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# INTERNATIONAL STANDARD 2890

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

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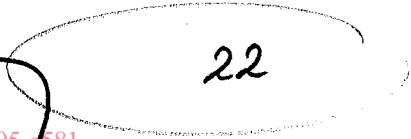
## Road vehicles — Vacuum braking for caravans and light trailers

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**Descriptors** : trailers, caravans, braking, ground vehicles.

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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 2890 was drawn up by Technical Committee ISO/TC 22, *Road vehicles*, and circulated to the Member Bodies in May 1972.

It has been approved by the Member Bodies of the following countries :

Belgium	Italy	Switzerland
Canada	Japan	Thailand
Czechoslovakia	New Zealand	Turkey
Egypt, Arab Rep. of	Romania	United Kingdom
France	South Africa, Rep. of	U.S.A.
Hungary	Spain	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Australia  
Germany  
Netherlands  
Sweden

# Road vehicles – Vacuum braking for caravans and light trailers

## 1 SCOPE

This International Standard specifies the characteristics of vacuum braking systems for caravans and light trailers.

## 2 FIELD OF APPLICATION

This International Standard applies to caravans and light trailers with a maximum total weight set by the manufacturer<sup>1)</sup> not exceeding 3,5 tonnes.<sup>2)</sup>

## 3 REFERENCE

ISO 3162, *Caravans and light trailers – Couplings for vacuum braking systems – Dimensional characteristics*.<sup>3)</sup>

## 4 SERVICE BRAKING SYSTEM

4.1 The brake control of the trailer shall be achieved in accordance with one of the two arrangements described in 4.1.1 and 4.1.2.

### 4.1.1 Connection by one vacuum line

This line, normally under a vacuum, shall ensure service braking and automatic braking in the case of breakaway of the coupling.

### 4.1.2 Connection by two vacuum lines

4.1.2.1 One control line, normally under a vacuum, shall ensure service braking and automatic braking in the case of breakaway of the coupling.

4.1.2.2 The second line shall ensure only the replenishing of the vacuum reservoir on the trailer.

4.2 It is recommended that the towing vehicle be equipped according to the arrangement described in 4.1.2, so that trailers equipped according to either arrangement 4.1.1 or 4.1.2 may equally be coupled.

4.3 All the wheels of the trailer must be braked.

4.4 The depression measured at the coupling head in the control line (and second line, if fitted), in the absence of braking and with the engine warm and idling, shall be at least 50 kPa (0,5 bar).<sup>4)</sup>

4.5 The total tyre drag of the trailer shall be between 0,45 and 0,55  $G_A$  ( $G_A$  being the maximum total weight set by the manufacturer) for a pressure increase of 50 kPa (0,5 bar) measured at the coupling head in the control line.

4.6 A deceleration of 5 m/s<sup>2</sup> of the towing vehicle alone at its maximum total weight set by the manufacturer, shall correspond to an increase in pressure in the coupling head of between 50 kPa (0,5 bar) and 60 kPa (0,6 bar).

4.7 During braking, the actions described in 4.5 and 4.6 shall be progressive on application and release.

4.8 The vacuum reserve for the trailer shall be sufficient to ensure four full brake applications of the trailer without replenishment (the brakes being fully adjusted). The fourth application shall ensure a tyre drag at least equal to 0,20  $G_A$ .

4.9 In the event of the trailer breaking away, the trailer brakes shall be self-applying.

1) This term corresponds to that defined in 4.7.1 of ISO 1176 (at present ISO/R 1176).

2) This value is chosen to include categories 01 and 02 of trailers according to the classification of vehicles given in document E/ECE/324/Rev. 1/Add. 12 of the Economic Commission for Europe of the United Nations.

This document is entitled : Agreement concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts – done at Geneva on 20 March 1958 – Addendum 12 : Regulation No. 13 to be annexed to the Agreement : Uniform provisions concerning the approval of vehicles with regard to braking.

3) At present at the stage of draft.

4) 1 bar = 10<sup>5</sup> Pa.

**4.10** The time which elapses between the beginning of the variation in the depression at the coupling head and the moment when the trailer tyre drag reaches  $0,34 G_A$  (75 % of  $0,45$ ) shall not be greater than  $0,8$  s when the brakes are fully applied, and with the brakes fully adjusted.

**4.11** A device for releasing the trailer vacuum brakes shall be provided to allow the uncoupled trailer to be moved. This device shall automatically re-apply the trailer brakes when not being held in the released position.

**NOTE** – If the vacuum brake control of the trailer is connected to the hydraulic circuit of the towing vehicle, the latter shall be capable of supplying a fluid volume of at least  $0,5 \text{ cm}^3$  to the vacuum brake control of the trailer. (If this cannot be achieved, a larger master cylinder, approved by the vehicle manufacturer, may be fitted.)

The hydraulic absorption of the trailer vacuum braking system control shall not exceed  $0,5 \text{ cm}^3$ .

**5 SUPPLEMENTARY BRAKE**

The towing vehicle may be equipped with a supplementary trailer brake control which is independent of the service braking system control.

This control is intended to bring into action the trailer brake without applying the service brake of the following vehicle; it shall be possible for it to be operated by the driver from the driver's seat.

**6 COUPLING HEADS**

**6.1** Couplings 4.1.2.1 and 4.1.2.2 shall not be interchangeable.

**6.2** Couplings 4.1.1 and 4.1.2.1 shall be identical.

**6.3** The couplings shall be placed on the towing vehicle as shown below :

**6.4** The coupling heads on the towing vehicle shall be fitted with automatic isolating devices.

**NOTE** – The dimensional requirements of the coupling head are defined in ISO 3162.

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Plug for electrical connection

