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# INTERNATIONAL STANDARD



# 2958

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

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## Road vehicles — Exterior protection for passenger cars

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## 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 2958 was drawn up by Technical Committee ISO/TC 22, *Road vehicles*, and circulated to the Member Bodies in August 1972.

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

|                     |             |                       |
|---------------------|-------------|-----------------------|
| Austria             | Hungary     | South Africa, Rep. of |
| Belgium             | Ireland     | Sweden                |
| Canada              | Italy       | Switzerland           |
| Czechoslovakia      | Mexico      | Thailand              |
| Egypt, Arab Rep. of | Netherlands | Turkey                |
| France              | Poland      | United Kingdom        |
| Germany             | Romania     |                       |

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

Australia  
Japan  
U.S.A.

# Road vehicles — Exterior protection for passenger cars

## 1 SCOPE

**1.1** This International Standard specifies the characteristics as regards exterior protection for passenger cars.

**1.2** The aim is to provide protection at the front and rear of the vehicle, of certain mechanical elements and, above all, for lighting and signalling devices in cases of collision at low speed during parking manoeuvres.

**1.3** Exterior protection is assured by protective devices, which are essentially elements located at the front and rear ends of vehicles and designed in such a way as to allow contacts and small shocks to occur without causing any serious damage.

The main objective is to fix protective devices at a common reference height, taking into account safety requirements and all aspects of vehicle design.

## 2 FIELD OF APPLICATION

The provisions of this International Standard apply to passenger cars with up to and including 9 designated seating positions, including that of the driver.

## 3 DEFINITIONS

**3.1 kerb load** : The mass of the vehicle when it is loaded under loading conditions indicated in ISO/R 1176, clause 4.6 (plus the spare wheel and any accessory equipment).

**3.2 design load** : The mass of the vehicle when it is loaded to the conditions prescribed in 3.1, increased by the mass of passengers (taking 68 kg per passenger) distributed as follows :

| Number of seating positions | Number of passengers | Distribution                                                                                                                                                         |
|-----------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 and 3                     | 2                    | 2 in the front seats                                                                                                                                                 |
| 4 and 5                     | 3                    | 2 in the front seats<br>1 in the back seats                                                                                                                          |
| 6 and 7                     | 4                    | 2 in the front seats<br>2 in the extreme back seats                                                                                                                  |
| 8 and 9                     | 5                    | 2 in the front seats<br>3 in the extreme back seats.<br>When the rear row of seats has only 2 seating positions, one person shall be on the second row from the rear |

**3.3 vehicle corner** : The part of the vehicle contacted by a vertical plane that is tangent to the vehicle and at an angle of 60° with the longitudinal median plane of the vehicle.

**3.4 reference height** : The height above the ground at which the vehicle should embody sufficient protective devices, both at kerb load and design load.

This reference height is that of the horizontal plane passing through the reference line of the test device described in 4.2.

**3.5 reference line** : The intersection of the horizontal plane of symmetry of the impact contour with the impact contour itself, plane A of the impact device being vertical.

## 4 CONDITIONS OF TEST

### 4.1 General

**4.1.1** The vehicle shall be at rest on a level rigid surface.

**4.1.2** The front wheels shall be parallel to the longitudinal median plane of the vehicle.

**4.1.3** The tyres shall be inflated to the vehicle manufacturer's recommended pressure for the specified loading conditions.

**4.1.4** The brakes shall be disengaged and the transmission shall be in the neutral position.

**4.1.5** The exterior lighting and signalling devices may be either illuminated or extinguished.

**4.1.6** Vehicles equipped with hydropneumatic, hydraulic or pneumatic suspension or a device for automatic levelling according to load shall be tested with the vehicle in the normal running conditions specified by the manufacturer.

## **4.2 Test device**

The tests specified in section 5 shall be conducted with a test device having the following characteristics :

**4.2.1** The impact surface of the test device shall conform to the figure, the impact contour being made of hardened steel.

**4.2.2** With plane A vertical, the reference line shown in the figure shall be horizontal and at the same height as the test device's centre of percussion.

**4.2.3** The effective mass of the test device shall be equal to the vehicle kerb mass. A test device of different mass may be used at different impact speeds provided that it can be shown that the results are equivalent.

**4.2.4** The test device may, at the manufacturer's choice, be alternatively :

- a) a pendulum with a distance of not less than 3,3 m from pivot to centre of percussion (the reference line being coincident with the centre of percussion. Plane A of the pendulum shall remain parallel with its axis of rotation throughout the test;
- b) a parallelogram suspended pendulum, the arc described by any point of the reference line being constant with a radius of not less than 3,3 m. Plane A of the pendulum shall remain parallel with its axis of rotation throughout the test;
- c) a barrier moving in a horizontal plane in a straight line without rotation.

## **5 TEST PROCEDURE**

The vehicle under test shall comply with the conditions set out in 4.1, when tests are made according to the specifications in 5.1, 5.2 and 5.3.

**5.1** During impact tests, the first contact of the test device with the vehicle shall be by the impact contour on the protective device.

Also in the two specified loading conditions, the protective device between the defined corners shall be actually intersected by the horizontal plane containing the reference line situated at the reference height of 445 mm above the ground.

## **5.2 Longitudinal impact test**

This test consists in two impacts on the front surface and two impacts on the rear surface of the vehicle. On each surface one impact is made with the vehicle under kerb load conditions and the other is made with the vehicle loaded to the design load.

For the impacts on the front and rear surfaces, the choice of location of the test device for the first impact is free, but for the second impact the median plane of the test device shall be at a distance at least 300 mm from the first, provided that during these impacts the extremities of the test device do not pass outside a zone defined by two planes parallel to the longitudinal median plane and passing through the corners of the vehicle.

**5.2.1** Place the test device shown in the figure so that plane A is vertical and the reference line is horizontal at the reference height of 445 mm.

**5.2.2** Align the vehicle so that a point between the vehicle corners touches, but does not move, the test device, the longitudinal median plane of the vehicle being perpendicular to the plane A of the test device.

**5.2.3** Impact the vehicle at 4 km/h.

## **5.3 Corner impact test**

This test consists in an impact at one front corner and an impact at one rear corner of the vehicle at kerb load and an impact at the other front corner and the other rear corner with the vehicle at design load.

**5.3.1** Place the test device shown in the figure so that plane A is vertical and the reference line is horizontal and at the reference height of 445 mm.

**5.3.2** Align the vehicle so that a corner of the vehicle touches the test device without moving it. In addition the following conditions shall be met :

- a) the plane A of the test device shall make an angle of  $60 \pm 5^\circ$  with the longitudinal median plane of the vehicle;
- b) the point of the first contact shall be in the median plane of the test device (within a tolerance of  $\pm 25$  mm).

**5.3.3** Impact the vehicle at 2,5 km/h.

## 6 CONDITIONS OF REPAIR AND REPLACEMENT

**6.1** The protective devices and their mounting attachments to the vehicle structure may be repaired or replaced between the tests.

**6.2** If the protective devices include self-recovering materials, the permitted recovery time between tests shall be as stated by the manufacturer.

**6.3** If the manufacturer so wishes, a vehicle of the same type may be used for each test.

## 7 REQUIREMENTS

The vehicle shall meet the following requirements after each test made in accordance with the specifications in sections 4, 5 and 6.

**7.1** Should the adjustment of the factory fitted lighting devices be disturbed, it is permissible to correct their adjustment to the required specifications, provided this can be achieved by the normal adjustment means.

The signalling devices, with the exception of registration plate lights, shall continue to operate correctly and remain visible.

Bulbs may be replaced in the event of filament failure.

**7.2** The vehicle's bonnet (hood), trunk and doors shall be operable in the normal manner.

**7.3** The vehicle's fuel and cooling systems shall have neither leaks nor constricted fluid passages which prevent normal functioning. Their sealing devices and caps shall be operable in the normal manner.

**7.4** The vehicle's exhaust system shall not suffer any damage or displacement which would prevent its normal function.

**7.5** The vehicle's propulsion, suspension, steering and braking systems shall remain in adjustment and shall operate in a normal manner.

## 8 CONTROL TEST

The control test shall be carried out with the test device selected by the manufacturer.

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Dimensions in millimetres

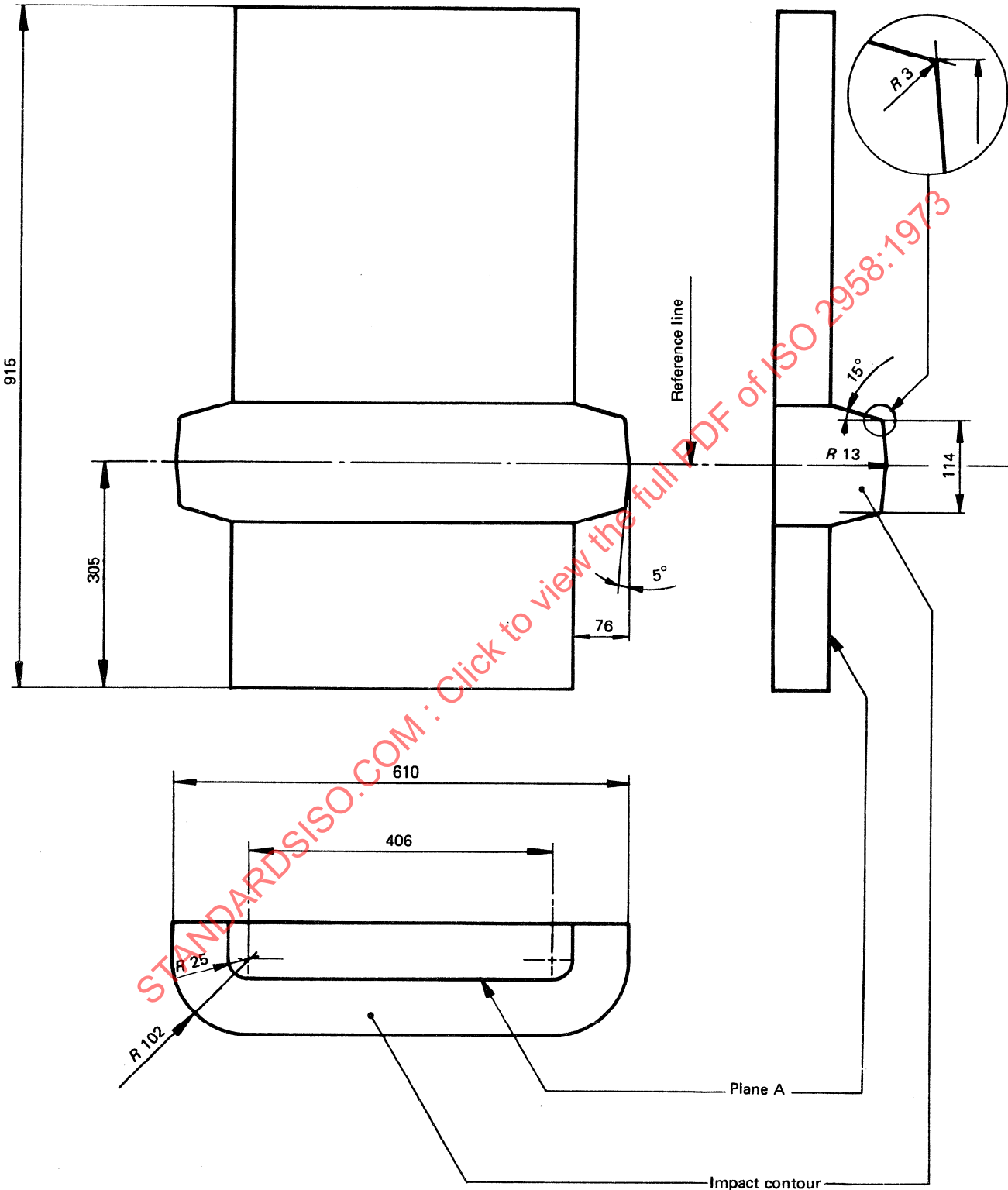


FIGURE – Impact device