
**Forestry machinery — Portable
chain-saws — Engine performance and
fuel consumption**

*Machines forestières — Scies à chaîne portatives — Puissance et
consommation de carburant du moteur*



Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7293 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 17, *Manually portable forest machinery*.

This second edition cancels and replaces the first edition (ISO 7293:1983), of which it constitutes a technical revision (see Introduction).

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Introduction

The first edition of ISO 7293 was elaborated from 1979 to 1980 according to the special conditions of chain-saws at that time. Extensive measurement experiences not only at manufacturers but also at test stations revealed that the test procedure given in ISO 7293:1983 is no longer appropriate due to advanced developments.

The test procedure given in ISO 7293:1983 required an intermittent test run repeated over a specified range of rotational frequency. Within this range, one data point had to be recorded at every 10 s^{-1} increment. The necessary reading had to be recorded within 50 s to 60 s after the application of full load. This sequence was then followed by 1 min of running with idling.

According to gathered experiences, this intermittent procedure has several disadvantages:

- the repeatability is poor due to the unstable test conditions: the temperature, and therefore the performance, is not steady within the defined time frame in which the test data have to be recorded;
- some machines have problems during idling due to the coupled masses of the dynamometer;
- the measuring time is lengthened due to the additional idling modes.

In the steady-state procedure given in this International Standard, the power curve is measured over the same range of rotational frequency. After the torque and temperature have stabilized, all necessary data for the performance and the fuel consumption measurement have to be taken.

After recording the data, the next point on the power curve has to be measured without returning to idling. Due to the close temperature correlation from the previous point to the subsequent point, the stabilized conditions are reached in a much shorter time than in the previous procedure.

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1 Scope

This International Standard specifies a method for testing the performance and fuel consumption of internal combustion engines used to power portable chain-saws.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5164:1990, *Motor fuels — Determination of knock characteristics — Research method*.

3 Apparatus

- 3.1 Brake power test bench** with a torque accuracy of ± 2 % of the measured value.
- 3.2 Tachometer** with an accuracy of $\pm 0,5$ % of the measured value.
- 3.3 Fuel consumption measuring device** with an accuracy of ± 3 % of the measured value.
- 3.4 Thermometer** with an accuracy of ± 1 K.
- 3.5 Barometer** with an accuracy of $\pm 0,5$ % of the measured value.
- 3.6 Humidity test device** with an accuracy of ± 2 %.

4 Test conditions

- 4.1** Ambient temperature, measured at a distance of 15 cm from the air intake: 15 °C to 27 °C.
- 4.2** Atmospheric pressure: 97,5 kPa to 105 kPa.