
INTERNATIONAL STANDARD



2416

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

Passenger cars — Load distribution

Voitures particulières — Répartition des charges

Second edition — 1976-11-01

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[ISO 2416:1976](#)

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UDC 629.114.6

Ref. No. ISO 2416-1976 (E)

Descriptors : road vehicles, motor vehicles, passenger cars, specifications, weight (mass), distribution of loads.

Price based on 3 pages

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 2416 was drawn up by Technical Committee ISO/TC 22, *Road vehicles*.

This second edition was circulated to the Member Bodies in June 1975.

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

Austria	Hungary	South Africa, Rep. of
Belgium	Iran	Spain
Brazil	Italy	Sweden
Bulgaria	Japan	Switzerland
Chile	Mexico	Turkey
Finland	Netherlands	United Kingdom
France	Poland	Yugoslavia
Germany	Romania	

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

Australia
Czechoslovakia

This second edition cancels and replaces the first edition (i.e. ISO 2416-1972).

Passenger cars – Load distribution

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1 SCOPE

This International Standard fixes :

- a conventional average mass for passengers and a conventional mass for luggage;
- a conventional method for determining the total transportable mass.

The total of the masses thus defined represents a minimum value for a given vehicle.

2 FIELD OF APPLICATION

The provisions of this International Standard apply only to passenger cars as defined in ISO 3833.

3 REFERENCES

ISO 3832, *Passenger cars – Method of measurement of the reference volume of luggage compartments.*

ISO 3833, *Motor vehicles, trailers and vehicle combinations – Designations and definitions.*

4 TERMS AND CONVENTIONAL VALUES

4.1 Total transportable mass

The total transportable mass M_t is fixed by the manufacturer. It is expressed in kilograms.

4.2 Conventional mass of a passenger

The conventional mass of a passenger without luggage is fixed at 68 kg.

4.3 Conventional mass of luggage

The conventional mass of luggage, for each passenger, is fixed at 7 kg.

4.4 Mass of transportable goods

The total mass of transportable goods m_t , in kilograms, is determined by the following formula :

$$m_t = M_t - 68 n$$

where

M_t is as defined in 4.1;

n is the number of occupied places.

5 LOAD DISTRIBUTION

5.1 Passengers

The corresponding load is applied as follows :

5.1.1 Non-adjustable seats

Vertically through a point located at 50 mm in front of the point R¹⁾ of the corresponding seat.

5.1.2 Adjustable seats

Vertically through a point located at 100 mm in front of the point R of the corresponding seat or at the nearest locked position.

5.2 Luggage

The conventional luggage load is represented by a vertical force passing through the middle of the projection on a horizontal plane of the maximum useful length of the luggage compartment situated in the median longitudinal plane of the vehicle. See figure 1.

P_1 represents the median longitudinal plane of the vehicle;

P_2 represents the horizontal plane of projection;

L_1 is the maximum useful length of the luggage compartment (this compartment is limited to the reference volume as defined in ISO 3832);

L is the length of the horizontal projection of L_1 .

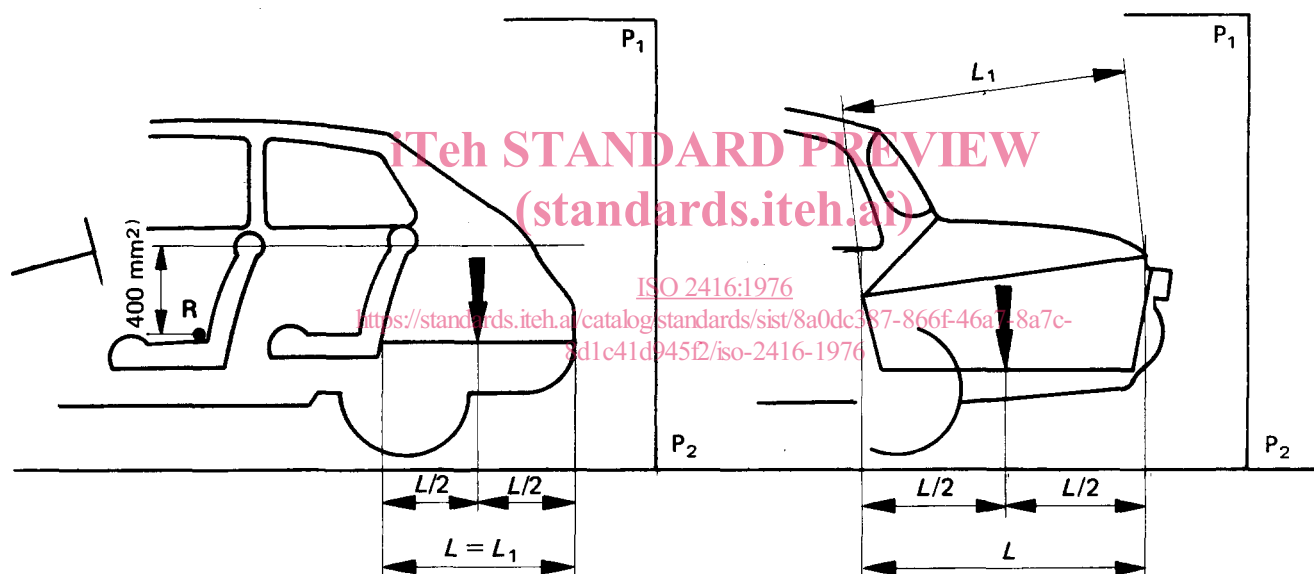


FIGURE 1

1) The point R, being the "seating reference point", is the manufacturer's design point which establishes the rearmost normal position of each seat provided by the vehicle manufacturer : it has co-ordinates established relative to the designed vehicle structure and simulates the position of the pivot centre of the human torso and thigh (the point H).

While awaiting the publication of an International Standard dealing with this subject, verification of the position of point H can be made in accordance with the information given in Annex 4 of document E/ECE/324/REV.1/ADD.13 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 13 : Regulation No. 14 to be annexed to the Agreement : *Uniform provisions concerning the approval of vehicles with regard to safety belt anchorages on passenger cars*.

The checking of the relationship between the two points will be considered satisfactory for the particular position in question, provided that the co-ordinates of the point H lie within a longitudinal rectangle whose horizontal and vertical sides are 30 mm and 20 mm respectively and whose diagonals intersect at the point R.

2) The dimension 400 mm corresponds to the upper loading limit for the vehicle concerned (see ISO 3832).

5.3 Transportable goods

5.3.1 The total goods load defined by the manufacturer is represented by a vertical force passing through the middle of the projection on a horizontal plane of the maximum useful length of the available space situated in the median longitudinal plane of the vehicle. See figure 2.

P_1 represents the median longitudinal plane of the vehicle;

P_2 represents the horizontal plane of projection;

L_1 is the maximum useful length of the available space

(this space is limited to the reference volume as defined in ISO 3832);

L is the length of the horizontal projection of L_1 .

5.3.2 When the rear seats or their backs are forward-foldable or may be folded or withdrawn, two methods of location of the load application point shall be used :

- the first one when the rear seats are in a normal position;
- the other with the rear seats in the stowaway position and with the front seats in the rearmost position for normal use.

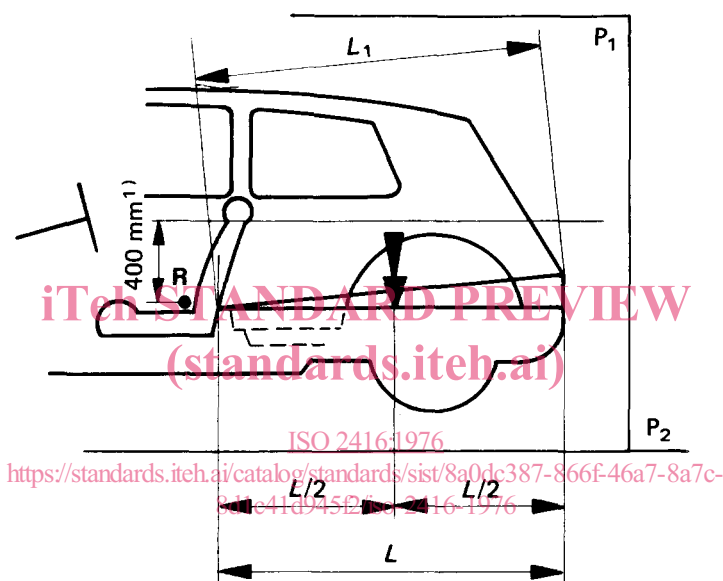


FIGURE 2

1) The dimension 400 mm corresponds to the upper loading limit for the vehicle concerned (see ISO 3832).

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