

GFV-07-02

INFORMAL GROUP ON GASEOUS FUELLED VEHICLES
Within the UN GRPE (WP29)
PROPOSED AMENDMENT

Name of Organisation submitting Amendment/Work Item
GFV GROUP

Person submitting Item
GFV secretariat

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Regulation name and reference number
Regulation 115

Name of Amendment/Work Item
Internal Working document aimed at informing members of the latest agreed changes to Regulation 115 and ECE/TRANS/WP.29/GRPE/2009/19.
Please note that for the sake of simplicity the proposed changes are made to the LPG section first. The CNG section will be changed accordingly after the LPG sections have been revised.

Specific language for Amendment/Work Item
English

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Rationale: (Why is it important/required?)

Several essential amendments were introduced to Regulation 115 in the document ECE/TRANS/WP.29/GRPE/2009/19 transmitted to the Secretariat, in particular:

- Clarification of the scope of application;
- Deletion of the concept of "non-intrusive" retrofit systems;
- Limitation of the operation on petrol to 90 seconds or 60 seconds;
- Addition of provisions for the setting of the chassis dynamometer;
- Clarification of some provisions.

However, there still are some outstanding issues. This working document takes on board the proposal agreed during the GFV meeting held on 26th May 2009. Further work will need to be done to address all the remaining issues highlighted in GFV-06-02.

Please submit new work items to:

E/ECE/324 } Rev.2/Add.114
E/ECE/TRANS/505 }
Regulation No. 115
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Annex 5

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Changes to GRPE-2009-19 are made with track changes and/or bold characters:

1.4. This Regulation applies to retrofit systems intended to be fitted on vehicles of categories M and N, with the exception of:

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(a) vehicles type-approved pursuant to Regulation No. 83, series of amendments 00 or 01 or 02 or 03 or 04.

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(b) vehicles type-approved pursuant to Regulation No. 49, series of amendments 00 or 01 or 02.

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(c) vehicles type-approved pursuant to EC Directive 70/220/EEC up to and including the amending Directive 96/69/EC as amended by 98/77/EC,

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(d) vehicles type-approved pursuant to EC Directive 88/77/EEC up to and including the amending Directive 96/1/EC.

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1.5 The requirements for the different categories (M₁, N₁ or others) are defined in paragraphs 2. to 7.¹

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Once the retrofit system is installed in the vehicle, the modified vehicle shall fulfil all the provisions of the Regulation for which the type approval has been initially granted.

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2.1.1. Specific LPG retrofit system of an approved type may consist of several components as classified and approved according to Regulation No. 67² Part I and the specific vehicle instruction manuals.

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2.1.2. Specific CNG retrofit system of an approved type may consist of several components as classified and approved according to Regulation No. 110³ Part I and the specific vehicle instruction manuals.

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2.2.5. the fuel container type (i.e. LPG liquid take off / vapour pressure, LPG vapour take off, LPG liquid take off / pressurized by pump, pressurized CNG take off), the safety devices and fuel container accessories, as required by Regulation No. 67², or Regulation No. 110³, where applicable (i.e. relief valve, ...);

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2.6. For definitions of the components of LPG retrofit systems refer to Regulation

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¹ Regarding safety requirements, it is recommended that the minimum requirements of Regulation No. 67, 01 series of amendments and Regulation No. 110 shall apply to all retrofitted vehicles.

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² Regulation No. 67, series of amendments in force during the type-approval of the retrofit system according to this Regulation.

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³ Regulation No. 110, series of amendments in force during the type-approval of the retrofit system according to this Regulation.

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No. 67²
 2.7. For definitions of the components of CNG retrofit systems refer to Regulation No. 110³

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6.1.1. Requirements for the installation of specific retrofit system for the use of LPG in the propulsion system of a vehicle

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6.1.1.1. Components indicated in Regulation No. 67² and defined as necessary,

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6.1.1.1.4. The plate according to Annex 2A.

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6.1.1.2. The LPG retrofit system may also include components indicated as optional in Regulation No. 67²

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6.1.1.3. The LPG retrofit system installed in the vehicle, in a proper way as defined in the above installation manual, shall comply with the installation requirements of Regulation No. 67². Concerning the fixation of the fuel container, the requirements of Regulation No. 67² shall be deemed to be met if the requirements of Annex 5 to the present Regulation are satisfied.

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6.1.2.4.2.1. Using of coast-down factors/coefficients of the original vehicle:

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In case coast-down coefficients of the original vehicle used during the type-approval are used, the following conditions shall apply:

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- the parent vehicle reference mass shall be measured with the retrofit system installed on the vehicle including the LPG container fully filled up (80% of capacity) or shall be calculated as the sum of the original vehicle reference mass and the mass of the retrofit system with the LPG container fully filled up (80% of capacity);
- the inertia mass of the parent vehicle shall be determined according to the reference mass of the retrofitted vehicle;
- the rolling resistance of the parent vehicle shall correspond to the original vehicle value proportionally adjusted to the parent vehicle mass measured or calculated as above:

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$$f_0' = f_0 + (\text{abs}(f_0)) \cdot (p/m)$$

where

f'0= rolling resistance of the parent vehicle
 f0= rolling resistance of the original vehicle
 m=reference mass of the original vehicle;

p= retrofit system mass;

- the other coefficients of the resistance of the parent vehicle shall be equal to that of the original vehicle.

6.1.2.4.1.2.2. Using of the table values:

- the parent vehicle reference mass shall be measured with the retrofit system installed on the vehicle including the LPG tank fully filled up (80% of capacity) or shall be calculated as the sum of the original vehicle reference mass and the mass of the retrofit system with the LPG tank fully filled up (80% of capacity);
- the inertia mass of the parent vehicle shall be determined according to the reference mass of the retrofitted vehicle;
- the coefficient a shall be the one corresponding to the reference mass of the retrofitted vehicle;
- the coefficient b shall be the one corresponding to the reference mass of the original vehicle.

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6.1.2.4.1.4. Notwithstanding the requirements of paragraph 6.1.2.4.1.3., for each pollutant or combination of pollutants, one of the three test results may exceed, by not more than 10 per cent, the limit prescribed, provided the arithmetical mean of the three results is below the prescribed limit. In this case the prescribed limits may be exceeded for more than one pollutant in the same test or in different tests.

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6.1.2.4.1.7. Notwithstanding the requirements of paragraph 6.1.2.4.1.6., for each pollutant one of the three test results may be equal to or exceed, by not more than 10 per cent, the limit prescribed, provided that the arithmetical mean of the three results is below the prescribed limit. In this case the prescribed limits may be exceeded for more than one pollutant in the same test or in different tests.

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