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agenda item 4.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 96
(Emissions of agricultural and forestry tractors)

Transmitted by the Expert from Italy

Note: The text reproduced below was prepared by the expert from Italy in order to bring the text of Regulation No. 96 in line with Directive 97/68/EC and the text of the draft EC Directive on the emissions of agricultural tractors. (Common Position (EC) No 5/2000 of 22 November 1999 adopted by the Council of the European Union, published in the Official Journal of the European Communities C17 of 20/1/2000). It is a consolidated text amending (bold and crossed-out text) the proposal by the expert from EUROMOT (TRANS/WP.29/GRPE/2000/3). In addition, transitional provisions are suggested.

Note: This document is distributed to the Experts on Pollution and Energy only.

GE.00-20769

A. PROPOSAL

TITLE, amend to read:

**UNIFORM PROVISIONS CONCERNING THE APPROVAL OF COMPRESSION IGNITION (C.I.)
ENGINES TO BE INSTALLED IN AGRICULTURAL AND FORESTRY TRACTORS
AND IN NON-ROAD MOBILE MACHINERY WITH REGARD TO
THE EMISSIONS OF POLLUTANTS BY THE ENGINE@**

SCOPE, amend to read:

"1. SCOPE

This Regulation applies to the emission of gaseous and particulate pollutants from C.I. engines

- ~~A.~~ - used in category T vehicles 1/ having an installed net power higher than 18 kW but not more than 560 kW,
- ~~B.~~ - used in machinery intended and suited, to move, or to be moved on the ground, with or without road, having an installed net power higher than 18 kW but not more than 560 kW, operated under intermittent speed, including but not limited to
- industrial drilling rigs, compressors etc.
 - construction equipment including wheel loaders, bulldozers, crawler tractors, crawler loaders, truck-type loaders, off-highway trucks, hydraulic excavators etc.
 - agricultural equipment, rotary tillers
 - forestry equipment
 - self propelled agricultural vehicles
 - material handling equipment
 - fork lift trucks
 - road maintenance equipment (motor graders, road rollers, asphalt finishers)
 - snow plough equipment
 - ground support equipment in airports
 - aerial lifts
 - mobile cranes

provided that they have not been approved according to Regulation No. 49, as amended @.

Insert a new paragraph 4.4.3., to read:

"4.4.3. an additional symbol consisting of **a letter from E to G** ~~the letter A or B~~ indicating the emission level (paragraph 5.2.1.) according to which the engine **or the engine family** has been approved."

Paragraph 5.2.1., table, delete stage A and amend the "power band" of stage B column to read:

"5.2.1.

Power Band	Net Power (P) (kW)	Carbon Monoxide (CO) (g/kWh)	Hydrocarbons (HC) (g/kWh)	Oxides of Nitrogen (NO _x) (g/kWh)	Particulates (PT) (g/kWh)
E	130 ≤ P ≤ 560	3.5	1.0	6.0	0.2
F	75 ≤ P < 130	5.0	1.0	6.0	0.3
G	37 ≤ P < 75	5.0	1.3	7.0	0.4
D	18 ≤ P < 37	5.5	1.5	8.0	0.8

Insert new paragraph 5.2.3., to read:

~~"5.2.3. The emission levels of stage B shall become effective no earlier than five years after introduction of the stage A emission levels, but no earlier than:~~

130 ≤ P ≤ 560	01.07.2002
75 ≤ P < 130	01.07.2003
37 ≤ P < 75	01.01.2004
18 ≤ P < 37	01.01.2002

~~For each category, Contracting Parties to the Agreement may postpone the introductory dates mentioned above for two years in respect of engines with a production date prior to the said date."~~

Insert a new paragraph 5.2.4.3., to read:

"5.2.3. Where, as defined, according to Annex 1B ~~in conjunction with Annex 1B B-Appendix~~, one engine family covers more than one power band, the emission values of the parent engine (type approval) and of all engine types within the same family (COP) must meet the more stringent requirements of the higher power band. ~~The applicant has the free choice to restrict the definition of engine families to single power bands, and to correspondingly apply for approval.~~"

Insert a new paragraph 12., to read:

"12. TRANSITIONAL PROVISIONS

- 12.1. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant ECE approval under this Regulation as amended by the 01 series of amendments.
- 12.2. As from [x] months(01.01.2001)* after the date of entry into force, Contracting Parties applying this Regulation may refuse to grant ECE approvals to engines, or engines families, of the power band E which do not meet the requirements of this Regulation as amended by the 01 series of amendments.
- 12.3. As from [x] months (01.01.2002)* after the date of entry into force, Contracting Parties applying this Regulation may refuse to grant ECE approvals to engines, or engines families, of the power band F which do not meet the requirements of this Regulation as amended by the 01 series of amendments.
- 12.4. As from [x] months (01.01.2003)* after the date of entry into force, Contracting Parties applying this Regulation may refuse to grant ECE approvals to engines, or engines families, of the power band G which do not meet the requirements of this Regulation as amended by the 01 series of amendments.
- 12.5. As from [x] months(01.01.2001)*, Contracting Parties applying this Regulation may refuse to grant ECE approvals to engines, or engines families, of the power band D which do not meet the requirements of this Regulation as amended by the 01 series of amendments.
- 12.6. As from [x] months (01.01.2002)* after the date of entry into force, Contracting Parties applying this Regulation may refuse the placing on the market of engines included in the power band E not approved under this Regulation as amended by the series 01 of amendments, unless they are intended to be fitted in category T vehicles. In this latter case the placing on the market of engines, or engines families, intended for fitting on category T vehicles may be allowed up to [x] months (1.7.2002)* later.
- 12.7. As from [x] months (1.1.2003)* after the date of entry into force, Contracting Parties applying this Regulation may refuse the placing on the market of engines included in the power band F not approved under this Regulation as amended by the series 01 of amendments, unless they are intended to be fitted in category T vehicles. In this latter case the placing on the market of engines, or engines families, intended for fitting on category T vehicles may be allowed up to [x] months (1.7.2003)* later.
- 12.8. As from [x] months (1.1.2004)* after the date of entry into force, Contracting Parties applying this Regulation may refuse the placing

on the market of engines included in the power band G not approved under this Regulation as amended by the series 01 of amendments, unless they are intended to be fitted in category T vehicles. In this latter case the placing on the market of engines, or engines families, intended for fitting on category T vehicles may be allowed up to the same date.

- 12.9. As from [x]... months (1.1.2001)* after the date of entry into force, Contracting Parties applying this Regulation may refuse the placing on the market of engines included in the power band D not approved under this Regulation as amended by the series 01 of amendments, unless they are intended to be fitted in category T vehicles. In this latter case the placing on the market of engines, or engines families, intended for fitting on category T vehicles may be allowed up to [x] months (1.1.2002)* later.
- 12.10. By derogation to the provisions stipulated on paragraphs 12.6, 12.7, 12.8, 12.9 Contracting Parties applying this Regulation may continue to permit placing on the market of engines approved on the basis of a any previous technical standard, provided that the engines are intended as replacement for fitting on vehicles in use, and that this is not technically feasible for the engines in question to satisfy the new requirements of the series 01 of amendments.

* / The dates are set as reference to the dates defined in the relevant EC directives."

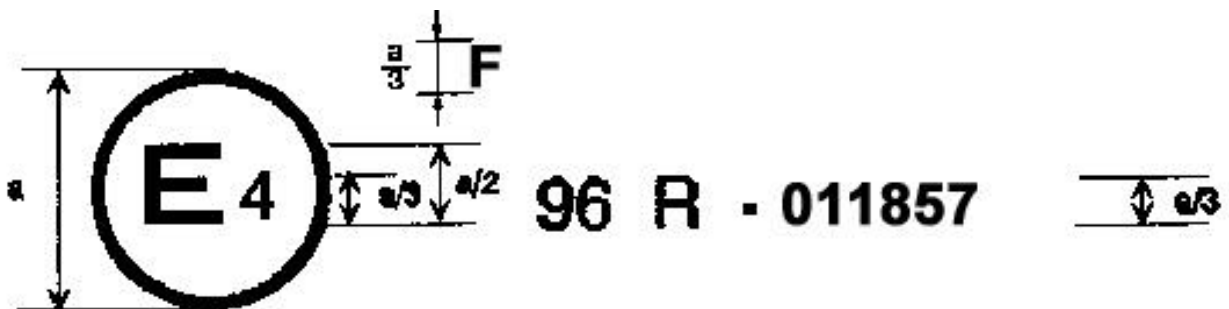
Annex 3, amend to read:

"Annex 3

ARRANGEMENTS OF APPROVAL MARKS

Model A

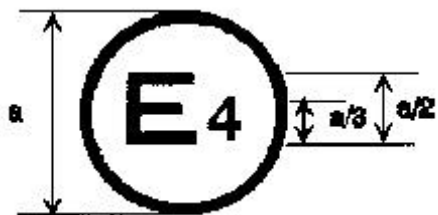
(See paragraph 4.4. of this Regulation)



a = 8 mm min

The above approval mark affixed to an engine shows that the engine type concerned has been approved in the Netherlands (E4) pursuant to Regulation No. 96 (according to the level corresponding to power band F) and under approval number 011857. The first two digits of the approval number indicate that Regulation No. 96 was in its amended form (series 01 of amendments) when the approval was granted.

Model B
(See paragraph 4.5. of this Regulation)



96 F	011857	$\frac{a}{3}$
24 1.30	03 1628	$\frac{a}{3}$

a = 8 mm min

The above approval mark affixed to an engine shows that the engine type concerned has been approved in the Netherlands (E4) pursuant to Regulations Nos. 96 (**according to the level corresponding to power band F**) and 24. The first two digits of the approval number indicate that, at the dates when the respective approvals were granted, Regulation No. 96 was already in **its amended form (series 01 of amendments)** and Regulation No. 24 already included the 03 series of amendments."

Annex 4,

Paragraph 2.2.2., amend to read:

"2.2.2. Test Validity

For a test to be recognized as valid, the parameter f_a shall be such that:

$$0.96 \leq f_a \leq 1.06 "$$

Annex 4 B Appendix 2,

Paragraph 1.2.1., amend to read:

A1.2.1. Pure Gases

.....

Hydrogen-helium mixture

40 ± 2% hydrogen, balance helium)

(Contamination ≤ 1 ppm Cl, ≤ 400 ppm CO₂)

..... @

Paragraph 1.9.2.2., amend to read:

"1.9.2.2. Water Quench Check

.....

... . The NO gas shall then be bubbled through water at room temperature and passed through the (H)CLD and the NO value recorded as C. The water temperature shall be determined and recorded as F. The mixture's saturation vapour pressure that corresponds to the bubbler water

temperature (F) shall be determined and recorded as G. The water vapour concentration (in %) of the mixture shall be calculated as follows:

$$H = 100 * (G/p_B)$$

and recorded as H. The expected diluted NO span gas (in water vapour) concentration shall be calculated as follows:

$$De = D * (1 - H/100)$$

and recorded as De. For diesel exhaust, the maximum exhaust water vapour concentration (in %) expected during testing shall be estimated, under the assumption of a fuel atom H/C ratio of 1.8 to 1, from the maximum CO₂ concentration in the exhaust gas or from the undiluted CO₂ span gas concentration (A, as measured in paragraph 1.9.2.1.) as follows:.....
....."

Annex 4 B Appendix 3,

Paragraph 1.4.4., amend to read:

".....

The particulate mass flow rate may be background corrected as follows:

For Single Filter Method:

$$PT_{mass} = \left[\frac{M_f}{M_{SAM}} - \left(\frac{M_d}{M_{DIL}} * \left(\sum_{i=1}^{i=n} \left(1 - \frac{1}{DF_i} \right) * WF_i \right) \right) \right] * \frac{G_{EDFW}}{1000}$$

If more than one measurement.....@

Annex 5 (Technical characteristics of the reference fuel),

Note 9, amend to read:

"Note 9: To be kept under constant review in the light of trends in the markets. For the purpose of the initial approval of an engine on request of the applicant, a 0.05 per cent mass nominal sulphur level (minimum 0.03 per cent mass) is permissible, in which case the measured particulate level must be corrected upward to the average value that is nominally specified for fuel sulphur content (0.15 per cent mass) per the equation below:..."

* * *

B. JUSTIFICATION

Re. Scope: the mention of letters "A" and "B" could be misleading;

Re. Para. 4.4.3: to take into account all the power bands;

Re. Para. 5.2.1.: it is advisable to retain the same symbols already used in the corresponding EC Directives;

Re. Deletion of former para.5.2.3.: It stipulates matters that are more appropriately dealt with in para. 12.

Re. Para. 5.2.3 (new): The explanations deleted from this paragraph appeared as redundant and misleading since they are already covered by the engine family definition;

Re. Annex 3,: the previous examples were not consistent with the present draft.
