

COUNCIL DIRECTIVE

of 1 March 1971

on the approximation of the laws of the Member States relating to the rear-view mirrors of motor vehicles

(71/127/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof;

Having regard to the proposal from the Commission;

Having regard to the Opinion of the European Parliament¹;

Having regard to the Opinion of the Economic and Social Committee²;

Whereas the technical requirements which motor vehicles must satisfy pursuant to national laws relate, *inter alia*, to their rear-view mirrors;

Whereas those requirements differ from one Member State to another; whereas it is therefore necessary that all Member States adopt the same requirements either in addition to or in place of their existing requirements, in order, in particular, to allow the EEC type-approval procedure which was the subject of the Council Directive of 6 February 1970³ on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers to be applied in respect of each type of vehicle;

Whereas rules on rear-view mirrors should lay down requirements concerning not only how such mirrors should be fitted on vehicles but also their construction;

Whereas a harmonised type-approval procedure for rear-view mirrors makes it possible for each Member State to check compliance with the common construction and testing requirements and to inform

the other Member States of its findings by sending a copy of the type-approval certificate completed for each type of rear-view mirror; whereas the placing of an EEC type-approval mark on all mirrors manufactured in conformity with the approved type obviates any need for technical checks on these mirrors in the other Member States;

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. Each Member State shall approve any type of rear-view mirror which satisfies the construction and testing requirements laid down in item 2 of Annex I.
2. The Member State which has granted type approval shall take the measures required in order to verify, in so far as is necessary and if need be in co-operation with the competent authorities in the other Member States, that production models conform to the approved type. Such verification shall be limited to spot checks.

Article 2

Member States shall issue to the manufacturer, or to his authorised representative, an EEC type-approval mark which shall conform to the model shown in item 2.6 of Annex I, for each type of rear-view mirror which they approve pursuant to Article 1.

Member States shall take all appropriate measures to prevent the use of marks liable to create confusion between rear-view mirrors which have been type-approved pursuant to Article 1 and other mirrors.

Article 3

1. No Member State may prohibit the placing on the market of rear-view mirrors on grounds relating

¹ OJ No C 160, 18.12.1969, p. 7.

² OJ No C 48, 16.4.1969, p. 16.

³ OJ No L 42, 23.2.1970, p. 1.

to their construction or method of functioning if they bear the EEC type-approval mark.

2. Nevertheless, this provision shall not prevent a Member State from taking such measures in respect of rear-view mirrors bearing the EEC type-approval mark which, by their design, do not conform to the approved prototype.

That State shall inform the other Member States and the Commission forthwith of the measures taken, specifying the reasons for its decision. The provisions of Article 5 shall also apply.

There shall be failure to conform to the approved prototype, within the meaning of paragraph 1 above, where the requirements of items 2.1, 2.2 or 2.4 of Annex I are not observed.

Article 4

The competent authorities of each Member State shall within one month send to the competent authorities of the other Member States a copy of the type-approval certificates completed for each type of rear-view mirror which they approve or refuse to approve.

Article 5

1. If the Member State which has granted EEC type-approval finds that a number of rear-view mirrors bearing the same type-approval mark do not conform to the type which it has approved, it shall take the necessary measures to ensure that production models conform to the approved type. The competent authorities of that State shall advise those of the other Member States of the measures taken, which may, where necessary, extend to withdrawal of EEC type-approval. The said authorities shall take the same measures if they are informed by the competent authorities of another Member State of such failure to conform.

2. The competent authorities of Member States shall inform each other within one month of any withdrawal of EEC type-approval, and of the reasons for such measure.

3. If the Member State which has granted EEC type-approval disputes the failure to conform notified to it, the Member States concerned shall endeavour to settle the dispute. The Commission shall be kept informed and shall, where necessary, hold appropriate consultations for the purpose of reaching a settlement.

Article 6

All decisions taken pursuant to the provisions adopted in implementation of this Directive which refuse or withdraw type-approval for a rear-view

mirror or prohibit its use shall set out in detail the reasons on which they are based. A decision shall be notified to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member States and of the time limits allowed for the exercise of such remedies.

Article 7

No Member State may refuse to grant EEC type-approval or national type-approval of a vehicle on grounds relating to its rear-view mirrors if these bear the EEC type-approval mark and are fitted in accordance with the requirements laid down in item 3 of Annex I.

Article 8

For the purposes of this Directive, 'vehicle' means any motor vehicle intended for use on the road, with or without bodywork, having at least four wheels and a maximum design speed exceeding 25 km/h, with the exception of vehicles which run on rails, agricultural tractors and machinery, and public works vehicles.

Article 9

The amendments necessary for adjusting the requirements of Annexes I, II and III so as to take account of technical progress shall be adopted in accordance with the procedure laid down in Article 13 of the Council Directive of 6 February 1970 on the approximation of the laws of the Member States relating to the type approval of motor vehicles and their trailers.

Article 10

1. Member States shall put into force provisions containing the requirements needed in order to comply with this Directive within eighteen months of its notification and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the main provisions of national law which they adopt in the field governed by this Directive are communicated to the Commission.

Article 11

This Directive is addressed to the Member States.

Done at Brussels, 1 March 1971.

For the Council

The President

M. SCHUMANN

ANNEX I

1. DEFINITIONS

- 1.1. 'Rear-view mirror' means any device intended to give, within the field of vision geometrically defined in item 3.5 below, a clear view to the rear which, within reasonable limits, is not blocked by component parts of the vehicle or by the occupants of the vehicle itself.
- 1.2. 'Interior rear-view mirror' means a device as defined in item 1.1 which is fitted in the passenger compartment of a vehicle.
- 1.3. 'Exterior rear-view mirror' means a device as defined in item 1.1 which is mounted on the external surface of a vehicle.
- 1.4. 'Class of rear-view mirror' means all rear-view mirrors having one or more common characteristics or functions. Interior rear-view mirrors are grouped in class I, exterior rear-view mirrors in classes II and III.
- 1.5. 'Category A vehicles' means all vehicles having a technically permissible maximum weight exceeding 3.5 metric tons.
- 1.6. 'Category B vehicles' means all vehicles having a technically permissible maximum weight not exceeding 3.5 metric tons.
- 1.7. The 'driver's ocular points' means two points 65 mm apart and 635 mm above point H of the driver's seat as defined in Annex III. The straight line joining these points runs perpendicular to the vertical longitudinal median of the vehicle. The centre of the segment joining the two ocular points is in the vertical longitudinal plane passing through the centre of the steering control. If this plane does not pass through the apparent centre of the driver's seat, an appropriate modification of the lateral position of this plane must be made.
- 1.8. 'R' means the average of the principal radii of curvature measured from the centre of the mirror and expressed in millimetres.

2. PROVISIONS RELATING TO EEC TYPE APPROVAL OF REAR-VIEW MIRRORS

2.1. General specifications

- 2.1.1. All rear-view mirrors must be adjustable.
- 2.1.2. The edge of the reflecting surface must be enclosed in a holder with a rounded rim of at least 3.5 mm.
- 2.1.3. No component of an exterior rear-view mirror may include any projecting part with a radius of curvature of less than 3.5 mm.

2.2. Dimensions

2.2.1. *Interior rear-view mirrors* (class 1)

The dimensions of the reflecting surface must be such that it is possible to inscribe thereon a rectangle, one side of which is equivalent in length to 4 cm and the other to

$$15 \text{ cm} \times \frac{1}{1 + \frac{1000}{R}}$$

2.2.2. *Exterior rear-view mirrors* (classes II and III)

2.2.2.1. The dimensions of the reflecting surface must be such that it is possible to inscribe therein

- a rectangle 4 cm high, the base length of which, measured in centimetres, has the value 'a',
- a segment which is parallel to the height of the rectangle, and the length of which, expressed in centimetres, has the value 'b',

2.2.2.2. The minimum values of 'a' and 'b' are given in the table below:

Class of rear-view mirrors	Categories of vehicles for which the rear-view mirrors are designed	a	b
II	A	$1 + \frac{17}{1 + \frac{1000}{R}}$	20
III	B	$1 + \frac{13}{1 + \frac{1000}{R}}$	7

2.3. *Reflecting surface and coefficients of reflection*

2.3.1. The reflecting surface must be limited by a curve of ordinary convex shape.

2.3.2. The reflecting surface must retain the characteristics laid down in item 2.3.5 in normal conditions of use in spite of adverse weather conditions.

2.3.3. The reflecting surfaces must consist of flat or spherically convex mirrors. The difference between the main radii of curvature at any one point on the central part of the mirror must not be greater than 0.25 R.

2.3.4. The average R of the radii of curvature defined in item 1.8 above must not be less than the following values:

- 1800 mm for class II rear-view mirrors,
- 1200 mm for class I and III rear-view mirrors.

2.3.5. The normal coefficient of reflection of the reflecting surface must not be less than 35%. If the mirror has two positions ('day' and 'night'), the normal coefficient of reflection in the 'night' position must not be less than 4%. The rear-view mirror must not inhibit recognition of the colours of signals used in the control of road traffic.

2.4. *Tests*

2.4.1. The reaction of rear-view mirrors to impact and bending on the holder fixed to the stem or support shall be tested in the manner described in items 2.4.2. and 2.4.3.

2.4.2. *Impact test*

2.4.2.1. Description of the test device.

2.4.2.1.1. The test device consists of a pendulum which is made up of a beam with a hammer-head terminal. A support rigidly fixed to the frame of the pendulum is used to clamp the test samples (Figure 1).

Main dimensions of the impact test device

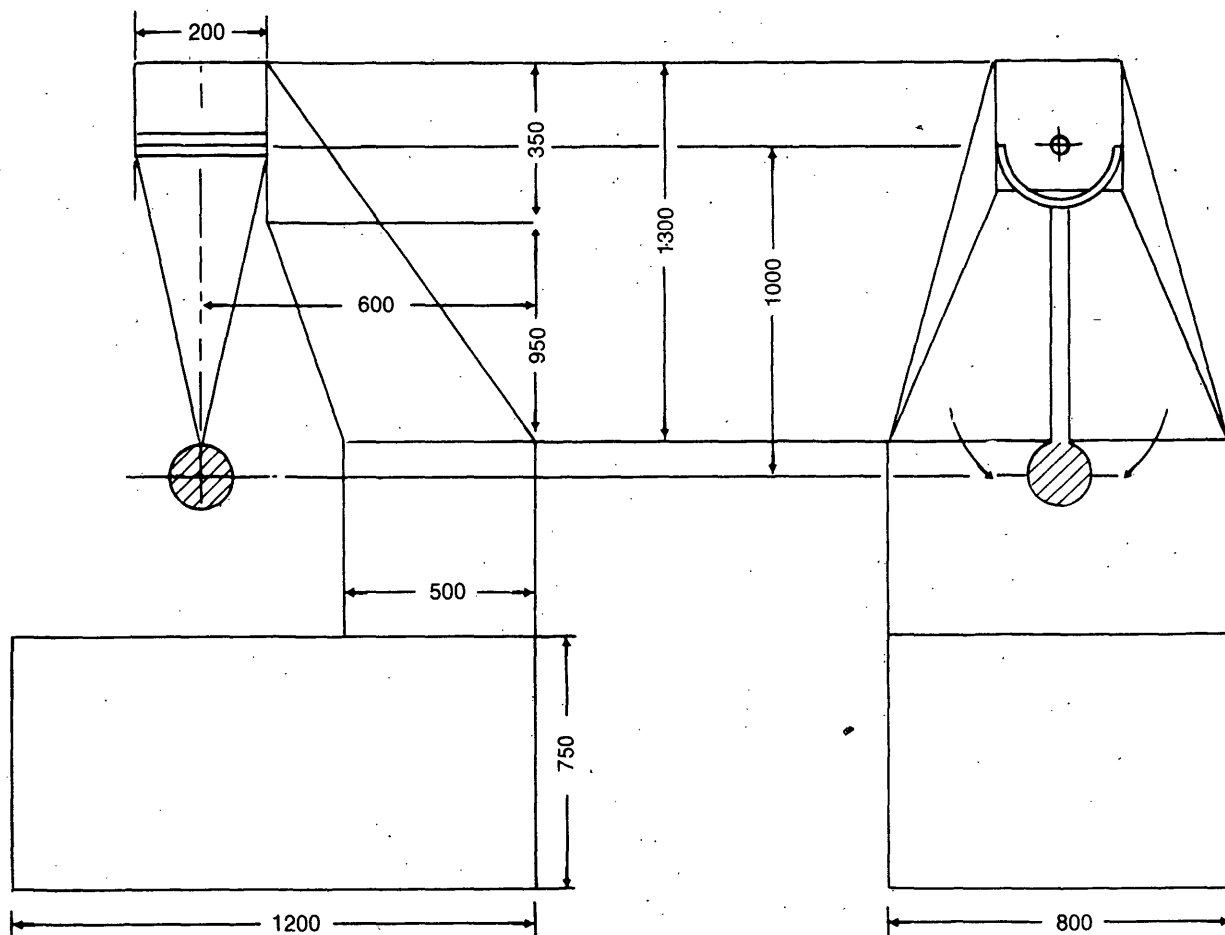


Fig. 1

2.4.2.1.2. The face of the hammer used to make the blow must be in the shape of a spherical cup 165 mm \pm 5 mm in diameter. It shall be rigid and have a 5-mm-thick covering rubber of Shore A 50 hardness.

2.4.2.1.3. The centre of percussion of the pendulum coincides with the centre of the portion of a sphere at the end of the hammer. It is at a distance of 1 m \pm 10 mm from the axis of rotation of the pendulum. The total mass of the pendulum considered at its centre of percussion is $m_o = 6.8 \pm 50$ g (the relationship between m_o to the total mass m of the pendulum and the distance '1' between the centre of gravity of the pendulum and its axis of rotation is expressed as

$$m_o = m \frac{1}{a}.$$

2.4.2.2. Description of the test

2.4.2.2.1. Rear-view mirrors are clamped to the support in such a way that the latter cannot obstruct the movement of the movable parts of the rear-view mirror. The procedure used to clamp the rear-view mirror to the support and to position the arm is that recommended by the person submitting the rear-view mirrors for testing.

2.4.2.2.2. When the rear-view mirror has a device for adjusting the distance in relation to the base, the device must be set at the minimum value.

2.4.2.2.3. The test consists in allowing the hammer to fall from a height corresponding to a pendulum angle of 60° from the vertical so that the hammer strikes the rear-view mirror at the moment when the pendulum reaches the vertical position, the hammer's point of impact being on a line passing horizontally to the centre of percussion of the pendulum.

2.4.2.2.4. The rear-view mirrors are subjected to impact in the following different conditions:

2.4.2.2.4.1. Interior rear-view mirrors

Test 1 — Perpendicularly to the surface of the mirror, the point of impact being such that the impact produced on the mirror passes through the point at which the holder is attached to the stem or the mounting. The impact is directed on the reflecting surface.

Test 2 — On the edge of the holder in such a way that the impact produced makes an angle of 45° with the plane of the mirror and is situated in the horizontal plane passing through the point at which the holder is attached to the stem or the mounting. The impact is directed on the reflecting surface.

2.4.2.2.4.2. Exterior rear-view mirrors

Test 1 — Perpendicularly to the surface of the mirror, the point of impact being such that the impact produced on the mirror passes through the point at which the holder is attached to the stem or the mounting.

Test 1' — At the back of the mirror, on its stem or mounting (the hammer being at the same distance from the clamping plane as in Test 1 and the mirror being perpendicular to the trajectory of the centre of percussion).

Test 2 — On the edge of the holder in such a way that the impact produced makes an angle of 45° with the plane of the mirror and is in the horizontal plane passing through the point at which the holder is attached to the stem or the mounting. The impact is directed on the reflecting surface.

2.4.2.2.4.3. General observations

2.4.2.2.4.3.1. The centre of the mirror is taken as the reference point when the devices tested do not have any clearly defined mounting or stem, or when the point of attachment is on the periphery of the mirror.

2.4.2.2.4.3.2. If it is not possible to carry out the test described in item 2.4.2.2, the point of impact is moved, in the plane of symmetry of the pendulum, in such a way that the lowest point of the hammer is 40 mm from the clamping plane.

2.4.3. *Bending test on the holder fixed to the stem*

2.4.3.1. Description of the test

The holder is placed horizontally in a device in such a way that the stem or the mounting can be clamped securely. In the direction of the greatest dimension of the holder, the end nearest to the point of fixing on the stem is immobilised by means of a fixed stop 15 mm wide, covering the entire width of the holder.

At the other end, a stop identical to the one described above is placed on the holder so that the specified test load can be applied to it (Figure 2).

Example of bending test apparatus for rear-view mirror holders

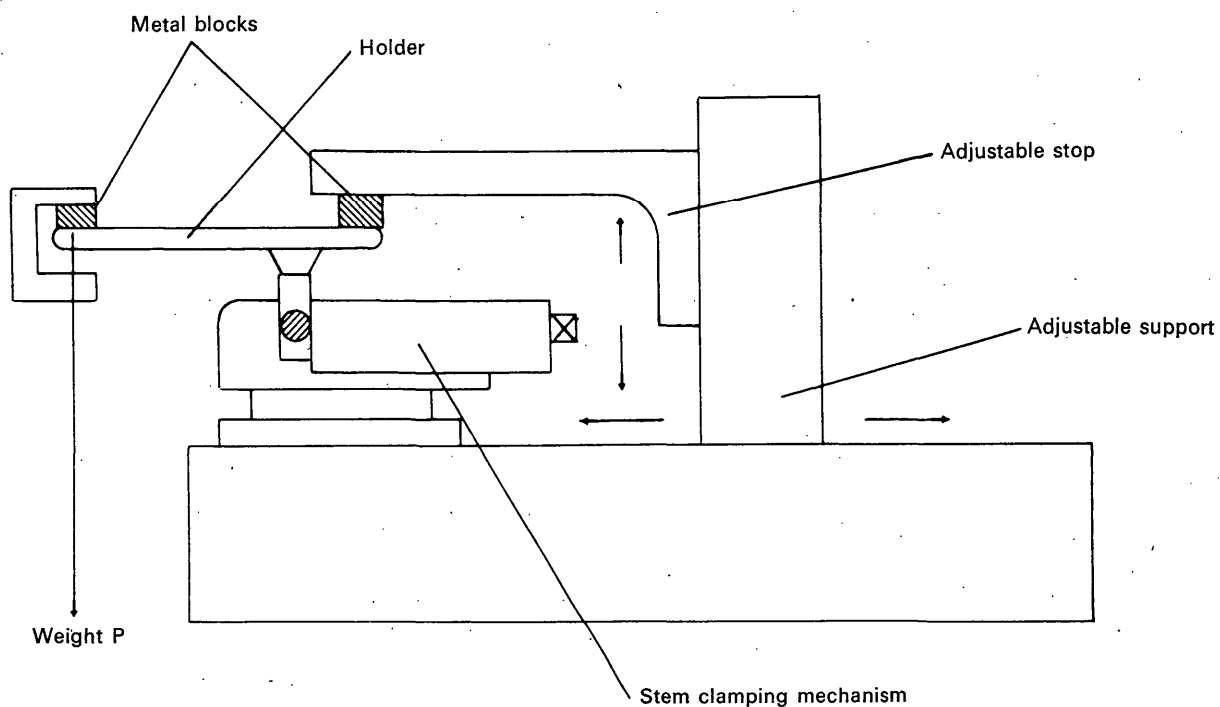


Fig. 2

2.4.3.2. The test load is 25 kg. It is applied for one minute.

2.5. Interpretation of results

2.5.1. In all the tests described in item 2.4.2 the pendulum must continue to swing after impact to a point forming an angle of at least 2° with the vertical.

2.5.2. Should there be a breakage of the stems or the mounting of the rear-view mirror during the tests described in item 2.4.2 the part remaining must not project from the base by more than 1 cm. If the stem or mounting breaks off, the remaining part of the base must not form a dangerous projection.

2.5.3. The mirror must not break during the tests described in items 2.4.2 and 2.4.3. However, breakage of the mirror will be allowed if one of the following conditions is fulfilled:

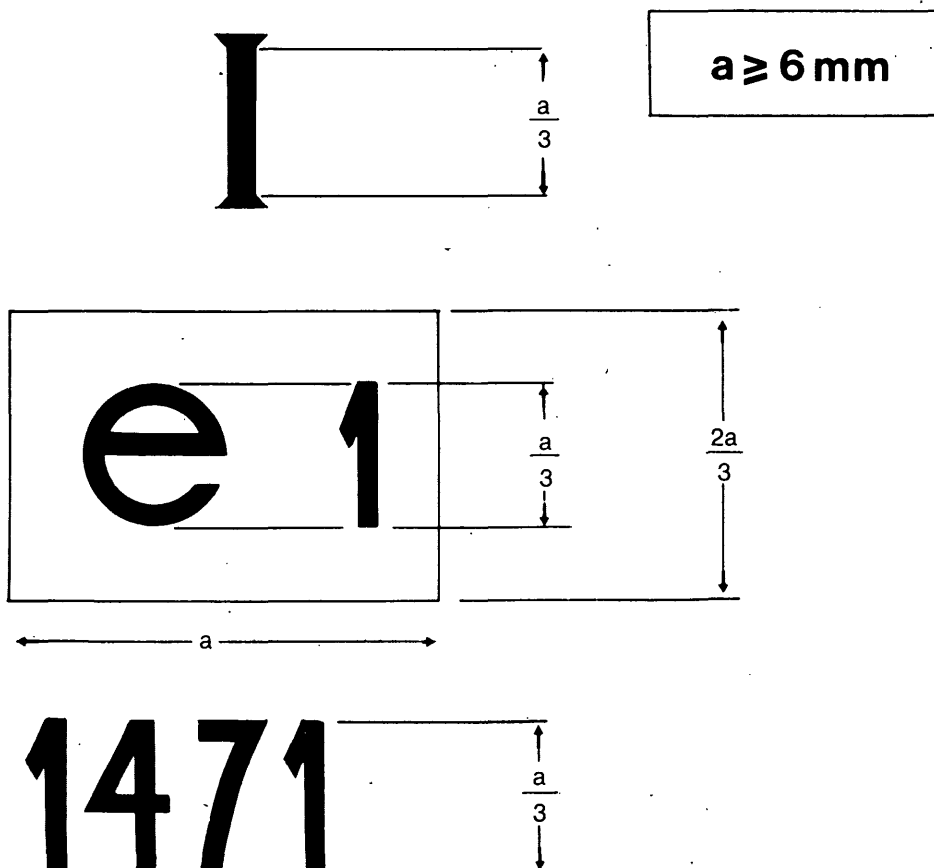
2.5.3.1. The fragments of glass still adhere to the back of the holder or to a surface firmly attached to the holder, provided that an area no greater than 5 mm in width comes unstuck.

2.5.3.2. The mirror is made of safety glass.

2.6. Type approval mark

- 2.6.1. The type approval mark shall be made up of a rectangle, within which shall be placed the letter 'e' followed by the distinguishing number or letter of the country which has granted the type approval (1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 6 for Belgium, and L for Luxembourg). At any point in the proximity of this rectangle there shall be placed a type approval number corresponding to the number of the approval certificate completed for the prototype.
- 2.6.2. The type approval mark (symbol and number) shall be placed on a main part of the rear-view mirror in such a way that it is indelible and clearly visible even after the rear-view mirror has been fitted on a vehicle.

Example of an EEC type-approval mark¹



Legend

The mirror bearing the EEC type-approval mark shown above is a class I mirror (interior rear-view mirror) which has been type approved in Germany (e.1) under number 1471.

¹ The numbers in the diagram are for guidance only.

3. REQUIREMENTS FOR FITTING TO VEHICLES

3.1. General

- 3.1.1. Rear-view mirrors must be fixed in such a way that they remain steady under normal driving conditions.
- 3.1.2. Exterior rear-view mirrors fitted on category A vehicles must be class II mirrors, those which are fitted on category B vehicles must be class III mirrors.

3.2. Number

- 3.2.1. All vehicles shall be equipped with both an interior and an exterior rear-view mirror, the latter being fitted to the left side of the vehicle.
- 3.2.2. If the conditions laid down in item 3.5 with respect to the field of vision of the interior rear-view mirror are not satisfied, an exterior rear-view mirror must be fitted on the right side of the vehicle. In this case, an interior rear-view mirror does not have to be fitted if it would not provide any visibility towards the rear.

3.3. Position

- 3.3.1. Rear-view mirrors must be so placed that the driver, when sitting on the driving seat in a normal driving position, has a clear view of the road to the rear of the vehicle.
- 3.3.2. Exterior rear-view mirrors shall be visible through the side windows or through the portion of the windscreen that is swept by the windscreen wiper. This provision shall not apply to exterior rear-view mirrors fitted on the right side of vehicles of the international categories M2 and M3 as defined in the Council Directive on the approximation of the laws of the Member States relating to the type approval of motor vehicles and their trailers.
- 3.3.3. In the case of left-hand drive vehicles the prescribed exterior rear-view mirror must be fitted to the left side of the vehicle in such a way that there is an angle of not more than 55° between the vertical longitudinal median of the vehicle and the vertical plane which passes through the centre of the rear-view mirror and through the centre of the segment between the ocular points of the driver.
- 3.3.4. The rear-view mirror must not protrude beyond the external bodywork of the vehicle substantially more than is necessary to obtain the fields of vision laid down in item 3.5.
- 3.3.5. Where the bottom edge of an exterior rear-view mirror is less than 2 m above the ground when the vehicle is laden, this rear-view mirror must not project more than 0.20 m beyond the overall width of the vehicle measured without rear-view mirrors.
- 3.3.6. Subject to the requirements of items 3.3.4 and 3.3.5, rear-view mirrors may project beyond the permissible maximum widths of vehicles.

3.4. Adjustment

- 3.4.1. The driver must be able to adjust the interior rear-view mirror from his driving position.
- 3.4.2. It must be possible to adjust the exterior rear-view mirror situated on the driver's side from inside the vehicle while the door is closed. The mirror may, however, be locked into position from the outside¹.
- 3.4.3. The requirements of item 3.4.2 do not apply to exterior rear-view mirrors which can be returned to their former position without any adjustment being necessary, after having been knocked out of alignment.

3.5. Field of vision

3.5.1. General

The fields of vision defined below must be established using binocular vision, the observer's eyes being at the 'driver's ocular points' as defined in item 1.7 above. The fields of vision shall be determined when the vehicle is empty except for one observer, and must be established through windows which have a total light transmission factor of more than 70%.

3.5.2. Interior rear-view mirror

The field of vision must be such that the driver can see at least a 20-m-wide plane and horizontal portion of the road centred on the vertical longitudinal median of the vehicle, said portion stretching from the horizon to 60 m behind the rear of the vehicle (Figure 3).

3.5.3. Left-hand exterior rear-view mirror

The field of vision must be such that the driver can see at least a 2.50-m-wide plane and horizontal portion of the road, said portion being bounded on the right by the plane which is parallel to the vertical longitudinal median of the vehicle and passes through the leftmost point of the overall width of the vehicle, said portion stretching from the horizon to 10 m behind the ocular points of the driver (Figure 4).

3.5.4. Right-hand exterior rear-view mirror

The field of vision must be such that the driver can see at least a 3.50-m-wide plane and horizontal portion of the road, said portion being bounded on the left by the plane which is parallel to the vertical longitudinal median of the vehicle and passes through the rightmost point of the overall width of the vehicle, said portion stretching from the horizon to 30 m behind the ocular points of the driver.

In addition, the road must be visible to the driver, over a width of 0.75 m, from a point 4 m, behind the vertical plane passing through the ocular points of the driver (Figure 4).

¹ It would be desirable to lay down, at a future date, that exterior rear-view mirrors which do not have a locking system must be capable of being adjusted by the driver from his driving position inside the vehicle while the door is closed.

The procedure laid down in Article 9 will be applied with a view to incorporation of this improvement in the Directive, as soon as simple, economic methods of manufacture and fitting on vehicles have become possible as a result of technical progress.

Interior rear-view mirror

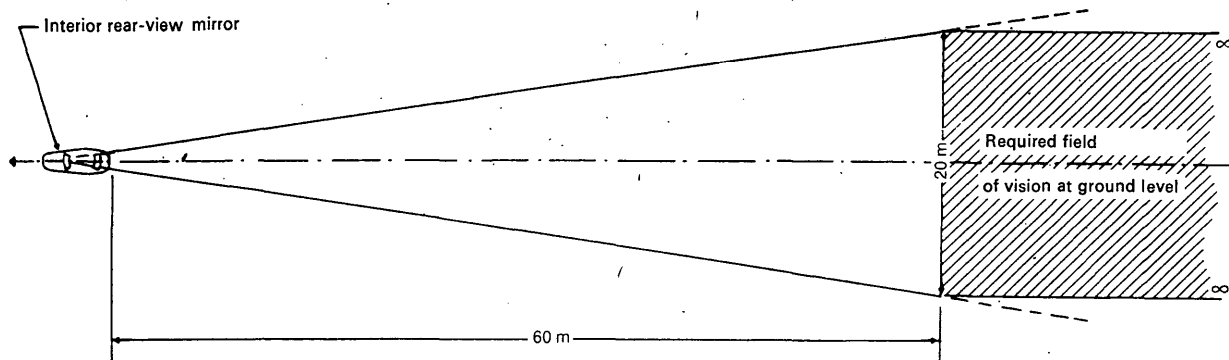


Fig. 3

Exterior rear-view mirrors

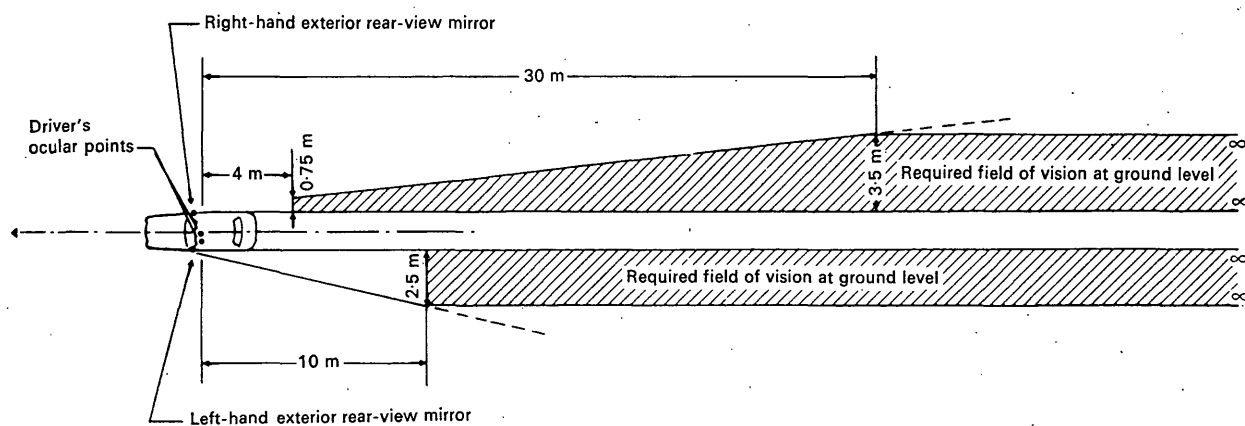


Fig. 4

ANNEX II

TYPE APPROVAL CERTIFICATE

 Name of the competent authority

Notification concerning the grant, refusal or withdrawal of approval of a type of rear-view mirror

Type approval No

1. Trade name or mark
2. Class (I, II, III)
3. Name and address of manufacturer
4. If applicable, name and address of manufacturer's authorised representative
5. Submitted for type approval on
6. Test laboratory
7. Date and number of laboratory report
8. Date of grant/refusal/withdrawal of type approval¹
9. Place
10. Date
11. The following documents, bearing the type approval number shown above, are annexed to this type approval certificate
- (descriptive notes, drawings, diagrams and plans of the rear-view mirror)
12. Remarks

 Signature

¹ Delete items not applicable.

ANNEX III¹

TEST PROCEDURE FOR DETERMINING THE H POINT

1. Definition

The 'H' point, which indicates the position in the passenger compartment of a seated occupant, is the trace, in a longitudinal vertical plane, of the theoretical axis of rotation between the leg and the torso of a human body, represented by a manikin.

2. Determination of H points

2.1. An H point shall be determined for the driver's seat.

(2.1.1.)

(2.1.2.)

2.2. For each determination of an H point the seat concerned shall be placed in the normal position for driving provided by the manufacturer, the back, if inclinable, being set up in a position close to the vertical.

3. Description of the manikin

3.1. A three-dimensional manikin with the weight and shape of an adult male of average height shall be used. Such a manikin is depicted in Figures 1 and 2.

3.2. This manikin shall comprise:

3.2.1. two components, one simulating the back and the other the seat of the body, hinged along an axis representing the axis of rotation between the torso and the thigh. The trace of this axis on the side of the manikin is its H point;

3.2.2. two components simulating the legs and hinged in relation to the component simulating the seat;

3.2.3. two components simulating the feet and connected to the legs by hinges simulating the ankles;

3.2.4. in addition, the component simulating the seat shall be provided with a level enabling its transverse orientation to be verified.

3.3. Weights each representing the weight of one of the components of the body shall be placed at appropriate points constituting the relevant centres of gravity, so as to bring the total weight of the manikin up to about 75.8 kgf (74.4 daN). Details of the various weights are given in the table of Figure 2.

¹ The text of Annex III is similar to that of Regulation No 14; in particular the breakdown into items is the same. For this reason, where an item of Regulation No 14 has no counterpart in this Directive, its number is given in Annex III in brackets as a token entry.

4. Setting up the manikin

The three-dimensional manikin shall be set up in the following manner:

- 4.1. The vehicle is levelled and the seat is adjusted as prescribed in item 2.2.
- 4.2. The seat to be tested is covered with a piece of fabric to facilitate correct setting up of the manikin.
- 4.3. The manikin is placed on the seat.
- 4.4. The feet of the manikin are placed as follows:
 - 4.4.1. The right foot is placed on the accelerator pedal in the position of rest and the left foot is so arranged that the level verifying the transverse orientation of the seat of the manikin is restored to the horizontal;
 - (4.4.2.)
 - (4.4.3.)
- 4.5. The weights are placed on the thighs, the transverse level of the manikin's seat is restored to the horizontal, and the weights are placed on the component simulating the seat.
- 4.6. The manikin is moved away from the seat back by using the hinged knee bar and the back of the manikin is tilted forward. The manikin is repositioned on the seat of the vehicle by sliding the seat of the manikin rearwards until resistance is encountered, and the back of the manikin is then replaced against the seat back.
- 4.7. A load of about 10.2 kgf (10 daN) is applied horizontally to the manikin twice. The direction and point of application of the load are shown by a black arrow in Figure 2.
- 4.8. The weights on the right and left sides and then the torso weights are placed in position, the transverse level of the manikin being kept horizontal.
- 4.9. The manikin's transverse level being kept horizontal, the manikin's back is tilted forwards until the torso weights are above the H point, so as to eliminate any friction with the seat back.
- 4.10. The manikin's back is gently moved rearwards again so as to complete the setting up operation. The transverse level of the manikin should be horizontal. If it is not, repeat the process described above.

5. Results

- 5.1. When the manikin has been set up as described in item 4, the H point of the seat is the H point on the manikin.
- 5.2. The Cartesian co-ordinates of the H point shall each be measured accurately to within 1 mm, as shall the co-ordinates of characteristic and well-defined points of the passenger compartment. The projections of these points along a longitudinal vertical plane shall then be plotted on a diagram.

Components of the three-dimensional manikin

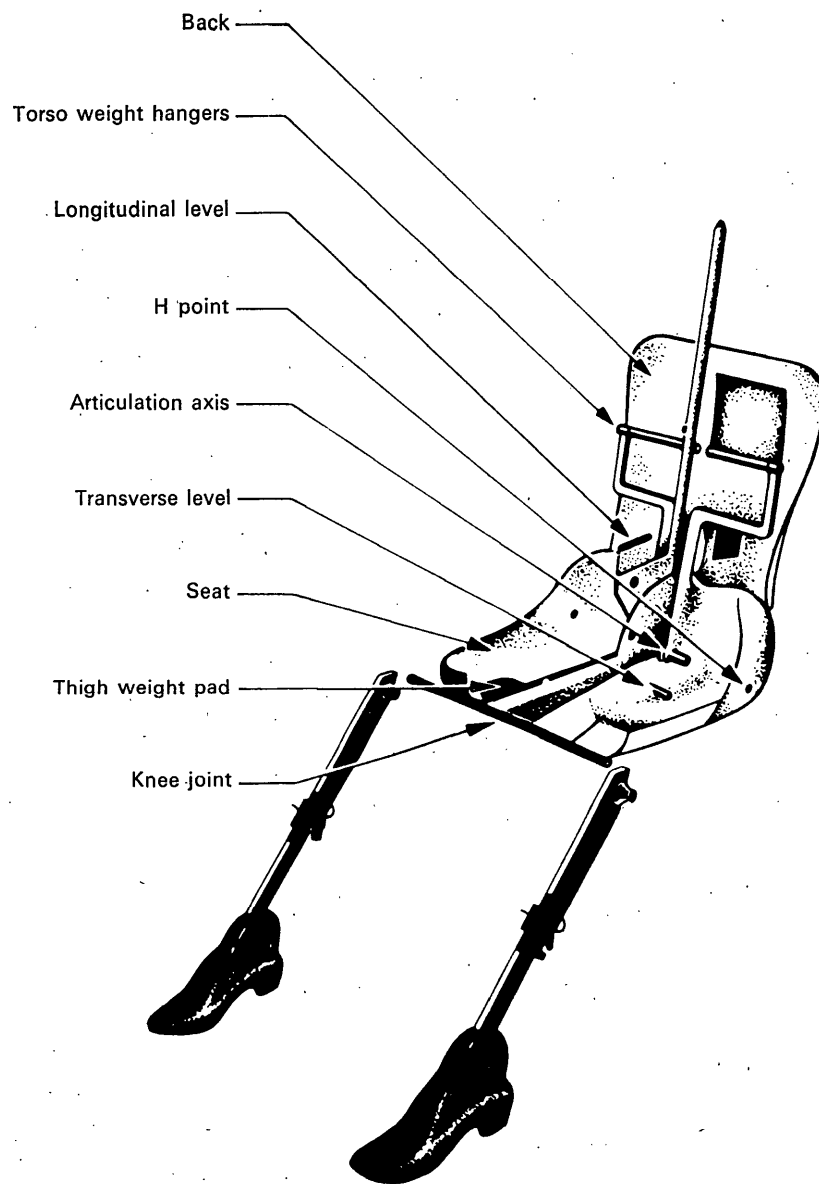


Fig. 1

Dimensions and weight of manikin

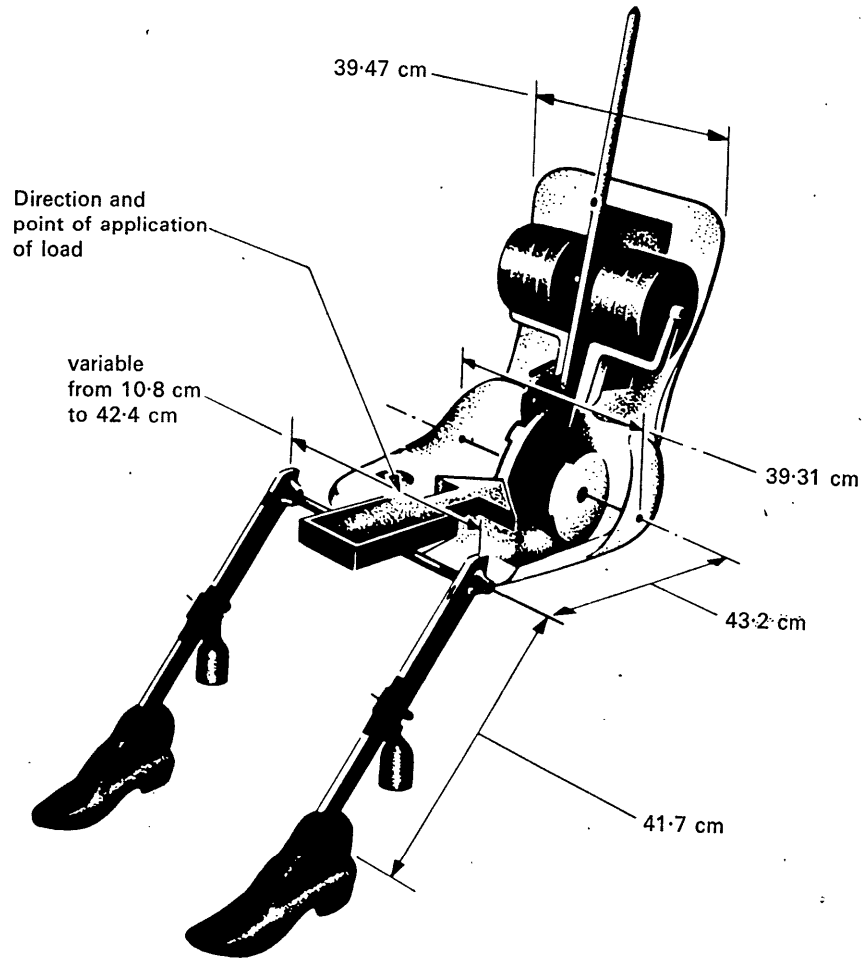


Fig. 2

Weight of manikin

	kg
Components simulating back and seat of body	16.6
Torso weights	31.2
Seat weights	7.8
Thigh weights	6.8
Leg weights	13.2
Total	75.6