

## COUNCIL DIRECTIVE

of 4 June 1974

on the approximation of the laws of the Member States relating to the interior fittings of motor vehicles (the behaviour of the steering mechanism in the event of an impact)

(74/297/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 Parliament <sup>(1)</sup>;

Having regard to the Opinion of the Economic and Social Committee <sup>(2)</sup>;

Whereas the technical requirements which motor vehicles must satisfy pursuant to national laws relate, *inter alia*, to the behaviour of the steering mechanism in the event of an impact;

Whereas these 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 regulations; in order, in particular, to allow the EEC type-approval procedure which was the subject of the Council Directive of 6 February 1970 <sup>(3)</sup> 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 common requirements for interior rear-view mirrors have been laid down by the Council Directive of 1 March 1971 <sup>(4)</sup> and for the interior fittings of the passenger compartment, the layout of the controls, the roof and backrest and rear part of the seats by the Council Directive of 17 December 1973 <sup>(5)</sup>; whereas other requirements will be adopted subsequently concerning interior fittings and relating to anchorages for safety belts and seats, head restraints and the identification of the controls;

Whereas harmonized requirements must reduce the risk or the severity of injuries which may be suffered by the drivers of motor vehicles and thereby ensure road safety throughout the entire Community;

Whereas, with regard to technical requirements, it is appropriate to utilize those adopted by the Economic Commission for Europe of the UNO in its Regulation No 12 <sup>(6)</sup> (Uniform provisions concerning the approval of vehicles with regard to the protection of the driver against the steering mechanism in the event of impact) which is annexed to the Agreement of 20 March 1958 concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

For the purpose of this Directive, 'vehicle' means any motor vehicle in category M<sub>1</sub> (defined in Annex I of the Directive of 6 February 1970) 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 a vehicle fitted with forward control as defined in 2.7 of Annex I.

*Article 2*

No Member State may refuse to grant EEC type-approval or national type approval of a motor vehicle on grounds relating to the behaviour of the steering mechanism in the event of an impact if the latter complies with the requirements laid down in Annexes I, II and III.

*Article 3*

No Member State may refuse or prohibit the sale or registration, entry into service or use of any vehicle

<sup>(1)</sup> OJ No C 14, 27. 3. 1973, p. 18.

<sup>(2)</sup> OJ No C 60, 26. 7. 1973, p. 13.

<sup>(3)</sup> OJ No L 42, 23. 2. 1970, p. 1.

<sup>(4)</sup> OJ No L 68, 22. 3. 1971, p. 1.

<sup>(5)</sup> OJ No L 38, 11. 2. 1974, p. 2.

<sup>(6)</sup> ECE Geneva document E/ECE/324/Add. 11.

on grounds relating to the behaviour of the steering mechanism in the event of an impact if the latter meets the requirements laid down in Annexes I, II and III.

#### *Article 4*

A Member State which has granted approval to a vehicle type shall take the necessary measures to ensure that it is informed of any modification to any of the parts or characteristics referred to in Annex I, 2.2. The competent authorities of that Member State shall determine whether it is necessary to carry out fresh tests on a modified vehicle type and to prepare a new report. Where such tests reveal failure to comply with the requirements of this Directive, the modification shall not be granted EEC type-approval.

#### *Article 5*

Amendments which are necessary to adapt the requirements of Annexes I, II, III and IV to 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 6*

1. Member States shall put into force the provisions necessary to comply with this Directive within 18 months of its notification and shall immediately inform the Commission thereof.

2. Member States shall ensure that the texts of legislative provisions which they adopt in the area governed by this Directive are communicated to the Commission.

#### *Article 7*

This Directive is addressed to the Member States.

Done at Luxembourg, 4 June 1974.

*For the Council*

*The President*

H. D. GENSCHER

## ANNEX I (\*)

DEFINITIONS, APPLICATION FOR EEC TYPE-APPROVAL, EEC TYPE-APPROVAL,  
SPECIFICATIONS, TESTS, CONFORMITY OF PRODUCTION

(1.)

## 2. DEFINITIONS

For the purposes of this Directive,

- 2.1. 'Behaviour of the steering mechanism in the event of an impact' shall mean the behaviour of this mechanism under the effect of two types of force, i.e.:
  - 2.1.1. those resulting from a frontal collision which may produce displacement towards the rear of the steering column,
  - 2.1.2. those due to the inertia of the mass of the driver in the event of an impact against the steering column in a frontal collision.
- 2.2. 'Vehicle type' means a category of motor vehicles which do not differ in such essential respects as:
  - 2.2.1. the structure, dimensions, lines and constituent materials of that part of the vehicle forward of the steering control;
  - 2.2.2. the maximum permissible weight of the vehicle.
- 2.3. 'Steering control' means the steering device, usually the steering wheel, which is actuated by the driver.
- 2.4. 'Steering column' means the housing enclosing the steering shaft.
- 2.5. 'Steering shaft' means the component which transmits to the steering gear housing the torque applied to the steering control.
- 2.6. 'Steering mechanism' means the aggregate comprising the steering control, the steering column, the assembly accessories, the steering shaft, the steering gear housing, and all other components such as those designed to contribute to the absorption of energy in the event of impact against the steering wheel.
- 2.7. 'Forward control' means a configuration in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length.

## 3. APPLICATION FOR EEC TYPE-APPROVAL

- 3.1. The application for EEC approval of a vehicle type shall be submitted by the manufacturer or by his representative.
- 3.2. It shall be accompanied by the undermentioned documents in triplicate and the following particulars:
  - 3.2.1. a detailed description of the vehicle type with respect to the structure, the dimensions, the lines and the constituent materials of that part of the vehicle forward of the steering control;
  - 3.2.2. drawings, on an appropriate scale and in sufficient detail, of the steering mechanism and of its attachment to the vehicle chassis and body; and

(\*) The text of the Annexes is essentially the same, with the exception of item 2.1, as that of Regulation No 12 of the United Nations Economic Commission for Europe; in particular the subdivision of the sections is the same; where an item of Regulation No 12 has no corresponding item in these Annexes its number is shown for the record in brackets.

- 3.2.3. a technical description of the mechanism.
- 3.3. The following must be submitted to the technical service responsible for conducting the approval tests:
  - 3.3.1. a vehicle which is representative of the vehicle type to be approved, for the test referred to in item 5.1,
  - 3.3.2. at the manufacturer's discretion, either a second vehicle, or those parts of the vehicle regarded as essential for the test referred to in item 5.2.

#### 4. EEC TYPE-APPROVAL

(4.1.)

(4.2.)

- 4.3. A form conforming to the model set out in Annex IV shall be attached to the EEC type-approval certificate.

(4.4.)

(4.5.)

(4.6.)

#### 5. SPECIFICATIONS

- 5.1. When the unladen car without a dummy is collision-tested against a barrier at a speed of 48.3 km/h, the top of the steering column and its shaft shall not move backwards, horizontally and parallel to the longitudinal axis of the vehicle, by more than 12.7 cm in relation to a point of the vehicle not affected by the impact, the distance being determined by dynamic measurement.
- 5.2. When the steering control is struck by a body block released against this control at a relative speed of at least 24.1 km/h; the force exerted on the 'chest' of the body block by the steering control shall not exceed 1 111 daN.
  - 5.2.1. The steering control shall be so designed, constructed and fitted as not to comprise either any dangerous roughness or sharp edges likely to increase the danger or severity of injuries to the driver in the event of impact.
  - 5.2.2. The steering control shall be so designed, constructed and fitted as not to embody components or accessories, including the horn control and assembly accessories, capable of catching in the driver's clothing or jewellery in normal driving movements.

#### 6. TESTS

Compliance with the requirements of item 5 shall be checked in accordance with the methods set out in Annexes II and III.

#### 7. CONFORMITY OF PRODUCTION

(7.1.)

- 7.2. In order to verify conformity, a sufficient number of production vehicles shall be subjected to random checks.
- 7.3. As a general rule the checks as aforesaid shall be confined to the taking of measurements. However, if necessary, the vehicles shall be subjected to the test prescribed in item 5.

(8.)

(9.)

## ANNEX II

## FRONTAL IMPACT TEST AGAINST A BARRIER

## 1. PURPOSE

The purpose of this test is to verify whether the vehicle satisfies the requirements set forth in item 5.1 of Annex I.

## 2. INSTALLATIONS, PROCEDURES AND MEASURING INSTRUMENTS

## 2.1. Testing site

The test area must be large enough to accommodate the run-up track, barrier and technical installations necessary for the test. The last part of the track, for at least 5 m before the barrier must be horizontal, flat and stabilized.

## 2.2. Barrier

The barrier shall consist of a block of reinforced concrete at least 3 m wide, at least 1.5 m high and at least 0.6 m thick. The collision wall must be perpendicular to the last part of the run-up track and be covered with plywood 2 cm thick. At least 90 metric tons of earth must be banked up behind the concrete block. The concrete and earth barrier may be replaced by obstacles, having the same frontal area and producing equivalent results.

## 2.3. Propulsion of vehicle

At the moment of impact the vehicle must be moving freely as a result of its propulsion. It must reach the obstacle on a course perpendicular to the collision wall; the maximum lateral disalignment tolerated between the vertical median line of the front of the vehicle and the vertical median line of the collision wall is  $\pm 30$  cm.

## 2.4. State of vehicle

During the test, the vehicle must be fitted with all its normal parts and equipment. In addition, objects in the passenger compartment must not accidentally strike the steering wheel (tip-up driver's seat, rear seat cushion, etc.).

## 2.5. Speed

The speed at the time of impact must be between 48.3 km/h and 53.1 km/h.

## 2.6. Measuring instruments

2.6.1. The instrument used to record the measurements referred to in item 3.1 must have the following degrees of accuracy:

2.6.1.1. speed of vehicle: within 1/100,

2.6.1.2. time recording: within 1/1 000 second,

2.6.1.3. the beginning of the impact (zero point) at the moment of first contact of the vehicle with the obstacle, shall be reproduced on the recordings and films used for evaluating the test.

2.6.2. The distance referred to in item 3.1 must be measured to within  $\pm 5$  mm.

### 3. RESULTS

- 3.1. To determine the rearward movement of the steering control, a recording shall be made <sup>(1)</sup>, during the collision, of the variation in the distance — measured horizontally and parallel to the longitudinal axis of the vehicle — between the top of the steering column (and shaft) and a point on the vehicle which is not affected by the impact. If the speed measured is higher than the nominal speed of 48.3 km/h, this displacement shall be reduced to the corrected value appropriate to the nominal speed by multiplying it by the square of the ratio between this nominal speed and the speed measured.
- 3.2. After the test, the damage sustained by the vehicle shall be described in a written report; at least one photograph must be taken of each of the following views of the vehicle:
- 3.2.1. sides (right and left),
- 3.2.2. front,
- 3.2.3. bottom,
- 3.2.4. affected area inside the passenger compartment.

### 4. EQUIVALENT TEST METHODS

Equivalent non-destructive test methods are permitted, provided that the results referred to in item 3 can be obtained either entirely by means of the substitute test, or by calculation from the results of the substitute test. If a method other than that described in items 2 and 3 is used, its equivalence must be demonstrated.

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<sup>(1)</sup> This recording may be replaced by maximum and minimum measurements.

## ANNEX III

## TEST FOR ENERGY ABSORPTION CAPACITY IN THE EVENT OF IMPACT AGAINST THE STEERING CONTROL

## 1. PURPOSE

The purpose of the test is to verify whether the vehicle meets the requirements set forth in item 5.2 of Annex I.

## 2. INSTALLATIONS, PROCEDURES AND MEASURING INSTRUMENTS

## 2.1. Mounting of the steering control

2.1.1. The control shall be mounted on the front section of the vehicle obtained by cutting the body transversely at the level of the front seats, and possibly eliminating the roof, wind-screen and doors. This section shall be fixed rigidly to the test bench, so that it does not move under the impact of the body block.

2.1.2. However, at the request of the manufacturer, the steering control may be mounted on a framework simulating the mounting of the steering mechanism, provided that as compared with the real 'front body section and steering' the 'framework and steering' assembly has:

2.1.2.1. the same geometrical lay-out,

2.1.2.2. a greater rigidity.

2.2. During the first test, the steering control shall be turned so that its most rigid spoke is perpendicular to the point of contact with the body block; if the steering control is a steering wheel, the test shall be repeated with the most flexible part of the steering wheel perpendicular to this point of contact. In the case of an adjustable steering control, both tests shall be made with the wheel adjusted to the middle position.

## 2.3. Body block

The body block shall have the shape, dimensions, weight and characteristics shown in the Appendix to this Annex.

## 2.4. Measurement of forces

2.4.1. Measurements shall be made of the maximum force, acting horizontally and parallel to the longitudinal axis of the vehicle, applied to the body block as a result of impact against the steering control.

2.4.2. This force may be measured directly or indirectly, or may be calculated from values measured during the test.

## 2.5. Propulsion of the body block

Any method of propulsion may be used, provided that when the body block strikes the steering control it is free from all connection with the propelling device. The body block must strike this control after an approximately straight trajectory, parallel to the longitudinal axis of the front section of the car. The initial contact of the body block with the steering control must take place at the point where contact will normally occur when a man weighing 75.3 kg and having a height of 1.73 m <sup>(1)</sup>, occupying the driver's seat of the vehicle (set at the most forward position), is thrown forward, parallel to the longitudinal axis of the vehicle until he touches the steering wheel.

## 2.6. Speed

The body block must strike the steering control at a speed of at least 24.1 km/h and as near to this speed as possible.

<sup>(1)</sup> These dimensions correspond to the 50th percentile body block with the specifications of the National Centre for Health Statistics, series 11, No 8, United States of America Centre for Health, Education and Welfare, 12 May 1967.

### 2.7. Measuring instruments

- 2.7.1. The instrument used to record the measurements referred to in item 3.2 below must have the following degrees of accuracy:
- 2.7.1.1. speed of body block: within 2/100,
  - 2.7.1.2. time recording: within 1/1 000 second,
  - 2.7.1.3. the beginning of the impact (zero point) at the moment of first contact of the body block with the steering control shall be reproduced on the recordings and films used for evaluating the test,
  - 2.7.1.4. measurement of force: the measuring range shall be 3 920 daN. The force must be recorded without distortion for phenomena having frequencies up to 1 000 cycles, with an accuracy of 2.5 % of the maximum measuring range or  $\pm 5$  % of the real value,
  - 2.7.1.5. transverse sensitivity: below 5 % of the measuring range.

### 3. RESULTS

- 3.1. After the test, the damage sustained by the steering mechanism shall be ascertained and described in a written report; at least one side view and one front view of the 'steering control/steering column/instrument panel' area shall be photographed.
- 3.2. A recording shall be made, during the collision, of the total forces applied to the chest of the body block by the steering control, measured as described in item 2.7.

### 4. EQUIVALENT TEST METHODS

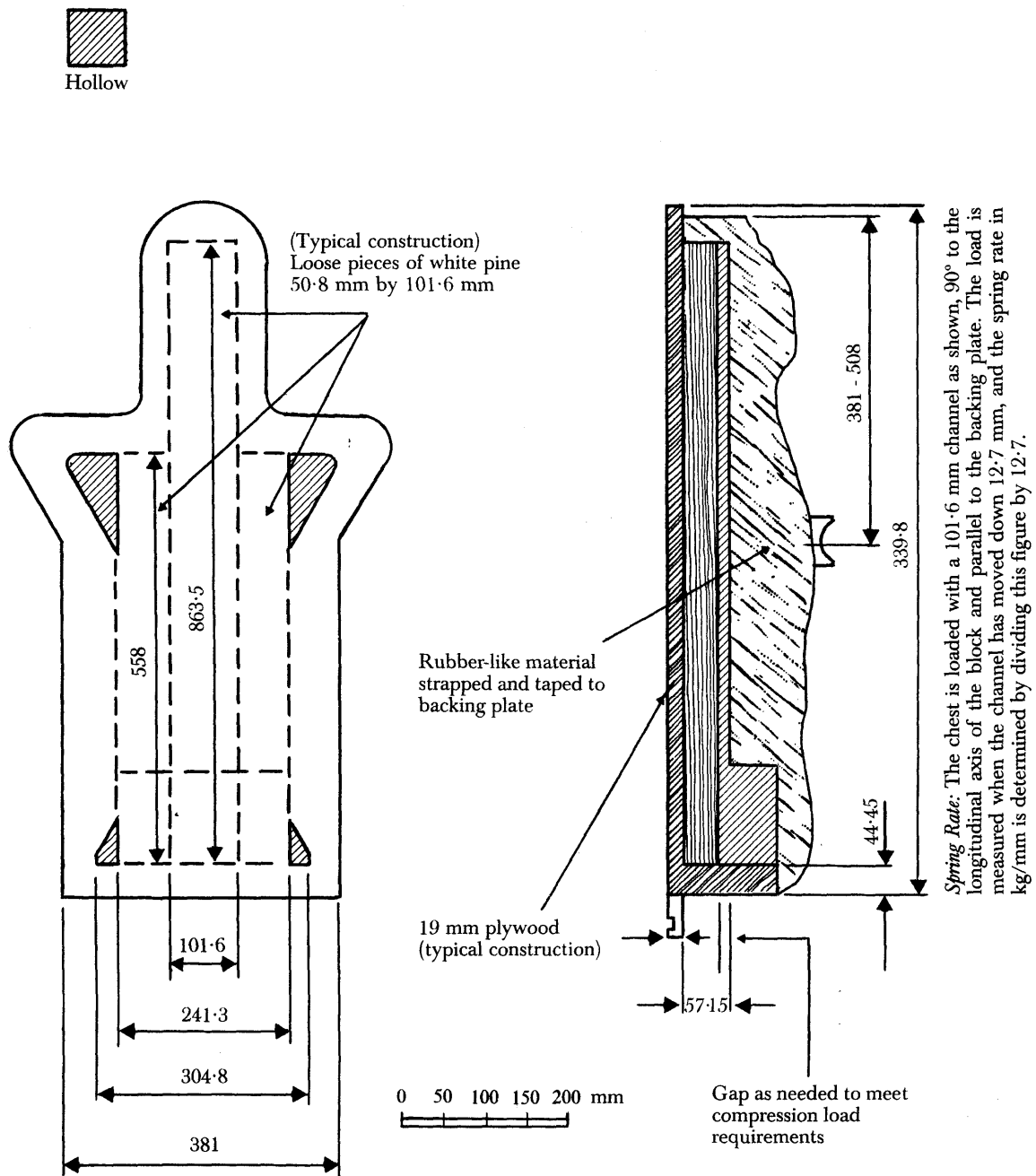
Equivalent non-destructive test methods are permitted, provided that the results referred to in item 3 can be obtained either entirely by means of the substitute test, or by calculation from the results of the substitute test. If a method other than that described in items 2 and 3 is used, its equivalence must be demonstrated.

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Appendix to Annex III

BODY BLOCK



Body block, 34 to 36.3 kg. 50th percentile torso shape block, spring rate: 107 to 142 kg/cm.

ANNEX IV

Name of administration

Communication concerning the approval (or refusal or withdrawal of approval) of a vehicle type with regard to the behaviour of the steering mechanism in the event of an impact

Approval No: .....

- 1. Trade name or mark of the motor vehicle: .....
- 2. Vehicle type: .....
- 3. Manufacturer's name and address: .....
- 4. Where applicable, name and address of the manufacturer's representative: .....
- 5. Brief description of the steering mechanism and the components of the vehicle affecting the behaviour of the steering mechanism in the event of an impact: .....
- 6. Vehicle presented for approval on: .....
- 7. Technical service conducting approval tests: .....
- 8. Date of report issued by that service: .....
- 9. Number of report issued by that service: .....
- 10. Approval concerning the behaviour of the steering mechanism in the event of an impact shall be granted/refused/withdrawn <sup>(1)</sup>
- 11. Place: .....
- 12. Date: .....
- 13. Signature: .....
- 14. The following documents, bearing the approval number shown above, are annexed to this communication:

- ..... drawings, diagrams and plans of the steering mechanism;
- ..... photographs of the steering mechanism and other components affecting the behaviour of the steering mechanism in the event of an impact.

<sup>(1)</sup> Delete where inapplicable.