

## OICA PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 83

This proposal has been prepared by the experts from OICA in order to amend the requirements of Regulation 83, to clarify and update the specifications for the proportional speed fan which can be used during testing of the vehicle on the chassis dynamometer.

The modifications to the current text of the Regulation are marked in **bold** characters.

### A. PROPOSAL

#### Annex 4,

Paragraph 6.1.3., amend to read:

"6.1.3. A current of air of variable speed shall be blown over the vehicle. The blower speed shall be ~~such that,~~ within the operating range of 10 km/h to at least 50 km/h, **or as an alternative, at the request of the manufacturer within the operating range of 10 km/h to at least the maximum speed of the test cycle being used.** The linear velocity of the air at the blower outlet **shall be** within 5 km/h of the corresponding roller speed **during the test cycle.** The final selection of the blower shall have the following characteristics:

Area: at least 0.2 m<sup>2</sup>;

Height of the lower edge above ground: approximately 20 cm;

Distance from the front of the vehicle: approximately 30 cm.

As an alternative, **at the request of the manufacturer** the blower speed shall be fixed at an air speed of at least 6 m/s (21.6 km/h).

~~For special vehicles (e. g. vans, off-road), the~~ **The height and lateral position** of the cooling fan can also be modified at the request of the manufacturer.

#### Annex 4a,

Paragraph 6.1.3., amend to read:

3.4.2. A current of air of variable speed shall be blown over the vehicle. The blower speed shall be ~~such that,~~ within the operating range of 10 km/h to at least 50 km/h, **or as an alternative, at the request of the manufacturer within the operating range of 10 km/h to at least the maximum speed of the test cycle being used.** The linear velocity of the air at the blower outlet **is shall be** within  $\pm 5$  km/h of the corresponding roller speed **during the test cycle.** The final selection of the blower shall have the following characteristics:

(i) Area: at least 0.2 m<sup>2</sup>;

- (ii) Height of the lower edge above ground: approximately 0.2 m;
- (iii) Distance from the front of the vehicle: approximately 0.3 m.

As an alternative, **at the request of the manufacturer** the blower speed shall be fixed at an air speed of at least 6 m/s (21.6 km/h).

~~For special vehicles (e.g. vans, off-road),~~ The height **and lateral position** of the cooling fan can also be modified at the request of the manufacturer.

\* \* \*

## **B. JUSTIFICATION**

Vehicles require increasingly complex thermal management of the engine, the charge (intake) air and aftertreatment devices. It is therefore essential that the air flow over the vehicle and onto the radiators, intercoolers and/or EGR coolers during emission / fuel economy type approval testing on the chassis dynamometer is representative of that which the vehicle would experience when being driven on a road.

There is currently a choice of type of fan, a constant speed fan and a variable speed fan often called a 'road speed fan'. The Road speed fan specification requires updating for technical progress and for clarification. However, the existing requirements must also be maintained to allow appropriate testing of vehicles with an existing approval to be checked on conformity of production / in-service compliance according to the test conditions used at the time of certification.

The specification is updated to align with the test cycle which operates at a maximum speed of 120 kph – but only at the manufacturers request, otherwise ~~the rather than~~ the 50 kmh<sup>-1</sup> referenced in the existing text would apply. The insertion of the phrase 'during the test' is added to clarify that there is a dynamic requirement for the fan. In some cases, the existing text has been interpreted by Test Authorities as meaning a steady state rather than a dynamic requirement for the road speed fan. In these cases, test laboratories are equipped with very large fans with high inertia which are not capable of following the test cycle.

The final section of the paragraph is modified as it is important to position the fan such that the air flow over the radiator, intercoolers, EGR & charge coolers etc is correct, with full range of road speed to replicate as far as possible the normal air flow over the vehicle when driving on the road. Vehicle thermal management systems are highly complex and it is important to the correct emission performance of the vehicle that a representative air flow over the charge air cooling devices and the radiator is delivered during the test.

-----