
Traktorji za kmetijstvo in gozdarstvo - Merjenje hrupa na voznikovem mestu - Pregledna metoda

Tractors for agriculture and forestry - Measurement of noise at the operator's position - Survey method

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Tracteurs agricoles et forestiers - Mesurage du bruit au poste de conduite de l'opérateur - Méthode de contrôle

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65.060.01	Kmetijski stroji in oprema na splošno	Agricultural machines and equipment in general

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Tractors for agriculture and forestry — Measurement of noise at the operator's position — Survey method

*Tracteurs agricoles et forestiers — Mesurage du bruit au poste de
conduite de l'opérateur — Méthode de contrôle*

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ISO 5131:2015(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 \(standards.iteh.ai\)](http://Foreword - Supplementary information (standards.iteh.ai))

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

This third edition cancels and replaces the second edition (ISO 5131:1996), which has been technically revised for technical harmonization with OECD Code 5: July 2014.

Introduction

Technical harmonization with OECD is ensured by the Maintenance Agency operating as specified in [Annex C](#).

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Tractors for agriculture and forestry — Measurement of noise at the operator's position — Survey method

1 Scope

This International Standard specifies a method for the measuring and reporting of the noise at the operator(s) position of a tractor used in agriculture and forestry. The measured noise relates only to the basic machine and applies to tractors with machine-carried operators. The results provide information to the operator(s) in order to avoid exposing themselves to noise levels that could put their hearing at risk.

The conditions specified for the operation of the machines during the measurements are defined to provide a realistic and repeatable assessment of the maximum noise an operator should be subjected to when operating a machine. The test procedures specified in this International Standard are survey methods as defined in ISO 12001.

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.

ISO 5353:1995, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point*

[SIST ISO 5131:2016](https://standards.iteh.ai/catalog/standards/sist/ec4aa04b-d2bf-4668-9d95-e54050ef9ac2/sist-iso-5131-2016)

ISO 6395:2008, *Earth-moving machinery — Determination of sound power level — Dynamic test conditions*

ISO 12001, *Acoustics — Noise emitted by machinery and equipment — Rules for the drafting and presentation of a noise test code*

IEC 60942, *Electroacoustics — Sound calibrators*

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

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

power take-off power

power measured at the dynamometer coupled to any shaft (with the tractor stationary) designed by the tractor manufacturer to be used as a power take-off

[SOURCE: ISO 789-1:1990, 3.2]

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3.3 roll-over protective structure ROPS

framework (safety cab or frame) protecting drivers of tractors for agricultural and forestry that avoids or limits risk to the driver resulting from accidental overturning during normal operation

Note 1 to entry: The ROPS is characterized by the provision of space for a clearance zone either inside the envelope of the structure or within a space bounded by a series of straight lines from the outer edges of the structure to any part of the tractor that might come into contact with flat ground and that is capable of supporting the tractor in that position if the tractor overturns.

[SOURCE: ISO 5700:2013, 3.1]

3.4 unballasted tractor mass

mass of 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 Measurements units and tolerances

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

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

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 slow response as described in IEC 61672-1.

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.

5.3 An adequate technical description of the measuring equipment shall be given in the test report.

6 Circumstances for testing

6.1 Acoustical environment

6.1.1 Measurements shall be made in a sufficiently silent, flat, and open zone. The last 20 m next to the test zone shall be essentially level and there shall be no obstacle in this area likely to reflect significant sound, such as a building, solid fence, tree or other machine.

6.1.2 The surface of the test zone shall be of a kind where pneumatic tyres or endless rubber tracks do not cause excessive noise. It shall be made of concrete, asphalt or a similar material unless otherwise specified. The surface shall be as clean and dry as possible (e.g. free of gravel, leaves, snow, etc.).

6.1.3 For endless metal tracks, the surface of the test zone shall be of a kind where they do not cause excessive noise. In this case, it shall be a layer of humid sand as specified by ISO 6395:2008, 5.3.2.

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 that occurs while obtaining data, which is not connected to general sound level measurement, shall not be taken into consideration.

6.2.2 No corrections 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.

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6.3 Operator

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6.3.1 No person other than the operator of the tractor shall be in the cab during measurements. However, when the noise is being measured at additional operator positions on the machine, the usual number of operators shall be present. No person other than the operator(s) shall be in a position to influence the noise measurements.

6.3.2 The operator shall not wear abnormally thick clothing or any additional attire, such as a hat or scarf, which could influence the sound measurement.

7 Condition of tractor

7.1 Selection

7.1.1 In the case of a third party performing the assessment, the manufacturer and the third party shall work together to select a tractor to be submitted for testing. The tractor shall comply with the manufacturer's product specification, and shall be operated in accordance with the manufacturer's instructions.

7.1.2 [Annex A](#) specifies conditions for agricultural tractors covered by this International Standard.

7.2 Running-in and preliminary adjustment

7.2.1 The tractor shall be new and run in prior to the test in accordance with the manufacturer's usual instructions. If a third party is responsible for the testing, the third party itself may run in the tractor