

ANNEX I

APPARATUS, CONDITIONS AND METHOD OF MEASUREMENT

1. UNIT OF MEASUREMENT AND MEASURING APPARATUS

1.1. Unit of measurement

Noise level L_A shall be measured in dB with A-weighting, expressed as dB(A).

1.2. Measuring apparatus

Driver-perceived noise level shall be measured by means of a sound-level meter as described in the first edition of Publication No 179/1965 of the International Electrotechnical Commission.

In the case of variable readings, the average of the maximum values must be taken.

2. CONDITIONS OF MEASUREMENT

Measurements shall be made under the following conditions:

- 2.1. the tractor must be unladen, i.e. without optional accessories, but must include coolant, lubricant, full fuel tank, tools and driver. The latter may not wear any abnormally thick clothing, scarf or hat. There may be no object on the tractor likely to distort the noise level;
- 2.2. the tyres must be inflated to the pressure recommended by the tractor manufacturer, the engine, transmission and drive axles must be at normal running temperature and radiator blinds when fitted must be kept open during measurements;
- 2.3. if it is liable to affect the noise level, extra equipment powered by the engine or self-powered such as windscreen wipers, warm air fan or power take-off, may not be in operation when measurements are being made; parts which normally operate at the same time as the engine, such as the engine cooling fan, must be in operation when measurements are being made;
- 2.4. the test area must be in an open and sufficiently silent location; it may take the form, for instance, of an open space of 50-metre radius, having a central part with a radius of at least 20 m which is practically level, or of a level section having a solid track with as flat a surface and as few gullies as possible. The track must be as clean and dry as possible (e.g. free of gravel, leaves, snow, etc.). Slopes and irregularities are acceptable only if the variations in noise level caused by them lie within the error tolerances of the measuring equipment;
- 2.5. the surface of the track must be such as not to cause excessive tyre noise;
- 2.6. the weather must be fine and dry with little or no wind.

The driver-perceived ambient noise level due to the wind or other sources of noise must be at least 10 dB(A) below the noise level of the tractor;

- 2.7. if a vehicle is used for measurements, it must be towed or driven at a sufficient distance from the tractor to avoid all interference. During measurements no object interfering with the measurements or reflective surfaces may be located within 20 m of each side of the test track or less than 20 m to the front or rear of the tractor. This condition can be considered fulfilled if the variations in noise level thus caused remain within the error tolerances; if not, the measurements must be discontinued for the duration of the interference;

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2.8. all measurements in a given series must be carried out on the same track.

3. METHOD OF MEASUREMENT

3.1. The microphone must be located 250 mm to the side of the centre plane of the seat, the side being that on which the higher noise level is encountered.

The microphone diaphragm must face forward and the centre of the microphone must be 790 mm above and 150 mm forward of the seat reference point described in Annex III. Excessive vibration of the microphone must be avoided.

3.2. The maximum noise level in dB(A) shall be determined as follows:

3.2.1. all openings (e.g. doors, windows) in tractors having a closed series-produced cab structure must be closed during an initial series of measurements;

3.2.1.1. during a second series of measurements, they must be left open, provided that, when open, they do not create a road safety hazard, but fold-down or fold-up windscreens must remain closed;

3.2.2. noise must be measured using slow sound-level meter response at the load corresponding to the maximum noise in the gear giving the forward speed nearest to 7.5 km/h.

The governor control lever must be fully open. Starting with no load, the load applied must be increased until the maximum noise level is found. After each increase of load, time must be allowed for the noise level to stabilise before making the measurement;

3.2.3. noise must be measured using slow sound-level meter response at the load corresponding to the maximum noise in any gear other than that referred to in point 3.2.2 in which the noise level recorded is at least 1 dB(A) above that recorded in the gear referred to in point 3.2.2.

The governor control lever must be fully open. Starting with no load, the load applied must be increased until the maximum noise level is found. After each increase of load, time must be allowed for the noise level to stabilise before making the measurement;

3.2.4. noise must be measured at the maximum design speed of the unladen tractor.

3.3. The test report shall include noise-level measurements carried out under the following conditions:

3.3.1. in the gear giving the speed nearest to 7.5 km/h;

3.3.2. in any gear, if the conditions described in point 3.2.3 are fulfilled;

3.3.3. at maximum design speed.

4. ASSESSMENT CRITERIA

The measurements described in points 3.2.1, 3.2.2, 3.2.3 and 3.2.4 may not exceed the values laid down in Article 2.