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Kmetijski traktorji - Postopki preskušanja - 1. del: Preskušanje moči na priključni gredi

Agricultural tractors - Test procedures - Part 1: Power tests for power take-off

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**Agricultural tractors — Test
procedures —
Part 1:
Power tests for power take-off**

Tracteurs agricoles — Méthodes d'essai —

Partie 1: Essais de puissance à la prise de force

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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 voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html. (standards.iteh.ai)

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This third edition cancels and replaces the second edition (ISO 789-1:1990), which has been technically revised for the technical harmonization with OECD Code 2: February 2017. 90470295d-ed11c10c-1901

A list of all the parts in the ISO 789 series can be found on the ISO website.

Agricultural tractors — Test procedures —

Part 1: Power tests for power take-off

1 Scope

This document specifies test procedures for determining the power available at the power take-off (PTO) on agricultural tractors of the wheeled, track-laying or semi-track-laying type.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 500-1, *Agricultural tractors — Rear-mounted power take-off types 1, 2, 3 and 4 — Part 1: General specifications, safety requirements, dimensions for master shield and clearance zone*

ISO 500-2, *Agricultural tractors — Rear-mounted power take-off types 1, 2 and 3 — Part 2: Narrow-track tractors, dimensions for master shield and clearance zone*

ISO 500-3, *Agricultural tractors — Rear-mounted power take-off types 1, 2, 3 and 4 — Part 3: Main PTO dimensions and spline dimensions, location of PTO*

ISO 789-13:2018, *Agricultural tractors — Test procedures — Part 13: Vocabulary and specimen test report*

ISO 8759-1, *Agricultural wheeled tractors — Front-mounted equipment — Part 1: Power take-off and three-point linkage*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 789-13 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Measurement units and tolerances

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

- rotational frequency, in revolutions per minute (r/min): $\pm 0,5 \%$;
- time, in seconds (s): $\pm 0,2 \%$;
- distance, in metres or millimetres (m or mm): $\pm 0,5 \%$;
- force, in newtons (N): $\pm 1 \%$;
- torque, in newton metres (N·m): $\pm 1 \%$;

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- mass, in kilograms (kg): $\pm 0,5 \%$;
- fuel consumption, in kilograms per kilowatt hour (kg/kWh): $\pm 1 \%$;
- atmospheric pressure, in kilopascals (kPa): $\pm 0,2 \text{ kPa}$;
- temperature of fuels, etc., in degrees Celsius: $\pm 2 \text{ }^\circ\text{C}$;
- wet and dry bulb thermometer temperature, in degrees Celsius: $\pm 0,5 \text{ }^\circ\text{C}$.

5 General requirements**5.1 Selection**

In the case of a third party performing the assessment, the tractor manufacturer and the third party shall work together to select a tractor to be submitted for testing. The tractor submitted for the test shall require a serial number, shall comply with the manufacturer's product specification, and shall be operated in accordance with the manufacturer's instructions. The manufacturer shall provide a representative to be present throughout the entire testing of the tractor.

5.2 Running-in and preliminary adjustments

5.2.1 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 provided an authority of the manufacturer or the manufacturer's representative, who will remain responsible for the running-in, is obtained.

The test report shall state the place and duration of running in.

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5.2.2 The adjustment of the carburettor or injection pump as well as the setting of the governor shall conform to the specifications provided by the manufacturer. The manufacturer may make adjustments in conformity with these specifications prior to testing, but adjustments shall not be made during the test.

5.3 Manufacturer's instructions

Once the test has started, the tractor shall never be operated in a way that is not in accordance with the manufacturer's published instructions in the form of an operating handbook unless specifically required by test criteria and then only by arrangement with the manufacturer.

5.4 Repairs

All repairs made during the tests shall be noted in the test report, together with comments on any practical defects or shortcomings about which there is no doubt.

5.5 Preliminary information

Specification information of the tractor consisting of the items listed in the ISO 789-13 specimen test report, as well as any further data required to carry out the tests, shall be recorded and used to set up the test.

These technical specifications shall be validated as thoroughly as possible by the entity performing the test.

5.6 Fuels and lubricants

5.6.1 Selection

Fuels and lubricants shall be selected from the range of products commercially available in the country where the equipment is tested, but shall conform to the minimum standards approved by the tractor manufacturer. If the fuel or lubricant conforms to a national or international standard, it shall be mentioned and the standard stated.

5.6.2 Measuring consumption

Measurement of fuel consumption during PTO tests is required.

The fuel measurement apparatus shall be arranged so the fuel pressure at the carburettor or the fuel injection pump is equivalent to that which exists when the tractor's fuel tank is half full. The fuel temperature shall be comparable to that which is found during full load operation for 2 h, when the fuel is taken from the tractor fuel tank.

5.6.3 Tractors equipped with diesel particulate filters

In the case of a tractor equipped with a diesel particulate filter, a regeneration of the diesel particulate filter may be performed before starting the PTO test. If the tractor initiates a regeneration of the diesel particulate filter during the test, the current test should be suspended and the regeneration should be allowed to complete before continuing the test.

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5.7 Auxiliary equipment (standards.iteh.ai)

For all tests, accessories such as the hydraulic lift pump or air compressor may only be disconnected if it is allowed in the operator's manual and is practicable for the operator to do so as normal practice in work. The accessories must be disconnected without using tools and in accordance with the operator's manual. If not, they shall remain connected and operate at minimum load.

If the tractor is equipped with devices that create variable parasitic power losses, such as a variable speed cooling fan, intermittent hydraulic or electrical demands, etc., the device shall not be disconnected or altered for test purposes. If it is practical for the operator to disconnect the device as outlined by the operator's manual, it may be disconnected for test purposes, in which case this shall be recorded in the test report.

Power variations during tests caused by these devices exceeding $\pm 5\%$ shall be recorded in the test report in terms of percent variation from the mean.

5.8 Ambient conditions

5.8.1 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.

5.8.2 The surrounding temperature shall be 23 ± 7 °C.

5.9 Test equipment

5.9.1 The torque and power values in the test report shall be obtained from an appropriately sized dynamometer bench without correction for losses in power transmission between the PTO and the dynamometer bench.