ISSN 0378–6988

Official Journal

of the European Communities

L 173

Volume 43

12 July 2000

English edition

Legislation

Contents

I *Acts whose publication is obligatory*

★ **Directive 2000/25/EC of the European Parliament and of the Council of 22 May 2000 on action to be taken against the emission of gaseous and particulate pollutants by engines intended to power agricultural or forestry tractors and amending Council Directive 74/150/EEC** 1

EN

Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.

The titles of all other Acts are printed in bold type and preceded by an asterisk.

I

(Acts whose publication is obligatory)

DIRECTIVE 2000/25/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 22 May 2000

on action to be taken against the emission of gaseous and particulate pollutants by engines intended to power agricultural or forestry tractors and amending Council Directive 74/150/EEC

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 95 thereof,

Having regard to the proposal from the Commission [1],

Having regard to the opinion of the Economic and Social Committee [2],

Acting in accordance with the procedure laid down in Article 251 of the Treaty [3],

Whereas:

(1) To ensure the proper functioning of the internal market, Council Directive 74/150/EEC of 4 March 1974 on the approximation of the laws of the Member States relating to the type-approval of wheeled agricultural or forestry tractors [4] and the 22 specific Directives adopted between 1974 and 1989 harmonised the technical specifications in this field.

(2) In order to further safeguard the environment, it is necessary to supplement the measures already adopted by Council Directive 77/537/EEC of 28 June 1977 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 wheeled agricultural or forestry tractors [5] (opacity of exhaust gases) with other measures relating, in particular, to physicochemical emissions. By referring to the provisions of Directive 97/68/EC of the European Parliament and of the Council of 16 December 1997 on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery [6], this Directive lays down the limit values for emissions of gaseous and particulate pollutants to be applied in successive stages, and the test procedure for internal combustion engines intended to power agricultural or forestry tractors. Compliance with the provisions of Council Directive 88/77/EEC of 3 December 1987 on the approximation of the laws of the Member States relating to the measures to be taken against the emission of gaseous pollutants from diesel engines for use in vehicles [7], can also be accepted as compliance with the requirements of this Directive.

(3) In order to facilitate access to third-country markets, it is necessary to establish equivalence between the requirements of this Directive for the first stage and the requirements laid down in United Nations Economic Commission for Europe (UN/ECE) Regulation No 96 concerning the component type-approval of compression ignition engines intended to be fitted to agricultural or forestry tractors in terms of their pollutant emissions.

(4) In order to maximise the benefits for the European environment and, at the same time, to ensure the unity of the market, it is necessary to adopt very strict mandatory standards at regular intervals. Any further reduction in the limit values and any changes to the test procedure can be adopted only on the basis of studies and research to be conducted into existing and foreseeable technological potential and into the cost effectiveness thereof, in order to allow production on an industrial scale of agricultural or forestry tractors that are capable of meeting these more stringent limits.

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(1) OJ C 303, 2.10.1998, p. 9.
(2) OJ C 101, 12.4.1999, p. 13.
(3) Opinion of the European Parliament of 5 May 1999 (OJ C 279, 1.10.1999, p. 209), Council Common Position of 22 November 1999 (OJ C 17, 20.1.2000, p. 13) and Decision of the European Parliament of 12 April 2000 (not yet published in to Official Journal).
(4) OJ L 84, 28.3.1974, p. 10. Directive as last amended by Directive 97/54/EC (OJ L 277, 10.10.1997, p. 24).
(5) OJ L 220, 29.8.1977, p. 38. Directive as last amended by Directive 97/54/EC.
(6) OJ L 59, 27.2.1998, p. 1.
(7) OJ L 36, 9.2.1988, p. 33. Directive as last amended by Directive 96/1/EC (OJ L 40, 17.2.1996, p. 1).

(5) Technical progress requires rapid adaptation of the technical requirements set out in the Annexes to this Directive. The Commission is committed to aligning without delay the limit values and dates in this Directive to future changes in Directive 97/68/EC. In every case where the European Parliament and the Council empower the Commission to implement the rules drawn up for agricultural or forestry tractors, a prior consultation procedure involving the Commission and the Member States meeting in committee should be introduced.

(6) The requirements of this Directive supplement those of Directive 77/537/EEC, which is referred to in Item 2.8.1 of Annex II to Directive 74/150/EEC; Directive 74/150/EEC thus needs to be amended in order to add a new Item 2.8.2 in Annex II covering the topic dealt with by this Directive in conjunction with the reference SD (Specific Directive).

(7) The objective of reducing the level of pollutant emissions from agricultural or forestry tractors and the smooth functioning of the internal market for such vehicles cannot be sufficiently achieved by individual Member States and can therefore be better achieved by the approximation of the laws of the Member States relating to measures to be taken against air pollution by such vehicles. The measures contained in this Directive do not go beyond what is necessary to achieve the objectives of the Treaty,

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Definitions

For the purposes of this Directive:

— 'agricultural or forestry tractor' (hereinafter referred to as 'tractor') means any vehicle as defined in Article 1(1) of Directive 74/150/EEC,

— 'engine' means any internal combustion engine intended to power tractors as defined in Annex I,

— 'type-approval of an engine type or family as a separate technical unit with respect to pollutant emissions' means the instrument whereby a Member State certifies that an engine type or family intended to power tractors meets the technical requirements of this Directive,

— 'type-approval of a tractor type in respect of pollutant emissions' means the instrument whereby a Member State certifies that a tractor type equipped with an engine meets the technical requirements of this Directive,

— 'family of engines' means two or more types of engine that are similar in design and which, therefore, could display characteristics that are comparable in terms of pollutant emissions.

Article 2

Type-approval procedure

The procedure for granting type-approval for an engine type or family in respect of pollutant emissions, the procedure for granting type-approval for tractors with respect to pollutant emissions, and the conditions of the unrestricted placing on the market of such engines and tractors, are as laid down in Directive 74/150/EEC.

Article 3

Obligations

1. Subject to Article 5, any engine type or family must meet the requirements of Annex I.

2. Any tractor type must meet the requirements of Annex II. In this respect type-approvals for engine type or families which have been approved in accordance with Annex I or the provisions mentioned in Annex III shall be recognised.

Article 4

Timetable

1. Member States may not after 30 September 2000:

— refuse to grant EC type-approval or national type-approval in respect of an engine type or family, or

— prohibit the sale, entry into service or use of a new engine, or

— refuse to grant EC type-approval or national type-approval of tractor types, or

— prohibit the use, the sale, the initial entry into service of tractor types,

on grounds relating to air pollution if the pollutants emitted by those engines or the engines fitted to those tractors meet the requirements of this Directive.

2. Member States may no longer grant EC type-approval or national type-approval for a type or family of engines or a tractor type where the pollutants emitted by the engine do not meet the requirements of this Directive:

(a) in stage I

— after 31 December 2000 for engines of categories B and C (power range as defined in Article 9(2) of Directive 97/68/EC);

(b) in stage II

— after 31 December 2000 for engines of categories D and E (power range as defined in Article 9(3) of Directive 97/68/EC),

— after 31 December 2001 for engines of category F (power range as defined in Article 9(3) of Directive 97/68/EC),

— after 31 December 2002 for engines of category G (power range as defined in Article 9(3) of Directive 97/68/EC).

3. Member States shall prohibit the initial entry into service of engines and tractors where the pollutants emitted by the engines do not meet the requirements of the Directive:

— after 30 June 2001 for engines of categories A, B, and C,

— after 31 December 2001 for engines of categories D and E,

— after 31 December 2002 for engines of category F,

— after 31 December 2003 for engines of category G.

However, for tractors fitted with category E or F engines, the above dates shall be postponed for six months.

4. The requirements of paragraph 3 do not apply to engines intended to be installed in tractor types for export to third countries and the replacement of engines for tractors in service.

5. Member States may postpone the dates mentioned in paragraph 3 for two years with respect to engines with a production date prior to the said date. They may grant other exceptions under the conditions laid down in Article 10 of Directive 97/68/EC.

Article 5

Recognition of equivalence and conformity

The authorities of Member States granting EC type-approval for a type or family of engines shall recognise the type-approvals granted in accordance with the provisions of Annex III and the corresponding type-approval marks as being in conformity with this Directive.

Article 6

Further reduction in emission limit values

As soon as the provisions referred to in Article 19 of Directive 97/68/EC are adopted by the European Parliament and the Council, the Commission shall, in accordance with the procedure laid down in Article 13 of Directive 74/150/EEC, without delay align the limit values and dates contained in this Directive with those adopted following the decisions taken pursuant to the abovementioned Article 19.

Article 7

Technical adaptations

Any amendments needed in order to adapt the requirements of the Annexes to technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 74/150/EEC.

Article 8

Amendment of Directive 74/150/EEC

In Annex II to Directive 74/150/EEC the following item 2.8.2 shall be inserted: '2.8.2. Emission of gaseous and particulate pollutants by engines: SD'.

Article 9

Transposition into national law

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 29 September 2000. They shall forthwith inform the Commission thereof.

They shall apply these provisions from 31 December 2000.

When Member States adopt these measures, they shall contain a reference to this Directive, or be accompanied by such a reference on the occasion of their official publication. The methods of making such a reference shall be laid down by the Member States.

Article 10

Entry into force

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

Article 11

Adressees

This Directive is addressed to the Member States.

Done at Brussels, 22 May 2000.

For the European Parliament	*For the Council*
The President	*The President*
N. FONTAINE	J. GAMA

LIST OF ANNEXES

ANNEX I Requirements for EC type-approval of a type of engine or engine family for a tractor as a separate technical unit in terms of the pollutants emitted

Appendix 1: Information document concerning the EC type-approval of a parent engine type for use in a tractor as a separate technical unit, in terms of the pollutants emitted

Appendix 2: EC type-approval certificate for a separate technical unit

Appendix 3: Marking of engines

Appendix 4: Numbering

Appendix 5: EC type-approval mark

ANNEX II Requirements for the EC type-approval of a tractor type equipped with a compression ignition engine in respect of the pollutants emitted

Appendix 1: Information document

Appendix 2: EC type-approval certificate

ANNEX III Recognition of alternative type-approvals

ANNEX I

REQUIREMENTS FOR EC TYPE-APPROVAL OF A TYPE OF ENGINE OR ENGINE FAMILY FOR A TRACTOR AS A SEPARATE TECHNICAL UNIT IN TERMS OF THE POLLUTANTS EMITTED

0. GENERAL

Unless otherwise defined by this Directive, the appropriate definitions, symbols and abbreviations contained in Directive 97/68/EC are applicable.

1. DEFINITIONS

— 'type of tractor engine in terms of pollutants emitted' means compression-ignition engines which display no essential differences with regard to the characteristics defined in Appendix 1 to Annex I,

— 'pollutants emitted' means gaseous pollutants (carbon monoxide, hydrocarbons, and nitrogen oxides) and polluting particulates.

2. APPLICATION FOR EC TYPE-APPROVAL FOR A TYPE OF ENGINE OR ENGINE FAMILY AS A SEPARATE TECHNICAL UNIT

2.1. The application for the type-approval of an engine type or family in terms of the pollutants emitted shall be made by the engine manufacturer or his agent.

2.2. It shall be accompanied by the information document, completed in triplicate, a specimen for which is provided in Appendix 1 to this Annex.

2.3. An engine conforming to the 'engine type' or 'parent engine' characteristics described in Appendix 1 to this Annex shall be submitted to the technical service responsible for conducting the approval tests.

2.4. In the case of an applicant for type-approval of an engine family, if the approval authority determines that, with regard to the selected parent engine, the submitted application does not fully represent the engine family described in Annex II, Appendix 2, to Directive 97/68/EC an alternative and, if necessary an additional parent engine which is determined by the approval authority shall be provided for approval according to Article 3(1) of Directive 97/68/EC.

3. SPECIFICATIONS AND TESTS

The provisions of Directive 97/68/EC, Annex I, Section 4 and Annexes III, IV are V are applicable.

4. TYPE-APPROVAL FOR A SEPARATE TECHNICAL UNIT

An EC type-approval certificate conforming to the specimen provided in Appendix 2 to this Annex shall be issued.

5. ENGINE MARKING

The engine shall be marked in accordance with the requirements of Appendix 3 to this Annex. The identification number must comply with the provisions of Appendices 4 and 5 to this Annex.

6. CONFORMITY OF PRODUCTION

Without prejudice to the requirements of Article 8 of Directive 74/150/EEC, conformity of production shall be checked in accordance with the provisions of Section 5 of Annex I to Directive 97/68/EC.

7. NOTIFICATION ON THE ISSUE OF APPROVALS

Notice of the approval, extension, refusal or withdrawal of approval or of production definitely discontinued in relation to an engine type pursuant to Annex I or a tractor type pursuant to Annex II must be communicated to the Member States in accordance with Article 5(1) of Directive 74/150/EEC.

8. ENGINE FAMILY

8.1. Parameters defining the engine family

The engine family may be defined by basic design parameters which must be common to all engines within the family. In some cases there may be interaction of parameters. These effects must also be taken into consideration in order to ensure that only engines with similar exhaust-emission characteristics are included within an engine family.

For engines to be considered to belong to the same engine family, the following list of basic parameters must be common.

8.1.1. Combustion cycle: 2 stroke/4 stroke [1]

8.1.2. Cooling medium: air/water/oil [1]

8.1.3. Individual cylinder displacement

— engines to be within a total spread of 15 %

— number of cylinders for engines with after-treatment device

8.1.4. Method of air aspiration: naturally aspirated/pressure charged [1]

8.1.5. Combustion chamber type/design

— pre-chamber

— swirl chamber

— open chamber

8.1.6. Valve and porting — configuration, size and number

— cylinder head

— cylinder wall

— crankcase

8.1.7. Fuel system

— pump-line-injector

— in-line pump

— distributor pump

— single element

— unit injector

8.1.8. Exhaust gas recirculation

8.1.9. Water injection/emulsion [1]

8.1.10. Air injection

8.1.11. Charge cooling system

8.1.12. Oxidation catalyst

8.1.13. Reduction catalyst

8.1.14. Thermal reactor

8.1.15. Particulates trap

8.2. Choice of parent engine

8.2.1. The parent engine of the family shall be selected using the primary criterion of the highest fuel delivery per stroke at the declared maximum torque speed. If two or more engines share this primary criterion, the parent engine shall be selected using the secondary criterion of highest fuel delivery per stroke at rated speed. Under certain circumstances, the approval authority may conclude that the worst-case emission rate of the family can best be characterised by testing a second engine. Thus, the approval authority may select an additional engine for tests based on features which indicate that it may have the highest emission levels of the engines within that family.

8.2.2. If engines within the family incorporate other variable features which could be considered to affect exhaust emissions, these features must also be identified and taken into account in the selection of the parent engine.

---

(1) Delete where inappropriate.

Appendix 1

Information document

concerning the EC type-approval of a parent engine type for use in a tractor as a separate technical unit, in terms of the pollutants emitted

The information set out below shall be supplied in triplicate and be accompanied by a list of enclosures. Any drawings needed shall be supplied to an appropriate scale and with sufficient details in A4 format or in a folder of this format. Photographs shall, where needed, show sufficient detail.

SECTION 1 GENERAL

1. **Parent engine/engine type** [1] [3]

1.1. Make(s) (trade name of manufacturer): .....

1.2. Type and commercial description of the parent and (if applicable) of the family of engine(s) [1]: ....

.....

1.3. Manufacturer's type coding as marked on the engine(s) and method of affixing:

1.3.1. Location, coding and method of affixing of the type engine identification number: .....

1.3.2. Location and method of affixing of the EC component type-approval mark: .....

1.4. Name and address of manufacturer: .....

1.5. Address(es) of assembly plant(s): .....

SECTION 2 ENGINE TYPE

2. **Essential characteristics of the engine type**

2.1. Description of the compression-ignition engine

2.1.1. Manufacturer: .....

2.1.2. Manufacturer's engine code as affixed to engines: .....

2.1.3. Cycle: four stroke/two stroke [1]

2.1.4. Bore: ..... mm

2.1.5. Stroke: ..... mm

2.1.6. Number and arrangement of cylinders: .....

2.1.7. Swept volume: ..... cm^3

2.1.8. Rated speed: ..... r/min

2.1.9. Peak torque speed: ..... r/min

2.1.10. Compression ratio [2]: .....

2.1.11. Combustion system: .....

2.1.12. Drawing(s) of combustion chamber and piston crown .....

2.1.13. Minimum cross sectional area of inlet and outlet ports: .....

2.1.14. Cooling system

2.1.14.1. Coolant

2.1.14.1.1. Nature of coolant: .....

2.1.14.1.2. Circulating pump(s): yes/no [1]

2.1.14.1.3. Characteristics or make(s) and type(s) (if applicable): .....

2.1.14.1.4. Drive ratio(s) (if applicable): .....

2.1.14.2. Air

2.1.14.2.1. Blower: yes/no [1]

2.1.14.2.2. Characteristics or make(s) and type(s) (if applicable): .....

2.1.14.2.3. Drive ratio(s) (if applicable): .....

2.1.15. Temperature permitted by the manufacturer: .....

2.1.15.1. Liquid cooling: maximum temperature at outlet: ..... K

2.1.15.2. Air cooling: reference point: .....

Maximum temperature at reference point: ..... K

2.1.15.3. Maximum charge-air temperature at the intercooler outlet (if applicable): ..... K

2.1.15.4. Maximum exhaust temperature at the point in the exhaust pipe(s) adjacent to the outer flange(s) of the exhaust manifold(s): ..... K

2.1.15.5. Lubricant temperature: minimum: ..... K maximum: ..... K

2.1.16. Pressure charger: yes/no [1]

2.1.16.1. Make: .....

2.1.16.2. Type: .....

2.1.16.3. Description of the system (e.g. maximum charge pressure, waste-gate, if applicable): .....

2.1.16.4. Intercooler: yes/no (1)

2.1.17. Intake system: maximum allowable intake depression at rated engine speed ..... r/min:

..... kPa and at 100 % load: ..... kPa

2.1.18. Exhaust system: maximum permissible exhaust back pressure at rated engine speed ..... r/min:

..... kPa and at 100 % load: ..... kPa (2)

2.2. Additional anti-pollution devices (if any, and if not covered by another heading)

Description and/or diagram(s): .....

2.3. Fuel feed

2.3.1. Feed pump

Pressure (2) or characteristic diagram: ..... kPa

2.3.2. Injection system

2.3.2.1. Pump

2.3.2.1.1. Make(s): .....

2.3.2.1.2. Type(s): .....

2.3.2.1.3. Delivery: ..... and ..... mm^3 (2) per stroke or cycle at pump speed of: ..... r/min

(rated) and ..... r/min (maximum torque) respectively, or characteristic diagram

State which method used: on engine/on pump bench (1)

2.3.2.1.4. Injection advance

2.3.2.1.4.1. Injection advance curve (2): .....

2.3.2.1.4.2. Timing (2): .....

2.3.2.2. Injection piping

2.3.2.2.1. Length: ..... mm

2.3.2.2.2. Internal diameter: ..... mm

2.3.2.3. Injector(s)

2.3.2.3.1. Make(s): .....

2.3.2.3.2. Type(s): .....

2.3.2.3.3. Opening pressure (2) or characteristic diagram (1): .....

2.3.2.4. Governor(s)

2.3.2.4.1. Make(s): .....

2.3.2.4.2. Type(s): .....

2.3.2.4.3. Speed at which cut-off starts under full load (2): ..... r/min

2.3.2.4.4. Maximum no-load speed (2): ..... r/min

2.3.2.4.5. Idling speed (2): ..... r/min

2.3.3. Cold-start system

2.3.3.1. Make(s): .....

2.3.3.2. Type(s): .....

2.3.3.3. Description: .....

2.4. Valve timing

2.4.1. Maximum lift and opening and closing angles in relation to top dead centre or equivalent data: ....

2.4.2. Reference clearances and/or setting ranges (1) .....

2.5. Electronic command functions

If the engine features electronically controlled functions, information concerning their performance must be provided including:

2.5.1. Make: .....

2.5.2. Type: .....

2.5.3. Part number: .....

2.5.4. Location of engine electronic control unit: .....

2.5.4.1. What does it sense: .....

2.5.4.2. What does it control: .....

SECTION 3 COMPRESSION-IGNITION ENGINE FAMILY

3. **Essential characteristics of the engine family**

3.1. List of engine types within a family

3.1.1. Name of engine family: .....

3.1.2. Specification of engine types within this family:

					Parent engine
Engine type					
Number of cylinders					
Rated speed (r/min)					
Fuel delivery per stroke (mm^3) at rated speed					
Rated net power (kW)					
Maximum torque speed (r/min)					
Fuel delivery per stroke (mm^3) at maximum torque speed					
Maximum torque (Nm)					
Low idle speed (r/min)					
Cylinder swept volume as % of parent engine					100

SECTION 4 ENGINE TYPE WITHIN THE FAMILY

4. **Essential characteristics of the family's parent engine** [3]

4.1. Description of the compression-ignition engine

4.1.1. Manufacturer: .....

4.1.2. Manufacturer's engine code as affixed to engines: .....

4.1.3. Cycle: four stroke/two stroke [1]

4.1.4. Bore: ..... mm

4.1.5. Stroke: ..... mm

4.1.6. Number and layout of cylinders: .....

4.1.7. Swept volume: ..... cm^3

4.1.8. Rated speed: ..... r/min

4.1.9. Peak-torque speed: ..... r/min

4.1.10. Compression ratio [2]: .....

4.1.11. Combustion system description: .....

4.1.12. Drawing(s) of combustion chamber and piston crown: .....

4.1.13. Minimum cross-sectional area of inlet and outlet ports: .....

4.1.14. Cooling system

4.1.14.1. Coolant

4.1.14.1.1. Nature of coolant: .....

4.1.14.1.2. Circulating pump(s): yes/no [1]

4.1.14.1.3. Characteristics or make(s) and type(s) (if applicable): .....

4.1.14.1.4. Drive ratio(s) (if applicable): .....

4.1.14.2. Air

4.1.14.2.1. Blower: yes/no [1]

4.1.14.2.2. Characteristics or make(s) and type(s) (if applicable): .....

4.1.14.2.3. Drive ratio(s) (if applicable): .....

4.1.15. Temperature permitted by the manufacturer:

4.1.15.1. Liquid cooling: maximum temperature at outlet: ..... K

4.1.15.2. Air cooling: reference point: .....

Maximum temperature at reference point: ..... K

4.1.15.3. Maximum charge air temperature at the intercooler outlet (if applicable): ..... K

4.1.15.4. Maximum exhaust temperature at the point in the exhaust pipe(s) adjacent to the outer flange(s) of the exhaust manifold(s): ..... K

4.1.15.5. Lubricant temperature: minimum: ..... K maximum: ..... K

4.1.16. Pressure charger: yes/no (1)

4.1.16.1. Make: .....

4.1.16.2. Type: .....

4.1.16.3. Description of the system (e.g. maximum charge pressure, waste-gate, if applicable): .....

4.1.16.4. Intercooler: yes/no (1)

4.1.17. Intake system: maximum allowable intake depression at rated engine speed ..... r/min:

..... kPa and at 100 % load: ..... kPa

4.1.18. Exhaust system: maximum permissible exhaust back pressure at rated engine speed ..... r/min:

..... kPa and at 100 % load: ..... kPa

4.2. Additional anti-pollution devices (if any, and if not covered by another heading)

Description and/or (1) diagram(s): .....

4.3. Fuel feed

4.3.1. Feed pump

Pressure (2) or characteristic diagram ..... kPa

4.3.2. Injection system

4.3.2.1. Pump

4.3.2.1.1. Make(s): .....

4.3.2.1.2. Type(s): .....

4.3.2.1.3. Delivery: ..... mm^3 (2) per stroke or cycle at pump speed of: ..... r/min

(rated) and ..... r/min (maximum torque), respectively, or characteristic diagram

State which method is used: on engine/on pump bench (1)

4.3.2.1.4. Injection advance

4.3.2.1.4.1. Injection advance curve (2): .....

4.3.2.1.4.2. Timing (2): .....

4.3.2.2. Injection piping

4.3.2.2.1. Length ..... mm

4.3.2.2.2. Internal diameter ..... mm

4.3.2.3. Injector(s)

4.3.2.3.1. Make(s): .....

4.3.2.3.2. Type(s): .....

4.3.2.3.3. Opening pressure [2] or characteristic diagram: .....

4.3.2.4. Governor

4.3.2.4.1. Make(s): .....

4.3.2.4.2. Type(s): .....

4.3.2.4.3. Speed at which cut-off starts under full load [2]: ..... r/min

4.3.2.4.4. Maximum no-load speed [2]: ..... r/min

4.3.2.4.5. Idling speed [2]: ..... r/min

4.3.3. Cold-start system

4.3.3.1. Make(s): .....

4.3.3.2. Type(s): .....

4.3.3.3. Description: .....

4.4. Valve timing

4.4.1. Maximum lift and angles of opening and closing in relation to top dead centre or equivalent data: ....

.....

4.4.2. Reference clearances and/or setting ranges [1]

4.5. Electronic control functions

If the engine features electronically controlled functions, the information concerning their performance must be provided including:

4.5.1. Make: .....

4.5.2. Type: .....

4.5.3. Part No: .....

4.5.4. Location of engine electronic control unit: .....

4.5.4.1. What does it sense: .....

4.5.4.2. What does it control: .....

(1) Delete where appropriate.
(2) Specify tolerance.
(3) Where applications are made for several parent engines a separate form must be filled in for each of these.

Appendix 2

SPECIMEN

(Maximum format A4 (210 x 297 mm))

EC TYPE-APPROVAL CERTIFICATE FOR A SEPARATE TECHNICAL UNIT

Stamp of administration

Communication concerning the

— component type-approval (1)

— extension of component type-approval (1)

— refusal of component type-approval (1)

— withdrawal of component type-approval (1)

pursuant to Directive .../.../EC of a compression-ignition engine type or family as a separate technical unit that is intended to power tractors, in terms of the pollutants emitted.

EC component type-approval No: .....

Extension No (2): .....

Reason for extension (2): .....

SECTION I

0. General

0.1. Make (name of undertaking): .....

0.2. Name and address of the manufacturer (or where appropriate of his agent) of the parent engine type

and (where appropriate) of the engine types within the family (1): .....

0.3. Manufacturer's type coding as marked on the engine(s): .....

Location: .....

Method of affixing: .....

0.4. Location, coding and method of affixing of the type engine identification number: .....

0.5. Location and method of affixing of the EC component type-approval mark: .....

0.6. Address(es) of assembly plant(s): .....

SECTION II

1. Restriction on use (if any): .....

1.1. Particular conditions to be met when fitting the engine(s) to the tractor .....

1.1.1. Maximum permissible intake depression: ..... kPa

1.1.2. Maximum permissible back pressure: ..... kPa

2.1. Technical service responsible for carrying out the type-approval tests: .....

2.2. Date of test report: .....

2.3. Number of test report: .....

2.4. Test results

Measured in accordance with the requirements of Directive 97/68/EC

CO (g/kWh)	HC (g/kWh)	NO_x (g/kWh)	Particulates (g/kWh)

3. The undersigned hereby certifies the accuracy of the manufacturer's description of the engine type/parent engine within the family [1] given above and that the test results set out in the type-approval file are correct.

Component type-approval is granted/refused/withdrawn [1]

Place: .....

Date: .....

Signature: .....

Annex: .....

Component type-approval file: .....

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[1] Delete where appropriate.
[2] Specify tolerance.

Appendix 3

Marking of engines

1. Any engine approved as a separate technical unit must bear:

1.1. the trade mark or trade name of the engine's manufacturer;

1.2. the engine type, and if applicable engine family, and a unique engine identification number;

1.3. the EC type-approval mark in accordance with Appendix 5 of this Annex.

2. These marks must last throughout the useful life of the engine and remain clearly legible and indelible. If labels or plates are used, they must be affixed in such a way that they too last throughout the useful life of the engine, and the labels/plates cannot be removed without destroying or defacing them.

3. The marks must be secured to an engine part that is necessary for normal engine operation and not normally requiring replacement during engine life.

These marks must be located so as to be readily visible to the average person once the engine has been fitted to the tractor, together with all the accessories needed for engine operation. If a bonnet is to be removed in order to make the mark visible, this requirement shall be considered to have been met if removal of that bonnet is simple and does not require the use of a tool.

In case of doubt concerning the meeting of this requirement, it shall be considered to have been met if an additional mark containing at least the engine identification number and the name, trade name or logo of the manufacturer has been added.

That additional mark shall be affixed to, or next to, a major component that would not normally have to be replaced during the service life of the engine, and be easily accessible, without the assistance of tools, during routine maintenance operations; otherwise, it must be located at a distance from the original mark on the engine crankcase. The original mark and, where appropriate, the additional mark shall both be clearly visible once all of the accessories needed for the operation of the engine have been fitted. A bonnet meeting the requirements set out in the above paragraph shall be authorised. The additional mark shall be affixed in a durable manner preferably directly to the topside of the engine, for example by means of an engraving, or a sticker or plate that meets the requirements of Item 2.

4. The engines must be classified by means of their identification numbers in such a way that the production sequence can be determinated unambiguously.

5. Before leaving the production line, the engines must bear all of the required marks.

6. The exact location of the engine marks shall be declared in the information document, in accordance with Annexes I and II.

Appendix 4

Numbering

1. The EC type-approval number shall consist of five sections, separated by the sign '*':

Section 1 A lower-case letter 'e' followed by the distinguishing number of the Member State which has granted the type-approval:

'1' for Germany

'2' for France

'3' for Italy

'4' for the Netherlands

'5' for Sweden

'6' for Belgium

'9' for Spain

'11' for the United Kingdom

'12' for Austria

'13' for Luxembourg

'17' for Finland

'18' for Denmark

'21' for Portugal

'23' for Greece

'24' for Ireland

Section 2 The number of the base Directive followed by a letter A for stage I, letter B for stage II

Section 3 The number of the latest amending Directive applicable to the approval. If a Directive contains different implementation dates referring to different technical standards, an alphabetical character shall be added in order to specify the standard in accordance with which the approval was granted

Section 4 A four-digit sequential number (with leading zeros as applicable) to denote the base approval number. The sequence shall start from 0001 for each base Directive

Section 5 A two-digit sequential number (with leading zeros as applicable) to denote the extension. The sequence shall start from 00 for each approval number

2. Example of the third approval by France according to this Directive meeting the requirements of stage I of this Directive:

e2∗NN/NN (1)A∗00/00∗0003∗00

3. Example of the second extension to the fourth approval issued by the United Kingdom according to this Directive meeting the requirements of stage II of this Directive:

e11∗NN/NN (1)B∗00/00∗0004∗02

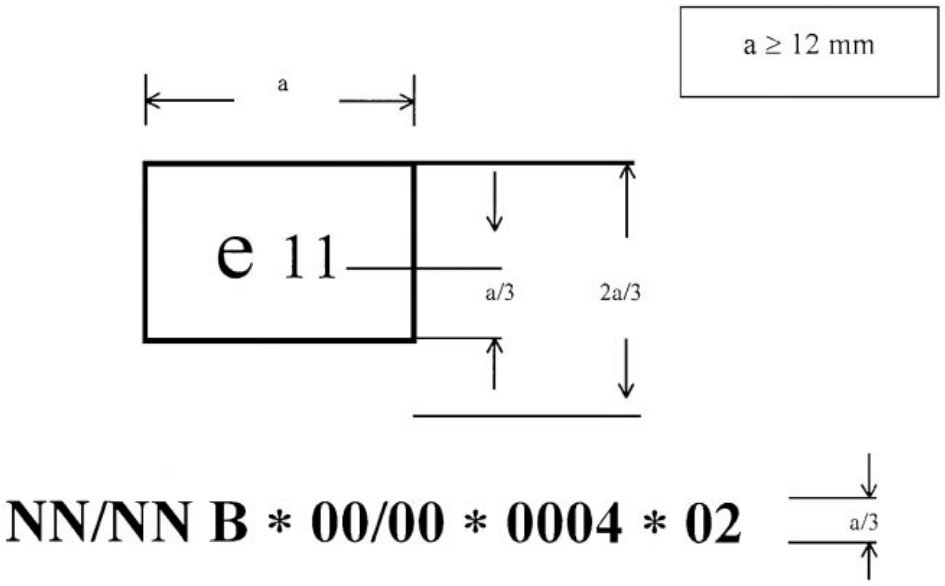
(1) NN/NN = the number of these Directives.

Appendix 5

EC type-approval mark

1. The EC type-approval mark will consist of a rectangle surrounding the lower case letter 'e' followed by the distinguishing number or letters of Sections 2 to 5 of the EC type-approval number.

2. Example of the EC type-approval mark:



ANNEX II

REQUIREMENTS FOR THE EC TYPE-APPROVAL OF A TRACTOR TYPE EQUIPPED WITH A COMPRESSION-IGNITION ENGINE IN RESPECT OF THE POLLUTANTS EMITTED

0. GENERAL

Unless otherwise defined by this Directive, the appropriate definitions, symbols and abbreviations contained in Directive 97/68/EC are applicable.

1. DEFINITIONS

— 'Type of tractor in terms of the pollutants emitted' means tractors which display no essential differences with regard to the characteristics as defined in Appendix 1 to this Annex,

— 'Pollutants emitted' means gaseous pollutants (carbon monoxide, hydrocarbons, and nitrogen oxides) and polluting particulates.

2. APPLICATION FOR EC TYPE-APPROVAL FOR A TRACTOR TYPE

2.1. *Application for the EC type-approval of a tractor type in respect of its engine*

2.1.1. The application for type-approval of a tractor type in terms of the pollutants emitted shall be made by the tractor manufacturer or his agent.

2.1.2. It shall be accompanied by the information document, completed in triplicate, a specimen for which is provided in Appendix 1 to this Annex.

2.1.3. The tractor engine conforming to the 'engine type' or 'parent engine' characteristics described in Appendix 1 to this Annex shall be submitted to the technical service responsible for conducting the approval tests.

2.2. *Application for the EC type-approval of a tractor type with an approved engine*

2.2.1. The application for type-approval of a tractor type in terms of the pollutants emitted shall be made by the tractor manufacturer or his agent.

2.2.2. It shall be accompanied by the information document, completed in triplicate, a specimen for which is provided in Appendix 1 to this Annex and a copy of the EC type-approval certificate for the engine or engine family, if applicable, for the separate technical unit which is installed in the tractor type.

3. SPECIFICATIONS AND TESTS

3.1. *General*

The provisions of Directive 97/68/EC, Annex I, Section 4, Annexes III, IV and V are applicable.

3.2. *Engine installation on the vehicle*

The engine installation on the vehicle shall comply with the following characteristics in respect to the type-approval of the engine:

3.2.1. intake depression shall not exceed that specified for the type-approved engine,

3.2.2. exhaust back pressure shall not exceed that specified for the type-approved engine.

3.3. Those tractor components which may affect the pollutants emitted shall be designed, built and assembled in such a way as to meet the technical requirements of this Directive under the tractor's normal operating conditions and despite any vibrations to which it could be subjected.

4. APPROVAL

Any tractor type fitted with an engine which has been issued with a certificate of approval in accordance with Annex I or the provisions mentioned in Annex III shall be issued with a type-approval certificate in accordance with Appendix 2 to this Annex.

5. ENGINE MARKING

The engine shall be marked in accordance with the requirements of Appendix 3 to Annex I. The EC type-approval identification number must meet the requirements of Appendices 4 and 5 to Annex I.

6. CONFORMITY OF PRODUCTION

Without prejudice to the requirements of Article 8 of Directive 74/150/EEC, conformity of production shall be checked in accordance with the provisions of Section 5 of Annex I to Directive 97/68/EC.

Appendix 1

Information document

Concerning the EC type-approval of a type of tractor equipped with a compression-ignition engine in terms of the pollutants emitted

The information set out below shall be supplied in triplicate and be accompanied by a list of enclosures. Any drawings needed shall be supplied to an appropriate scale and with sufficient details in A4 format or in a folder of this format. Photographs shall, where needed, show sufficient detail

SECTION 1 GENERAL

1. **Tractor type**

1.1. Make(s) (trade name of manufacturer): .....

1.2. Type and commercial description of the tractor: .....

1.3. Manufacturer's type codes if marked on the tractor and method of affixing: .....

1.3.1. Location, coding and method of affixing of the tractor identification number: .....

1.3.2. Location and method of affixing of the EC type-approval mark: .....

1.4. Name and address of manufacturer: .....

1.5. Address(es) of assembly plant(s): .....

SECTION 2 TRACTOR TYPE

2. **Essential characteristics of the tractor type**

2.1. Description of the compression-ignition engine

2.1.1. Manufacturer: .....

2.1.2. Manufacturer's code as affixed to engine: .....

2.1.3. Cycle: four stroke/two stroke [1]

2.1.4. Bore: ..... mm

2.1.5. Stroke: ..... mm

2.1.6. Number and arrangement of cylinders: ..... cm^3

2.1.7. Swept volume: ..... cm^3

2.1.8. Rated speed: ..... r/min

2.1.9. Peak torque speed: ..... r/min

2.1.10. Compression ratio [2]: .....

2.1.11. Combustion system: .....

2.1.12. Drawing(s) of combustion chamber and piston crown: .....

2.1.13. Minimum cross sectional area of inlet and outlet ports: .....

2.1.14. Cooling system

2.1.14.1. Coolant

2.1.14.1.1. Nature of coolant: .....

2.1.14.1.2. Circulating pump(s): yes/no [1]

2.1.14.1.3. Characteristics or make(s) and type(s) (if applicable): .....

2.1.14.1.4. Drive ratio(s) (if applicable): .....

2.1.14.2. Air

2.1.14.2.1. Blower: yes/no [1]

2.1.14.2.2. Characteristics or make(s) and type(s) (if applicable): .....

2.1.14.2.3. Drive ratio(s) (if applicable): .....

2.1.15. Temperature permitted by the manufacturer: .....

2.1.15.1. Liquid cooling: maximum temperature at outlet: ..... K

2.1.15.2. Air cooling: reference point: .....

Maximum temperature at reference point: ..... K

2.1.15.3. Maximum charge air temperature at the intercooler outlet (if applicable): ..... K

2.1.15.4. Maximum exhaust temperature at the point in the exhaust pipe(s) adjacent to the outer flange(s) of the exhaust manifold(s): ..... K

2.1.15.5. Lubricant temperature: minimum: ..... K maximum: ..... K

2.1.16. Pressure charger: yes/no [1]

2.1.16.1. Make: .....

2.1.16.2. Type: .....

2.1.16.3. Description of the system (e.g. maximum charge pressure, waste-gate, if applicable): .....

2.1.16.4. Intercooler: yes/no [1]

2.1.17. Intake system: maximum permissible intake depression at rated engine speed ..... r/min:

..... kPa and at 100 % load: ..... kPa

2.1.18. [1] Exhaust system: maximum permissible exhaust back pressure at rated engine speed ..... r/min:

..... kPa and at 100 % load: ..... kPa

2.2. Additional anti-pollution devices (if any, and if not covered by another heading)

Description and/or diagram(s): .....

2.3. Fuel feed

2.3.1. Feed pump

Pressure [2] or characteristic diagram: ..... kPa

2.3.2. Injection system

2.3.2.1. Pump

2.3.2.1.1. Make(s): .....

2.3.2.1.2. Type(s): .....

2.3.2.1.3. Delivery: ..... and ..... mm^3 [2] per stroke or cycle at pump speed of: ..... r/min

(rated), and ..... r/min (maximum torque) respectively, or characteristic diagram.

State which method used: on engine/on pump bench [1]

2.3.2.1.4. Injection advance

2.3.2.1.4.1. Injection advance curve [2] .....

2.3.2.1.4.2. Timing [2]: .....

2.3.2.2. Injection piping

2.3.2.2.1. Length ..... mm

2.3.2.2.2. Internal diameter: ..... mm

2.3.2.3. Injector(s)

2.3.2.3.1. Make(s): .....

2.3.2.3.2. Type(s): .....

2.3.2.3.3. Opening pressure (2) or characteristic diagram (1): .....

2.3.2.4. Governor

2.3.2.4.1. Make(s): .....

2.3.2.4.2. Type(s): .....

2.3.2.4.3. Speed at which cut-off starts under full load (2): ..... r/min

2.3.2.4.4. Maximum no-load speed (2): ..... r/min

2.3.2.4.5. Idling speed (2): ..... r/min

2.3.3. Cold-start system

2.3.3.1. Make(s): .....

2.3.3.2. Type(s): .....

2.3.3.3. Description: .....

2.4. Valve timing

2.4.1. Maximum lift and angles of opening and closing in relation to top dead centre or equivalent data: . .

.....

2.4.2. Reference clearances and/or setting ranges (1):

2.5. Electronic command functions

If the engine features electronically controlled functions, the information concerning their performance should be provided including: .....

2.5.1. Make: .....

2.5.2. Type: .....

2.5.3. Part No: .....

2.5.4. Location of engine electronic control unit: .....

2.5.4.1. What does it sense: .....

2.5.4.2. What does it control: .....

(1) Delete where appropriate.
(2) Specify the tolerance.

Appendix 2

SPECIMEN

(Maximum format A4 (210 x 297 mm))

EC TYPE-APPROVAL CERTIFICATE

Stamp of administration

Communication concerning the:

— type-approval (1)

— extension of type-approval (1)

— refusal of type-approval (1)

— withdrawal of type-approval, (1)

of a type of tractor equipped with a compression-ignition engine pursuant to Directive .../.../EC, on pollutant emissions.

EC type-approval No: .....

Extension No (2): .....

Reason for extension (2): .....

SECTION I

0. General .....

0.1. Make(s) (name of undertaking) .....

0.2. Name and address of the manufacturer (or if appropriate of his agent) of the type of tractor: .....

.....

0.3. Manufacturer's type code as marked on the tractor: .....

Location: .....

Method of affixing: .....

0.4. Location, code and method of affixing of the tractor identification number: .....

.....

0.5. Location and method of affixing of the EC type-approval mark: .....

.....

0.6. Name(s) and address(es) of assembly plant(s): .....

SECTION II

1. Restrictions on use of engine (if any): .....

1.1. Particular conditions to be met when fitting the engine(s) to the tractor: .....

1.1.1. Maximum permissible intake depression: ..... kPa

1.1.2. Maximum permissible back pressure: ..... kPa

2. The engine or tractor has been subjected to specific component type-approval YES/NO [1]

2.1. If YES

2.1.1. Reference Directives or Regulations: Directive 97/68/EC, or where appropriate Directive 88/77/EEC / UN-ECE Regulation No 49.02 / UN-ECE Regulation No 96

2.1.2. Component type-approval No .....

and attach the component type-approval certificate for the engine type or family concerned

2.2. If NO

2.2.1. Technical service responsible for carrying out the component type-approval tests: .....

.....

2.2.2. Date of test report: .....

2.2.3. No of test report: .....

2.2.4. Test results

Measured in accordance with the requirements of Directive 97/68/EC

CO (g/kWh)	HC (g/kWh)	NO_x (g/kWh)	Particulates (g/kWh)

or attach the component type-approval certificate for the engine type or family concerned

2.3. Tractor components which may affect the pollutants emitted (indicate, if relevant, the nature of effect): .....

3. The undersigned hereby certifies the accuracy of the manufacturer's description of the tractor type given above and that the test results mentioned in the type-approval file are correct.

Type-approval is granted/refused/withdrawn [1]

Place: .....

Date: .....

Signature: .....

Annex: .....

Type-approval file: .....

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[1] Delete where appropriate.
[2] Where appropriate.

ANNEX III

RECOGNITION OF ALTERNATIVE TYPE-APPROVALS

1. For stage I the following certificates of type-approvals are recognised to be equivalent for engines of categories B and C as defined in Directive 97/68/EC:

1.1. Certificates of type-approvals according to Directive 97/68/EC.

1.2. Certificates of type-approvals according to Directive 88/77/EEC, complying with the requirements of stage A or B regarding Article 2 and Annex I, Section 6.2.1 of Directive 88/77/EEC as amended by Directive 91/542/EEC, or UN-ECE Regulation 49.02 series of amendments corrigenda I/2.

1.3. Certificates of type-approvals according to ECE-Regulation No 96.

2. For stage II the following certificates of type-approvals are recognised to be equivalent:

Certificates of type-approvals according to Directive 97/68/EC, stage II for engine of categories D, E, F and G.