
**Road vehicles — Stabilizing devices for
caravans and light trailers —**

**Part 1:
Integrated stabilizers**

*Véhicules routiers — Dispositifs stabilisateurs pour les caravanes et les
remorques légères —*

Partie 1: Stabilisateurs intégrés

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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.

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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 11555-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 4, *Caravans and light trailers*.

ISO 11555 consists of the following parts, under the general title *Road vehicles — Stabilizing devices for caravans and light trailers*:

— *Part 1: Integrated stabilizers*

Blade stabilizers will be the subject of a future part 2.

Introduction

Additional forces from a towing device cannot be allowed to impart forces onto the coupling ball such that the lifetime of the device could be reduced. The placement and manner in which the stabilizing device is to be attached to the towing device is an important parameter, which is the reason why stabilizing devices can only be permitted if the coupling is approved by the manufacturer for use with such devices.

Conformity with this part of ISO 11555 will ensure that, when in use, a stabilizing device will not adversely affect the permitted loading and operation of tow bar, coupling or braking devices.

Road vehicles — Stabilizing devices for caravans and light trailers —

Part 1: Integrated stabilizers

1 Scope

This part of ISO 11555 specifies requirements for integrated stabilizers for central-axle (single-axle or tandem-axle) trailers up to a maximum laden mass of 3 500 kg. Integrated stabilizers conforming with its requirements are able to be used together with ISO 3853-compliant towing devices without restriction.

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 3853, *Road vehicles — Towing vehicle coupling device to tow caravans or light trailers — Mechanical strength test*

3 Terms and definitions

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

3.1

stabilizing device

integrated or additional device placed between a towing vehicle and the centre-axle trailer whose main purpose is to reduce or to prevent oscillations about the articulation axis and to reduce pitch and roll

See Figures 1 to 3.

4 Design requirements

4.1 The action of the stabilizing device shall be approximately uniform and continuous on both sides.

For stabilizing devices in which damping about the vertical axis (the yaw axis) takes place to a significant extent by mechanical friction, the maximum and minimum damping moments in the region covered by an articulation angle of 5° to the left and to the right of the central position shall not differ by more than 30 %. This shall be measured with the stabilizing device mounted on a test bench, with the force on the stabilizing device being slowly increased to move it through the articulation angle.

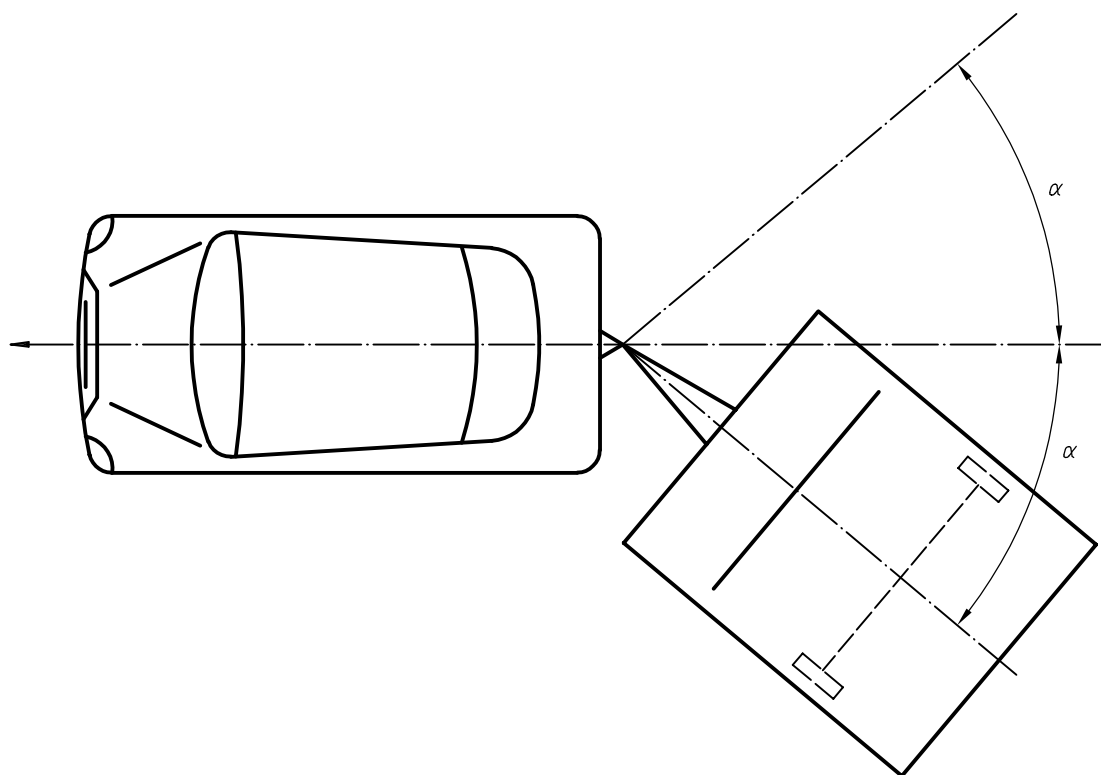


Figure 1 — Articulation angle

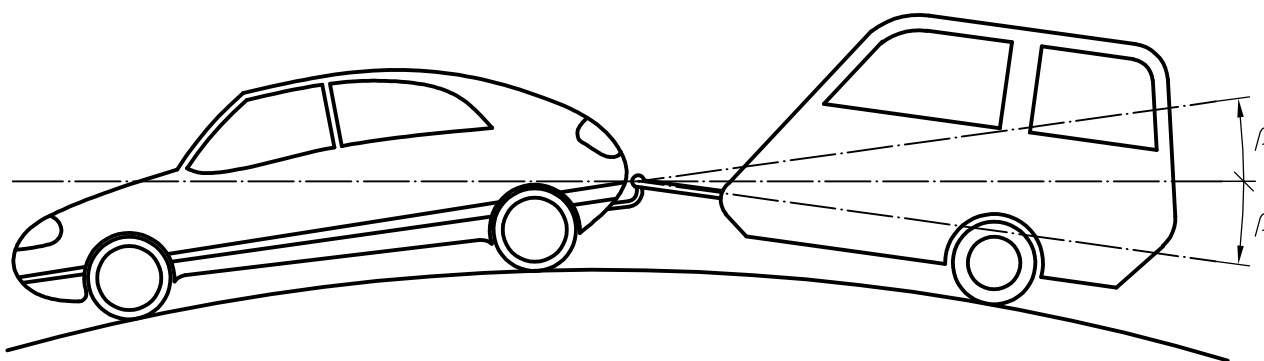


Figure 2 — Pitch angle

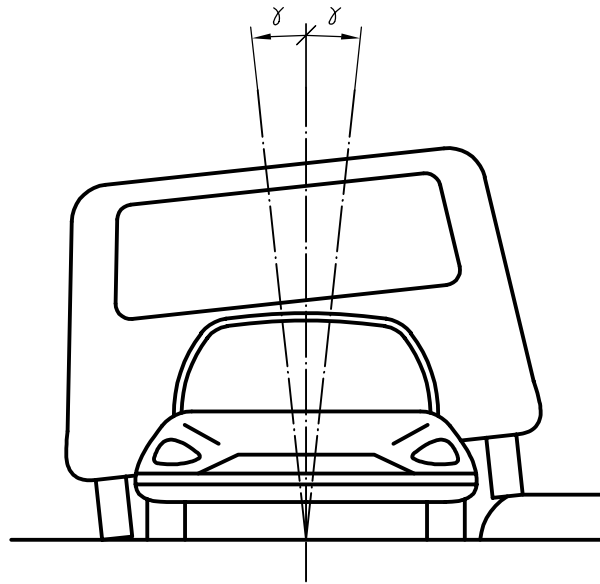


Figure 3 — Roll angle

4.2 The minimum angular displacements possible in the attached state shall be

$\pm 60^\circ$ for articulation angle, α , and, simultaneously,

$\pm 7^\circ$ for pitch angle, β , and, simultaneously,

$\pm 8^\circ$ for roll angle, γ .

Coupling and uncoupling of the stabilizing device and the towing device shall be possible at each of the three angles:

$\alpha \pm 60^\circ$

$\beta \pm 7^\circ$

$\gamma \pm 8^\circ$

The minimum articulation angle of the stabilizing device itself, without pitch or roll, shall be $\alpha = \pm 75^\circ$ (see Figure 1).

4.3 The static forces generated by the stabilizing device shall not exceed the permissible static loads for the surrounding certified components.

4.4 The damping moment about the vertical axis running through the coupling point (the articulation axis), M_{art} , as determined by simulated oscillation testing, shall not exceed 350^{+10}_0 N·m or the numerical value of $0,46 m_R$ — whichever is the smaller (m_R being the maximum manufacturer's total mass, in kilograms, of the trailer in accordance with ISO 3853); but M_{art} shall be not less than $< 0,07 m_R$, in order to ensure that the fatigue strength of the towing device is not adversely affected by the forces and moments transmitted by the stabilizing device (see Figure 4).

4.5 The resultant, M_{res} , of the moment caused by the vertical static force generated by the stabilizing device and the moment due to pitch through the angle given in 4.2, M_{pitch} , shall not exceed 300^{+10}_0 N·m or the numerical value of $0,4 m_R$ — whichever is the smaller — when determined by simulated oscillation testing (see Figure 5).

4.6 The moment acting on the towing device as a result of roll, M_{roll} , shall not exceed 300 N·m or the numerical value of $0,4 m_R$ — whichever is the smaller — when measured on the test bench (see Figure 6).

4.7 It shall be possible to couple and uncouple the towed vehicle by hand without the use of tools.

4.8 The stabilizing device shall not alter the efficiency or impair the functioning of the trailer's braking system, nor cause excessive wear or reduce the strength of the towing elements.

4.9 The stabilizing device shall be attached such that

- only bolt attachments need to be used,
- no holes have to be drilled or welding done to fit the stabilizing device, and
- attachment of the coupling head to the trailer is not affected in any way.

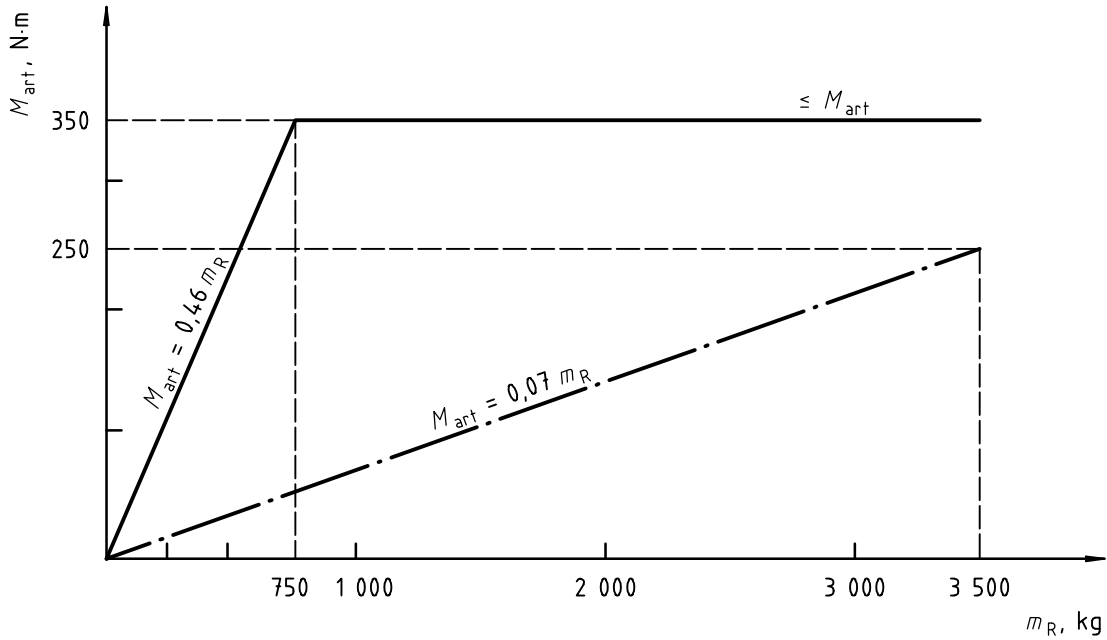


Figure 4 — Damping of articulation motions

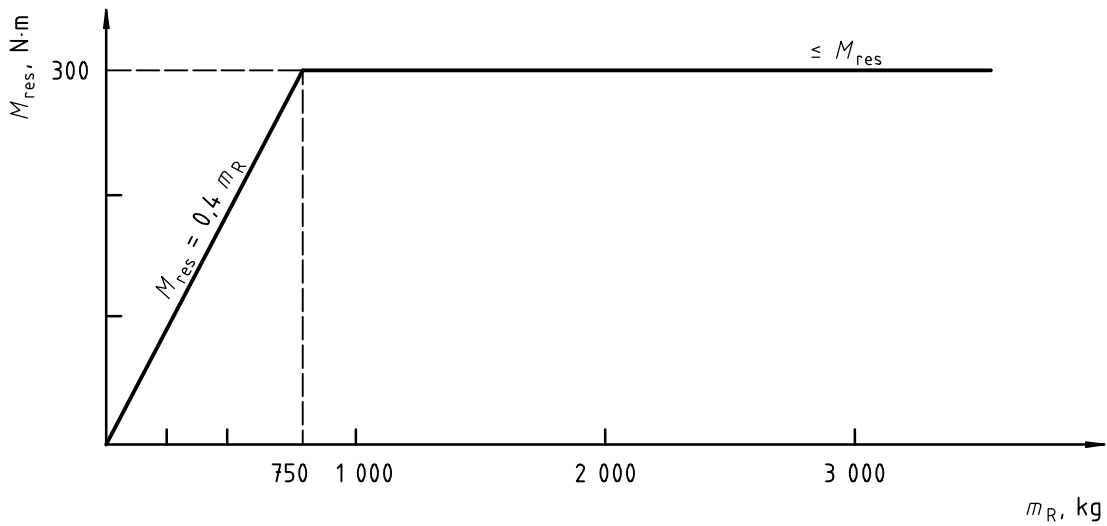


Figure 5 — Damping of pitch motions

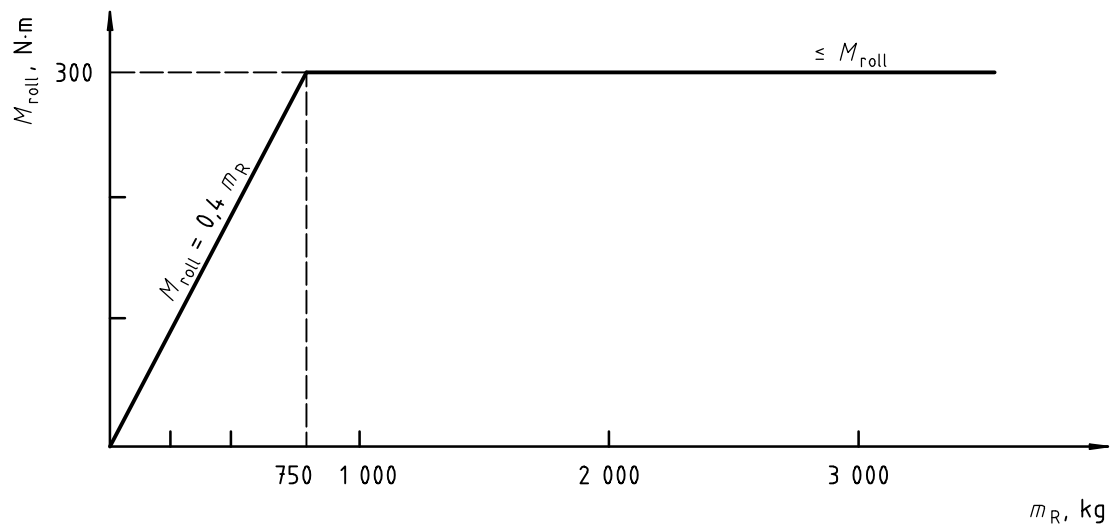


Figure 6 — Damping of roll motions

5 Testing on the test bench

5.1 General

The following tests are related to the functioning of the stabilizing device and bear no relation to strength testing.

During each of the tests specified in 5.2 to 5.4 the damping moment shall not decrease by more than 15 % due to wear. A new stabilizing device shall be used for each test.

5.2 Simulated oscillations about the articulation axis

The stabilizing device shall be made to oscillate about the vertical axis through the coupling point, simulating actual conditions as closely as possible.

The frequency of the sinusoidal motion shall be $(0,6 \pm 0,2)$ Hz and the amplitude of the motion $\pm 5^\circ$.

Procedure

- Measure the damping moment after 250 test cycles and 50 000 test cycles.
- Calculate the percentage reduction in the damping moment.

5.3 Simulated pitch oscillations

The stabilizing device shall be made to oscillate about its horizontal axis running at right angles to the driving direction (simulating actual conditions as closely as possible).

The frequency of the sinusoidal motion shall be $(0,6 \pm 0,2)$ Hz and the amplitude of the motion $\pm 5^\circ$.

Procedure

- Measure the damping moment after 1 000 test cycles and 25 000 test cycles.
- Calculate the percentage reduction in the damping moment.

5.4 Simulated roll oscillations

The stabilizing device shall be made to oscillate about its horizontal axis running in the direction of the longitudinal axis of the vehicle (simulating actual conditions as closely as possible).

The frequency of the sinusoidal motion shall be $(0,6 \pm 0,2)$ Hz and the amplitude of the motion $\pm 3^\circ$.

Procedure

- a) Measure the damping moment after 1 000 test cycles and 10 000 test cycles.
- b) Calculate the percentage reduction in the damping moment.

6 Instructions for fitting and use

Complete instructions for fitting the stabilizing device, its use and its maintenance, as well as information concerning wear and illustrations for clarification, shall be supplied with each unit.

The user shall be informed that, on very slippery road surfaces (e.g. ice, snow) conditions such as low trailer weight or short drawbar could be present which require the neutralization of the stabilizing device in order for cornering ability to be maintained.

7 Marking

The stabilizing device shall be permanently and legibly marked with the following information:

- a) reference number of this part of ISO 11555 (i.e. "ISO 11555-1");
- b) designation of the stabilizing device;
- c) manufacturer's name;
- d) type or mode;
- e) the permitted area of application, for example, minimum and maximum trailer mass, in kilograms.

Bibliography

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