced by the following:

**‘TECHNICAL CHARACTERISTICS OF REFERENCE FUEL
PRESCRIBED FOR APPROVAL TESTS AND TO VERIFY
CONFORMITY OF PRODUCTION**

CEC reference fuel RF-03-A-84 ⁽¹⁾ ⁽³⁾ ⁽⁷⁾

| | Limits and units | ASTM method |
|--|--|-------------------------|
| Cetan number ⁽⁴⁾ | min 49 max 53 | D 613 |
| Density 15 °C (Kg/l) | min 0,835 max 0,845 | D 1298 |
| Distillation ⁽²⁾ 50 % 90 % | min 245 °C min 320 °C max 340 °C max 370 °C | D 86 |
| FBP | | |
| Flash point | min 55 °C | D 93 |
| CFPP | min – max – 5 °C | EN 116 (CEN) |
| Viscosity 40 °C | min 2,5 mm ² /S max 3,5 mm ² /S | D 445 |
| Sulphur content | min (to be reported) max 0,3 % mass | D 1266/D 2622 D 2785 |
| Copper corrosion | max 1 | D 130 |
| Conradson carbon residue (10 % DR) | max 0,2 % mass | D 189 |
| Ash content | max 0,01 % mass | D 482 |
| Water content | max 0,05 % mass | D 95/D 1744 |
| Neutralization (strong acid) number | max 0,2 mg KPH/g | |
| Oxidation stability ⁽⁶⁾ | max 2,5 mg/100 m | D 2274 |
| Additives ⁽⁵⁾ | | |
| Carbon-hydrogen ratio | (to be reported) | |

⁽¹⁾ Equivalent ISO methods will be adopted when issued all properties listed above.

⁽²⁾ The figures quoted show the evaporated quantities (percentage recovered + percentage loss).

⁽³⁾ The values quoted in the specification are “true values”. In establishment of their limit values the terms of ASTM D 3244 “Defining a basis for petroleum product quality disputes” have been applied and in fixing a maximum value, a minimum difference of 2R above zero has been taken into account; in fixing a maximum and minimum value, the minimum difference is 4R (R = reproducibility).

Notwithstanding this measure, which is necessary for statistical reasons, the manufacturer of fuel should nevertheless aim at a zero value where the stipulated maximum value is 2R and at the mean value in the case of quotations of maximum and minimum limits. Should it be necessary to clarify the question as to whether a fuel meets the requirements of the specification, the terms of ASTM D 3244 be applied.

⁽⁴⁾ The range for cetane is note in accordance with the requirement of a minimum range of 4R. However, in cases of dispute between fuel supplier and fuel user, the terms of ASTM D 3244 can be used to resolve such disputes provided replicate measurements, of sufficient number to achieve the necessary precision, are made in preference to single determinations.

⁽⁵⁾ This fuel should be based on straight run and cracked hydrocarbon distillate components only; desulphurization is allowed. It must not contain any metallic additives or cetane improver additives.

⁽⁶⁾ Even though oxidation stability is controlled, it is likely that shell life will be limited. Advice should be sought from the supplier as to storage conditions and life.

⁽⁷⁾ If it is required to calculate thermal efficiency of an engine or vehicle, the calorific value of the fuel can be calculated from:

$$\text{Specific energy (calorific value) (net) MJ/kg} = (46,423 - 8,792d^2 + 3,170d) (1 - (x+y+s)) + 9,420s - 2,499x$$

where: d = the density at 15 °C,

x = the proportion by mass of water (%/100),

y = the proportion by mass of ash (%/100),

s = the proportion by mass of sulphur (%/100).’





ANNEX VI

AMENDMENTS TO ANNEX I TO DIRECTIVE 88/1269/EEC

1. 8 is replaced by:

‘8. EXTENSION OF EEC TYPE APPROVAL

8.1. **Vehicle types modified to run on unleaded petrol**

8.1.1. Subject to the approval of the authority granting type approval, approval of a vehicle type modified and/or adjusted solely for the purpose of making it capable of running on unleaded petrol, as specified in Directive 85/210/EEC, shall be extended under the following alternative conditions:

8.1.1.1. The manufacturer shall certify that the engine power of the modified vehicle shall remain within the limits for conformity of production, as specified in 9.2 as obtained with the original, unmodified, type approved vehicle. In this case the extension shall confirm the power of the original type approval, or

8.1.1.2. The manufacturer shall declare a revised engine power figure which is less than that obtained with the original, unmodified type approved vehicle. In this case the extension shall specify the newly declared figures as applicable to the modified vehicle type.

8.2. **Vehicle types modified for any other purpose**

Any other modification of the engine with regard to the characteristics listed in Appendix 1 or Appendix 2 to this Annex shall be reported to the competent authority. That authority may then either:

8.2.1. consider that the modifications made are not likely to have any substantial effect on the power of the engine, or

8.2.2. request a further determination of engine power through the carrying-out of such tests as are deemed necessary.’

2. 9 is replaced by:

‘9. TOLERANCES FOR MEASURING THE NET POWER

9.1. The net power indicated by the manufacturer for the type of engine shall be accepted if it does not differ by more than $\pm 2\%$ for maximum power and more than $\pm 4\%$ at the other measurement points on the curve with a tolerance of $\pm 1,5\%$ for engine speed, from the values measured by the technical service on the engine submitted for testing.

9.2. During the tests to verify conformity of production the power shall be measured at two engine speeds S1 and S2 corresponding respectively to the measurement points of maximum power and maximum torque accepted for type approval. At these two engine speeds, which are subject to a tolerance of $\pm 5\%$, the net power measured at at least one point within the ranges $S1 \pm 5\%$ and $S2 \pm 5\%$ shall not differ by more than $\pm 5\%$ from the approval figure.’