INTERNATIONAL STANDARD

ISO 8334

Second edition
2007-04-15

Forestry machinery — Portable chain-saws — Determination of balance and maximum holding moment

Matériel forestier — Scies à chaîne portatives — Détermination de l'équilibre et du moment de sustentation maximal

Reference number
ISO 8334:2007(E)

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Published in Switzerland

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 8334 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 8334:1985), which has been technically revised to cover not only chain-saws for forest service but those for tree service as well. It includes the additional determination of lateral balance and maximum holding moment. All limits have been removed and are now to be set using the product standards.

Forestry machinery — Portable chain-saws — Determination of balance and maximum holding moment

1 Scope

This International Standards specifies a test method for the longitudinal and the lateral balance of portable combustion engine hand-held chain-saws.

It also provides a test method for determining the maximum holding moment of tree service chain-saws.

2 Normative references

The following referenced documents are indispensable for the application 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 6531, *Machinery for forestry — Portable hand-held chain-saws — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6531 apply.

4 Determination of balance

4.1 Preparation

4.1.1 Chain-saw

The balance shall be checked on a normal production saw in a new and clean condition. Fuel and oil tanks shall be half full. The saw shall be fitted with a guide bar and an associated saw chain as specified below. The guide bar shall be tightened to its uppermost position.

The chain-saw as specified in the instruction handbook or according to the manufacturer's instructions shall be tested in both of the following two configurations:

a) shortest and lightest guide bar, without spiked bumper (if detachable);

b) longest and heaviest guide bar, with spiked bumper (if available).

The length and mass of the guide bars used in the test shall be listed in the test report.

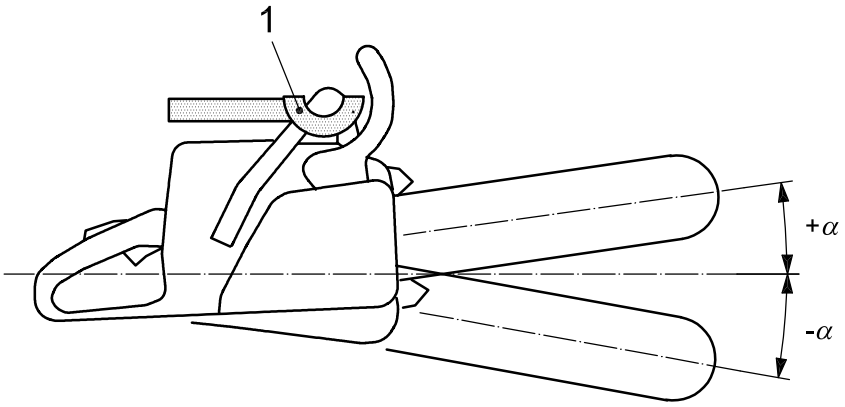
4.1.2 Test equipment

The suspension method shall not influence the test result.

4.2 Longitudinal balance at front handle of chain-saws for forest service

A chain-saw according to 4.1 shall be supported on the front handle, positioned so that the guide bar plane is vertical. This support shall produce the lowest possible friction to allow saw rotation. See the example shown in Figure 1.

Measure and report the angle, α, between the centreline of the guide bar and the horizontal plane.



Key

1 segment of a ball bearing

Figure 1 — Example of device for determining longitudinal balance at front handle for chain-saws for forest service

4.3 Longitudinal balance at rear handle for chain-saws for tree service

A chain-saw according to 4.1 shall be supported by a rod of 10 mm diameter, positioned as close as possible behind the throttle trigger. This rod shall be firmly attached to the rear handle by means of a clamp or similar so that the guide bar plane will be vertical. The rod shall be supported on bearings such that the lowest possible friction is produced. See the example shown in Figure 2.

Measure and report the angle, β, between the centreline of the guide bar and the horizontal plane.

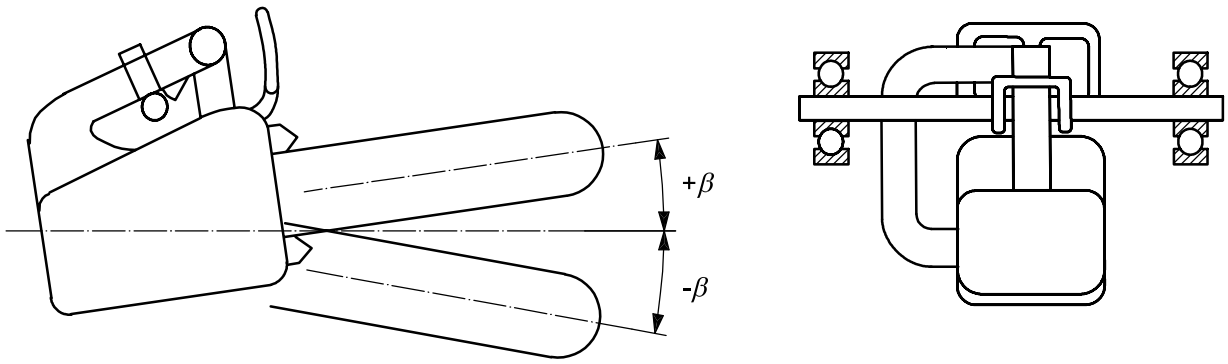


Figure 2 — Example of device for determining longitudinal balance at rear handle for chain-saws for tree service

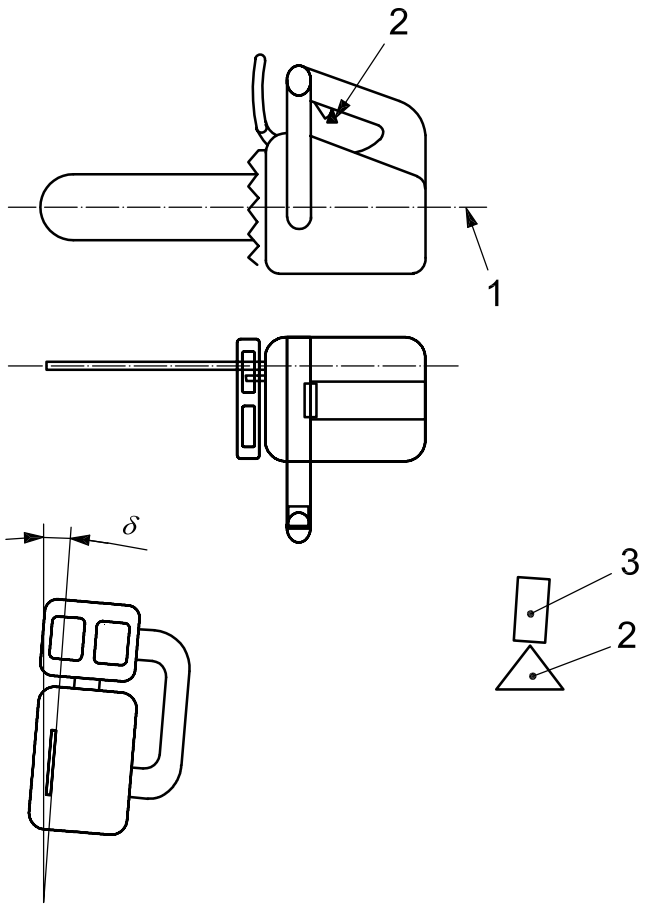
4.4 Lateral balance at rear handle for chain-saws for tree service

A chain-saw shall be balanced on a support pin in accordance with Figure 3. The support pin shall be as close as possible behind the released throttle trigger.

The support pin shall be of steel, conical to a maximum of 45° and shall have a contact point with a radii, R, of 1 mm max.

If the chain-saw will not remain on the rear handle support pin because of handle design, it is permissible to drill a recess hole for locating the support pin. The recess hole diameter and depth shall be such as to provide positive location of the support pin without interfering with chain-saw movement.

Measure and report the angle, δ, between the plane of the guide bar and the vertical.



Key

1 guide bar centreline
2 support pin
3 rear handle

Figure 3 — Example of device for determining lateral balance at rear handle for chain-saws for tree service

5 Determination of maximum holding moment at rear handle for chain-saws for tree service

Determine the centre of gravity (CG) and the mass, m, of the complete saw, with half-full tanks and the longest guide bar with a saw chain and spiked bumper (if available). The guide bar shall be tightened to its uppermost position.

Measure the distance, R, from the reference point (RP) to the centre of gravity. RP is located as close as possible behind the back of the released throttle trigger as shown in Figure 4, and is defined as the point at which the inside of the rear handle intersects the back of the released throttle trigger. The measurement shall be conducted from RP in a plane parallel to the guide bar plane to the axis through the centre of gravity perpendicular to the guide bar plane.

Calculate the holding moment, M_H, in Newton metres (N·m), using the formula:

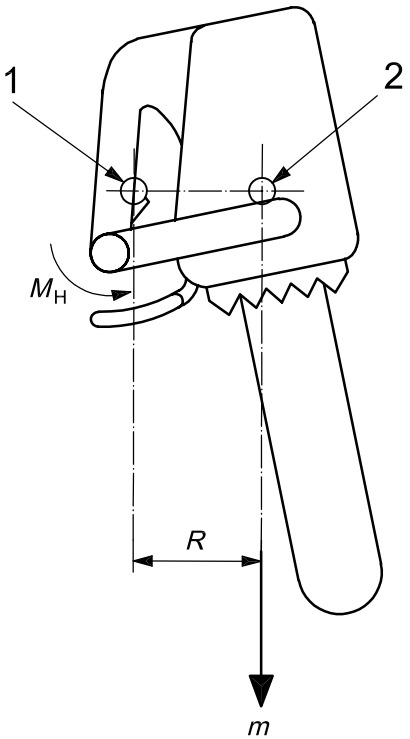
$$M_H = m \cdot g \cdot R \cdot 10^{-3}$$

where

m is the chain-saw mass (kg);

g is the acceleration due to gravity, i.e. 9,81 m/s^2;

R is the distance between the reference point and the centre of gravity (mm).



Key

M_H holding moment
R distance between RP and CG
m mass of chain-saw
1 reference point (RP)
2 centre of gravity (CG)

Figure 4 — Determination of maximum holding moment at rear handle for chain-saws for tree service

6 Test report

The test report shall include at least the following information:

a) reference to this International Standard (i.e. ISO 8334);

b) date and place of measurement;

c) description of the chain-saw, including

- manufacturer,
- type, model and serial number,
- type and length of guide bars and saw chains, and
- mass of the chain-saw (with guide bar and saw chain, and with tanks half full), in kilograms;

d) description of the measuring equipment;

e) recorded values of

- longitudinal balance α at front handle for chain-saws for forest service, or
- longitudinal balance β and lateral balance δ at rear handle, for chain-saws for tree service, and
- maximum holding moment at the rear handle for chain-saws for tree service;

f) name of test station and person responsible for the test.

An example of a test report is given in Annex A.

Annex A
(informative)

Example test report

Test report for

ISO 8334, *Forestry machinery — Portable chain-saws — Determination of balance and maximum holding moment*

Chain-saw manufacturer:	Chain-saw type and model:	Chain-saw serial number:
Date and place of measurement:		
Name of test station and person responsible for test:		

Longitudinal balance				
Chain-saw for forest service	Yes	Chain-saw for tree service		Yes
Tank half filled (cm^3)				
Guide bar length (cm)/mass (kg)	Spiked bumper		Saw chain type	Total chain-saw mass (kg)
Shortest: ...../.....	Yes	No		
Longest: ...../.....	Yes	No		
Measured longitudinal guide bar angle from the vertical, α or β				
Shortest bar length	Angle (°)			
Longest bar length	Angle (°)			

Lateral balance for tree service chain-saws				
Tank half filled (cm^3)				
Guide bar length (cm)/mass (kg)	Spiked bumper		Saw chain type	Total chain-saw mass (kg)
Shortest: ...../.....	Yes	No		
Longest: ...../.....	Yes	No		
Measured lateral guide bar angle from the vertical, δ				
Shortest bar length	Angle(°)			
Longest bar length	Angle(°)			

Holding moment for tree service chain-saws					
Tank half filled	Longest guide bar length		Saw chain	Spiked bumper	
cm^3	cm	Type	Type	Yes	No
R distance between reference point (RP) and centre of gravity (CG) (mm)					
m total chain-saw mass (kg)					
Calculated holding moment, $M_H = 9{,}81 \cdot 10^{-3} \cdot m \cdot R$ (N·m)					

ICS 65.060.80

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