

Proposal for a new supplement to UN Regulation No. 85

Submitted by the experts from France.

The text reproduced below was prepared by the expert from France. This document proposes to allow higher tolerance for pressure measurement in paras 4.7 and 4.8 to Annex 5. The difference introduced in revision 1 of the document are in **red**.

I. Proposal

Annex 5, paragraphs 4.7 and 4.8, amend to read:

4.7. Depression in intake duct (see note 1a to table 1): **± 800 Pa**~~± 50 Pa~~.

4.8. Pressure in exhaust duct: **± 800 Pa**~~± 200 Pa~~.

II. Justification

Context:

Accuracy of pressure measurements for net power determination test is defined in Annex 5 paragraph 4:

4.7. Depression in intake duct (see note 1a to table 1): ± 50 Pa.

4.8. Pressure in exhaust duct: ± 200 Pa.

Intake depression is to calculate the correction factor α_d of net power for Diesel internal combustion engines.

5.4.2. Diesel engines - Factor α_d

The power correction factor (α_d) for diesel engines at constant fuel rate is obtained by applying the formula:

$$\alpha_d = (f_a) f_m$$

where

f_a is the atmospheric factor

f_m is the characteristic parameter for each type of engine and adjustment

[...]

5.4.2.2. Engine factor f_m

f_m is a function of q_c (fuel flow corrected) as follows:

$$f_m = 0.036 q_c - 1.14$$

where: $q_c = q/r$

where:

q is the fuel flow in milligram per cycle per litre of total swept volume (mg/(l.cycle))

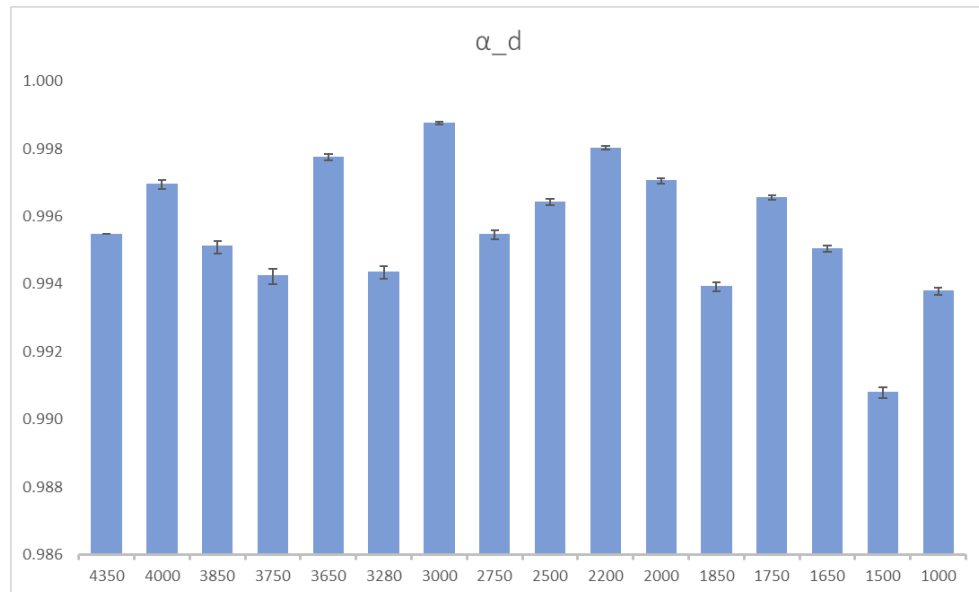
r is the pressure ratio of compressor outlet and compressor inlet

($r = 1$ for naturally aspirated engines) [...]

Exhaust pressure is not used in the power calculation.

Statement

Pressure accuracy is not always compliant to the requirement in § 4 in the engine test benches.



Evaluation of the impact on the pressure sensor accuracy at the intake (fictive engine) with ±800 ~~mbar:~~ Pa

Proposal

Allow higher tolerance for pressure measurement in §4.7 and 4.8 (+ aligned intake and exhaust) in order to avoid refusal of test due to the non-compliance of pressure accuracy and based on the low impact on the α_d . Value or approach (linearity?) to be discussed.