TECHNICAL REPORT ISO/TR 4114

Published 1979-11-15

ISO Technical Reports are subject to review within three years of publication, with the aim of achieving the agreements necessary for the publication of an International Standard.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Road vehicles — Caravans and light trailers — Static load on ball couplings

Véhicules routiers — Caravanes et remorques légères — Charge statique sur les boules d'attelage

This Technical Report has been established by Technical Committee ISO/TC 22, *Road vehicles.*

It specifies different values from those presently retained by the group of experts on the construction of vehicles (WP 29 — ECE/ONU) for the limiting static load on the ball coupling.

This fact led Sub-Committee ISO/TC 22/SC 4, *Caravans and light trailers*, to propose that the document be published as a Technical Report as it was thought desirable to wait for clarification of the positions of the various countries with respect to ISO specifications and to the WP 29 draft regulation.

An addendum to allow for stabilizing hitches should also be prepared.

---

1 SCOPE

This Technical Report lays down the limiting values of static loads applied vertically by caravans or light trailers on ball couplings fitting to towing vehicles.

2 FIELD OF APPLICATION

This Technical Report applies to caravans and light trailers for which the maximum authorized weight does not exceed 3,5 tonnes.

It does not apply to unbraked trailers and twin-axle trailers.

3 REFERENCES

ISO 1103, *Road vehicles — Caravans and light trailers — Coupling ball — Dimensional characteristics.*

ISO 1176, *Road vehicles — Weights — Vocabulary.*

4 CONDITIONS FOR MEASUREMENT OF STATIC LOAD

4.1 The towed vehicle, caravan or trailer, shall be placed on a horizontal surface and the centre of engagement of the coupling ball within the coupling head shall be situated within the limits of height given in ISO 1103.

4.2 The value of the static load shall be measured along the vertical line of action passing through the centre of engagement of the coupling ball in the coupling head.

4.3 The caravan, or the light trailer, shall be loaded up to its maximum authorized weight. The loads shall be distributed according to the manufacturer's specification.

UDC 629.11.013.5 Ref. No. ISO/TR 4114-1979 (E)

Descriptors : road vehicles, caravans, trailers, couplings, ball couplings, measurement, static loads.

Printed in Switzerland

Price based on 3 pages

5 VALUES OF STATIC LOAD

The values of the load measured under the conditions specified above shall be within the following limits.

Upper limit

Straight line AB of equation $y = 0{,}12\,D$, limited to points A with a coordinate of 50 daN and B with a coordinate of 120 daN, completed by the horizontal lines $y = 50$ daN for the coordinates below that of A and $y = 120$ daN for the coordinates above that of B.

Lower limit

Straight line EF of equation $y = 0{,}07\,D$, limited to points E with a coordinate of 30 daN and F with a coordinate of 85 daN, completed by the horizontal lines $y = 30$ daN for the coordinates below that of E and $y = 85$ daN for the coordinates above that of F :

where :

$$D = \frac{W_M \times W_R}{W_M + W_R}$$

W_M being the maximum manufacturer's total weight (towing vehicle) in decanewtons.

W_R being the maximum authorized weight (towed vehicle) in decanewtons.

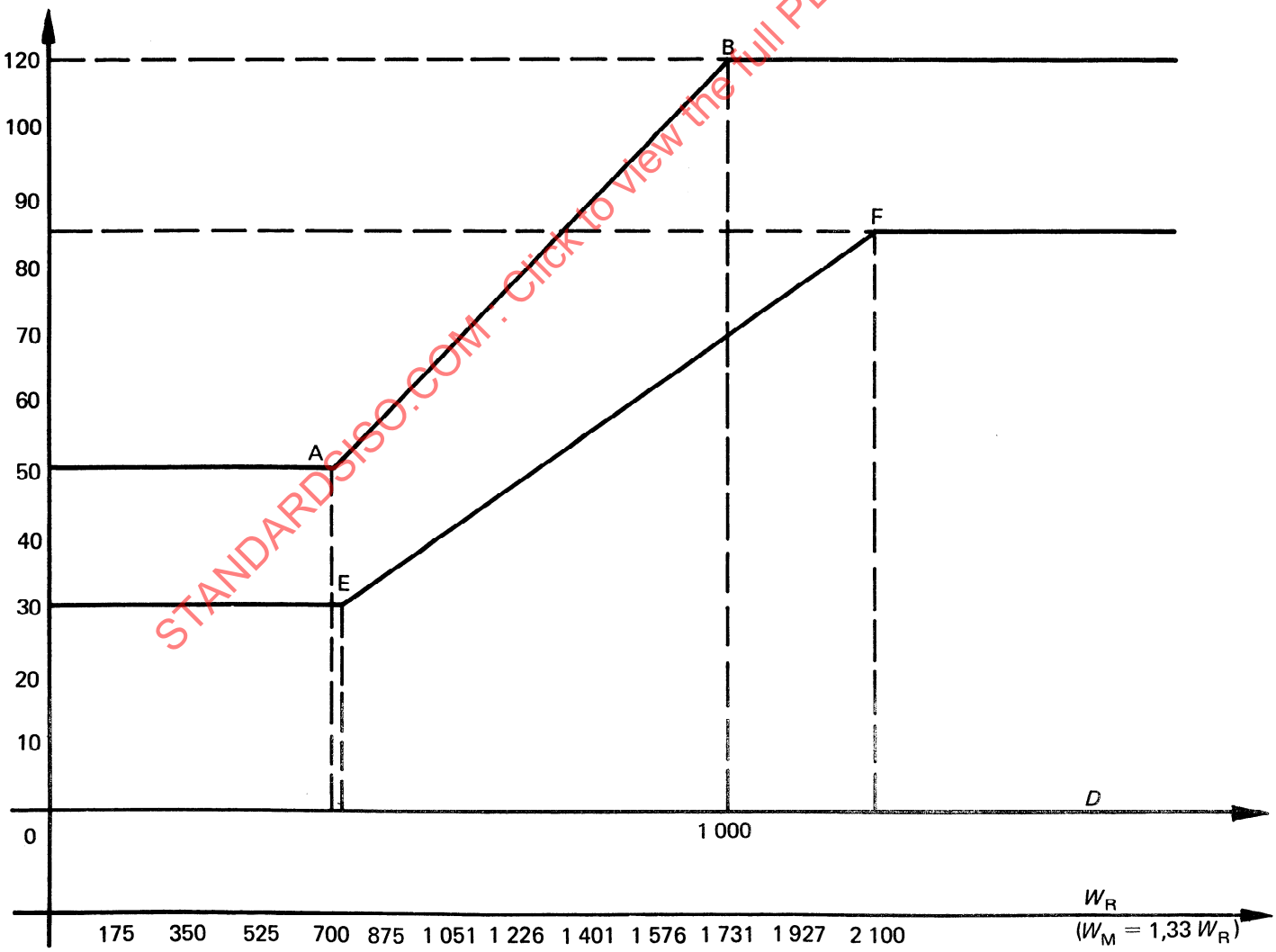

FIGURE 1 – **Limits of the static load**

5.1 Application to the towing vehicle

The maximum authorized static road load is to be fixed by the motor vehicle manufacturer between the upper and lower limits given by the above formula.

5.2 Application to the trailer

In order to calculate the static load for the trailer, the maximum towing vehicle weight is defined as follows :

$$W_M = 1{,}33\, W_R$$

regardless of the actual weight of the towing vehicle.

6 MARKING

The limits of the values of the static load shall be shown on the plate fixed to the front of the caravan or the trailer.