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PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 89
(Speed limitation devices)

Transmitted by the expert from France

Note: The text reproduced below was prepared by the expert from France.
It proposes that the scope of Regulation No. 89 should be extended to M1 and
N1 category vehicles.

Note: This document is distributed to the Experts on Brakes and Running
Gear only.

GE.99-22042 (E)

A. PROPOSAL

Paragraph 1.1.1., amend to read:

"1.1.1. Part I: Vehicles of categories 1/ M and N 2/ equipped with an SLD which has not been separately approved according to Part III of this Regulation, or so designed and/or equipped that its component parts can be regarded as fulfilling the function of the SLD."

Paragraph 1.1.2., amend to read:

"1.1.2. Part II: The installation on vehicles of categories M and N or SLDs which have been type approved to Part III of this Regulation."

Paragraph 1.1.3., amend to read:

"1.1.3. Part III: SLDs which are intended to be fitted to vehicles of categories M and N."

Paragraph 1.2., amend to read:

"1.2. Purpose

The purpose of this Regulation is to limit to a specified value the maximum road speed of goods and passenger carrying vehicles. This is achieved by a speed limitation device (SLD) or speed limiting function within a vehicle system whose primary function is to control the fuel feed to the engine."

Paragraph 2.1.1., amend to read:

"2.1.1. 'Limitation speed V' means the maximum permitted speed for the category of vehicle as defined by the legislation in force;"

Paragraph 2.1.3., amend to read:

"2.1.3. 'Stabilized speed Vstab' means the mean vehicle speed when operating in the conditions specified in paragraph 1.1.4.2.3. of annex 5 or paragraph 1.1.5.3. of annex 6 of this Regulation, which is applicable to the category of vehicle under consideration."

Insert a new paragraph 2.1.5., to read:

"2.1.5. 'Regulated speed Vreq' means the speed regulated by the driver."

Insert a new paragraph 2.4.1.5., to read:

"2.4.1.5. and for vehicles of categories M1, N1 or M2, the commercial type."

Insert a new paragraph 5.1., to read:

"5.1. Requirements for vehicles of categories M3, N2 and N3"

Paragraphs 5.1 to 5.2 (former), renumber as 5.1.1. to 5.1.2.

Insert new paragraphs 5.2. to 5.2.2., to read:

- "5.2. Requirements for vehicles of categories M1, N1 and M2
- 5.2.1. General
- 5.2.1.1. The speed limitation must be such that the vehicle in normal use, despite the vibrations to which it may be subjected, complies with the provisions of Part I of this Regulation.
- 5.2.1.2. In particular, the vehicle's SLD must be so designed, constructed and assembled as to resist corrosion and ageing phenomena to which it may be exposed.
- 5.2.1.3. It shall be possible for the user to regulate the Vreg value by 5 km/h steps between 50 and 140 km/h. This shall be indicated to the driver by means of a digital indicator which can be read from his seat. The figures shall be not less than 30 mm high.
- 5.2.1.4. The regulation of this regulated speed shall not be capable of being modified other than by the regulation control.
- 5.2.1.5. The speed limitation function shall not actuate the vehicle's braking systems.
- 5.2.1.6. The speed limitation function shall be electronically regulated by acting on the vehicle's injector control chip.
- 5.2.1.7. Once the regulated speed is reached, the vehicle's road speed shall not be affected if a positive action on the accelerator is applied. However, it shall be possible for the regulated speed to be exceeded if the following two conditions are met:
- 5.2.1.7.1. The retractive force generated by the accelerator shall be at least doubled, making it difficult to attain a positive variation in speed and,
- 5.2.1.7.2. A repeated sound signal shall be emitted to warn the driver that he has exceeded the selected speed. This signal shall remain low-level.
- 5.2.1.8. The speed limitation function may allow normal accelerator control for the purposes of gear changing.
- 5.2.1.9. No malfunction or unauthorized interference shall result in an increase in engine power above that demanded by the position of the driver's accelerator.

In particular, the inviolability shall be demonstrated to the technical service with documentation analysing the failure mode in which the system will be globally examined. The analysis shall show, taking into account the different states taken by the system, the consequences of a modification of the input or output states on the functioning, the possibilities of obtaining these modifications by failures or by voluntary violation and the possibility of their occurrence. The analysis level will be always to the first failure.

- 5.2.1.10. The speed limitation function and the connections necessary for its operation, except those essential for the running of the vehicle, shall be capable of being protected from any unauthorized adjustments or the interruption of its energy supply.
- 5.2.1.11. The speed limitation function shall be obtained regardless of the accelerator control used if there is more than one such control which may be reached from the driver's seating position.
- 5.2.1.12. The speed limitation function shall operate satisfactorily in its electromagnetic environment without electromagnetic disturbance.
- 5.2.1.13. The SLD must be capable of being checked. The applicant for approval shall provide checking procedures. In particular:
 - 5.2.1.13.1. It shall be possible to check the functioning of the speed limitation function whilst the vehicle is stationary (e.g. for a police check or a periodic inspection);
 - 5.2.1.13.2. It shall be possible to reconstruct over a recording period of not less than two hours, by steps of a maximum of 10 seconds, the real speed of the vehicle and the successive regulated speed(s). It shall be possible to effect this reconstruction on a control display on board the vehicle.
- 5.2.1.14. [It shall be possible to interrogate the speed limiter by means of a connection conforming to international standard ISO9141].

5.2.2. Tests

The speed limitation tests to which the vehicle presented for approval is submitted as well as the limitation performances required, are described in annex 6 of this Regulation. At the request of the manufacturer and with the agreement of the type approval authority, vehicles whose theoretical limitation speed V does not exceed the set speed V_{set} defined for those vehicles may be exempt from the testing of annex 6 provided the requirements of this Regulation are met."

Insert a new paragraph 13.1., to read:

- "13.1. Requirements concerning the installation of an approved SLD intended for vehicles of categories M3, N2 and N3."

Paragraphs 13.1. to 13.1.6. (former), renumber as 13.1.1 to 13.1.1.6.

Insert new paragraphs 13.2 to 13.2.4., to read:

- "13.2. Requirements concerning the installation of an approved SLD intended for vehicles of categories M1, N1 and M2.
- 13.2.1. The SLD shall be so installed as to enable the vehicle in normal use, despite the vibrations to which it may be subjected, to comply with the provisions of Part II of this Regulation.
- 13.2.2. The electronic unit shall be so positioned in the vehicle as not to be easily accessible.
- 13.2.3. All the requirements defined in paragraph 5.2. of section I shall apply.
- 13.2.4. Tests
- The speed limitation tests to which the vehicle presented for approval is submitted as well as the limitation performances required, are described in annex 6 of this Regulation. At the request of the manufacturer and with the agreement of the type approval authority, vehicles whose theoretical limitation speed V does not exceed the set speed Vset defined for those vehicles may be exempt from the testing of annex 6 provided the requirements of this Regulation are met."

Insert a new paragraph 21.1., to read:

- "21.1. Requirements for SLDs intended for vehicles of categories M3, N2 and N3."

Paragraphs 21.1. to 21.1.7. (former), renumber as 21.1.1. to 21.1.7.

Insert new paragraphs 21.2. to 21.2.2.3., to read:

- "21.2. Requirements for SLDs intended for vehicles of categories M1, N1 and M2
- 21.2.1. General
- 21.2.1.1. The SLD shall be so designed, constructed and assembled as to enable the vehicle in normal use, fitted with the SLD, to comply with the provisions of Part III of this Regulation.
- 21.2.1.2. In particular, the SLD must be so designed, constructed and assembled as to resist corrosion and ageing phenomena to which it may be exposed and to resist tampering in accordance with paragraph 21.1.6. below.

- 21.2.1.2.1. The set speed shall be capable of being regulated by the user by 5 km/h steps between 50 and 140 km/h.
- 21.2.1.2.2. The regulation of this set speed shall not be capable of being modified other than by the regulation control.
- 21.2.1.2.3. The SLD and the connections necessary for its operation, except those essential for the running of the vehicle, shall be capable of being protected from any unauthorized adjustments or the interruption of its energy supply.
- 21.2.1.3. The SLD shall not actuate the vehicle's service braking system.
- 21.2.1.4. The SLD must be such that it does not affect the vehicle's road speed if a positive action on the accelerator is applied when the vehicle is running at its set speed.
- 21.2.1.5. The SLD shall allow normal accelerator control for the purposes of gear changing.
- 21.2.1.6. No malfunction or unauthorized interference shall result in an increase in engine power above that demanded by the position of the driver's accelerator. In particular, inviolability shall be demonstrated to the technical service with documentation analysing the failure mode in which the system will be globally examined. The analysis shall show, taking into account the different states taken by the system, the consequences of a modification of the input or output states on the functioning, the possibilities of obtaining these modifications by failures or by voluntary violation and the possibility of their occurrence. The analysis level will be always to the first failure.
- 21.2.1.7. The SLD shall operate satisfactorily without electromagnetic disturbance.
- 21.2.2. Tests
 - 21.2.2.1. The tests to which the SLD presented for approval is submitted and the specifications with which it must comply are described in annex 6 of this Regulation.
 - 21.2.2.2. It shall be demonstrated that the electronic components are capable of operating without a failure under the following successive conditions:
 - ambient temperature of $+65^{\circ}\text{C} \pm 5^{\circ}\text{C}$
 - ambient temperature of $-20^{\circ}\text{C} \pm 5^{\circ}\text{C}$
 - sinusoidal vibrations of 10 to 24 Hz with an amplitude of $\pm 2\text{ mm}$.

21.2.2.3. It shall be demonstrated that the mechanical components are capable of operating without a failure under the following successive conditions:

ambient temperature of $+100^{\circ}\text{C} \pm 5^{\circ}\text{C}$

ambient temperature of $-20^{\circ}\text{C} \pm 5^{\circ}\text{C}$

sinusoidal vibrations of 10 to 24 Hz with an amplitude of $\pm 2\text{ mm}$.

192 hours in a 4% salted atmosphere."

Paragraphs 21.2. to 21.2.1. (former), renumber as 21.1.2. to 21.1.2.1.

Notes

Note 1/, amend to read:

"1/ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3) (TRANS/WP.29/78 and Amend.1 and 2)."

Note 3/, amend to read:

"3/ 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 for Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Greece, 24 for Ireland, 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30 (vacant), 31 for Bosnia and Herzegovina, 32 for Latvia, 33-36 (vacant), 37 for Turkey, 38-39 (vacant), 40 for the former Yugoslav Republic of Macedonia, 41 (vacant), 42 for the European Community (the approvals are granted by the member States which use their own EEC markings) and 43 for Japan. Subsequent numbers shall be assigned to other countries in the chronological order in which they ratify or accede to the Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement."

Insert a new annex 6, to read:

"Annex 6

TESTS AND PERFORMANCE REQUIREMENTS

1. TESTS OF SPEED LIMITATION

At the request of the applicant for approval, tests shall be made in accordance with either paragraphs 1.1. or 1.2. below.

1.1. Measurement on test track

- 1.1.1. Preparation of the vehicle
 - 1.1.1.1. A vehicle representative of the vehicle type to be approved or an SLD representative of the type of SLD, as appropriate, shall be submitted to the technical service.
 - 1.1.1.2. The settings of the engine of the test vehicle, particularly the fuel feed (carburettor or injection system), shall conform to the specifications of the vehicle manufacturer.
 - 1.1.1.3. The tyres shall be bedded and the pressure shall be as specified by the manufacturer for the vehicle.
 - 1.1.1.4. The vehicle mass shall be the mass in readiness for operation as declared by the manufacturer.
- 1.1.2. Characteristics of the test track
 - 1.1.2.1. The test surface shall be suitable for enabling stabilized speed to be maintained and shall be free from uneven patches. Gradients shall not exceed 2% and shall not vary by more than 1% excluding camber effects.
 - 1.1.2.2. The test surface shall be free from standing water, snow or ice.
- 1.1.3. Ambient weather conditions
 - 1.1.3.1. The mean wind speed measured at a height of at least 1 m above the ground shall be less than 6 m/s with gusts not exceeding 10 m/s.
- 1.1.4. The vehicle running at a speed which is 10 km/h below the regulated speed shall be accelerated as much as possible using a fully positive action on the accelerator control. This action shall be maintained at least 30 seconds after the vehicle speed has been stabilized. The instantaneous vehicle speed shall be recorded during the test in order to establish the curve of the speed versus the time and during the operation of the speed limiting function or of the SLD as appropriate. The accuracy of the speed measurement shall be $\pm 1\%$. The accuracy of the time measurement shall be less than 0.1 s.
- 1.1.5. The test shall be considered satisfactory if the following conditions are met:
 - 1.1.5.1. The response curve is asymptotic;
 - 1.1.5.2. The stabilized speed reached by the vehicle shall not vary more than 2 km/h from the regulated speed.
 - 1.1.5.3. The stabilized speed V_{stab} is the average speed calculated for a minimum time interval of 20 seconds beginning 10 seconds after reaching 90% of the regulated speed.

1.1.5.4. Tests in acceleration shall be carried out and the acceptance criteria verified for each gear ratio allowing in theory the set speed to be exceeded and for each speed regulation.

1.2. Tests on the chassis dynamometer

1.2.1. Characteristics of the chassis dynamometer

The equivalent inertia of the vehicle mass shall be reproduced on the chassis dynamometer with an accuracy of $\pm 10\%$. The speed of the vehicle shall be measured with an accuracy of $\pm 1\%$. The time shall be measured with an accuracy of 0.1 s.

1.2.2. The power absorbed by the brake during the test shall be set to correspond with the vehicle's resistance to progress at the tested speed(s). This power may be established by calculation and shall be set to an accuracy of $\pm 10\%$. At the request of the applicant, and with the agreement of the competent authority, the power absorbed may alternatively be set at 0.4 Pmax (Pmax is the maximum power of the engine). The vehicle running at a speed which is 10 km/h below the set speed Vset shall be accelerated at the maximum possibilities of the engine by using a fully positive action on the acceleration control. This action shall be maintained at least 20 seconds after the vehicle speed has been stabilized. The instantaneous vehicle speed shall be recorded during the test in order to draw the curve of the speed versus time during the operation of the speed limiting function or of the SLD as appropriate.

1.2.3. The tests shall be considered satisfactory if the provisions of paragraph 1.1.5. are satisfied."

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B. JUSTIFICATION

This draft proposes that Regulation No. 89, concerning speed limitation, should be extended to M1 and N1 light vehicles.

The aim is to enable the driver to predetermine the maximum speed which he does not wish to exceed (known as Vreg). This selection should be simple and deliberate. Each time the engine is restarted a new selection should be incorporated (or proposed).

Subsequently, the Vreg speed may be exceeded by the driver but he must be informed of this, by a hardening of the accelerator and by audible information (which must remain user-friendly).

An additional aim should be for the system to be capable of recording the speed = f(time) function so that it can be checked by the police. This gives rise either to an on-board analysis function or a control function and an external diagnostic system (in the possession of the police). It must be possible to use the latter system whatever the make of the limitation device.

Lastly, in order to be universal the approval should provide for several solutions:

the possibility for the device in isolation to be fitted on different types of vehicles;

the fitting of the device on a vehicle type;

the function directly on the vehicle if the latter is designed with the speed limitation function.
