INTERNATIONAL STANDARD

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Agricultural and forestry tractors — Measurement of noise emitted when in motion

Tracteurs agricoles et forestiers — Mesurage du bruit émis en mouvement

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 2, *Common tests*.

This second edition cancels and replaces the first edition (ISO 7216:1992), of which has been technically revised for the technical harmonization with OECD Code 2, 4.8: July 2014.

Introduction

Technical harmonization with OECD is ensured by the Maintenance Agency operating as specified in Annex A.

Agricultural and forestry tractors — Measurement of noise emitted when in motion

1 Scope

This International Standard specifies a method for measuring the A-weighted sound pressure level of the noise emitted by agricultural and forestry tractors while the vehicle is in motion.

The conditions specified for the operation of the agricultural and forestry tractors during the measurements are defined to provide a realistic and repeatable assessment of the maximum noise emitted when it is in motion.

This International Standard is applicable to agricultural and forestry tractors, fitted with elastic tyres or rubber tracks.

It is not applicable to special forestry machinery, for example, forwarders, skidders, etc., as defined in ISO 6814 and agricultural and forestry tractors, fitted with steel tracks.

NOTE The test method calls for an acoustical environment which can only be obtained in an extensive open space.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61672-1, *Electroacoustics — Sound level meters*

IEC 60942, *Electroacoustics — Sound calibrators*

ISO 6814:2009, *Machinery for forestry — Mobile and self-propelled machinery — Terms, definitions and classification*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
agricultural tractor
self-propelled agricultural vehicle having at least two axles and wheels, or endless tracks, particularly designed to pull agricultural trailers and pull, push, carry and operate implements used for agricultural work (including forestry work), which may be provided with a detachable loading platform

Note 1 to entry: The agricultural vehicle has a maximum design speed of not less than 6 km/h and may be equipped with one or more seats.

[SOURCE: ISO 12934:2013, 3.1]

3.2
unballasted tractor mass
mass in the tractor in working order with tanks and radiators full, roll-over protective structure with cladding, and any track equipment or additional front-wheel drive components required for normal use

Note 1 to entry: Not included are the operator, optional ballast weights, additional wheel equipment, special equipment and loads.

[SOURCE: ISO 5700:2013, 3.2]

4 Measurement units and tolerances

The following units and tolerances apply to the maximum value measured:

—	rotational frequency (r/min)	± 0,5 % ;
—	time (s)	± 0,2 s ;
—	distance (m or mm)	± 0,5 % ;
—	force (N)	± 1,0 % ;
—	mass (kg)	± 0,5 % ;
—	atmospheric pressure (kPa)	± 0,2 kPa ;
—	tyre pressure (Pa)	± 5 % .

5 Instrumentation

5.1 A precision quality sound level meter shall be used meeting or exceeding the requirements of IEC 61672-1 for a class 1 instrument. If alternative measuring equipment is used, the tolerances shall not exceed those given in the relevant clauses of IEC 61672-1 for a class 1 instrument. Measurement shall be carried out with a frequency weighting network in conformity with curve A and set to give fast response as is described in the IEC publication.

5.2 The calibration of the equipment at the time of measurement shall be in accordance in all respects with the specifications of IEC 61672-1 for a class 1 instrument. Checking of the calibration shall be carried out at appropriate intervals and at least before and after each measurement session, using an acoustical calibrator in accordance with the specifications of IEC 60942 for a class 1 instrument. The calibrator shall be checked annually to verify its output and its calibration shall be traceable to a national standards laboratory.

6 Circumstances for testing

6.1 Acoustical environment

6.1.1 Measurements shall be made in a sufficiently silent, flat, and open zone. This area shall be an open space of 50 m radius, of which the central part of at least 20 m radius shall be practically level and made concrete, asphalt, or similar material and shall not be covered with powdery snow, high grass, friable soil or cinders.

6.1.2 The surface of the test track shall be of such a kind that pneumatic tyres or rubber tracks do not cause excessive noise. The surface shall be as clean and dry as possible (e.g. free of gravel, leaves, snow, etc.).

6.2 Ambient conditions

6.2.1 Measurements shall be made in fine weather with little or no wind. The level of background noise and the level of wind noise at the microphone location shall be at least 10 dB(A) below the noise level measured during the test. Any extraneous noise occurring during the reading, which is not connected to general sound level measurement, shall not be taken into consideration.

6.2.2 No correction shall be made to the test results for the atmospheric conditions or other factors. Atmospheric pressure shall not be less than 96,6 kPa. If this is not possible because of conditions of altitude, a modified injection pump setting may have to be used, details of which will be included in the report.

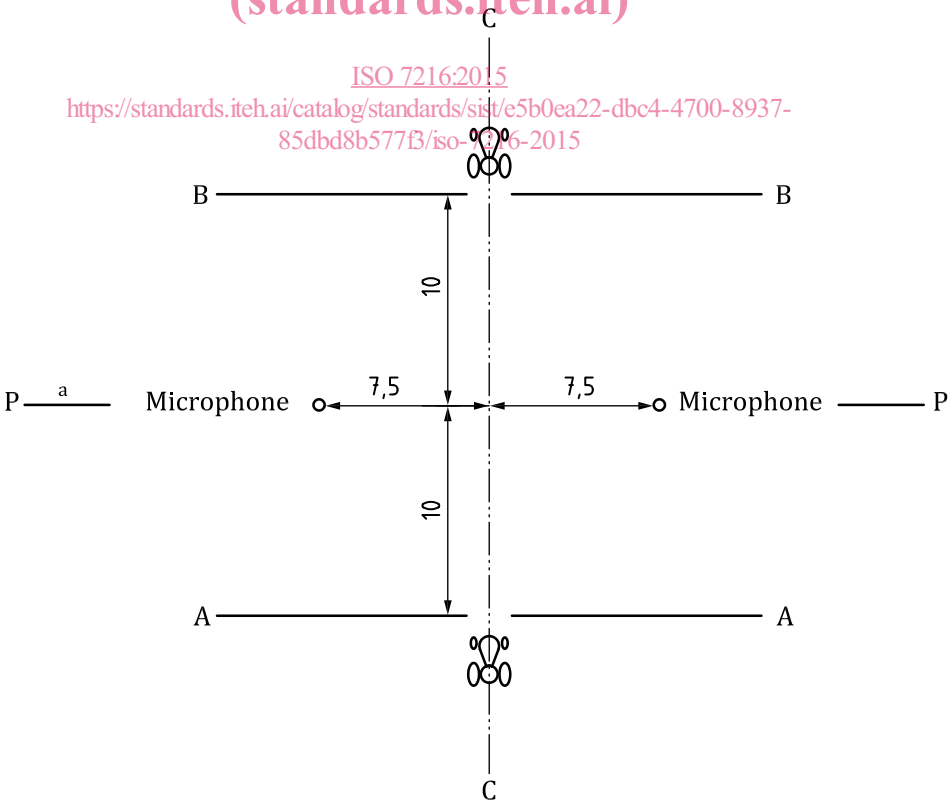
7 Layout of the test area

7.1 The centreline of the track (CC), a line (PP) perpendicular to it and passing through the centre of the test area and two lines (AA and BB) parallel to line PP and 10 m from it shall be marked on the track (see Figure 1).

7.2 The microphone shall be placed 1,2 m above ground and a distance of 7,5 m from the axis of forward movement of the tractor, measured along the perpendicular PP to the axis (see Figure 1).

The microphone shall be oriented in a direction normal to the centreline of the path of travel on the track.

Dimensions in metres



a One microphone position may be eliminated, in which case an additional test run from BB to AA is required.

Figure 1 — Layout of the test area — Microphone position