

International Standard



7642

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

Road vehicles — Caravans and light trailers — Trailers of categories 01 and 02 — Inertia bench test procedures for overrun brakes

Véhicules routiers — Caravanes et remorques légères — Remorques des catégories 01 et 02 freinées par inertie — Procédures d'essai de frein sur banc à masse d'inertie

First edition — 1983-04-01

UDC 629.114.3-592

Ref. No. ISO 7642-1983 (E)

Descriptors : road vehicles, trailers, braking systems, tests, testing conditions, laboratory tests, test benches.

Price based on 4 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 7642 was developed by Technical Committee ISO/TC 22, *Road vehicles*, and was circulated to the member bodies in January 1982.

It has been approved by the member bodies of the following countries:

Austria	Hungary	Romania
Belgium	Italy	South Africa, Rep. of
Brazil	Japan	Spain
China	Korea, Dem. P. Rep. of	Sweden
Czechoslovakia	Korea, Rep. of	Switzerland
Egypt, Arab Rep. of	Netherlands	USA
France	New Zealand	USSR
Germany, F.R.	Poland	

The member body of the following country expressed disapproval of the document on technical grounds:

United Kingdom

Road vehicles — Caravans and light trailers — Trailers of categories 01 and 02 — Inertia bench test procedures for overrun brakes

0 Introduction

The test procedures specified in this International Standard are intended for use in the context of type approval testing of road vehicles with respect to braking.¹⁾ This International Standard should therefore be used in connection with a pertinent regulation.²⁾

NOTE — In order to understand fully the requirements of this International Standard and to ensure that the test procedures are correctly applied, it is recommended that the regulation is studied before application of this International Standard.

1 Scope and field of application

This International Standard specifies test procedures for type approval testing of overrun brakes on trailers.

This test procedure applies to the type approval of categories 01 and 02²⁾ trailers with inertia brakes by testing on an inertia dynamometer. It relates to mechanically and hydraulically operated braking systems.

2 Symbols and definitions

2.1 All brakes

N_1 is the theoretical rotational frequency calculated for tests with cold brakes in reciprocal minutes;

N'_1 is the actual rotational frequency measured during the tests with cold brakes in reciprocal minutes;

N_2 is the theoretical rotational frequency calculated for the heating of the brakes in reciprocal minutes;

N'_2 is the actual rotational frequency measured during the heating of the brakes in reciprocal minutes.

2.2 For mechanical brakes

P_0 is the force of the brake in decanewtons;

P_1 is the force applied on the brake control lever, in decanewtons, to obtain a braking torque Mt_1 ;

P_2 is the force applied on the brake, in decanewtons, to obtain a braking torque Mt_4 with cold brakes;

P_3 is the force applied on the brake for the strength test :
 $P_3 = 2P_1$ in decanewtons.

2.3 For hydraulic brakes

p_0 is the input pressure in the brake cylinder in kilopascals;

p_1 is the pressure applied in the brake cylinder, in kilopascals, to obtain a braking torque Mt_1 ;

p_2 is the pressure applied in the brake cylinder, in kilopascals, to obtain a braking torque Mt_4 with cold brake;

p_3 is the pressure applied in the brake cylinder for the strength test :

$$p_3 = 2p_1 \text{ in kilopascals;}$$

T is the time in seconds.

1) Only SI units are used in this International Standard.

2) Definitions from UN/ECE Regulation No. 13 :

Category 01 : Single-axle trailers, other than semi-trailers, with a maximum weight not exceeding 0,75 t.

Category 02 : Trailers with a maximum weight not exceeding 3,5 t other than trailers of category 01.

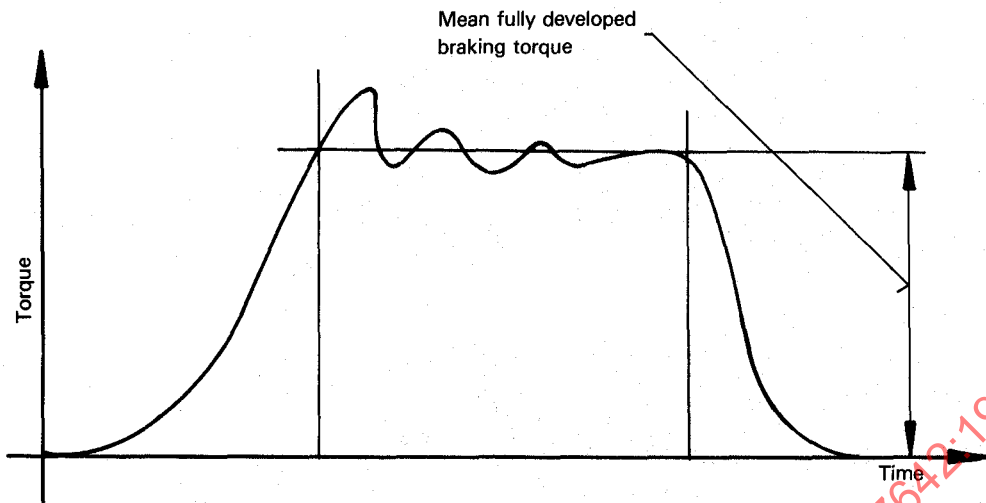


Figure 1 — Example of braking torque curve

2.4 Torque

For the purpose of this International Standard, torque is taken to mean the mean fully-developed braking torque which is established as illustrated in figure 1 above.

NOTE — Braking curves shall be recorded.

3 Test conditions

Before carrying out any test, the manufacturer must indicate:

3.1 G_{B0} : that fraction of the permissible total weight, in decanewtons, which can be braked by one brake.

3.2 R : the static radius under load of the largest tyre recommended by the manufacturer in metres.

3.3 R' : the static radius under load of the smallest tyre recommended by the manufacturer in metres.

3.4 Mt_{max} : the maximum braking torque admitted by the manufacturer in decanewtons-metres.

4 Definitions of the test bench parameters

Using the data supplied by the manufacturer, the following will be determined for the test bench.

4.1 Moments of inertia

The moment of inertia J (in kilograms-square metres) of the rotating bodies (calculated from R and $g = 9,81 \text{ m/s}^2$):

$$\text{Required } J = \frac{10 G_{B0} \times R^2}{g}$$

Actual J' : Actual moment of inertia of the inertia dynamometer limits of

$$\sqrt{\frac{J}{J'}} = 1 \pm 0,1$$

4.2 Rotational speed

The rotation frequency N in reciprocal minutes (calculated from R' corresponding to a linear speed of 50 km/h).

$$N_1 = \frac{50}{R'} \times 2,65 \sqrt{\frac{J}{J'}}$$

$$N'_1 = N_1 \pm 5 \%$$

5 Braking torques to be obtained¹⁾

These braking torques shall be calculated with an allowance for rolling resistance of 1 % of G_{B0} as follows:

a) a braking force of 44 % G_{B0} corresponds to a braking torque of

$$Mt_1 = 0,44 \times G_{B0} \times R, \text{ in decanewtons-metres;}$$

b) a braking force of 35 % G_{B0} corresponds to a braking torque of

$$Mt_2 = 0,35 \times G_{B0} \times R, \text{ in decanewtons-metres;}$$

c) a braking force of 6 % G_{B0} corresponds to a braking torque of

$$Mt_3 = 0,06 \times G_{B0} \times R, \text{ in decanewtons-metres;}$$

d) a braking force of 59 % G_{B0} corresponds to a braking torque of

$$Mt_4 = 0,59 \times G_{B0} \times R, \text{ in decanewtons-metres.}$$

1) Ref. ECE Regulation No. 13, annex 4 and annex 12.