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## Legislation

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## II

*(Acts whose publication is not obligatory)*

## COUNCIL

## COUNCIL DIRECTIVE

of 21 December 1977

amending Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers

(78/315/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 certain systems or parts of vehicles which form a separate technical unit are already marketed both separately and after being fitted to a vehicle; whereas, if it is possible to check such systems or parts before they are fitted to a vehicle, their free movement may be facilitated by the introduction of EEC type-approval also for these separate technical units;

Whereas it is therefore desirable that Council Directive 70/156/EEC 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 <sup>(3)</sup> should

be supplemented without delay by provisions introducing such type-approval, without prejudice to other amendments to that Directive, in particular those contained in the Commission's proposal of 5 January 1977;

Whereas the EEC type-approval of separate technical units to be fitted to vehicles simplifies the motor vehicle type-approval procedure by avoiding the repetition of certain checks during type-approval; whereas it must be possible, when granting EEC type-approval for separate technical units, to lay down restrictions for their use and/or conditions for their fitting;

Whereas it must always remain possible to adapt the separate Directives to technical progress in the production of separate technical units; whereas the procedure laid down in Article 13 of Directive 70/156/EEC is appropriate for this purpose,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

The following Article 9a shall be added after Article 9:

*'Article 9a*

1. Where the separate Directives make express provision for so doing, EEC type-approval may also

<sup>(1)</sup> OJ No C 118, 16. 5. 1977, p. 29.

<sup>(2)</sup> OJ No C 114, 11. 5. 1977, p. 1.

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

be granted to types of systems or parts of vehicles which form a separate technical unit.

2. Where the separate technical unit to be approved fulfils its function or offers a specific feature only in conjunction with other components of the vehicle and for this reason compliance with one or more requirements can be verified only when the separate technical unit to be approved operates in conjunction with other vehicle components, whether real or simulated, the scope of the EEC type-approval of the separate technical unit must be restricted accordingly. The EEC type-approval certificate for a separate technical unit shall then include any restrictions on its use and shall indicate any conditions for fitting it. Observance of these restrictions and conditions shall be verified at the time of EEC type-approval of the vehicle.

3. Articles 3 to 9 and 14 shall apply by analogy.

However, the holder of EEC type-approval for a separate technical unit granted in accordance with this Article shall be obliged not only to complete the certificate provided for in Article 5 (2), but also to affix to each unit manufactured in conformity with the approved type the trade name or mark, the type and, if the separate Directive so provides, the type-approval number.'

#### *Article 2*

The following paragraph shall be added to Article 11:

'This procedure shall also apply for the purpose of introducing provisions relating to EEC type-approval for separate technical units into the separate Directives.'

#### *Article 3*

1. Member States shall bring into force the provisions necessary in order to comply with this Directive within 18 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 covered by this Directive are communicated to the Commission.

#### *Article 4*

This Directive is addressed to the Member States.

Done at Brussels, 21 December 1977.

*For the Council*

*The President*

J. CHABERT

## COUNCIL DIRECTIVE

of 21 December 1977

on the approximation of the laws of the Member States relating to the interior fittings of motor vehicles (identification of controls, tell-tales and indicators)

(78/316/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

HAS ADOPTED THIS DIRECTIVE:

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 identification of controls, tell-tales and indicators;

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 rules in order, in particular, to allow the EEC type-approval procedure, which was the subject of Council Directive 70/156/EEC 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 <sup>(3)</sup>, as amended by Directive 78/315/EEC <sup>(4)</sup>;

Whereas it is advisable to draft the technical requirements so that they have the same aim as the work being carried out on the subject in the UN Economic Commission for Europe and as certain technical requirements adopted by the International Organization for Standardization (ISO);

Whereas the approximation of national laws relating to motor vehicles entails reciprocal recognition by Member States of the checks carried out by each of them on the basis of the common requirements,

*Article 1*

For the purposes of this Directive, 'vehicle' means any motor vehicle intended for use on the road, 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 2*

No Member State may refuse to grant EEC type-approval or national type-approval of a vehicle on grounds relating to the identification of controls, tell-tales and indicators, if these satisfy the requirements laid down in Annexes I to IV.

*Article 3*

No Member State may refuse or prohibit the sale, registration, entry into service or use of any vehicle on grounds relating to the identification of controls, tell-tales and indicators if these satisfy the requirements laid down in Annexes I to IV.

*Article 4*

Any amendments necessary to adapt the requirements of Annexes I to V to technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 70/156/EEC.

*Article 5*

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

<sup>(1)</sup> OJ No C 118, 16. 5. 1977, p. 33.

<sup>(2)</sup> OJ No C 114, 11. 5. 1977, p. 10.

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

<sup>(4)</sup> See page 1 of this Official Journal.

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

Done at Brussels, 21 December 1977.

*Article 6*

This Directive is addressed to the Member States.

*For the Council*

*The President*

J. CHABERT

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LIST OF ANNEXES

- Annex I: Scope, definitions, application for EEC type-approval, EEC type-approval, specifications (\*)
- Annex II: Controls, tell-tales and indicators for which, when fitted, identification is mandatory, and symbols to be used for that purpose (\*)
- Annex III: Controls, tell-tales and indicators for which, when fitted, identification is optional, and symbols which must be used if they are to be identified (\*)
- Annex IV: Construction of the basic pattern for the symbols shown in Annexes II and III (\*)
- Annex V: Annex to the EEC vehicle type-approval certificate with regard to the identification of controls, tell-tales and indicators.

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(\*) The technical requirements of this Annex are similar to those of the relevant UN Economic Commission for Europe draft regulation; the subdivisions have thus been observed. Where a section of the draft regulation has no counterpart in the Annexes to this Directive, the number is given in brackets for the record.

## ANNEX I

## SCOPE, DEFINITIONS, APPLICATION FOR EEC TYPE-APPROVAL, EEC TYPE-APPROVAL, SPECIFICATIONS

## 1. SCOPE

This Directive applies to motor vehicles with regard to the identification of manual controls, tell-tales and indicators.

## 2. DEFINITIONS

(2.1.)

## 2.2. Vehicle type

'Vehicle type' means motor vehicles which do not differ in respect of the internal arrangements which may affect the identification of symbols for controls, tell-tales and indicators.

## 2.3. Control

'Control' means that part of a device which enables the driver to bring about a change in the state or functioning of a vehicle.

## 2.4. On/off switch

'On/off switch' means a device by which the supply to an electrical circuit can be connected or cut off.

## 2.5. Selector switch

'Selector switch' means a device by which the supply of electric current can be transferred from one of two circuits to the other without any possibility of disconnection between the two positions.

## 2.6. Combined on/off-selector switch

'Combined on/off-selector switch' means a multi-function device which on first being actuated or put into position operates as an on/off switch and on each of the subsequent occasions when it is actuated or put into position operates as a selector switch.

## 2.7. Indicator

'Indicator' means a device which presents information on the functioning or situation of a system or part of a system, for example a fluid level.

## 2.8. Tell-tale

'Tell-tale' means an optical signal which indicates the actuation of a device, correct or defective functioning or condition, or failure to function.

## 2.9. Symbol

'Symbol' means a diagram identifying a control, a tell-tale or an indicator.

## 2.10. Master lighting switch

'Master lighting switch' means a switch connecting or cutting off the supply of current to the electrical circuits of the main/dipped-beam headlamps and lamp of the devices referred to in 3.11 of Annex I to Council Directive 76/756/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to the installation of lighting and light-signalling devices on motor vehicles and their trailers <sup>(1)</sup>.

<sup>(1)</sup> OJ No L 262, 27. 9. 1976, p. 1.

- 2.11. **Battery-charging indicator**  
'Battery-charging indicator' means a device showing whether the battery is being charged or not.
- 2.12. **Battery charging tell-tale**  
'Battery charging tell-tale' means a signal which when alight indicates that the battery is not being charged.
- 2.13. **Fuel-level indicator**  
'Fuel-level indicator' means a device which gives information on the amount of fuel in the tank.
- 2.14. **Fuel level tell-tale**  
'Fuel level tell-tale' means a signal which when alight indicates that the fuel level is close to zero or that the vehicle is running on its fuel reserve.
- 2.15. **Engine coolant temperature indicator**  
'Engine coolant temperature indicator' means a device which gives information on the temperature of the coolant.
- 2.16. **Engine coolant temperature tell-tale**  
'Engine coolant temperature tell-tale' means a signal which when alight indicates that the temperature of the engine coolant is above the normal running temperature prescribed by the manufacturer.
- 2.17. **Oil pressure indicator**  
'Oil pressure indicator' means a device which gives information on the pressure of the oil in the engine lubrication circuit.
- 2.18. **Oil pressure tell-tale**  
'Oil pressure tell-tale' means a signal which when alight indicates that the oil pressure in the engine lubrication circuit is below the normal operating limit prescribed by the manufacturer.
- 2.19. **Safety belt tell-tale**  
'Safety belt tell-tale' means a signal which when alight indicates that the buckle of the belt of at least one of the occupied seats is not locked.
- 2.20. **Parking brake circuit-closed tell-tale**  
'Parking brake circuit-closed tell-tale' means a signal which when alight indicates that the parking brake control has not been released.

### 3. APPLICATION FOR EEC TYPE-APPROVAL

- 3.1. The application for type-approval of a vehicle type with regard to the identification of controls, tell-tales and indicators shall be submitted by the vehicle manufacturer or by his authorized representative.
- 3.2. It must be accompanied by the following:
- 3.2.1. drawings (three copies), on an appropriate scale and in sufficient detail, of the parts of the vehicle to which the requirements of this Directive apply and of the symbols referred to in section 5.
- 3.3. A vehicle representative of the type to be approved or such part or parts of the vehicle as are considered to be necessary for carrying out the checks and tests prescribed by this Directive must be submitted to the technical service responsible for conducting the type-approval tests.

**4. EEC TYPE-APPROVAL**

(4.1.)

(4.2.)

4.3. A certificate conforming to the model shown in Annex V shall be attached to the EEC type-approval certificate.

(4.4.)

(4.5.)

(4.6.)

(4.7.)

(4.8.)

**5. SPECIFICATIONS****5.1. General specifications**

5.1.1. The controls, tell-tales and indicators listed in Annex II must be identified by symbols. The symbols must be in conformity with those indicated in the said Annex.

5.1.2. If symbols are used for identifying the controls and tell-tales listed in Annex III, such symbols must be in conformity with those indicated in the said Annex.

5.1.3. Symbols other than those shown in Annexes II and III may be used for other purposes, provided that there is no danger of confusion with those shown in the said Annexes.

5.1.4. 'Conformity' means having proportional dimensional characteristics.

**5.2. Characteristics of the symbols**

5.2.1. The symbols prescribed in 5.1.1 shall be identifiable, from his seat, by a driver with normal eyesight.

5.2.2. The symbols prescribed in 5.1.1 and 5.1.2 must be on or close to the controls, tell-tales and indicators.

5.2.3. The symbols must stand out clearly against the background, being either light on a dark background or dark on a light background.

5.2.4. The colours used for tell-tales must be those prescribed in Annex II.

(6.)

(7.)

(8.)

(9.)

## ANNEX II

## CONTROLS, TELL-TALES AND INDICATORS FOR WHICH, WHEN FITTED, IDENTIFICATION IS MANDATORY, AND SYMBOLS TO BE USED FOR THAT PURPOSE

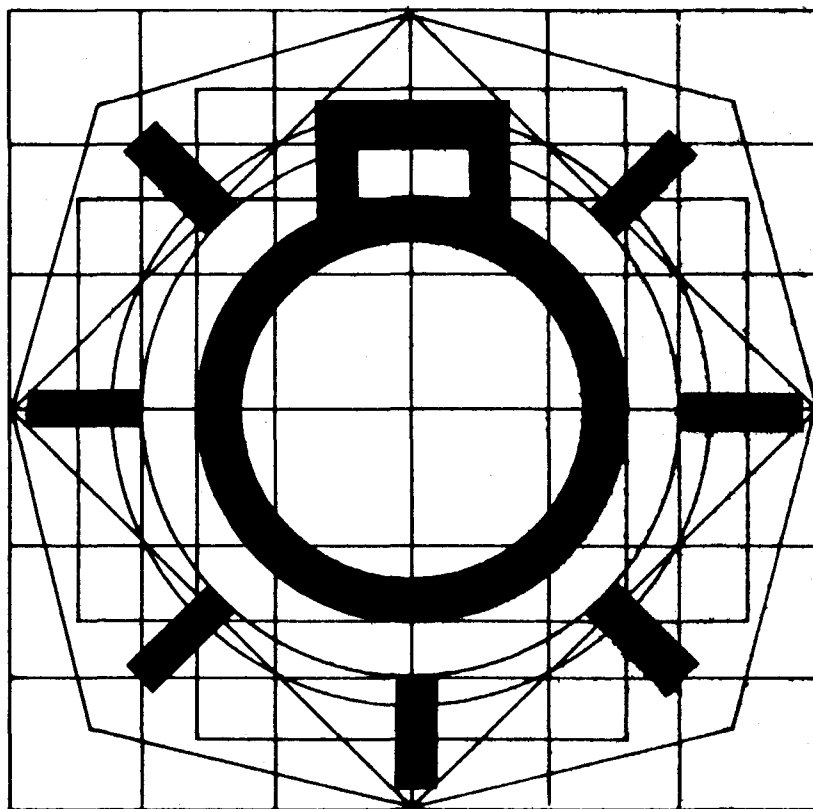
## Notes

- (a) The interior of the symbol may be entirely in a dark colour.
- (b) If the tell-tales for the left and right direction indicators are separate, the two arrows of the symbol may also be used separately.
- (c) The dark part of this symbol may be replaced by its outline, in which case the portion shown here as white must be entirely in a dark colour.
- (d) If the control is not separate, it may be identified by one or more symbols indicating its different functions.
- (e) If the indicator and tell-tale are combined, one symbol may be used for both.

Figure 1

Master lighting switch and circuit-closed tell-tale <sup>(1)</sup> or combined on/off-selector switch for lighting

Standard symbol



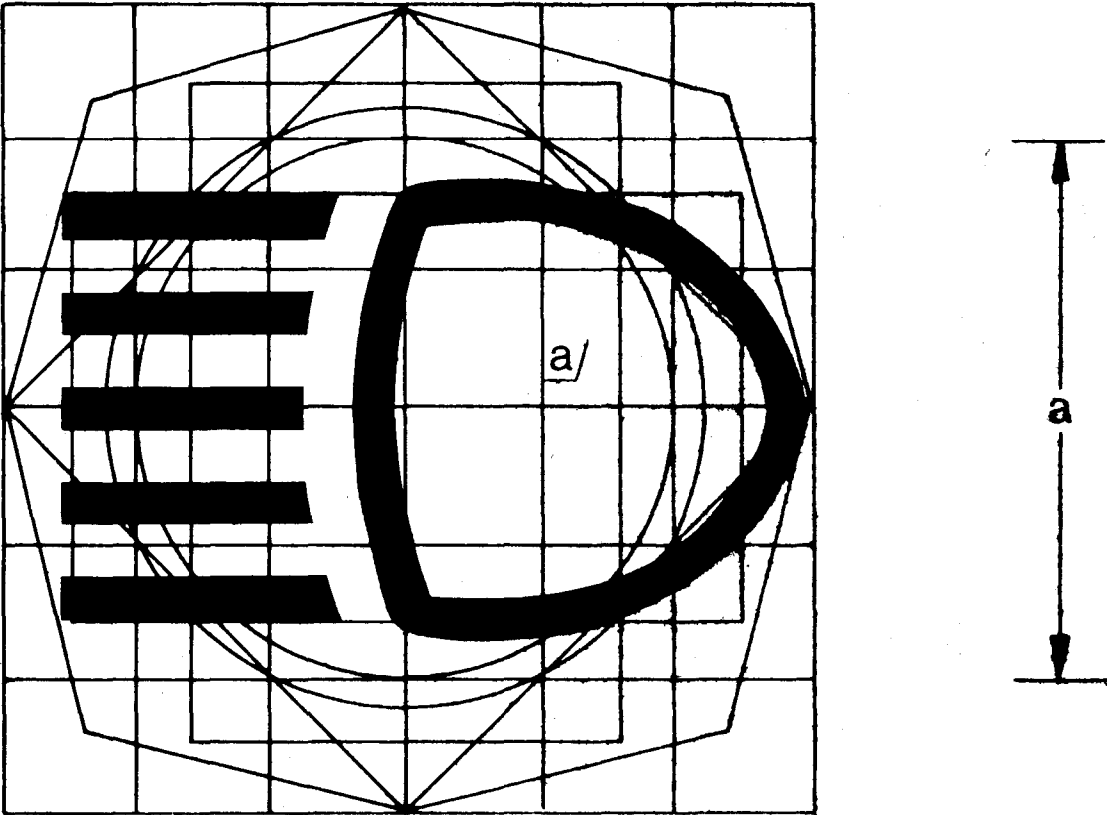
Colour of tell-tale light: green

<sup>(1)</sup> This tell-tale may not act as the tell-tale for the position (side) lamps.

Figure 2

Main-beam headlamp control, if separate (d), and circuit-closed tell-tale

Standard symbol

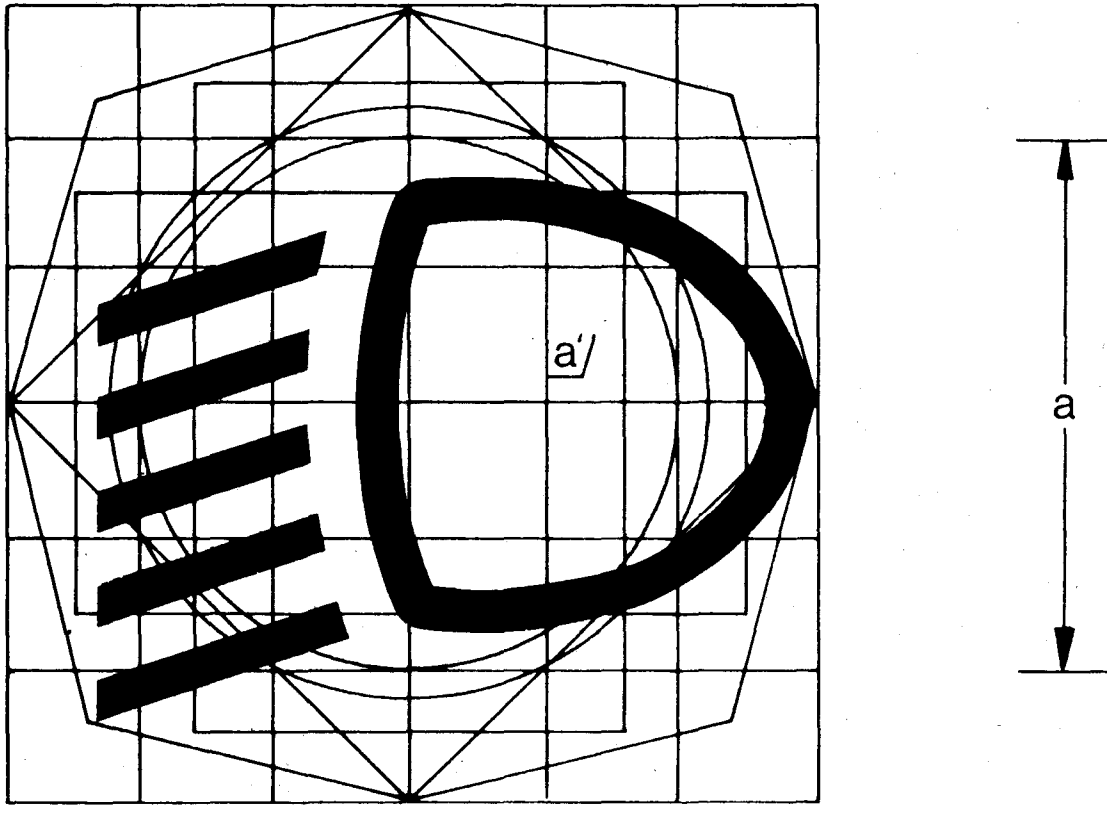


Colour of tell-tale light: blue

Figure 3

Dipped-beam headlamp control, if separate (d), and circuit-closed tell-tale

Standard symbol

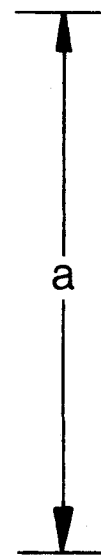
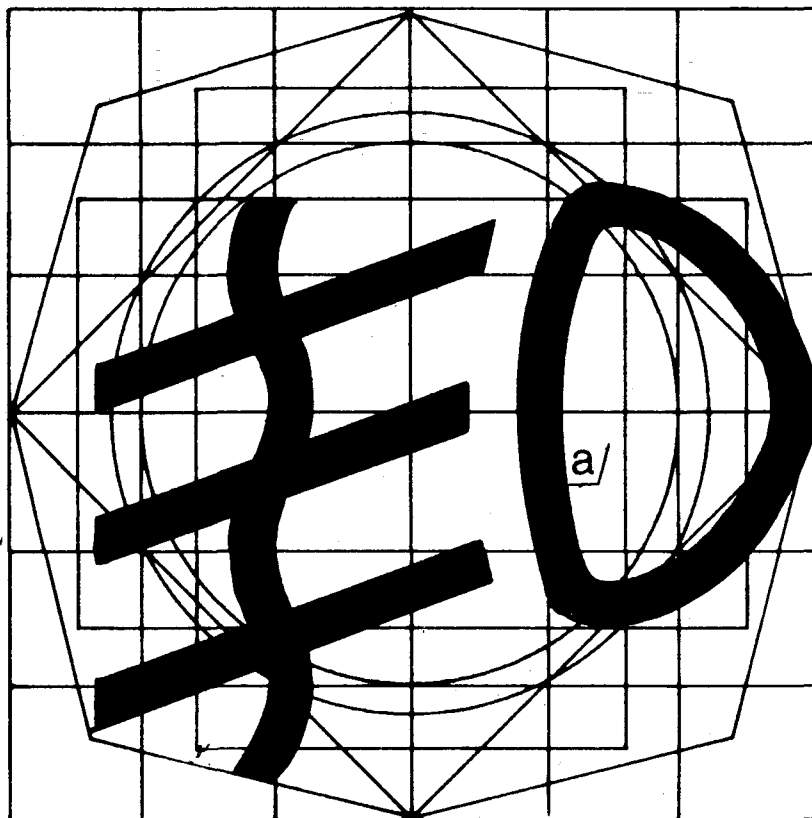


Colour of tell-tale light: green

Figure 4

Front fog-lamp control and circuit-closed tell-tale

Standard symbol

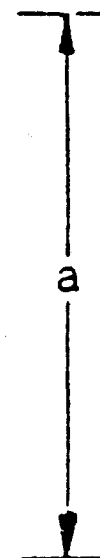
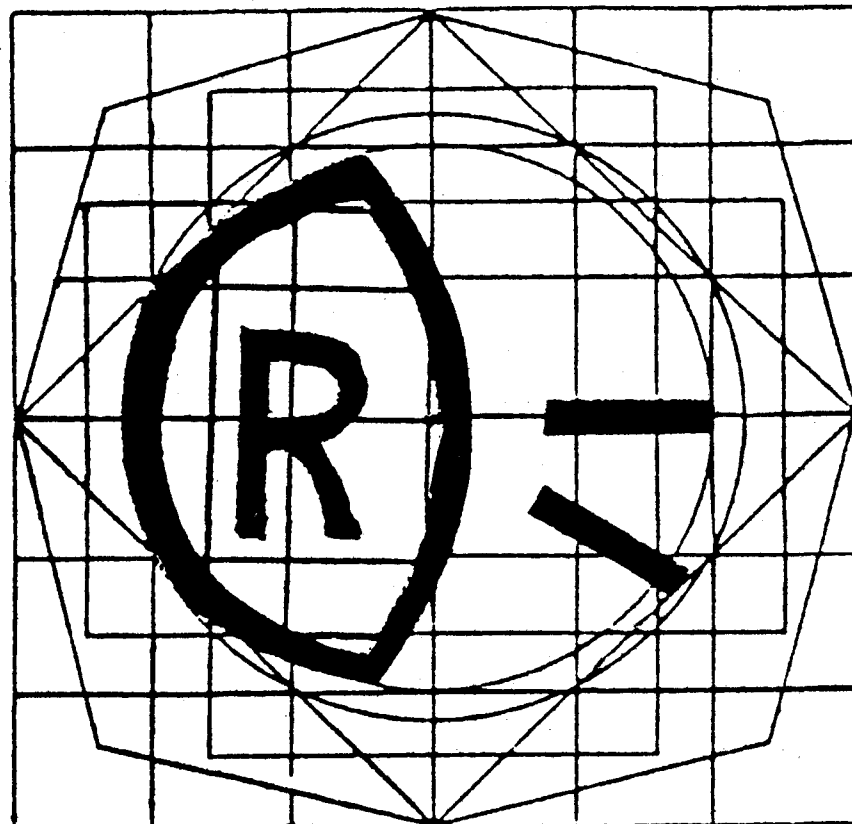


Colour of tell-tale light: green

Figure 5

Separate reversing lamp control (where fitted) and circuit-closed tell-tale

Standard symbol

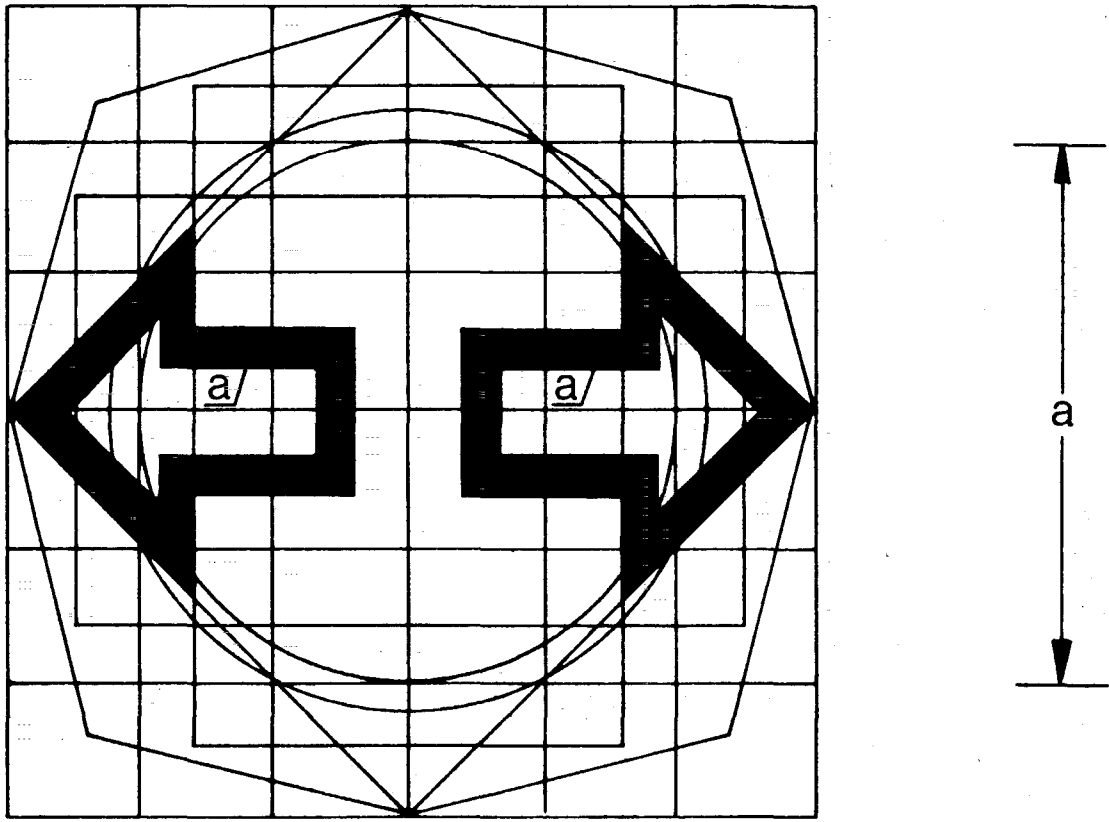


Colour of tell-tale light: green

Figure 6

Direction-indicator lamp control and operational tell-tale (b)

Standard symbol

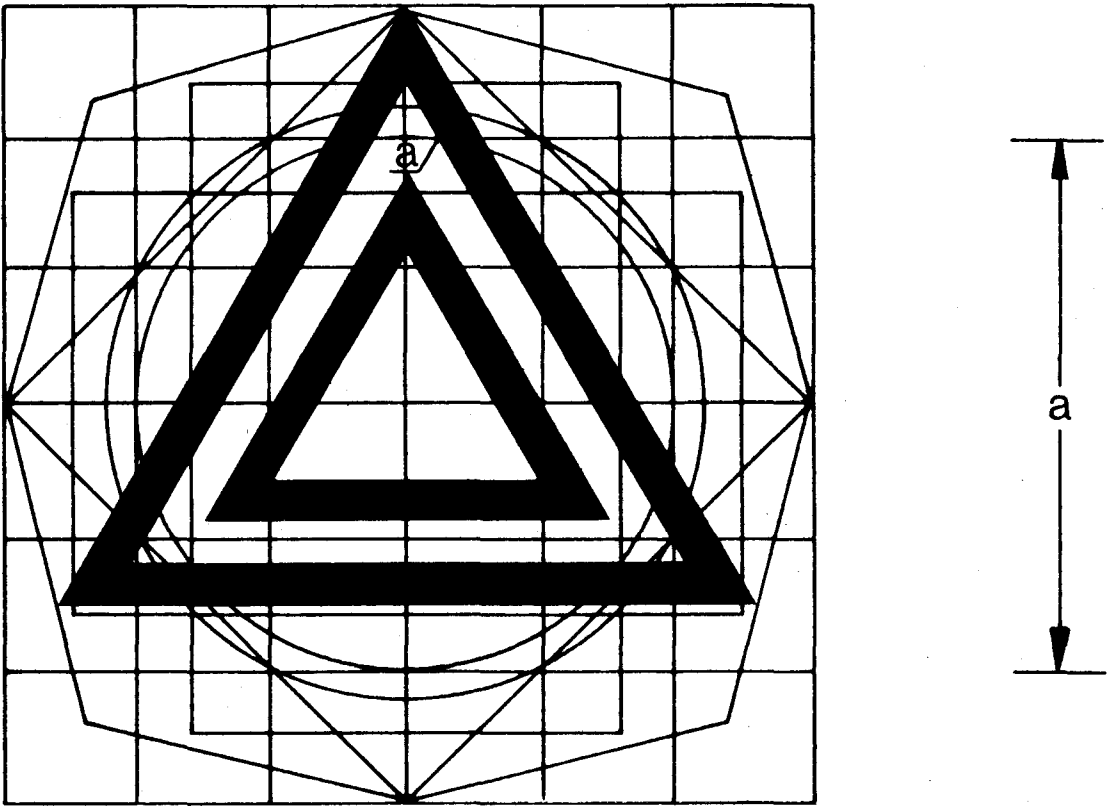


Colour of tell-tale light: green

Figure 7

Hazard-warning control and circuit-closed tell-tale

Standard symbol



Colour of tell-tale light: red

Figure 8

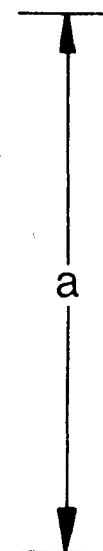
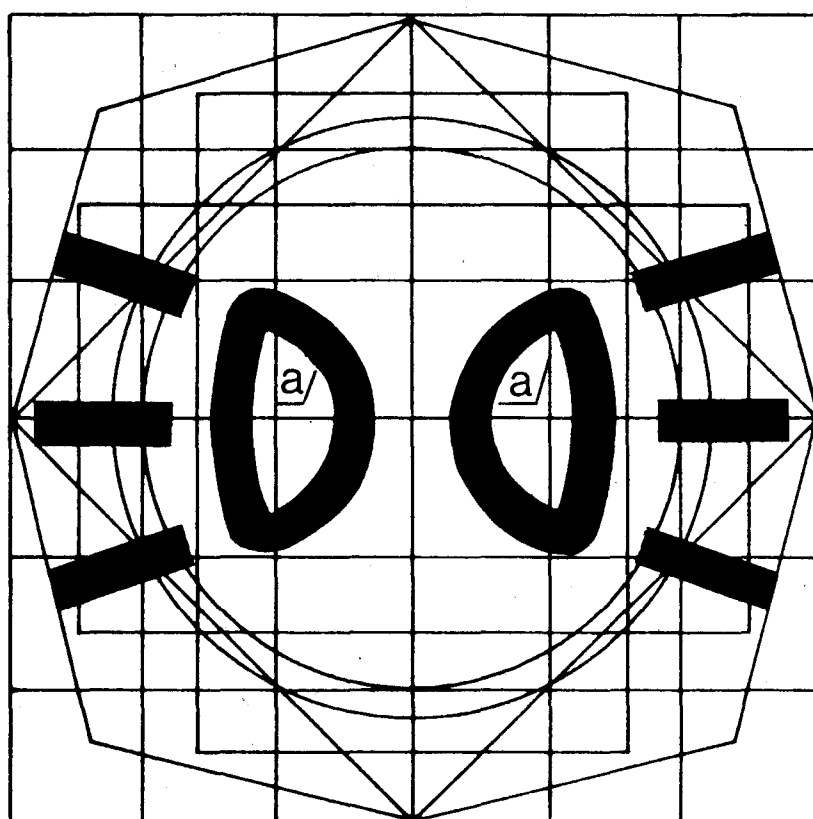
## Stop lamp tell-tale

If fitted, its function must be performed by the braking system defective operation tell-tale, which is shown in figure 28.

Figure 9

Position (side) lamps control, if separate (d), and position (side) lamps circuit-closed tell-tale

Standard symbol

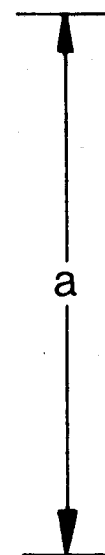
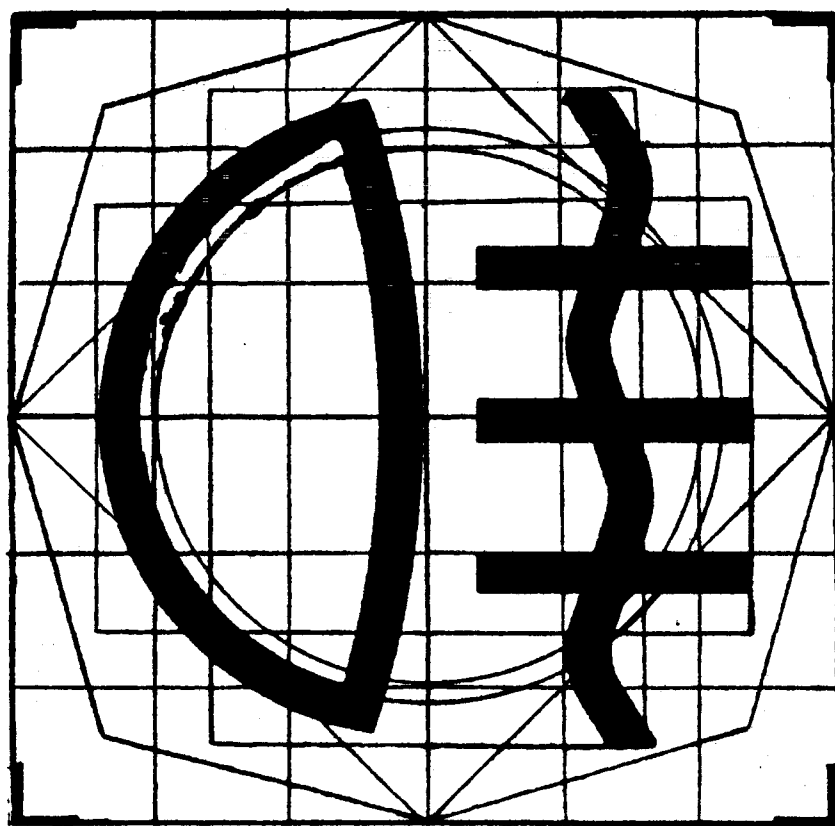


Colour of tell-tale light: green

Figure 10

Rear fog-lamp(s) control and circuit-closed tell-tale

Standard symbol

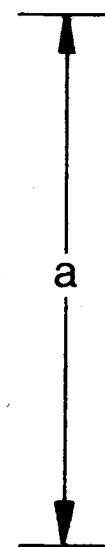
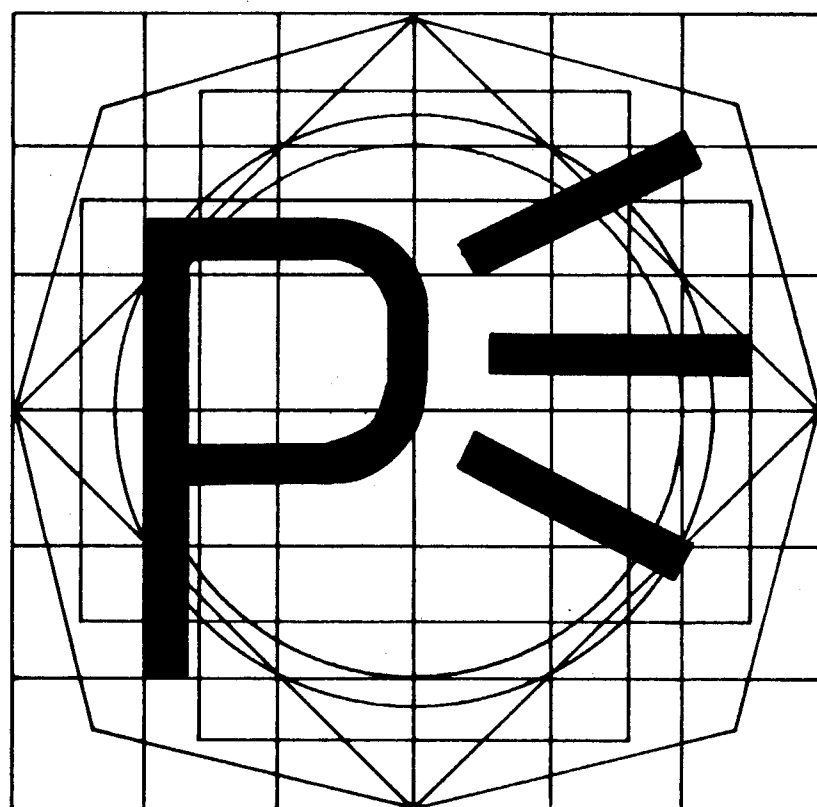


Colour of tell-tale light: amber

Figure 11

Parking lamp(s) control, if separate (d), and circuit-closed tell-tale

Standard symbol



Colour of tell-tale light: green

Figure 12

## Windscreen-wiper control

Standard symbol

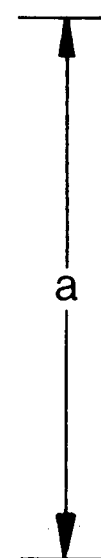
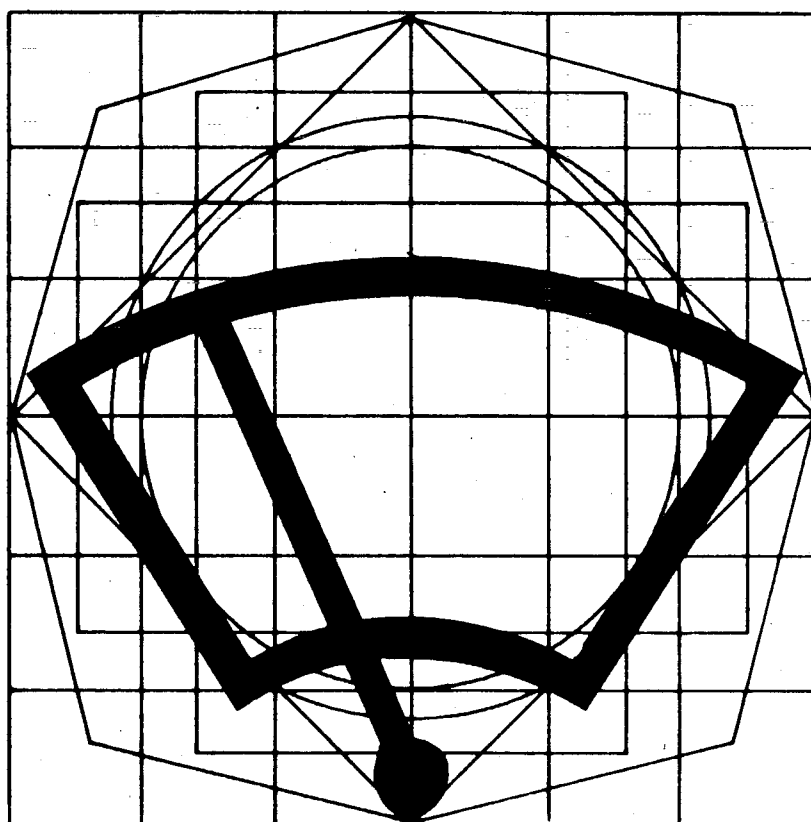


Figure 13

## Windscreen-washer control

Standard symbol

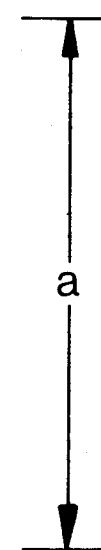
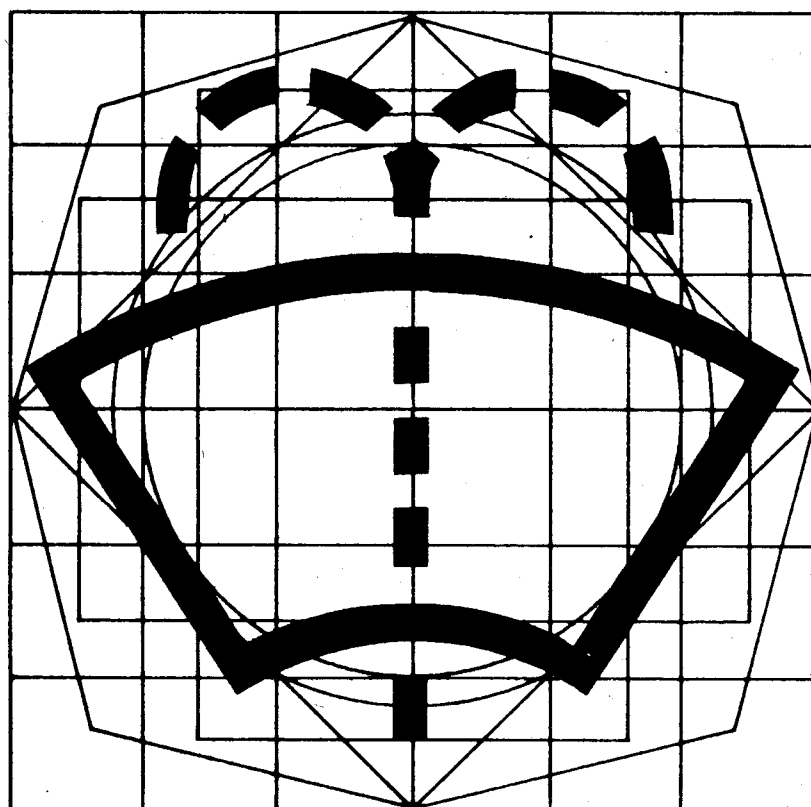


Figure 14

## Combined windscreen-wiper and windscreen-washer control

Standard symbol

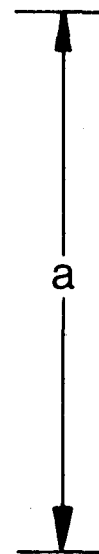
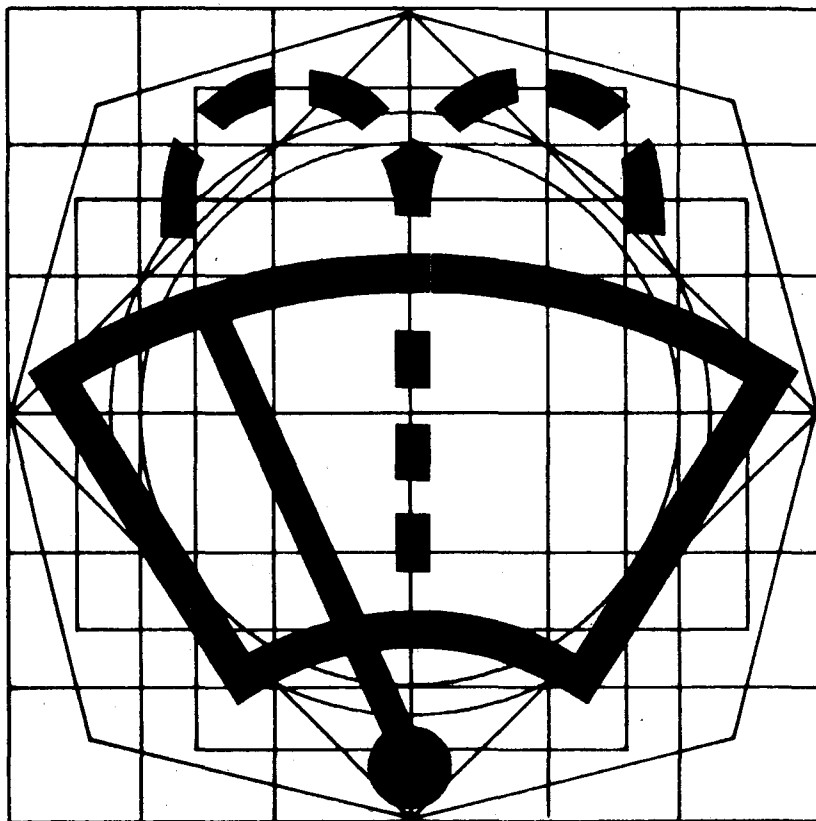
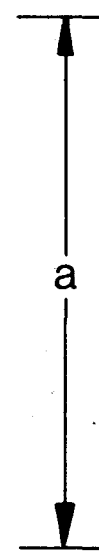
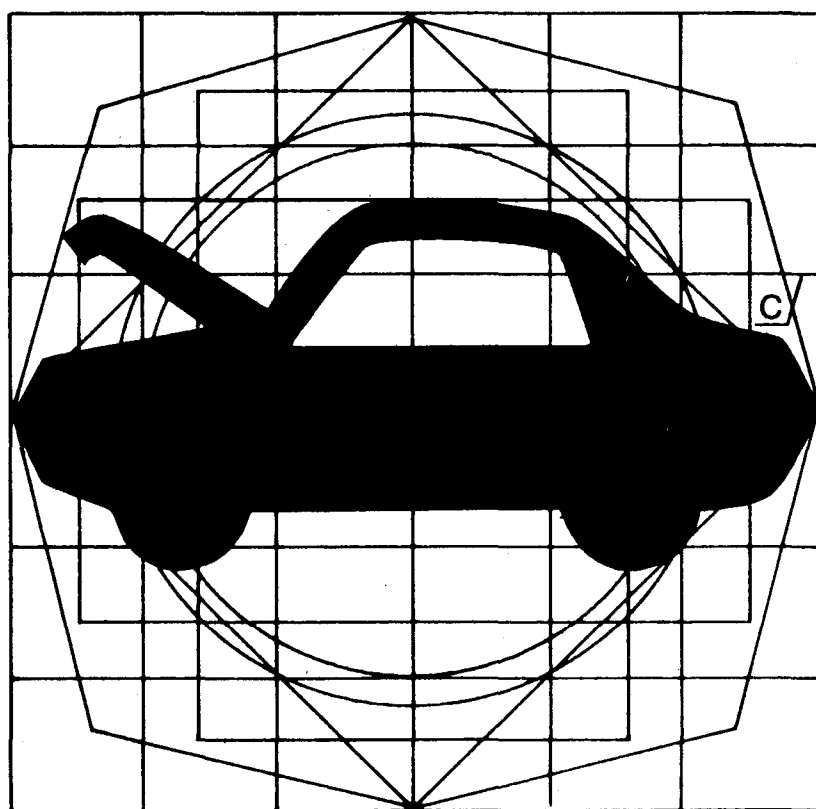


Figure 15

Front bonnet opener control <sup>(1)</sup>

Standard symbol



<sup>(1)</sup> If the vehicle manufacturer so wishes, section 5.1.1 of Annex I shall not apply where this control is not within the driver's field of vision from the normal driving position.

Figure 16

Fan (warm air/cold air) control

Standard symbol

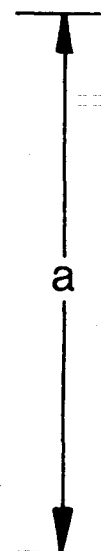
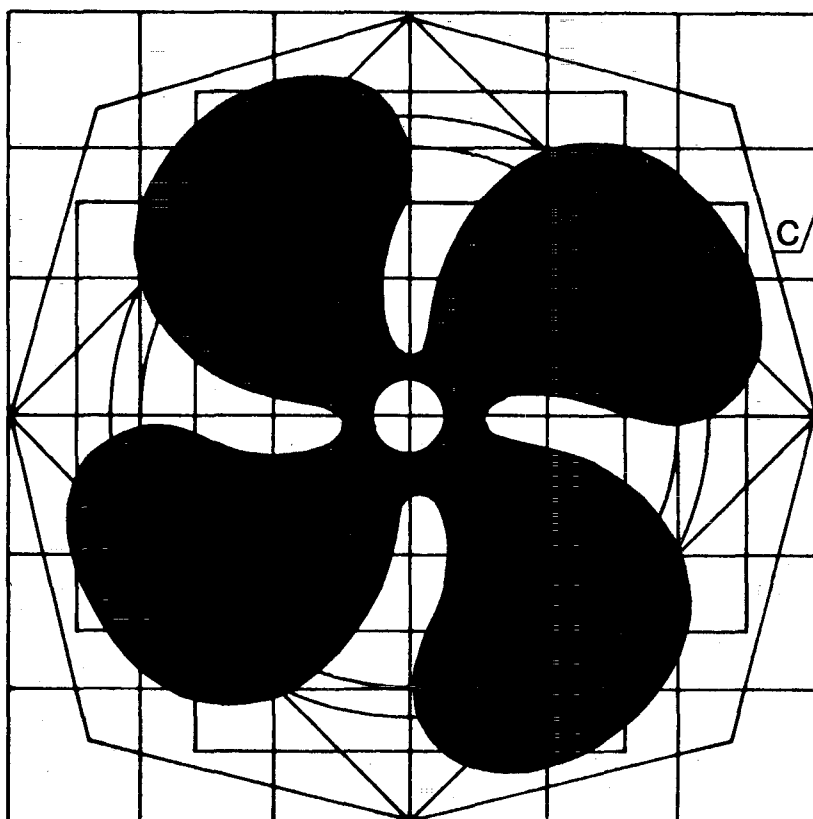
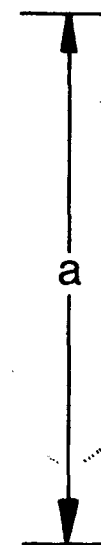
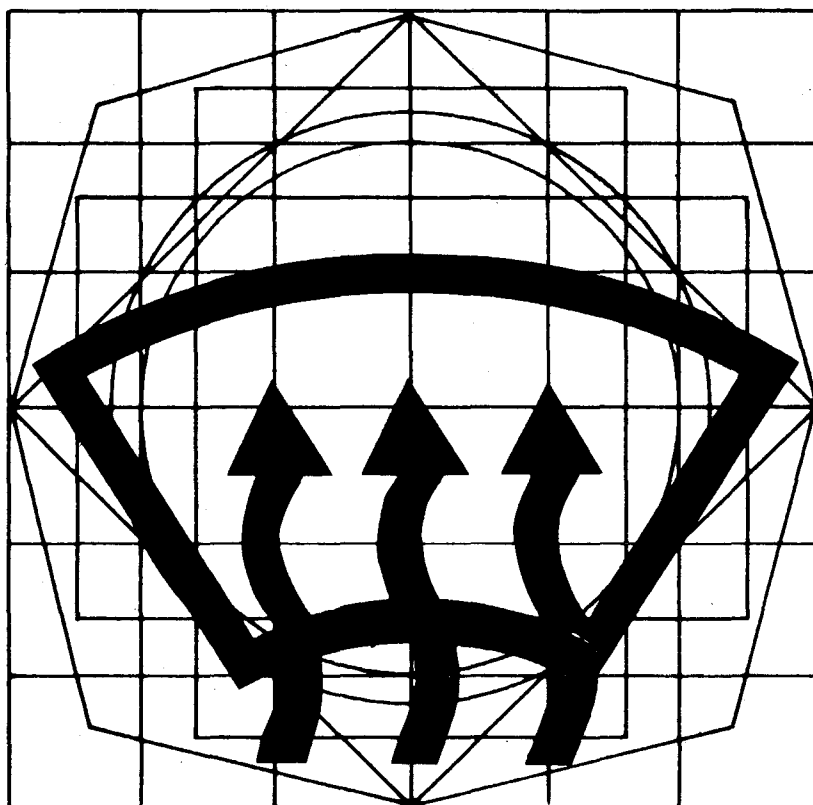


Figure 17

Windscreen defroster and demister control, if separate, and tell-tale

Standard symbol

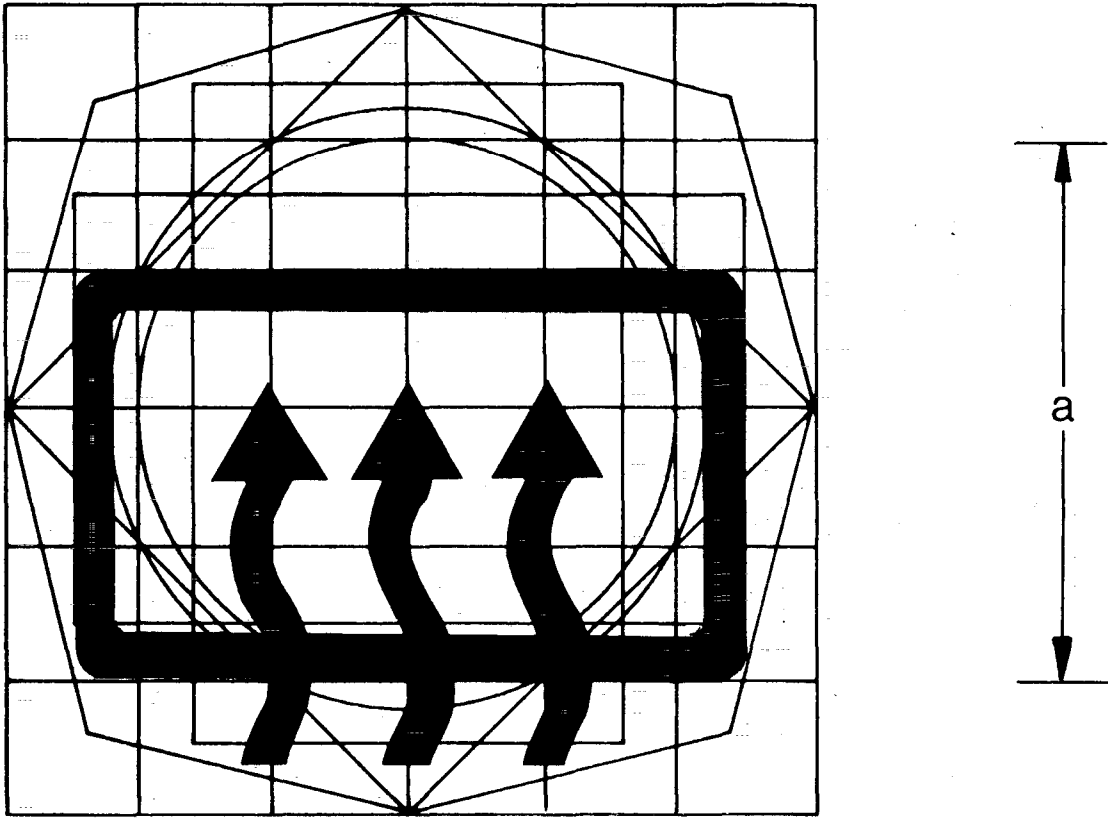


Colour of tell-tale light: amber

Figure 18

Rear-window defroster and demister control, if separate, and tell-tale

Standard symbol

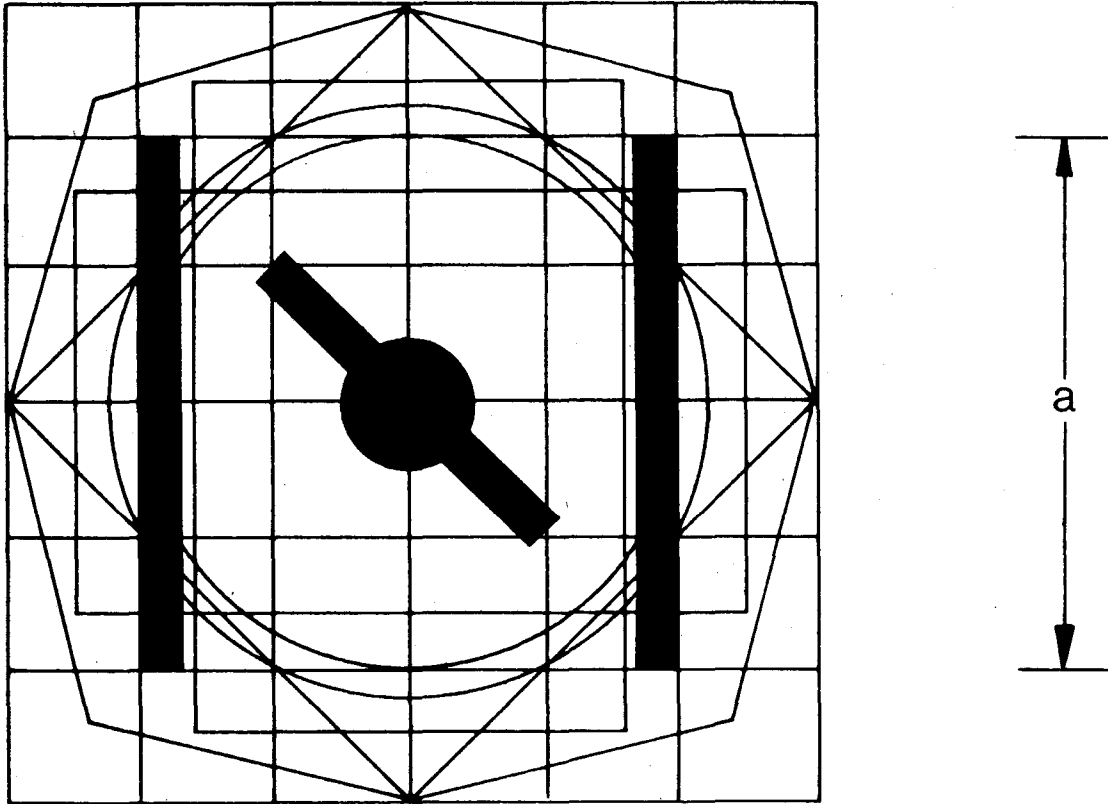


Colour of tell-tale light: amber

Figure 19

Cold-starting device control

Standard symbol



Colour of tell-tale light: amber

Figure 20

## Hand-accelerator control

Standard symbol

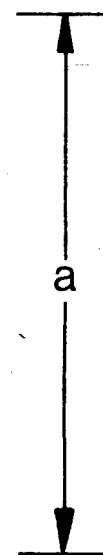
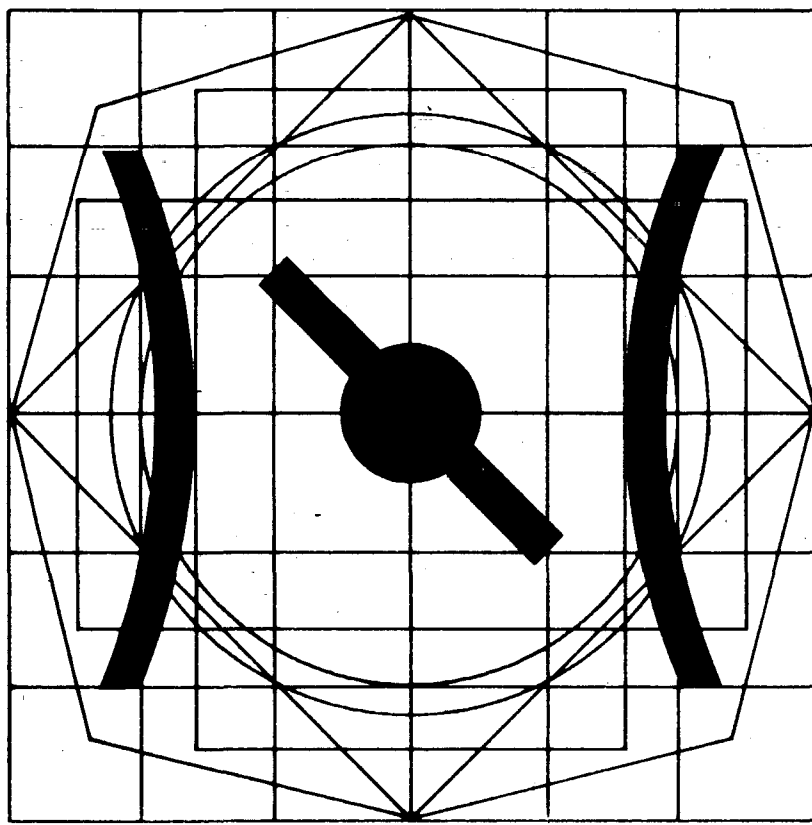
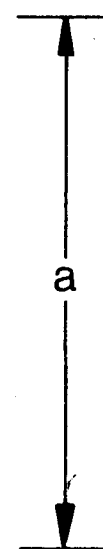
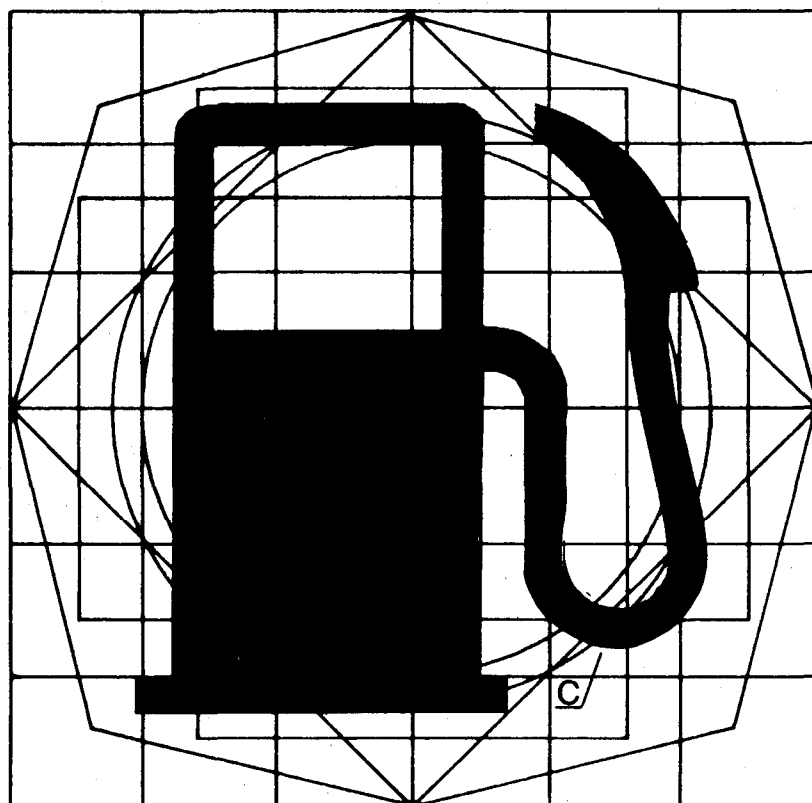


Figure 21

## Fuel-level indicator and tell-tale

Standard symbol

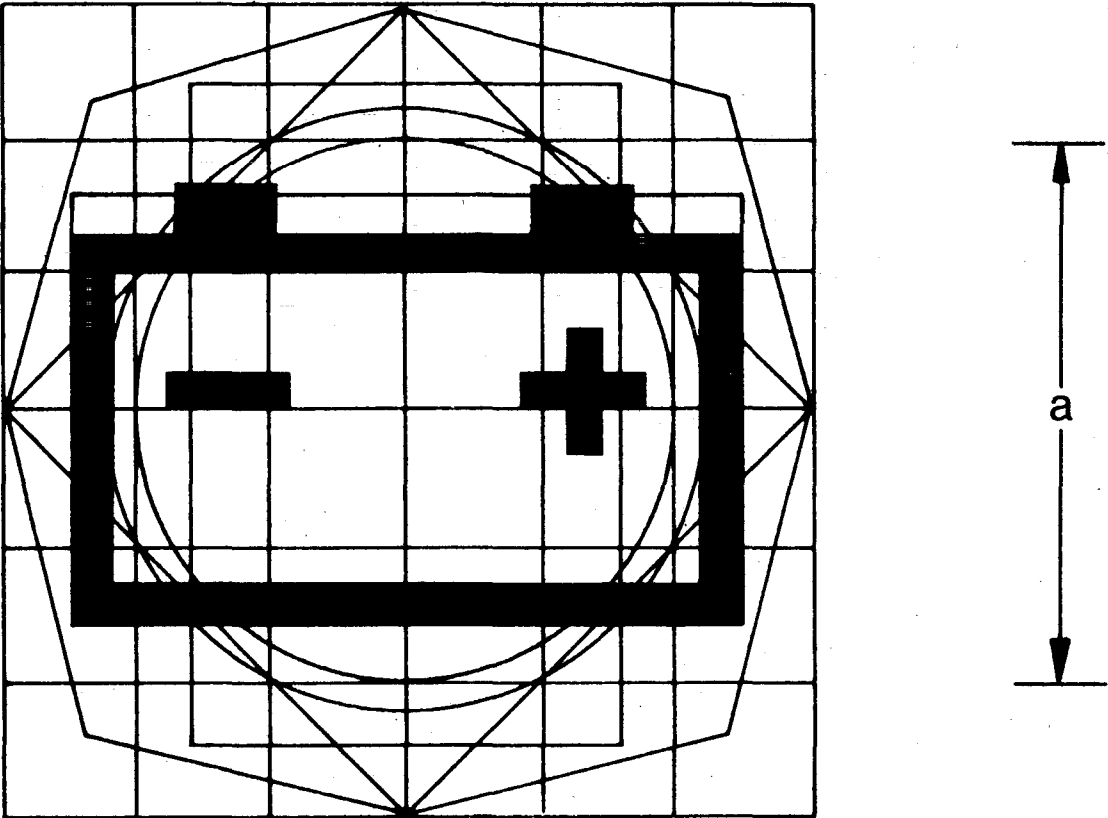


Colour of tell-tale light: amber

Figure 22

Battery-charging indicator and tell-tale

Standard symbol



Colour of tell-tale light: red

Figure 23

(Diesel) engine cut-off control, if installed on dashboard

Standard symbol

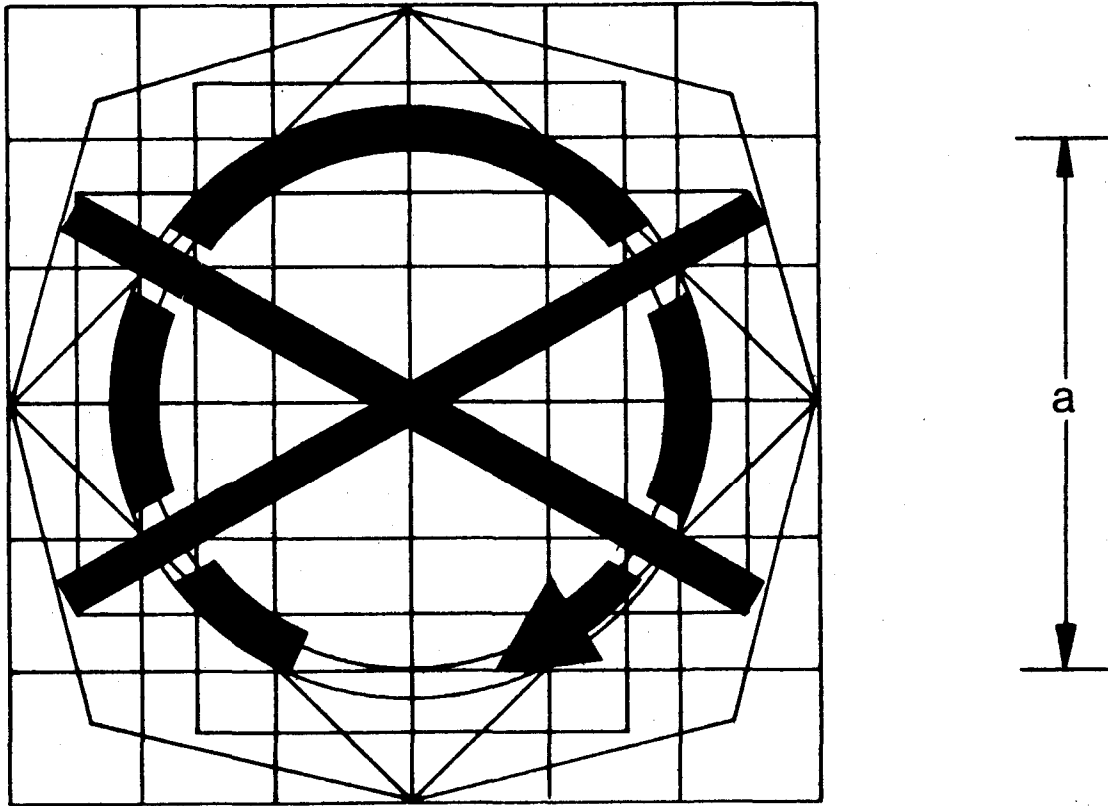
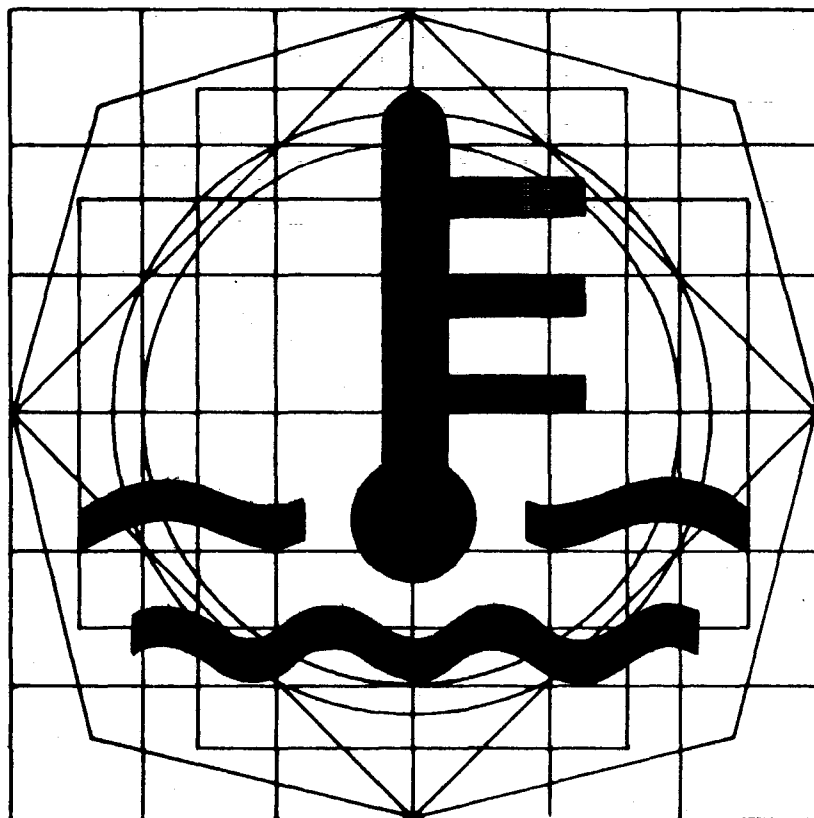


Figure 24

## Engine coolant temperature indicator and tell-tale

Standard symbol

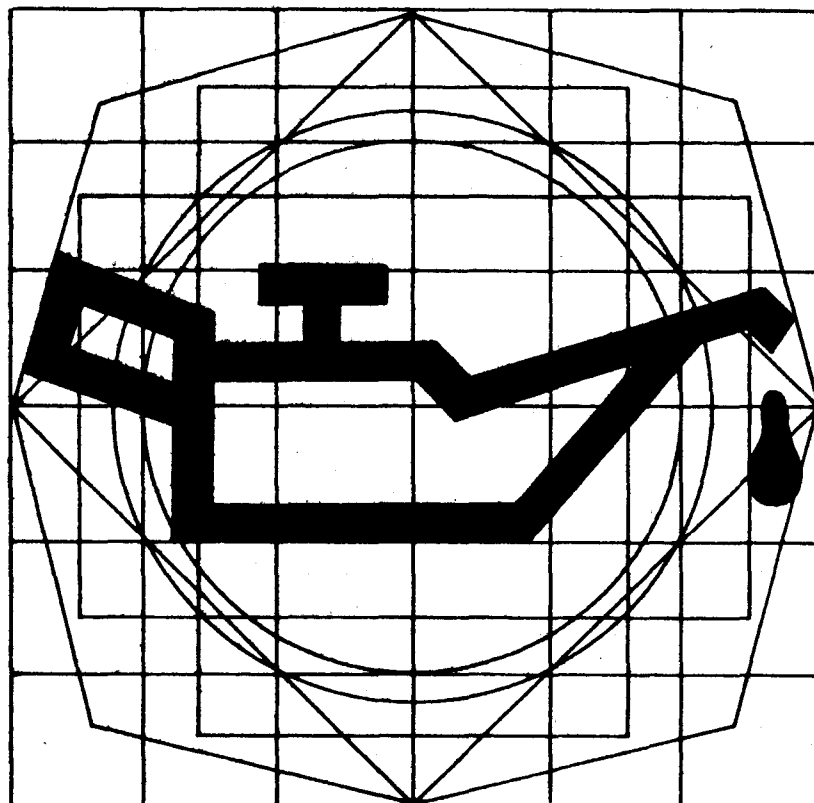


Colour of tell-tale light: red

Figure 25

## Oil pressure indicator and tell-tale

Standard symbol

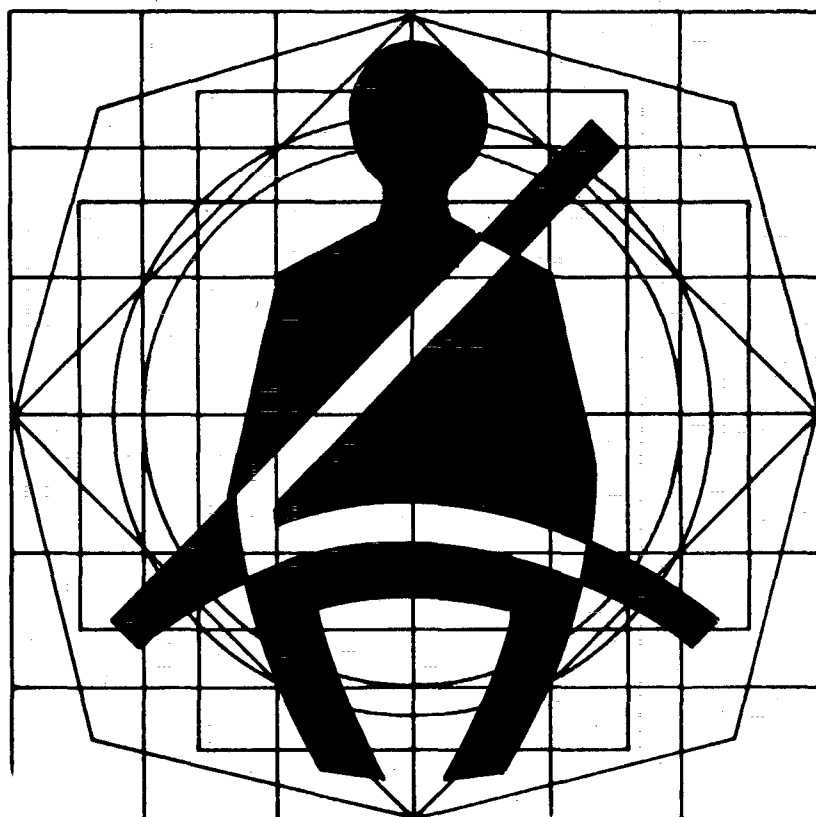


Colour of tell-tale light: red

Figure 26

## Safety belt tell-tale

Standard symbol



Colour of tell-tale light: red

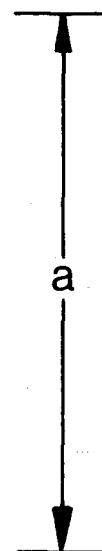


Figure 27

## Headlamp cleaning device hand-control

Standard symbol

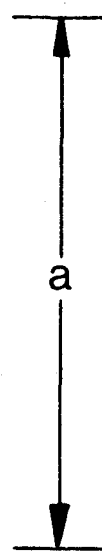
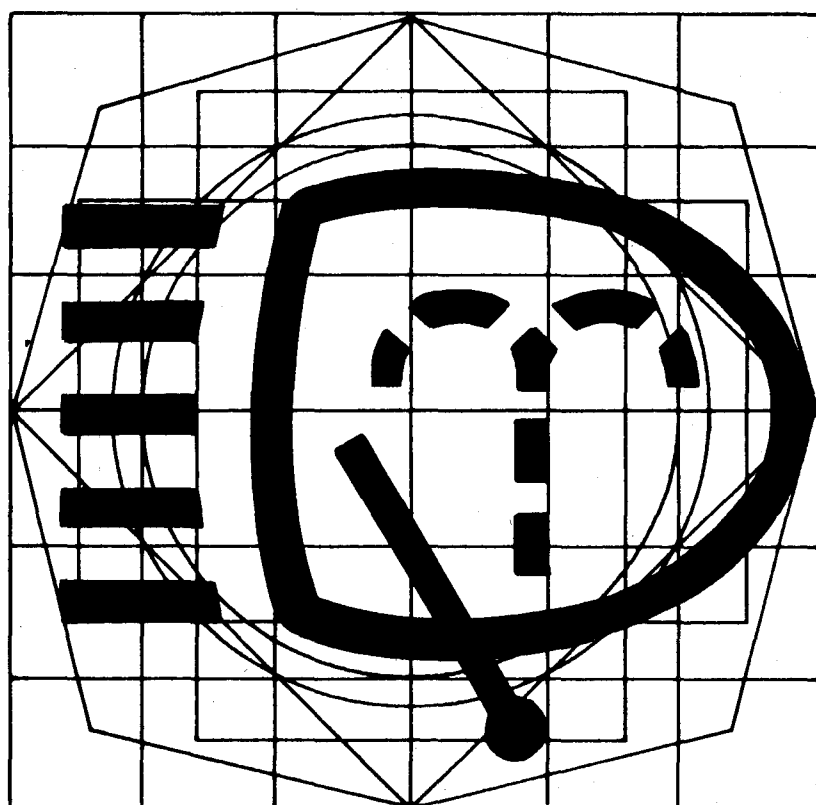
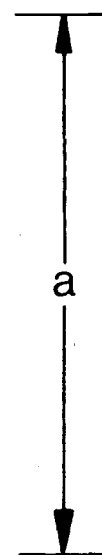
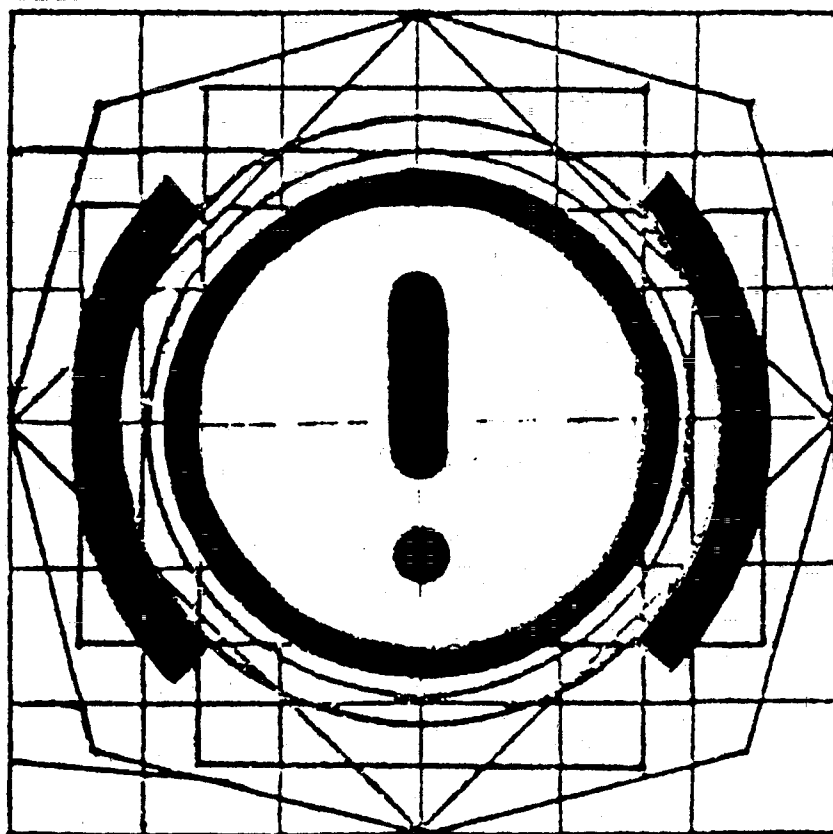


Figure 28

## Braking system defective operation tell-tale

Standard symbol

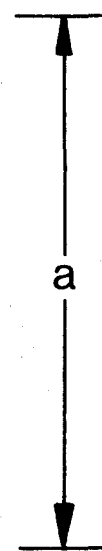
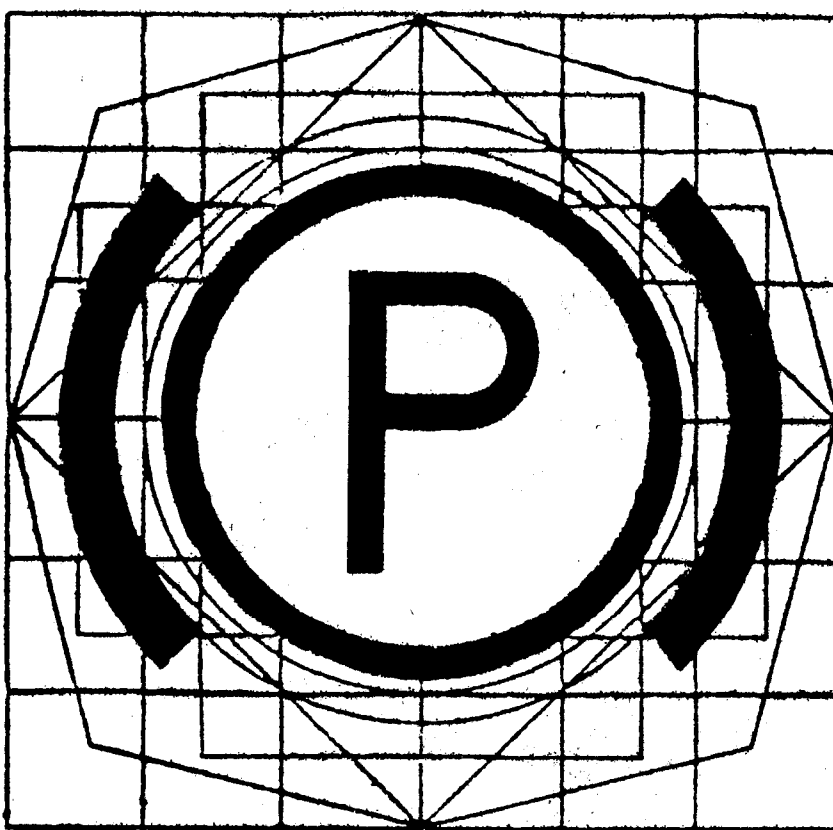


Colour of tell-tale light: red

Figure 29

## Parking brake circuit-closed tell-tale

Standard symbol



Colour of tell-tale light: red

## ANNEX III

CONTROLS, TELL-TALES AND INDICATORS FOR WHICH, WHEN FITTED, IDENTIFICATION IS OPTIONAL, AND SYMBOLS WHICH MUST BE USED IF THEY ARE TO BE IDENTIFIED

## Note

See note (c) in Annex II.

Figure 1

Rear-compartment closure release control

Standard symbol

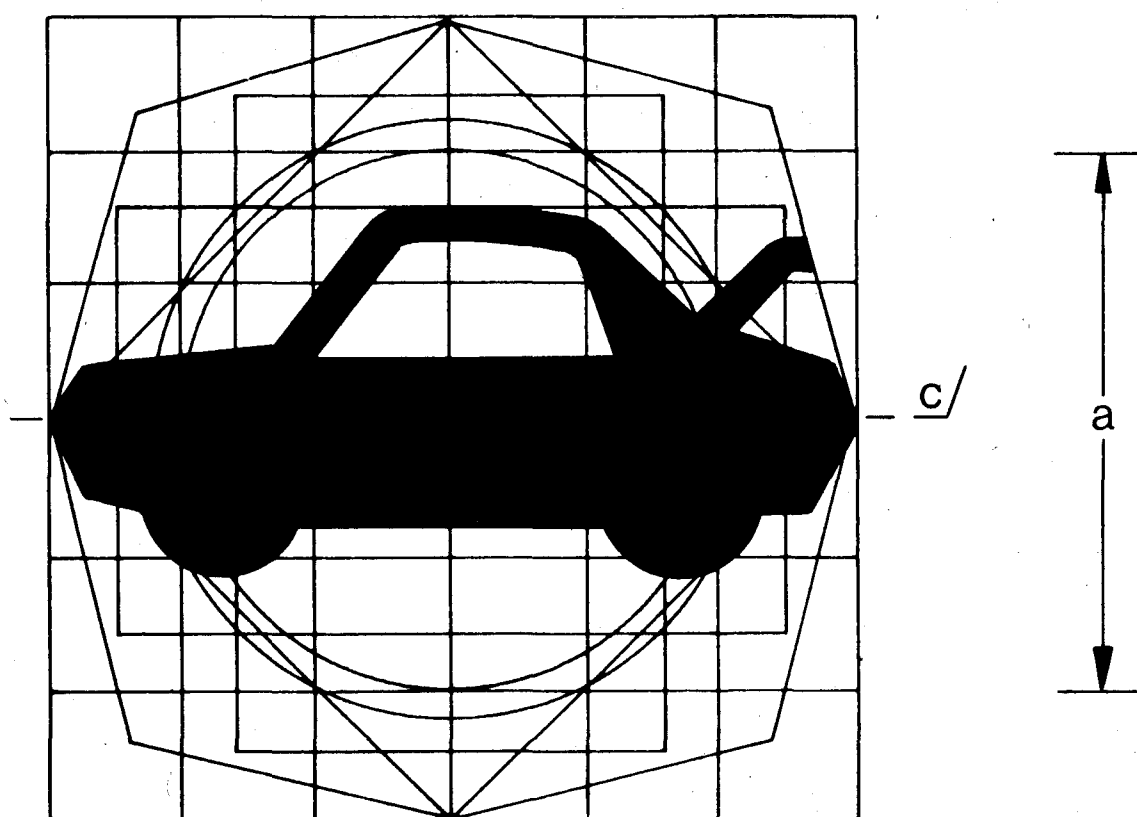
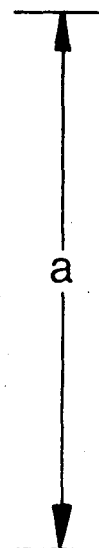
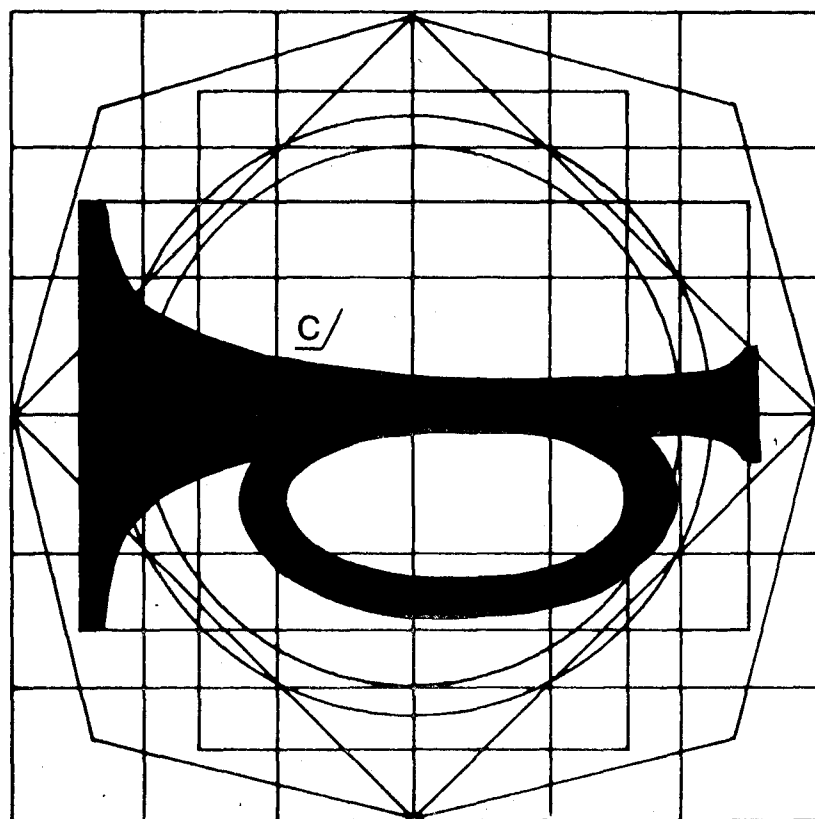


Figure 2

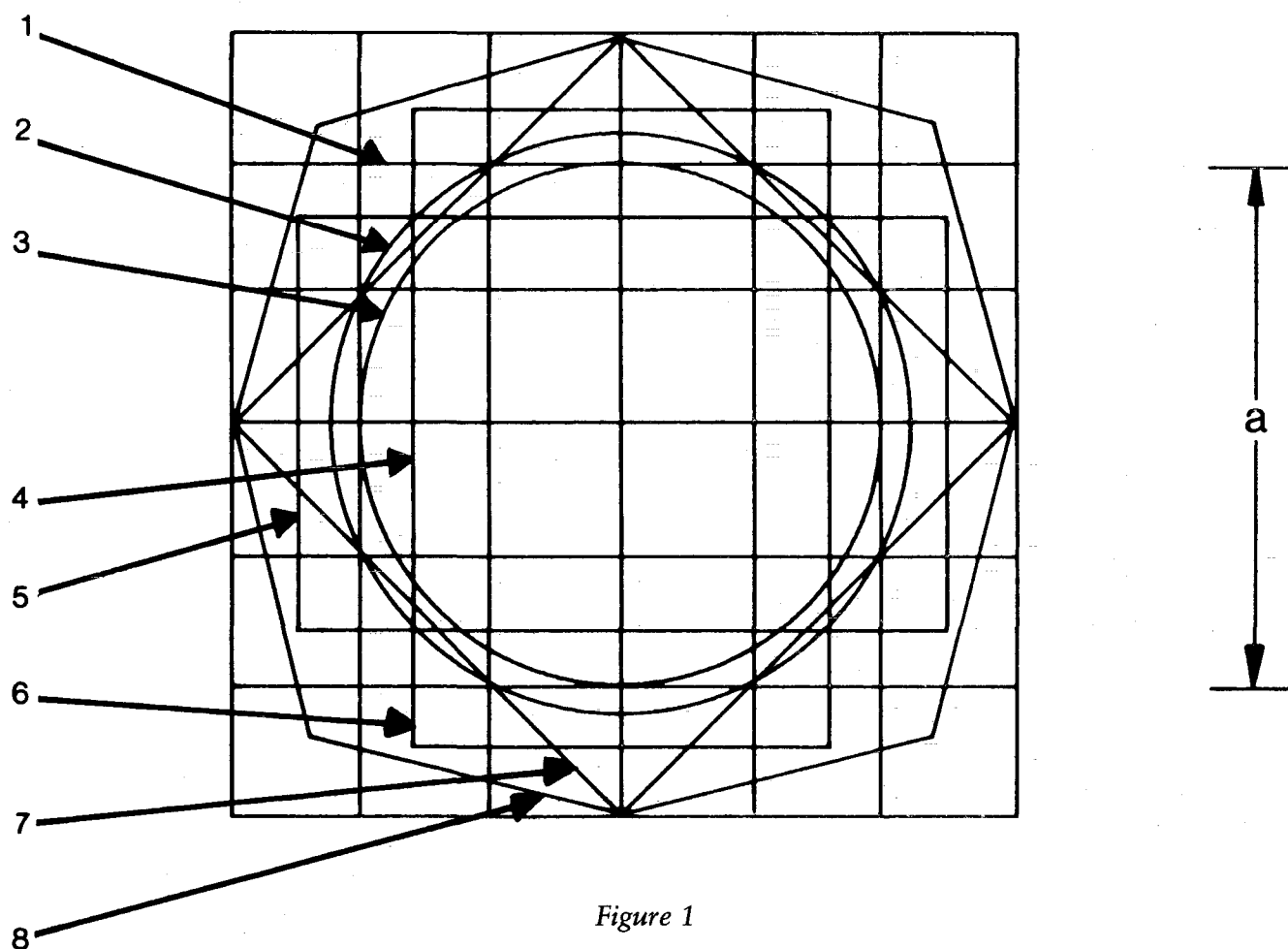
## Audible warning device control

Standard symbol



## ANNEX IV

## CONSTRUCTION OF THE BASIC PATTERN FOR THE SYMBOLS SHOWN IN ANNEXES II AND III



## Basic pattern

The basic pattern comprises:

1. a basic square of side 50 mm; this dimension is equal to the nominal dimension, 'a', of the basic pattern;
2. a basic circle of 56 mm diameter having approximately the same area as the basic square (1);
3. a second circle of 50 mm diameter, being the inscribed circle of the basic square (1);
4. a second square whose corners touch the basic circle (2) and whose sides are parallel to those of the basic square (1);
- 5 and 6. two rectangles having the same area as the basic square (1); they are mutually perpendicular, each being drawn to cross opposite sides of the basic square symmetrically;
7. a third square whose sides pass through the points of intersection of the basic square (1) and the basic circle (2) and are at an angle of  $45^\circ$ , giving the largest horizontal and vertical dimensions of the basic pattern;
8. an irregular octagon, formed by lines at an angle of  $30^\circ$  to the sides of the square (7).

The basic pattern is superimposed on a 12.5 mm grid which coincides with the basic square (1).

## ANNEX V

## MODEL

(Maximum format: A4 (210 × 297 mm))

|                           |
|---------------------------|
| Name of<br>administration |
|---------------------------|

**ANNEX TO THE EEC VEHICLE TYPE-APPROVAL CERTIFICATE WITH REGARD TO THE  
IDENTIFICATION OF CONTROLS, TELL-TALES AND INDICATORS**(Articles 4 (2) and 10 of Council Directive 70/156/EEC 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)

EEC type-approval No .....

1. Trade name or mark of the vehicle .....  
.....
2. Vehicle type .....
3. Manufacturer's name and address .....  
.....  
.....
4. Where applicable, name and address of manufacturer's authorized representative .....  
.....  
.....
5. Brief description of the vehicle type as regards the identification of controls, tell-tales and indicators .....  
.....  
.....
6. Vehicle submitted for type-approval on .....
7. Technical service conducting type-approval tests .....  
.....
8. Date of report issued by that service .....
9. Number of report issued by that service .....
10. Type-approval in respect of identification of controls, tell-tales and indicators is granted/  
refused (\*)
11. Place .....
12. Date .....
13. Signature .....
14. The following documents, bearing the type-approval number shown above, are annexed to this  
certificate:  
..... drawings of the controls, tell-tales and indicators and of the parts of the vehicle con-  
sidered to be of importance for the purposes of Council Directive 78/316/EEC of 21 December  
1977 on the approximation of the laws of the Member States relating to the interior fittings of  
motor vehicles (identification of controls, tell-tales and indicators).
15. Remarks .....

(\*) Delete where inapplicable.

## COUNCIL DIRECTIVE

of 21 December 1977

on the approximation of the laws of the Member States relating to the defrosting and demisting systems of glazed surfaces of motor vehicles

(78/317/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 defrosting and demisting systems of glazed surfaces of motor vehicles;

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 rules in order, in particular, to allow the EEC type-approval procedure, which was the subject of Council Directive 70/156/EEC 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 <sup>(3)</sup>, as amended by Directive 78/315/EEC <sup>(4)</sup>, to be introduced in respect of each type of vehicle;

Whereas it is advisable to draft the technical requirements so that they have the same aim as the work being carried out on the subject in the UN Economic Commission for Europe;

Whereas these requirements apply to motor vehicles in category M<sub>1</sub> (the international classification of motor vehicles is given in Annex I to Directive 70/156/EEC);

Whereas the approximation of national laws relating to motor vehicles entails reciprocal recognition by Member

States of the checks carried out by each of them on the basis of the common requirements,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

For the purposes of this Directive, 'vehicle' means any motor vehicle in category M<sub>1</sub> (as defined in Annex I to Directive 70/156/EEC) intended for use on the road, having at least four wheels and a maximum design speed exceeding 25 km/h.

*Article 2*

No Member State may refuse to grant EEC type-approval or national type-approval of a vehicle on grounds relating to the defrosting and demisting systems of its glazed surfaces if they satisfy the requirements set out in Annexes I, II, III, IV and V.

*Article 3*

No Member State may refuse or prohibit the sale, registration, entry into service or use of any vehicle on grounds relating to the defrosting and demisting systems of its glazed surfaces if they satisfy the requirements laid down in Annexes I, II, III, IV and V.

*Article 4*

The Member State which has granted type-approval shall take the measures required to ensure that it is informed of any modification of a part or characteristic referred to in 2.2 of Annex I. The competent authorities of that State shall determine whether it is necessary to carry out further tests on the modified vehicle type and to prepare a new report. If these tests show that the requirements of this Directive have not been complied with, the modification shall not be authorized.

<sup>(1)</sup> OJ No C 118, 16. 5. 1977, p. 33.

<sup>(2)</sup> OJ No C 114, 11. 5. 1977, p. 9.

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

<sup>(4)</sup> See page 1 of this Official Journal.

*Article 5*

Any amendments necessary to adapt the requirements of Annexes I, II, III, IV, V and VI to technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 70/156/EEC.

However, this procedure shall not apply to amendments introducing requirements for defrosting and demisting systems of glazed surfaces other than those of windscreens.

*Article 6*

1. Member States shall bring into force the provisions necessary in order to comply with this Directive within 18 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 covered by this Directive are communicated to the Commission.

*Article 7*

This Directive is addressed to the Member States.

Done at Brussels, 21 December 1977.

*For the Council*

*The President*

J. CHABERT

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LIST OF ANNEXES

- |            |                                                                                                                                                                                                                                |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Annex I:   | Scope, definitions, application for EEC type-approval, EEC type-approval, specific requirements, test procedure (*)                                                                                                            |
| Annex II:  | Procedure for determining the H point and the actual seat-back angle and for verifying the relative positions of the R and H points and the relationship between the design seat-back angle and the actual seat-back angle (*) |
| Annex III: | Method for determining the dimensional relationship between the vehicle's primary reference marks and the three-dimensional reference grid (*)                                                                                 |
| Annex IV:  | Procedure for determining vision areas on windscreens of vehicles in category M <sub>1</sub> vehicles in relation to the V points (*)                                                                                          |
| Annex V:   | Steam generator (*)                                                                                                                                                                                                            |
| Annex VI:  | Annex to the EEC vehicle type-approval certificate with regard to the windscreen defrosting and demisting systems                                                                                                              |

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(\*) The technical requirements of this Annex are similar to those of the relevant UN Economic Commission for Europe draft regulation; the subdivisions have thus been observed. Where a section of the draft regulation has no counterpart in the Annexes to this Directive, the number is given in brackets for the record.

## ANNEX I

## SCOPE, DEFINITIONS, APPLICATION FOR EEC TYPE-APPROVAL, EEC TYPE-APPROVAL, SPECIFIC REQUIREMENTS, TEST PROCEDURE

1. SCOPE
  - 1.1. This Directive applies to the 180° forward field of vision of the drivers of vehicles in category M<sub>1</sub>.
    - 1.1.1. Its purpose is to ensure good visibility under certain conditions by specifying the requirements for defrosting and demisting systems for the windscreens of category M<sub>1</sub> vehicles.
  - 1.2. The requirements of this Directive are so worded as to apply to category M<sub>1</sub> vehicles in which the driver is on the left. In category M<sub>1</sub> vehicles in which the driver is on the right, these requirements shall be applied by inverting the criteria where appropriate.
2. DEFINITIONS
  - (2.1.)
  - 2.2. **Vehicle type with regard to the windscreen defrosting and demisting systems**

'Vehicle type with regard to the windscreen defrosting and demisting systems' means vehicles which do not differ in such essential respects as:

    - 2.2.1. the external and internal forms and arrangements within the area specified in Section 1 which may affect visibility;
    - 2.2.2. the shape, size and characteristics of the windscreen and its mounting;
    - 2.2.3. the characteristics of the defrosting and demisting systems;
    - 2.2.4. the number of seats.
  - 2.3. **Three-dimensional reference grid**

'Three-dimensional reference grid' means a reference system which consists of a vertical longitudinal plane X-Z, a horizontal plane X-Y and a vertical transverse plane Y-Z (see figure 2 of Annex III). The grid is used to determine the dimensional relationships between the position of design points on drawings and their position on the actual vehicle. The procedure for situating the vehicle relative to the grid is specified in Annex III; all coordinates referred to ground zero shall be based on a vehicle in running order (as defined in 2.6 of Annex I to Directive 70/156/EEC plus one front-seat passenger, the mass of the passenger being 75 kg ± 1%).

    - 2.3.1. Vehicles fitted with suspension enabling their ground clearance to be adjusted shall be tested under the normal conditions of use specified by the vehicle manufacturer.
  - 2.4. **Primary reference marks**

'Primary reference marks' means holes, surfaces, marks and identification signs on the vehicle body. The type of reference mark used and the position of each mark relative to the X, Y and Z coordinates of the three-dimensional reference grid and to a design ground plane shall be specified by the vehicle manufacturer. These marks may be the control points used for body-assembly purposes.

- 2.5. **Seat-back angle**  
(See Annex II).
- 2.6. **Actual seat-back angle**  
(See Annex II).
- 2.7. **Design seat-back angle**  
(See Annex II).
- 2.8. **V points**  
'V points' means points whose position in the passenger compartment is determined by vertical longitudinal planes passing through the centres of the outermost designated seating positions on the front seat and in relation to the R point and the design angle of the seat back, which points are used for verifying compliance with the field-of-view requirements (see Annex IV).
- 2.9. **R point or seating reference point**  
(See Annex II).
- 2.10. **H point**  
(See Annex II).
- 2.11. **Windscreen datum points**  
'Windscreen datum points' means points situated at the intersection with the windscreen of lines radiating forward from the V points to the outer surface of the windscreen.
- 2.12. **Transparent area of a windscreen**  
'Transparent area of a windscreen' means that area of a vehicle windscreen or other glazed surface whose light transmittance, measured at right angles to the surface, is not less than 70%.
- 2.13. **Horizontal seat-adjustment range**  
'Horizontal seat-adjustment range' means the range of normal driving positions designated by the vehicle manufacturer for the adjustment of the driver's seat in the direction of the X axis (see 2.3).
- 2.14. **Extended seat-adjustment range**  
'Extended seat-adjustment range' means the range designated by the vehicle manufacturer for the adjustment of the seat in the direction of the X axis (see 2.3) beyond the range of normal driving positions specified in 2.13 and used for converting seats into beds or facilitating entry into the vehicle.
- 2.15. **Defrosting system**  
'Defrosting system' means the system intended to melt frost or ice on the surface of the windscreen and thus restore visibility.
- 2.16. **Defrosting**  
'Defrosting' means the elimination of frost or ice covering the glazed surfaces by the operation of defrosting or windscreen-wiper systems.
- 2.17. **Defrosted area**  
'Defrosted area' means the area of the glazed surfaces having a dry surface or covered with melted or partially melted (wet) frost which can be removed from the outside face by the windscreen wipers. It excludes the area of the windscreen covered with dry frost.
- 2.18. **Demisting system**  
'Demisting system' means the system intended to remove a film of condensate on the inside surface of the windscreen and thus restore visibility.

2.19. **Mist**

'Mist' means a film of condensate on the inside face of the glazed surfaces.

2.20. **Demisting**

'Demisting' means the elimination of the mist covering the glazed surfaces by the operation of the demisting system.

3. **APPLICATION FOR EEC TYPE-APPROVAL**

3.1. The application for EEC type-approval of a vehicle type with regard to its windscreen defrosting and demisting systems shall be submitted by the vehicle manufacturer or by his authorized representative.

3.2. It shall be accompanied by the following documents in triplicate, and by the following particulars:

3.2.1. a description of the vehicle referring to the criteria mentioned in 2.2, together with dimensional drawings and either a photograph or an exploded view of the passenger compartment. The numbers and/or symbols identifying the vehicle type shall be specified;

3.2.2. particulars of the primary reference marks in sufficient detail to enable them to be readily identified and the position of each in relation to the others and to the R point to be verified;

3.2.3. a technical description of the defrosting and demisting systems, together with relevant data in sufficient detail.

3.3. A vehicle representative of the vehicle type to be approved shall be submitted to the technical service conducting the type-approval tests.

4. **EEC TYPE-APPROVAL**

(4.1.)

(4.2.)

4.3. A certificate conforming to the model in Annex VI shall be attached to the EEC type-approval certificate.

(4.4.)

(4.5.)

(4.6.)

(4.7.)

5. **SPECIFIC REQUIREMENTS**

5.1. **Windscreen defrosting**

5.1.1. Every vehicle shall be equipped with a system for removing frost and ice from the glazed surfaces of the windscreen. The windscreen defrosting system shall be effective enough to ensure adequate visibility through the windscreen in cold weather.

5.1.2. The efficiency of the system shall be verified by determining the defrosted area of the windscreen periodically after starting the engine, the vehicle having been kept in a cold chamber for a certain amount of time.

5.1.3. The requirements of 5.1.1 and 5.1.2 shall be checked using the method set out in 6.1.

5.1.4. The following requirements must be satisfied:

- 5.1.4.1. 20 minutes after the start of the test period, the area defined in 2.2 of Annex IV (area A) must be 80% defrosted;
- 5.1.4.2. 25 minutes after the start of the test period, the defrosted area of the windscreen on the passenger side shall be comparable to that specified in 5.1.4.1 for the driver's side;
- 5.1.4.3. 40 minutes after the start of the test period, the area defined in 2.3 of Annex IV (area B) shall be 95% defrosted.

(5.1.5.)

## 5.2. Windscreen demisting

- 5.2.1. Every vehicle shall be equipped with a system for removing mist from the interior glazed surface of the windscreen.

- 5.2.2. The demisting system shall be effective enough to restore visibility through the windscreen in wet weather. Its efficiency shall be verified by the procedure described in 6.2.

- 5.2.3. The following requirements must be satisfied:

- 5.2.3.1. the area defined in 2.2 of Annex IV (area A) must be 90% demisted in 10 minutes;

(5.2.3.2.)

- 5.2.3.3. the area defined in 2.3 of Annex IV (area B) shall be 80% demisted in 10 minutes.

(5.2.4.)

## 6. TEST PROCEDURE

### 6.1. Windscreen defrosting

- 6.1.1. The tests shall be carried out at one of the temperatures specified below as prescribed by the manufacturers:  $-8 \pm 2$  °C or  $-18 \pm 3$  °C.

- 6.1.2. The test shall be carried out in a cold chamber large enough to contain the complete vehicle and equipped to maintain one of the temperatures mentioned in 6.1.1 in the chamber throughout the test and to circulate cold air. The cold chamber shall be maintained at or below the specified test temperature for not less than 24 hours before the start of the period during which the vehicle is exposed to cold.

- 6.1.3. Before the test, the inner and outer surfaces of the windscreen shall be thoroughly degreased by means of methylated spirit or an equivalent degreasing agent. After drying, a solution of ammonia of not less than 3% and not more than 10% shall be applied. The surface shall be allowed to dry again and then be wiped with a dry cotton cloth.

- 6.1.4. The vehicle, with the engine stopped, shall be kept for not less than 10 hours at the test temperature.

- 6.1.4.1. If instruments are available to check that the engine coolant and lubricant are stabilized at the test temperature, this period may be shortened.

- 6.1.5. Following the exposure period prescribed in 6.1.4, an even layer of ice of  $0.044 \text{ g/cm}^2$  shall be applied over the entire outside surface of the windscreen by means of a waterspray gun working at  $3.5 \pm 0.2$  bar operating pressure.

- 6.1.5.1. The spray nozzle, adjusted to full fan pattern and maximum flow, shall be held perpendicular to and at a distance of between 200 and 250 mm from the glazed surface, and so directed as to form an even layer of ice right across the windscreen from one side to the other.

- 6.1.5.1.1. A spray gun having a nozzle of 1.7 mm diameter and a liquid flowrate of 0.395 l/min, and capable of producing a fan pattern of 300 mm diameter on the glazed surface at a distance 200 mm from that surface, may be used to satisfy the requirements of 6.1.5. Any other device by which the requirements can be satisfied shall also be permitted.
- 6.1.6. After the ice has been formed on the windscreen, the vehicle shall be kept in the cold chamber for not less than 30 minutes and not more than 40 minutes.
- 6.1.7. After the period prescribed in 6.1.6 has elapsed, one or two observers shall enter the vehicle, and the engine may be started, if necessary by some external means. The test period shall commence as soon as the engine is running.
- 6.1.7.1. During the first five minutes of the test period, the engine speed or speeds may be those which the manufacturer recommends for warming up when starting in cold weather.
- 6.1.7.2. During the final 35 minutes of the test period (or during the entire test period if the five-minute warming-up procedure is not followed) the engine must run:
- 6.1.7.2.1. at a speed not exceeding 50% of the speed corresponding to its maximum power output; moreover,
- (6.1.7.2.2.)
- 6.1.7.2.3. the battery must be fully charged;
- 6.1.7.2.4. the voltage at the terminals of the defrosting device may be not more than 20% above the nominal rating of the system;
- 6.1.7.2.5. the temperature in the test chamber shall be measured at the level of the centre of the windscreen, at a point not significantly affected by heat from the vehicle under test;
- 6.1.7.2.6. the horizontal component of the speed of the air cooling the chamber, measured immediately prior to the test, in the median plane of the vehicle at a point 300 mm forward of the base of the windscreen and at a level half-way between the base and the top of the windscreen, must be as low as possible and in any event less than 8 km/h;
- 6.1.7.2.7. the engine bonnet, the doors and the vents, except the intakes and outlets of the heating and ventilating system, must be closed; one or two windows may be opened for a total vertical distance of 25 mm if the vehicle manufacturer so requests;
- 6.1.7.2.8. the defrosting system temperature control shall be set to the 'maximum' position;
- 6.1.7.2.9. the windscreen wipers may be used during the test if they can operate without manual assistance;
- 6.1.7.2.10. the defrosting system prescribed by the manufacturer shall be brought into operation, with the vehicle in the condition specified by the manufacturer for satisfactory operation at low temperature.
- 6.1.8. The observer(s) shall outline the defrosted area on the inside surface of the windscreen, at five-minute intervals from the start of the test period.
- 6.1.9. On completion of the test, the pattern of the defrosted area outlined on the inner face of the windscreen as required by 6.1.8 shall be noted and marked to identify the driver's side.
- 6.2. **Windscreen demisting**
- 6.2.1. Before the test, the inside surface of the windscreen shall be thoroughly degreased by means of methylated spirit, or an equivalent degreasing agent. After drying, a solution of ammonia of not less than 3% and not more than 10% shall be applied. The surface shall be allowed to dry again and then be wiped with a dry cotton cloth.

- 6.2.2. The test shall be carried out in an environmental chamber large enough to take the complete vehicle and capable of producing and maintaining a test temperature of  $-3 \pm 1^\circ\text{C}$  throughout the test period.
- 6.2.2.1. The temperature in the test chamber shall be measured at the level of the centre of the windscreen, at a point not significantly affected by heat from the vehicle under test.
- 6.2.2.2. The horizontal component of the speed of the air cooling the chamber, measured immediately prior to the test, in the median plane of the vehicle at a point 300 mm forward of the base of the windscreen and at a level half-way between the base and the top of the windscreen, must be as low as possible and in any event less than 8 km/h;
- 6.2.2.3. The engine bonnet, the docks and the vents, except the intakes and outlets of the heating and ventilation system, must be closed; one or two windows may be opened from the beginning of the demisting test for a total vertical distance of 25 mm if the vehicle manufacturer so requests.
- 6.2.3. The mist shall be produced by means of the steam generator described in Annex V. The generator must contain enough water to generate at least  $70 \pm 5$  g/h of steam for each seating position designated by the manufacturer, in an ambient temperature of  $-3 \pm 1^\circ\text{C}$ .
- 6.2.4. The inside surface of the windscreen shall be cleaned as prescribed in 6.2.1 and the vehicle placed in the environmental chamber. The ambient air temperature shall be lowered until the temperature of the engine coolant, the lubricants and the air inside the vehicle are stabilized at  $-3 \pm 1^\circ\text{C}$ .
- 6.2.5. The steam generator shall be placed with its outlets in the median plane of the vehicle at a height of  $580 \pm 80$  mm above the R point of the driver's seat. It shall normally be placed immediately behind the front seat backrest, with the seat-back, if adjustable, set at the prescribed angle. Where the design of the vehicle precludes this, the generator may be placed in front of the backrest, in the nearest convenient position to that mentioned above.
- 6.2.6. After the generator has been operating for five minutes inside the vehicle, one or two observers shall enter the front of the vehicle, the output of the generator being then reduced by  $70 \pm 5$  g/h for each observer.
- 6.2.7. One minute after the observer or observers have entered the vehicle, the engine shall be started as indicated by the manufacturer. The test period shall commence as soon as the engine is running.
- 6.2.7.1. Throughout the test the engine must run:
  - 6.2.7.1.1. at a speed not exceeding 50% of the speed corresponding to its maximum power output; moreover,
  - (6.2.7.1.2.)
  - 6.2.7.1.3. the vehicle demister controls must be set as recommended by the vehicle manufacturer for the test temperature;
  - 6.2.7.1.4. the battery must be fully charged;
  - 6.2.7.1.5. the voltage at the terminals of the demisting device may be not more than 20% above the nominal rating of the system.

6.2.8. At the end of the test, the demist pattern shall be recorded.

(7.)

(8.)

(9.)

(10.)

(11.)

(12.)

---

**ANNEX II****PROCEDURE FOR DETERMINING THE H POINT AND THE ACTUAL SEAT-BACK ANGLE AND FOR VERIFYING THE RELATIVE POSITIONS OF THE R AND H POINTS AND THE RELATIONSHIP BETWEEN THE DESIGN SEAT-BACK ANGLE AND THE ACTUAL SEAT-BACK ANGLE**

Annex III to Council Directive 77/649/EEC of 27 September 1977 on the approximation of the laws of the Member States relating to the field of vision of motor vehicle drivers <sup>(1)</sup> shall be applicable.

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<sup>(1)</sup> OJ No L 267, 19. 10. 1977, p. 1.

**ANNEX III****METHOD FOR DETERMINING THE DIMENSIONAL RELATIONSHIPS BETWEEN THE VEHICLE'S PRIMARY REFERENCE MARKS AND THE THREE-DIMENSIONAL REFERENCE GRID****1. RELATIONSHIP BETWEEN REFERENCE GRID AND VEHICLE'S PRIMARY REFERENCE MARKS**

To verify specific dimensions on or within a vehicle submitted for type-approval in accordance with this Directive, the relationship between the coordinates of the three-dimensional reference grid defined in 2.3 of Annex I, which have been laid out at the initial vehicle-design stage, and the positions of the primary reference marks defined in 2.4 of Annex I, must be established accurately so that specific points on the vehicle manufacturer's drawings can be located on an actual vehicle produced from those drawings.

**2. METHOD FOR ESTABLISHING RELATIONSHIP OF REFERENCE GRID TO REFERENCE MARKS**

For this purpose, a ground reference plane shall be constructed, which is marked with the X-X measurement and the Y-Y measurement. The method of achieving this is set out in figure 3 of this Annex, the reference plane being a hard, flat, level surface on which the vehicle stands, and which has two measuring scales firmly fixed to its surface; these shall be graduated in millimetres, the X-X scale being not less than 8 m long, and the Y-Y scale not less than 4 m long. The two scales must be set at right angles to each other as shown in figure 3 of this Annex. The intersection of the scales is ground zero.

**3. EXAMINATION OF THE REFERENCE PLANE**

In order to provide for minor variations in the level of the reference plane or test area, it is necessary to measure the deviations from ground zero along both the X and Y scales at intervals of 250 mm and to record the readings obtained so that corrections can be made when checking the vehicle.

**4. ACTUAL TEST ATTITUDE**

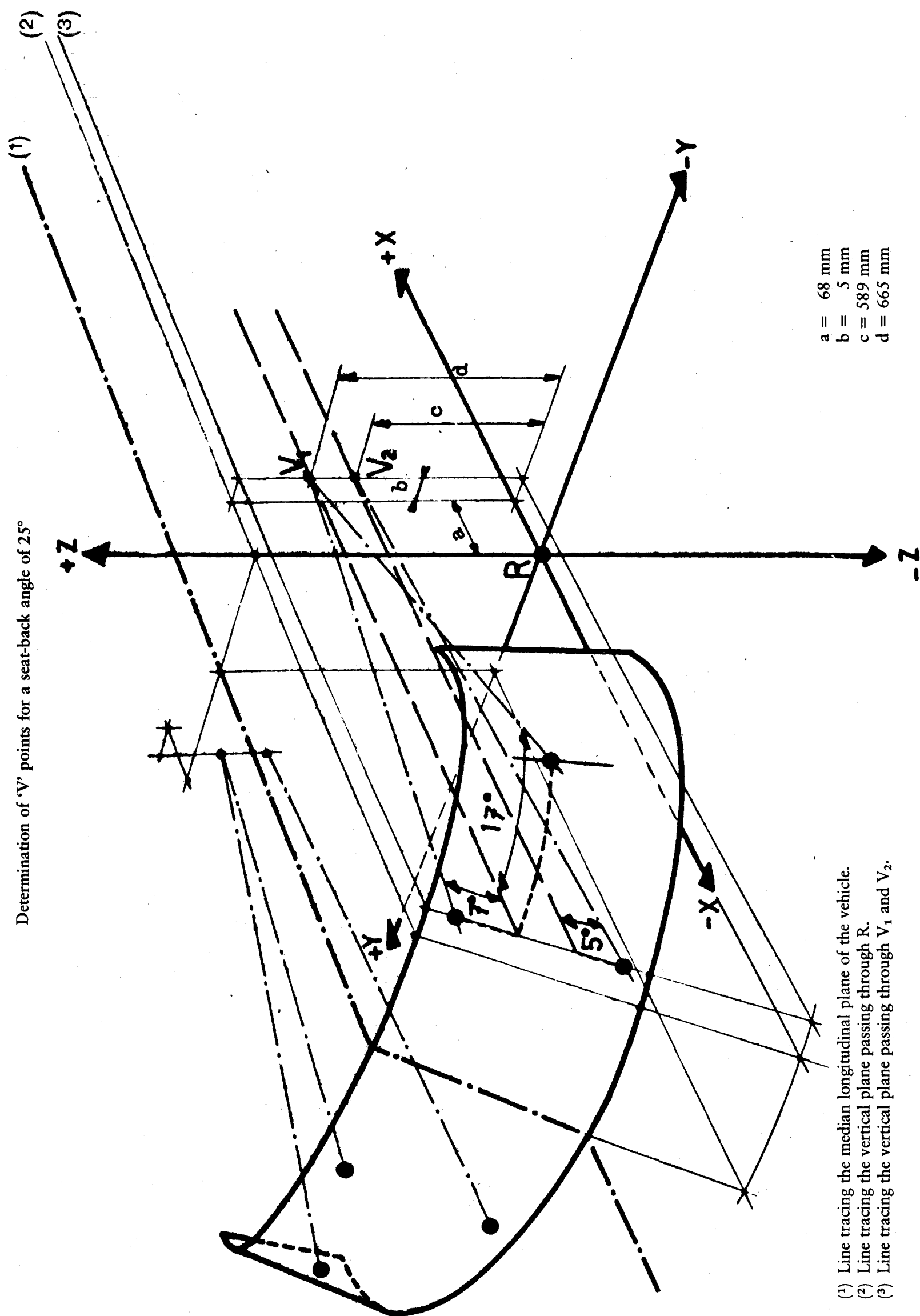
In order to provide for minor changes in suspension height, etc., it is necessary to have available a means of bringing the primary reference marks to the correct coordinate positions relative to the

design attitude before further measurements are taken. In addition, it must be possible to make minor lateral and/or longitudinal adjustments to the vehicle's position so as to place it correctly in relation to the reference grid.

## 5. RESULTS

The vehicle having been correctly placed relative to the reference grid and in its design attitude, the site of the necessary points for studying the forward visibility requirements can be readily determined. Test methods to determine these requirements may include the use of theodolites, light sources or shadow devices, or any other method which can be shown to give equivalent results.

Figure 1



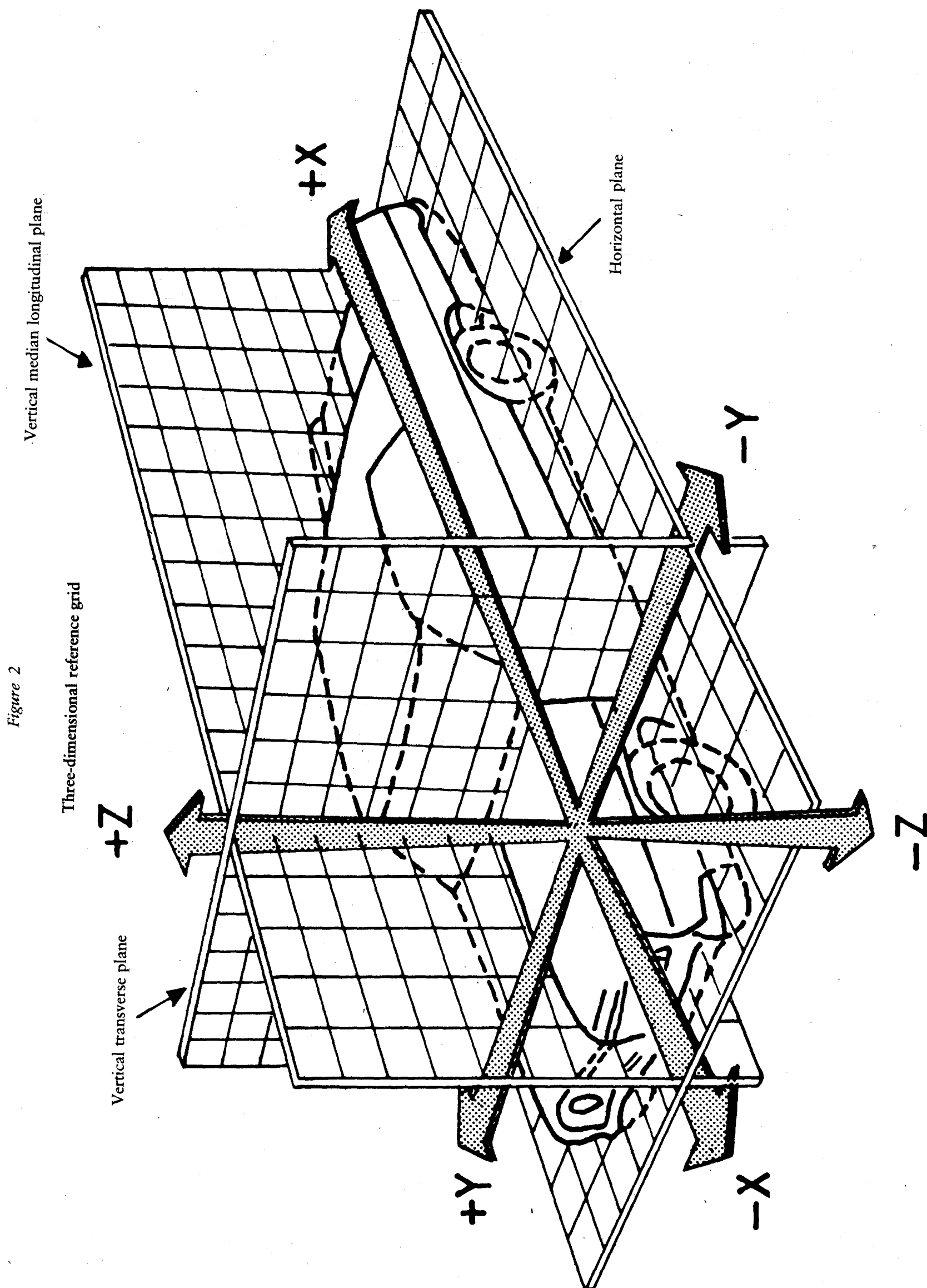
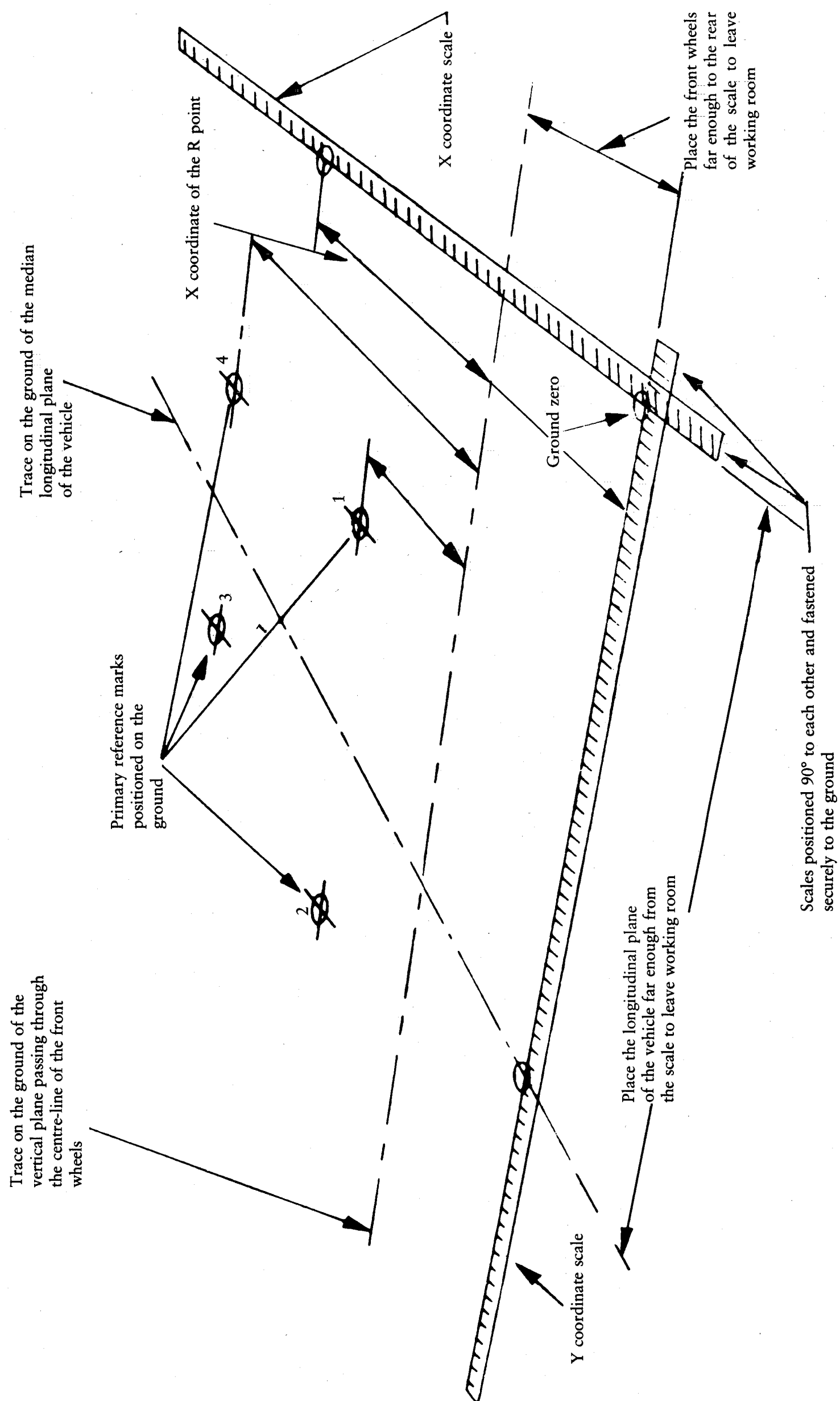


Figure 3

## Level work space



ANNEX IV

PROCEDURE FOR DETERMINING VISION AREAS ON WINDSCREENS OF CATEGORY M<sub>1</sub> VEHICLES IN RELATION TO THE V POINTS

- 1. POSITIONS OF THE V POINTS
  - 1.1. The positions of the V points in relation to the R point, as indicated by XYZ coordinates from the three-dimensional reference grid, are as shown in Tables I and II.
  - 1.2. Table I indicates the basic coordinates for a design seat-back angle of 25°. The positive direction for the coordinates is indicated in figure 1 of Annex III.

TABLE I

| V point        | X     | Y      | Z      |
|----------------|-------|--------|--------|
| V <sub>1</sub> | 68 mm | — 5 mm | 665 mm |
| V <sub>2</sub> | 68 mm | — 5 mm | 589 mm |

- 1.3. Correction for design seat-back angles other than 25°
  - 1.3.1. Table II shows the further corrections to be made to the X and Z coordinates of each V point when the design seat-back angle is not 25°. The positive direction for the coordinates is shown in figure 1 of Annex III.

TABLE II

| Seat-back angle (in °) | Horizontal coordinates ΔX | Vertical coordinates ΔZ | Seat-back angle (in °) | Horizontal coordinates ΔX | Vertical coordinates ΔZ |
|------------------------|---------------------------|-------------------------|------------------------|---------------------------|-------------------------|
| 5                      | — 186 mm                  | 28 mm                   | 23                     | — 18 mm                   | 5 mm                    |
| 6                      | — 177 mm                  | 27 mm                   | 24                     | — 9 mm                    | 3 mm                    |
| 7                      | — 167 mm                  | 27 mm                   | 25                     | 0 mm                      | 0 mm                    |
| 8                      | — 157 mm                  | 27 mm                   | 26                     | 9 mm                      | — 3 mm                  |
| 9                      | — 147 mm                  | 26 mm                   | 27                     | 17 mm                     | — 5 mm                  |
| 10                     | — 137 mm                  | 25 mm                   | 28                     | 26 mm                     | — 8 mm                  |
| 11                     | — 128 mm                  | 24 mm                   | 29                     | 34 mm                     | — 11 mm                 |
| 12                     | — 118 mm                  | 23 mm                   | 30                     | 43 mm                     | — 14 mm                 |
| 13                     | — 109 mm                  | 22 mm                   | 31                     | 51 mm                     | — 18 mm                 |
| 14                     | — 99 mm                   | 21 mm                   | 32                     | 59 mm                     | — 21 mm                 |
| 15                     | — 90 mm                   | 20 mm                   | 33                     | 67 mm                     | — 24 mm                 |
| 16                     | — 81 mm                   | 18 mm                   | 34                     | 76 mm                     | — 28 mm                 |
| 17                     | — 72 mm                   | 17 mm                   | 35                     | 84 mm                     | — 32 mm                 |
| 18                     | — 62 mm                   | 15 mm                   | 36                     | 92 mm                     | — 35 mm                 |
| 19                     | — 53 mm                   | 13 mm                   | 37                     | 100 mm                    | — 39 mm                 |
| 20                     | — 44 mm                   | 11 mm                   | 38                     | 108 mm                    | — 43 mm                 |
| 21                     | — 35 mm                   | 9 mm                    | 39                     | 115 mm                    | — 48 mm                 |
| 22                     | — 26 mm                   | 7 mm                    | 40                     | 123 mm                    | — 52 mm                 |

## 2. VISION AREAS

2.1. Two vision areas shall be determined from the V points.

2.2. Vision area A is the area on the outer surface of the windscreen bounded by the following four planes extending forward from the V point (see figure 1):

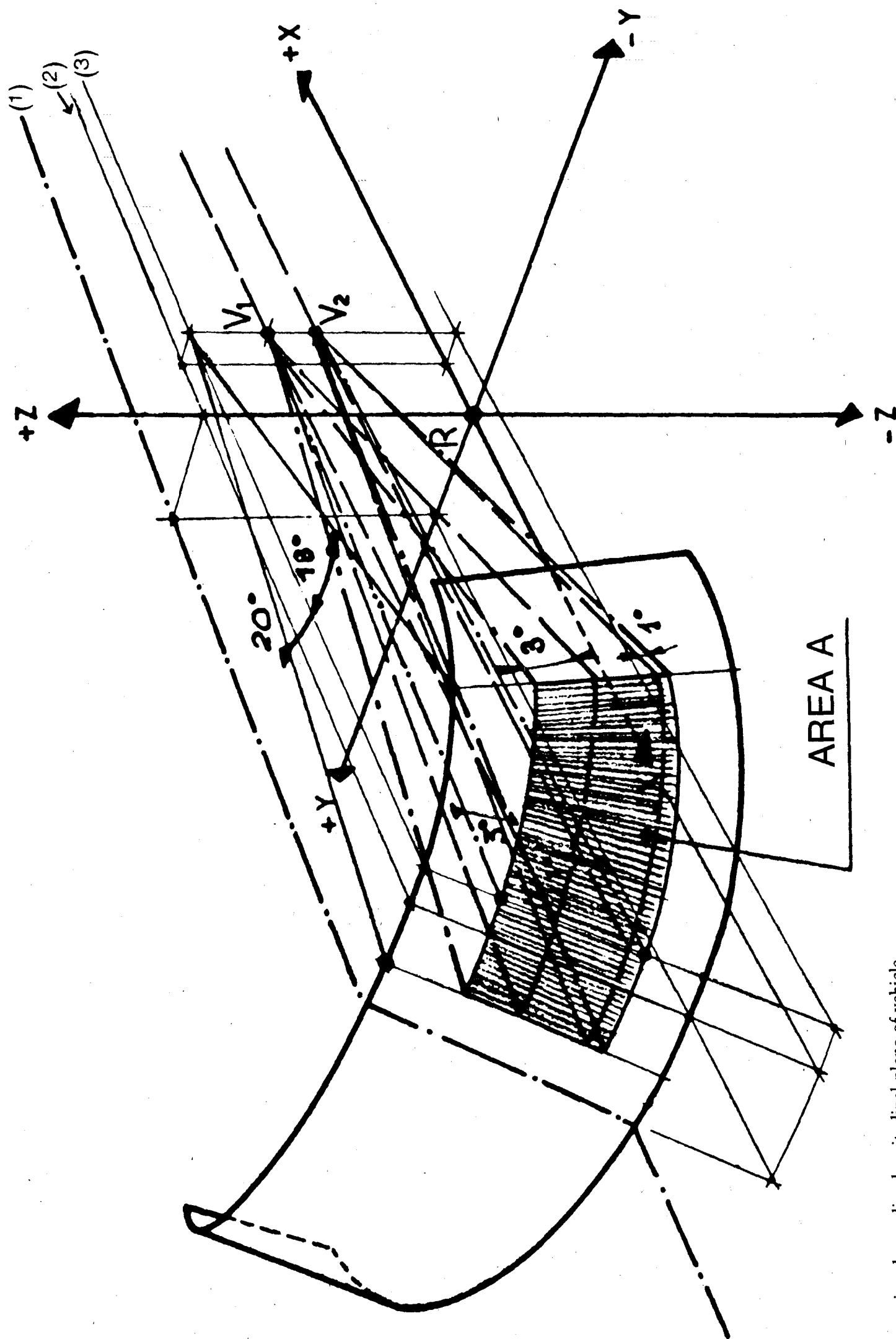
- a vertical plane passing through  $V_1$  and  $V_2$  and at an angle of  $13^\circ$  to the left of the X axis,
- a plane parallel to the Y axis, passing through  $V_1$  and at an upward angle of  $3^\circ$  from the X axis,
- a plane parallel to the Y axis, passing through  $V_2$  and at a downward angle of  $1^\circ$  from the X axis,
- a vertical plane passing through  $V_1$  and  $V_2$  and at an angle of  $20^\circ$  to the right of the X axis.

2.3. Vision area B is the area of the outer surface of the windscreen which is more than 25 mm from the outer edge of the transparent area and is bounded by the intersection of the following four planes with the outer surface of the windscreen (see figure 2):

- a plane parallel to the Y axis, passing through  $V_1$  and at an upward angle of  $7^\circ$  from the X axis,
- a plane parallel to the Y axis, passing through  $V_2$  and at a downward angle of  $5^\circ$  from the X axis,
- a vertical plane passing through  $V_1$  and  $V_2$  and at an angle of  $17^\circ$  to the left of the X axis,
- a plane symmetrical to the former plane in relation to the median longitudinal plane of the vehicle.

Figure 1

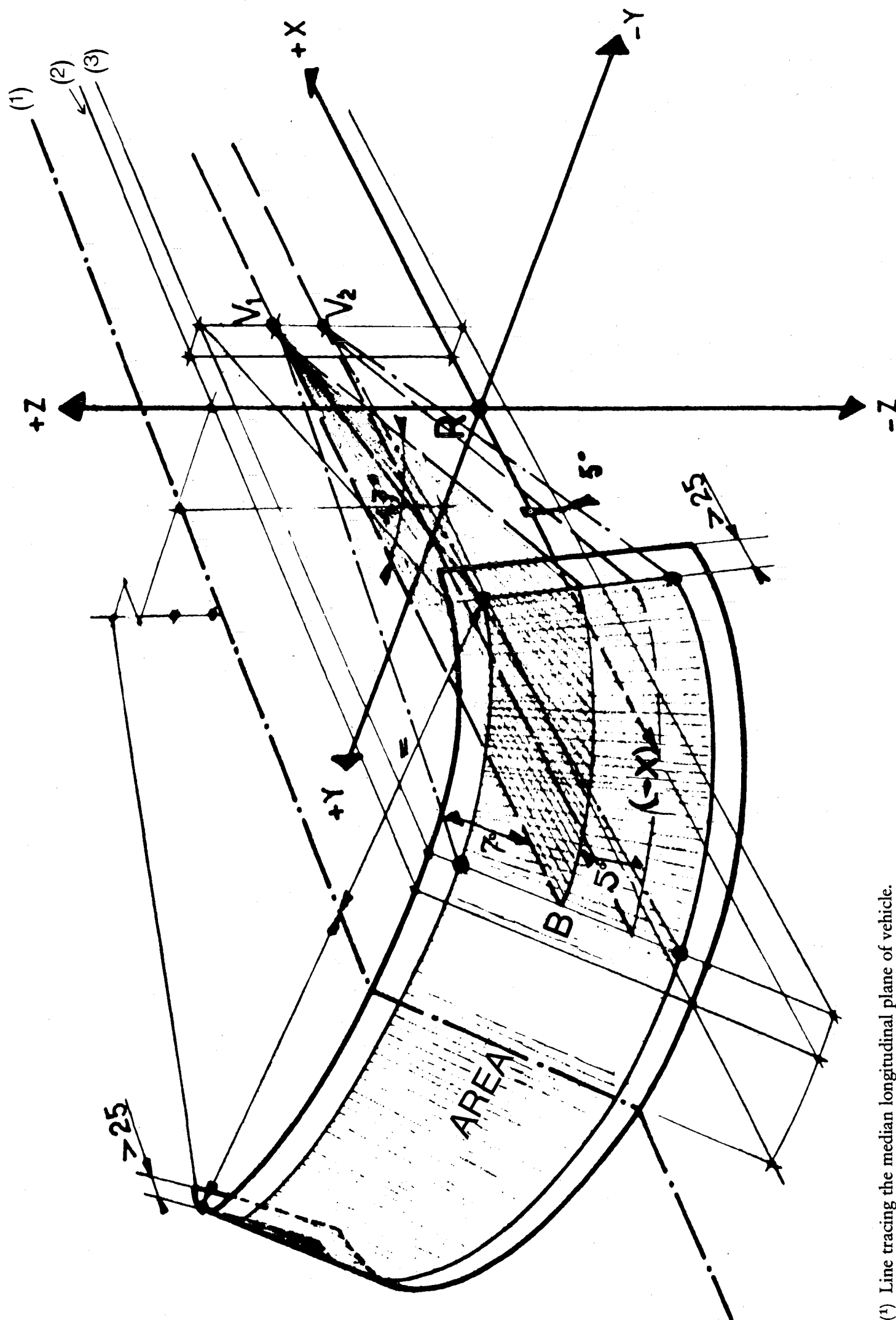
Vision area A



- (1) Line tracing the median longitudinal plane of vehicle.
- (2) Line tracing the vertical plane passing through R.
- (3) Line tracing the vertical plane passing through  $V_1$  and  $V_2$ .

Figure 2

Vision area B



- (1) Line tracing the median longitudinal plane of vehicle.
- (2) Line tracing the longitudinal plane passing through R.
- (3) Line tracing the longitudinal plane passing through  $V_1$  and  $V_2$ .

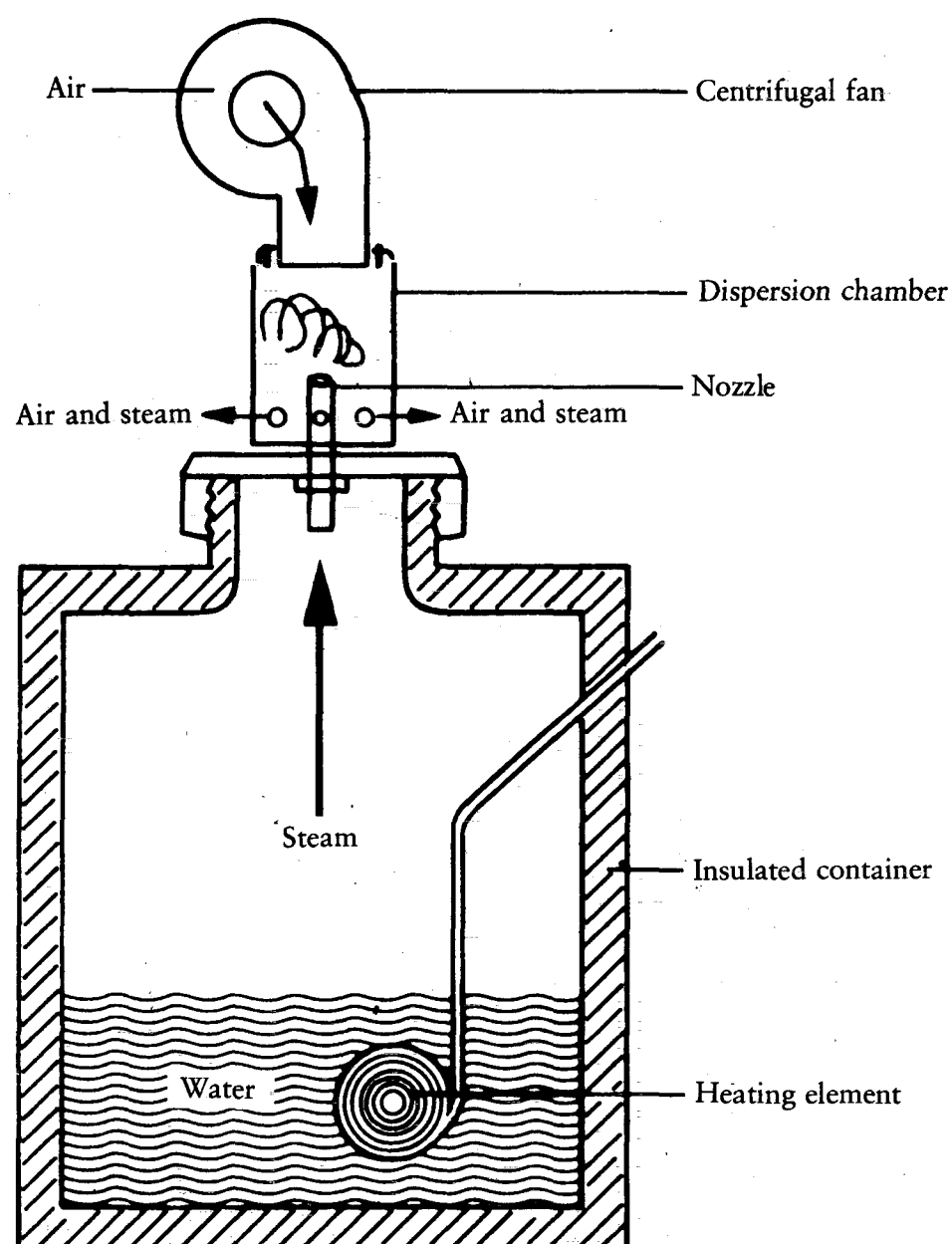
## ANNEX V

## STEAM GENERATOR

The steam generator used for the test must have the following characteristics:

- (a) the water container must have a capacity of at least 2.25 litres;
- (b) the heat loss at boiling point must not exceed 75 W in an ambient temperature of  $-3 \pm 1^\circ\text{C}$ ;
- (c) the fan must have a capacity of 0.07 to 0.10 m<sup>3</sup>/min at 0.5 mbar static pressure;
- (d) six steam outlet holes of 6.3 mm diameter must be provided round the top of the generator;
- (e) the generator must be calibrated at  $-3 \pm 1^\circ\text{C}$  to give readings for each  $70 \pm 5$  g/h output up to a maximum of n times this figure, where n is the number of seating positions designated by the manufacturer.

Diagram of steam generator



## Dimensions and characteristics of steam generator

| Component          | Dimensions                                                                                                             | Material                             |
|--------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Nozzle             | (a) Length 10 cm<br>(b) Inside diameter 1.5 cm                                                                         | Brass                                |
| Dispersion chamber | (a) Length 11.5 cm<br>(b) Diameter 7.5 cm<br>(c) Six holes of 0.63 cm evenly spaced 2.5 cm above bottom of the chamber | Brass pipe of 0.38 mm wall thickness |

ANNEX VI

MODEL

(Maximum format: A4 (210 × 297 mm))

Name of  
administration

ANNEX TO THE EEC VEHICLE TYPE-APPROVAL CERTIFICATE WITH REGARD TO THE  
WINDSCREEN DEFROSTING AND DEMISTING SYSTEMS

(Articles 4 (2) and 10 of Council Directive 70/156/EEC 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)

EEC type-approval No .....

1. Trade name or mark of the vehicle .....

2. Vehicle type .....

3. Manufacturer's name and address .....

.....

4. Where applicable, name and address of manufacturer's authorized representative .....

.....

.....

5. Brief description of the vehicle .....

.....

6. Number of seats .....

7. Brief description of defrosting and demisting systems .....

.....

.....

8. Defrost test temperature: — 8 ± 2 °C/— 18 ± 3 °C (\*)

9. Rated voltage of electrical installation .....

10. Characteristics of windscreen:  
laminated/toughened (\*)  
thickness of component parts: ..... mm

11. Particulars of windscreen mounting .....

.....

.....

12. Identification data for R point of driver's designated seating position in relation to position of  
primary reference marks .....

.....

(\*) Delete where inapplicable.

13. Identification, location and relative positions of primary reference marks .....
- .....
- .....
- .....
- .....
14. Vehicle submitted for type-approval on .....
15. Technical service conducting type-approval tests .....
- .....
16. Date of report issued by that service .....
17. Number of report issued by that service .....
18. Type-approval in respect of windscreen defrosting and demisting systems is granted/refused (\*)
19. Place .....
20. Date .....
21. Signature .....
22. The following documents, bearing the type-approval number shown above, are annexed to this certificate:
- ..... dimensional drawings
- ..... exploded view or photograph of the passenger compartment
- ..... characteristics of the defrosting system
- ..... characteristics of the demisting system
23. Remarks .....

---

(\*) Delete where inapplicable.

## COUNCIL DIRECTIVE

of 21 December 1977

on the approximation of the laws of the Member States relating to the wiper and washer systems of motor vehicles

(78/318/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 their wipers and washers;

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 rules, in order, in particular, to allow the EEC type-approval procedure which was the subject of Council Directive 70/156/EEC 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 <sup>(3)</sup>, as amended by Directive 78/315/EEC <sup>(4)</sup>, to be introduced in respect of each type of vehicle;

Whereas it is desirable to draft the technical requirements so that they have the same aim as the work being carried out on the subject in the UN Economic Commission for Europe;

Whereas these requirements apply to motor vehicles in category M<sub>1</sub> (the international classification of motor vehicles is given in Annex I to Directive 70/156/EEC);

Whereas the approximation of the national laws relating to motor vehicles entails reciprocal recognition by Member States of the checks carried out by each of them on the basis of the common requirements;

Whereas windscreen-washer systems are already marketed both separately and after being fitted to a vehicle; whereas if it is possible to check them before they are fitted to a vehicle, their free movement may be facilitated by the introduction of EEC type-approval for such systems, which are regarded as separate technical units within the meaning of Article 9a of Directive 70/156/EEC,

HAS ADOPTED THIS DIRECTIVE:

## Article 1

For the purposes of this Directive, 'vehicle' means any motor vehicle in category M<sub>1</sub> (as defined in Annex I to Directive 70/156/EEC) intended for use on the road, having at least four wheels and a maximum design speed exceeding 25 km/h.

## Article 2

No Member State may refuse to grant EEC type-approval or national type-approval of a vehicle with regard to the windscreen-washer and windscreen-wiper systems, or of a windscreen-washer system, if:

- such a vehicle satisfies the requirements of Annexes I to V relating to the windscreen-washer and windscreen-wiper systems,
- such a windscreen-washer system regarded as a separate technical unit within the meaning of Article 9a of Directive 70/156/EEC satisfies the relevant requirements laid down in Annex I,
- such a vehicle is fitted with a windscreen-washer system which has been granted type-approval as a separate technical unit within the meaning of Article 9a of Directive 70/156/EEC and has been installed in accordance with the requirements laid down in 6.2.5 of Annex I.

## Article 3

1. No Member State may refuse or prohibit the sale, registration, entry into service or use of any vehicle on grounds relating to:

<sup>(1)</sup> OJ No C 118, 16. 5. 1977, p. 33.

<sup>(2)</sup> OJ No C 114, 11. 5. 1977, p. 8.

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

<sup>(4)</sup> See page 1 of this Official Journal.

- its windscreen-wiper and windscreen-washer systems, if these satisfy the requirements laid down in Annexes I to V,
- its windscreen-washer system if this has been granted type-approval as a separate technical unit within the meaning of Article 9a of Directive 70/156/EEC and has been installed in accordance with the requirements laid down in 6.2.5 of Annex I.

2. No Member State may prohibit the placing on the market of any windscreen-washer system regarded as a separate technical unit within the meaning of Article 9a of Directive 70/156/EEC if it conforms to a type which has been granted type-approval within the meaning of the second indent of Article 2.

#### *Article 4*

The Member State which has granted type-approval shall take the measures required to ensure that it is informed of any modification of a part or characteristic referred to in 2.2 of Annex I. The competent authorities of that Member State shall determine whether it is necessary to carry out further tests on the modified vehicle type and to prepare a new report. If these tests show that the requirements of this Directive have not been complied with, the modification shall not be authorized.

#### *Article 5*

Any amendments necessary to adapt the requirements of Annexes I to VII to technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 70/156/EEC.

However, this procedure shall not apply to amendments introducing requirements for wiper and washer systems other than for the windscreen.

#### *Article 6*

1. Member States shall bring into force the provisions necessary in order to comply with this Directive within 18 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 covered by this Directive are communicated to the Commission.

#### *Article 7*

This Directive is addressed to the Member States.

Done at Brussels, 21 December 1977.

*For the Council*

*The President*

J. CHABERT

## LIST OF ANNEXES

- Annex I: Scope, definitions, applications for EEC type-approval, EEC type-approval, specifications, test procedure (\*)
- Annex II: Procedure for determining the H point and the actual seat-back angle and for verifying the relative positions of the R and H points and the relationship between the design seat-back angle and the actual seat-back angle (\*)
- Annex III: Method for determining the dimensional relationship between the vehicle's primary reference marks and the three-dimensional reference grid (\*)
- Annex IV: Procedure for determining vision areas on the windcreens of category M<sub>1</sub> vehicles in relation to the V points (\*)
- Annex V: Test-mixture specification for windscreen-wiper system and windscreen-washer system tests (\*)
- Annex VI: Annex to the EEC vehicle type-approval certificate with regard to the windscreen-wiper and windscreen-washer systems.
- Annex VII: EEC type-approval certificate of a separate technical unit

---

(\*) The technical requirements of this Annex are similar to those of the relevant UN Economic Commission for Europe draft regulation; the subdivisions have thus been observed. Where a section of the draft regulation has no counterpart in the Annexes to this Directive, the number is given in brackets for the record.

## ANNEX I

## SCOPE, DEFINITIONS, APPLICATION FOR EEC TYPE-APPROVAL, EEC TYPE-APPROVAL, SPECIFICATIONS, TEST PROCEDURE

## 1. SCOPE

1.1. This Directive applies to the 180° forward field of vision of the drivers of vehicles in category M<sub>1</sub>.

1.1.1. Its purpose is to ensure good visibility under adverse weather conditions by specifying the requirements for the windscreen-wiper and windscreen-washer systems of category M<sub>1</sub> vehicles.

1.1.2. The requirements of this Directive are so worded as to apply to category M<sub>1</sub> vehicles in which the driver is on the left. In category M<sub>1</sub> vehicles in which the driver is on the right, these requirements shall be applied by reversing the criteria where appropriate.

## 2. DEFINITIONS

(2.1.)

## 2.2. Vehicle type with regard to its windscreen-wiper and windscreen-washer systems

'Vehicle type with regard to its windscreen-wiper and windscreen-washer systems' means vehicles which do not differ in such essential respects as:

2.2.1. the external and internal forms and arrangements within the area specified in Section 1 which may affect visibility;

2.2.2. the shape, dimensions and characteristics of the windscreen and its mounting;

2.2.3. the characteristics of the windscreen-wiper and windscreen-washer systems.

## 2.3. Three-dimensional reference grid

'Three-dimensional reference grid' means a reference system which consists of a vertical longitudinal plane X-Z, a horizontal plane X-Y and a vertical transverse plane Y-Z (see figure 2 of Annex III). The grid is used to determine the dimensional relationships between the positions of design points on drawings and their position on the actual vehicle. The procedure for situating the vehicle relative to the grid is specified in Annex III; all coordinates referred to ground zero shall be based on a vehicle in running order (as defined in 2.6 of Annex I to Directive 70/156/EEC) plus one front-seat passenger, the mass of the passenger being 75 kg  $\pm$  1%.

2.3.1. Vehicles fitted with suspension enabling their ground clearance to be adjusted shall be tested under the normal conditions of use specified by the manufacturer.

## 2.4. Primary reference marks

'Primary reference marks' means holes, surfaces, marks and identification signs on the vehicle body. The type of reference mark used and the position of each mark relative to X, Y and Z coordinates of the three-dimensional reference grid and to a design ground plane shall be specified by the vehicle manufacturer. These marks may be the control points used for body assembly purposes.

## 2.5. Seat-back angle

(See Annex II).

- 2.6. **Actual seat-back angle**  
(See Annex II).
- 2.7. **Design seat-back angle**  
(See Annex II).
- 2.8. **V points**  
'V points' means points whose position in the passenger compartment is determined by vertical longitudinal planes passing through the centres of the outermost designated seating positions on the front seat and in relation to the R point and the design angle of the seat back, which points are used for verifying compliance with the field of vision requirements (see Annex IV).
- 2.9. **R point or seating reference point**  
(See Annex II).
- 2.10. **H point**  
(See Annex II).
- 2.11. **Windscreen datum points**  
'Windscreen datum points' means points situated at the intersection with the windscreen of lines radiating forward from the V points to the outer surface of the windscreen.
- 2.12. **Transparent area of a windscreen**  
'Transparent area of a windscreen' means that area of a vehicle windscreen or other glazed surface whose light transmittance, measured at right angles to the surface, is not less than 70%.
- 2.13. **Horizontal seat-adjustment range**  
'Horizontal seat-adjustment range' means the range of normal driving positions designated by the vehicle manufacturer for the adjustment of the driver's seat in the direction of the X axis (see 2.3).
- 2.14. **Extended seat-adjustment range**  
'Extended seat-adjustment range' means the range designated by the vehicle manufacturer for the adjustment of the seat in the direction of the X axis (see 2.3) beyond the range of normal driving positions specified in 2.13 and used for converting seats into beds or facilitating entry into the vehicle.
- 2.15. **Windscreen-wiper system**  
'Windscreen-wiper system' means the system consisting of a device for wiping the outer face of the windscreen, together with the accessories and controls necessary for starting and stopping the device.
- 2.16. **Windscreen-wiper field**  
'Windscreen-wiper field' means the area of the outer face of a wet windscreen that is swept by the windscreen wiper.
- 2.17. **Windscreen-washer system**  
'Windscreen-washer system' means the system consisting of a device for storing a fluid and applying it to the outer face of the windscreen, together with the controls necessary for starting and stopping the device.
- 2.18. **Windscreen-washer control**  
'Windscreen-washer control' means a device or accessory for starting and stopping the windscreen-washer system. Starting and stopping may be coordinated with the operation of the windscreen wiper or be totally independent of it.
- 2.19. **Windscreen-washer pump**  
'Windscreen-washer pump' means a device for transferring the windscreen-washer fluid from the reservoir to the outer face of the windscreen.

- 2.20. **Nozzle**  
'Nozzle' means a device the orientation of which is adjustable and which serves to direct the windscreen-washer fluid on to the windscreen.
- 2.21. **Performance of a windscreen-washer system**  
'Performance of a windscreen-washer system' means the ability of a windscreen-washer system to apply fluid to the target area of the windscreen without leakage or disconnection of a tube of the washer system occurring when the system is used normally.
3. **APPLICATIONS FOR EEC TYPE-APPROVAL**
- 3.1. **Application for EEC type-approval for a vehicle type in respect of its windscreen-wiper and windscreen-washer systems**
- 3.1.1. The application for EEC type-approval of a vehicle type with regard to its windscreen-wiper and windscreen-washer systems must be submitted by the vehicle manufacturer or by his authorized representative.
- 3.1.2. It must be accompanied by the following documents in triplicate containing the information specified below:
- 3.1.2.1. a description of the vehicle referring to the criteria mentioned in 2.2, together with dimensional drawings and either a photograph or an exploded view of the passenger compartment. The numbers and/or symbols identifying the vehicle type must be specified;
- 3.1.2.2. particulars of the primary reference marks in sufficient detail to enable them to be readily identified and the position of each in relation to the others and to the R point to be verified;
- 3.1.2.3. a technical description of the windscreen-wiper and windscreen-washer systems together with relevant data in sufficient detail.
- 3.1.2.4. A vehicle representative of the vehicle type to be approved must be submitted to the technical service conducting the type-approval tests.
- 3.2. **Application for EEC type-approval for a type of windscreen-washer system as a separate technical unit**
- 3.2.1. The application for EEC type-approval for a type of windscreen-washer system as a separate technical unit within the meaning of Article 9a of Directive 70/156/EEC must be submitted by the vehicle manufacturer or by the manufacturer of the windscreen-washer system, or by the authorized representative of either manufacturer.
- 3.2.2. For each type of windscreen-washer system the application shall be accompanied by:
- 3.2.2.1. three copies of documents giving a description of the system and of its technical characteristics;
- 3.2.2.2. one specimen of the type of the system. The competent authorities may, if they deem it necessary, request a further specimen. The specimens must bear in a clearly legible and indelible manner the applicant's trade name or mark and an identification of the type.
4. **EEC TYPE-APPROVAL**
- (4.1.)
- (4.2.)
- 4.3. A certificate conforming to the model specified in 4.3.1 and 4.3.2 shall be attached to the EEC type-approval certificate:
- 4.3.1. Annex VI for applications referred to in 3.1;
- 4.3.2. Annex VII for applications referred to in 3.2.
- (4.4.)
- (4.5.)

(4.6.)

(4.7.)

(4.8.)

5. SPECIFICATIONS

5.1. Windscreen-wiper system

5.1.1. Every vehicle must be equipped with at least one automatic windscreen-wiper system, i.e. a system which when the vehicle's engine is running is able to function without any action by the driver other than that needed for starting and stopping the windscreen wiper.

5.1.2. The windscreen wiper field must cover not less than 80% of vision area B as defined in 2.3 of Annex IV.

5.1.2.1. In addition the windscreen wiper field must cover not less than 98% of vision area A as defined in 2.2 of Annex IV.

5.1.3. The windscreen wiper must have at least two sweep frequencies:

5.1.3.1. one of not less than 45 cycles/minute (a cycle being the forward and return movement of the windscreen wiper);

5.1.3.2. one of not less than 10 and not more than 55 cycles/minute.

5.1.3.3. The difference between the highest and at least one of the lower sweep frequencies must be at least 15 cycles/minute.

5.1.4. The sweep frequencies prescribed in 5.1.3 must be achieved as indicated in 6.1.1 to 6.1.6, 6.1.8 and 6.1.9.

5.1.5. Intermittent operation windscreen-wiper systems may be used for the purposes of complying with the requirements of 5.1.3, provided that one of the frequencies complies with the requirements of 5.1.3.1 and that one of the other frequencies obtained when the main frequency is interrupted is not less than 10 cycles/minute.

5.1.6. When the windscreen-wiper system is stopped by the use of the windscreen-wiper control, the blades must return automatically to their position of rest.

5.1.7. The system must be capable of withstanding stalling for 15 seconds. The test procedure and conditions are set out in 6.1.7.

5.1.8. The windscreen wiper field must meet the minimum requirements of 5.1.2 when the wipers are tested at a sweep frequency conforming to the provisions of 5.1.3.2 under the conditions set out in 6.1.10.

5.1.9. The aerodynamic effects associated with the windscreen's size and shape, and the efficiency of the windscreen-wiper system, must be determined under the following conditions:

5.1.9.1. when subjected to a relative air speed equal to 80% of the vehicle's maximum speed but not exceeding 160 km/h, the windscreen-wiper systems, operating at maximum frequency, must continue to sweep a field as specified in 5.1.2.1, with the same efficiency.

5.1.10. The wiper-arm mounting must enable the wiper arm to be displaced from its position on the windscreen so as to allow the windscreen to be manually cleaned.

5.1.11. The windscreen-wiper system must be capable of operating for two minutes on a dry windscreen with the outside temperature at  $-18 \pm 3$  °C under the conditions specified in 6.1.11.

- 5.2. **Windscreen-washer system**
- 5.2.1. Every vehicle must be fitted with a windscreen-washer system which is capable of withstanding the loads produced when the nozzles are plugged and the system is actuated in accordance with the procedure set out in 6.2.1 and 6.2.2.
- 5.2.2. The performance of the windscreen-washer and windscreen-wiper systems must not be adversely affected by exposure to the temperature cycles prescribed in 6.2.3 and 6.2.4.
- 5.2.3. The windscreen-washer system must be capable of delivering sufficient liquid to clear 60% of the area defined in 2.2 of Annex IV under the conditions described in 6.2.5 of this Annex.
- 5.2.4. The capacity of the reservoir containing the liquid must not be less than one litre.
6. **TEST PROCEDURE**
- 6.1. **Windscreen-wiper system**
- 6.1.1. The tests described below must be carried out under the following conditions, unless otherwise specified:
- 6.1.2. the ambient temperature must not be less than 10 °C or more than 40 °C;
- 6.1.3. the windscreen must be kept constantly wet;
- 6.1.4. in the case of an electric windscreen-wiper system the following additional conditions must be met:
- 6.1.4.1. the battery must be fully charged;
- 6.1.4.2. the engine must be running at 30% of the speed at which it develops maximum power;
- 6.1.4.3. the dipped-beam headlamps must be switched on;
- 6.1.4.4. the heating and/or ventilation systems, if fitted, must be operating at maximum electrical consumption;
- 6.1.4.5. the defrosting and demisting systems, if fitted, must be operating at maximum electrical consumption.
- 6.1.5. Compressed air operated or vacuum operated windscreen-wiper systems must be able to function continuously at the prescribed sweep frequencies whatever the engine speed or engine load.
- 6.1.6. The sweep frequencies of windscreen-wiper systems must comply with the requirements of 5.1.3 after a preliminary operating time of 20 minutes on a wet surface.
- 6.1.7. The requirements of 5.1.7 shall be satisfied when the wiper arms are restrained in their vertical position for a period of 15 seconds with the windscreen-wiper control set at the maximum sweep frequency.
- 6.1.8. The outer face of the windscreen shall be thoroughly degreased by means of methylated spirit or an equivalent degreasing agent. After drying, a solution of ammonia of not less than 3% and not more than 10% shall be applied. The surface shall be allowed to dry again and shall then be wiped with a dry cotton cloth.
- 6.1.9. A coating of the test mixture (see Annex V) shall be applied uniformly to the outer surface of the windscreen and allowed to dry.
- 6.1.10. For the purpose of measuring the field of the windscreen-wiper system, prescribed in 5.1.2 and 5.1.2.1, the outer face of the windscreen shall be treated as indicated in 6.1.8 and 6.1.9 or by some other equivalent method.
- 6.1.10.1. A trace of the windscreen-wiper field shall be made and compared with a trace of the vision areas specified in 5.1.2 and 5.1.2.1 in order to verify that the requirements are met.
- 6.1.11. The requirements of 5.1.11 shall be met after the vehicle has been in an ambient temperature of  $-18 \pm 3$  °C for a minimum of four hours. The windscreen-wiper system is to be set to operate under the conditions set out in 6.1.4 with the control at the position of maximum frequency. There are no requirements regarding the field swept.

## 6.2. Windscreen-washer system

## Test conditions

## 6.2.1. Test No 1

- 6.2.1.1. The windscreen-washer system shall be filled with water, fully primed, and placed in an ambient temperature of  $20 \pm 2$  °C for a minimum of four hours. All the nozzles shall be plugged and the windscreen-washer control actuated six times in one minute, each time for at least three seconds. If the system is powered by the muscular energy of the driver, the force applied shall be that shown in the following table:

| Type of pump | Force to be applied |
|--------------|---------------------|
| hand         | 11 to 13.5 daN      |
| foot         | 40 to 44.5 daN      |

- 6.2.1.2. For electric pumps, the test voltage must be no less than the rated voltage without exceeding it by more than two volts.

- 6.2.1.3. The performance of the windscreen-washer system at the end of the test must be as defined in 2.21.

## 6.2.2. Test No 2

The windscreen-washer system shall be filled with water, fully primed, and placed in an ambient temperature of  $-18 \pm 3$  °C for a minimum of four hours. The windscreen-washer control shall be actuated six times in one minute, each time for at least three seconds, using the force prescribed in 6.2.1. The system shall then be placed in an ambient temperature of  $20 \pm 2$  °C until the ice has completely thawed. The performance of the windscreen-washer system shall then be verified by actuating it as prescribed in 6.2.1.

## 6.2.3. Test No 3 (Low-temperature exposure test)

- 6.2.3.1. The windscreen-washer system shall be filled with water, fully primed, and placed in an ambient temperature of  $-18 \pm 3$  °C for a minimum of four hours so that the total mass of the water in the washer system is frozen. The system shall then be placed in an ambient temperature of  $20 \pm 2$  °C until the ice has completely thawed. This freeze/thaw cycle shall be repeated six times. The performance of the windscreen-washer system shall then be verified by actuating it as prescribed in 6.2.1.

- 6.2.3.2. The windscreen-washer system shall be filled and fully primed with a low-temperature windscreen-washer fluid consisting of a 50% solution of methanol, or alternatively isopropyl alcohol, in water of a hardness not greater than 205 g/tonne.

- 6.2.3.2.1. The system shall be placed in an ambient temperature of  $-18 \pm 3$  °C for a minimum of four hours. The performance of the windscreen-washer system shall be verified by actuating it as prescribed in 6.2.1.

## 6.2.4. Test No 4 (High-temperature exposure test)

- 6.2.4.1. The windscreen-washer system shall be filled with water, fully primed, and placed in an ambient temperature of  $80 \pm 3$  °C for a minimum of eight hours and then in an ambient temperature of  $20 \pm 2$  °C. When the temperature has stabilized, the performance of the windscreen-washer system shall be verified by actuating it as prescribed in 6.2.1.

- 6.2.4.2. If part of the windscreen-washer system is situated in the engine compartment, the system shall be filled with water, fully primed, and placed in an ambient temperature of  $80 \pm 3$  °C for a minimum of eight hours. The performance of the windscreen-washer system shall be verified by actuating it as prescribed in 6.2.1.

- 6.2.4.3. If no part of the windscreen-washer system is situated in the engine compartment, the system shall be filled with water, fully primed, and placed in an ambient temperature of  $60 \pm 3$  °C for a minimum of eight hours. The performance of the windscreen-washer system shall be verified by actuating it as prescribed in 6.2.1.

- 6.2.5. *Test No 5* (Windscreen-washer system capability test prescribed in 5.2.3)
- 6.2.5.1. The windscreen-washer system shall be filled with water and fully primed. With the vehicle stationary and no significant wind effect, the washer nozzle or nozzles shall be adjusted towards the target area of the outer face of the windscreen. If the system is powered by the muscular energy of the driver the force required to do this shall not exceed that specified in 6.2.1.1. If the system is powered by an electric pump the requirements of 6.1.4 shall apply.
- 6.2.5.2. The outer face of the windscreen shall be treated as prescribed in 6.1.8 and 6.1.9.
- 6.2.5.3. The windscreen-washer system shall then be actuated in the manner indicated by the manufacturer for 10 cycles of automatic operation of the windscreen-wiper system at maximum frequency and the proportion of the vision area defined in 2.2 of Annex IV that is cleaned shall then be measured.
- 6.3. All the windscreen-washer tests described in 6.2.1 to 6.2.4 shall be carried out on one and the same windscreen-washer system, either attached to a vehicle of a type for which EEC type-approval has been sought, or not attached to a vehicle, in the case of a system for which EEC type-approval as a separate technical unit has been requested.
- (7.)
- (8.)
- (9.)
- (10.)
- (11.)
- (12.)
-

## ANNEX II

### PROCEDURE FOR DETERMINING THE H POINT AND THE ACTUAL SEAT-BACK ANGLE AND FOR VERIFYING THE RELATIVE POSITIONS OF THE R AND H POINTS AND THE RELATIONSHIP BETWEEN THE DESIGN SEAT-BACK ANGLE AND THE ACTUAL SEAT-BACK ANGLE

Annex III to Council Directive 77/649/EEC of 27 September 1977 on the approximation of the laws of the Member States relating to the field of vision of motor vehicle drivers <sup>(1)</sup> shall be applicable.

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<sup>(1)</sup> OJ No L 267, 19. 10. 1977, p. 1.

## ANNEX III

### METHOD FOR DETERMINING THE DIMENSIONAL RELATIONSHIPS BETWEEN THE VEHICLE'S PRIMARY REFERENCE MARKS AND THE THREE-DIMENSIONAL REFERENCE GRID

#### 1. RELATIONSHIP BETWEEN REFERENCE GRID AND VEHICLE'S PRIMARY REFERENCE MARKS

To verify specific dimensions on or within a vehicle submitted for type-approval in accordance with this Directive, the relationship between the coordinates of the three-dimensional reference grid defined in 2.3 of Annex I, which have been laid out at the initial vehicle-design stage, and the positions of the primary reference marks defined in 2.4 of Annex I, must be established accurately so that specific points on the vehicle manufacturer's drawings can be located on an actual vehicle produced from those drawings.

#### 2. METHOD FOR ESTABLISHING RELATIONSHIP OF REFERENCE GRID TO REFERENCE MARKS

For this purpose, a ground reference plane shall be constructed, which is marked with the X-X measurement and the Y-Y measurement. The method of achieving this is set out in figure 3 of this Annex, the reference plane being a hard, flat, level surface on which the vehicle stands, and which has two measuring scales firmly fixed to its surface; these shall be graduated in millimetres, the X-X scale being not less than 8 m long, and the Y-Y scale not less than 4 m long. The two scales must be set at right angles to each other as shown in figure 3 of this Annex. The intersection of the scales is ground zero.

#### 3. EXAMINATION OF THE REFERENCE PLANE

In order to provide for minor variations in the level of the reference plane or test area, it is necessary to measure the deviations from ground zero along both the X and Y scales at intervals of 250 mm and to record the readings obtained so that corrections can be made when checking the vehicle.

#### 4. ACTUAL TEST ATTITUDE

In order to provide for minor changes in suspension height, etc., it is necessary to have available a means of bringing the primary reference marks to the correct coordinate positions relative to the

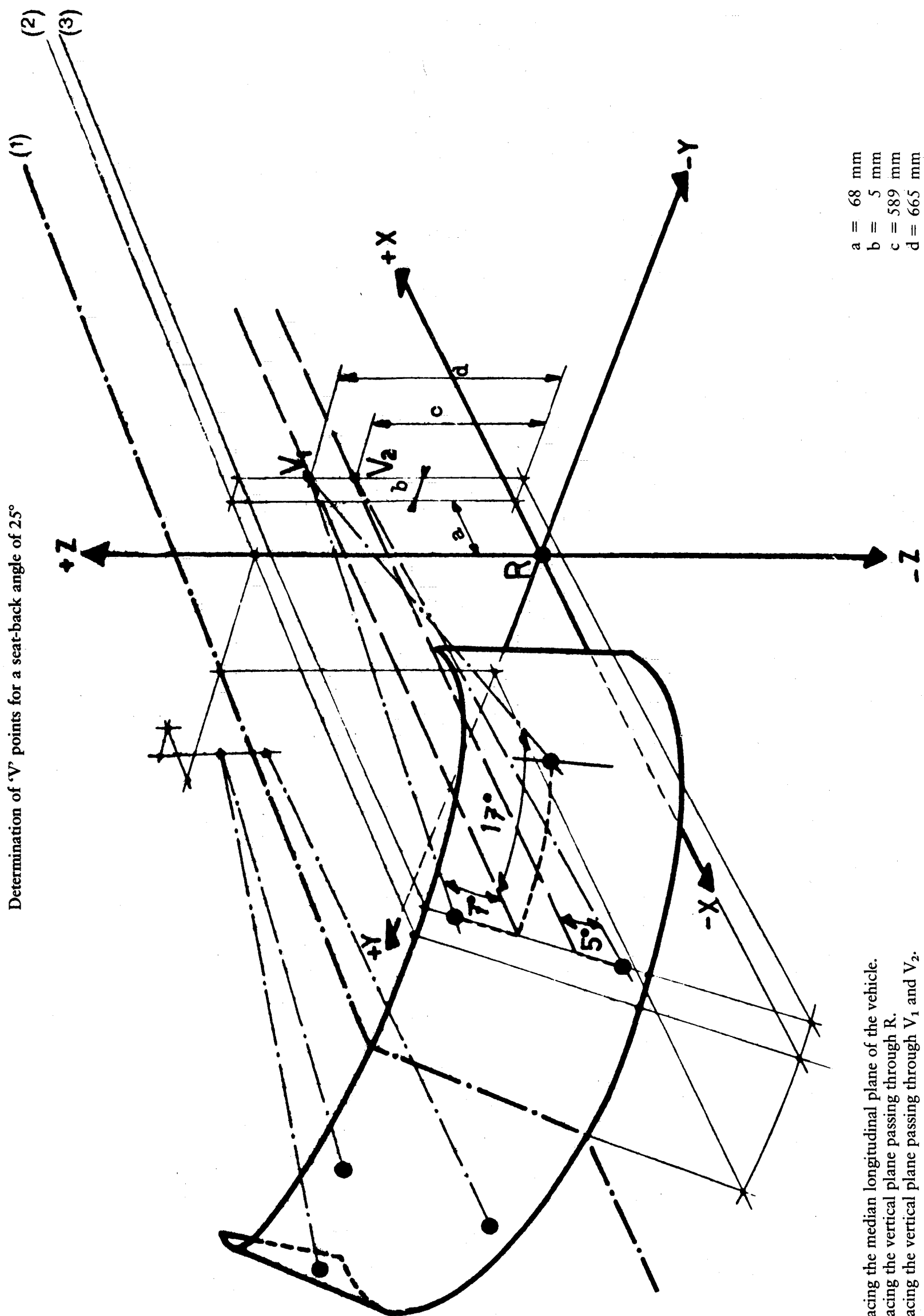
design attitude before further measurements are taken. In addition, it must be possible to make minor lateral and/or longitudinal adjustments to the vehicle's position so as to place it correctly in relation to the reference grid.

## 5. RESULTS

The vehicle having been correctly placed relative to the reference grid and in its design attitude, the site of the necessary points for studying the forward visibility requirements can be readily determined. Test methods to determine these requirements may include the use of theodolites, light sources or shadow devices, or any other method which can be shown to give equivalent results.

Figure 1

Determination of 'V' points for a seat-back angle of 25°



- (1) Line tracing the median longitudinal plane of the vehicle.
- (2) Line tracing the vertical plane passing through R.
- (3) Line tracing the vertical plane passing through V1 and V2.

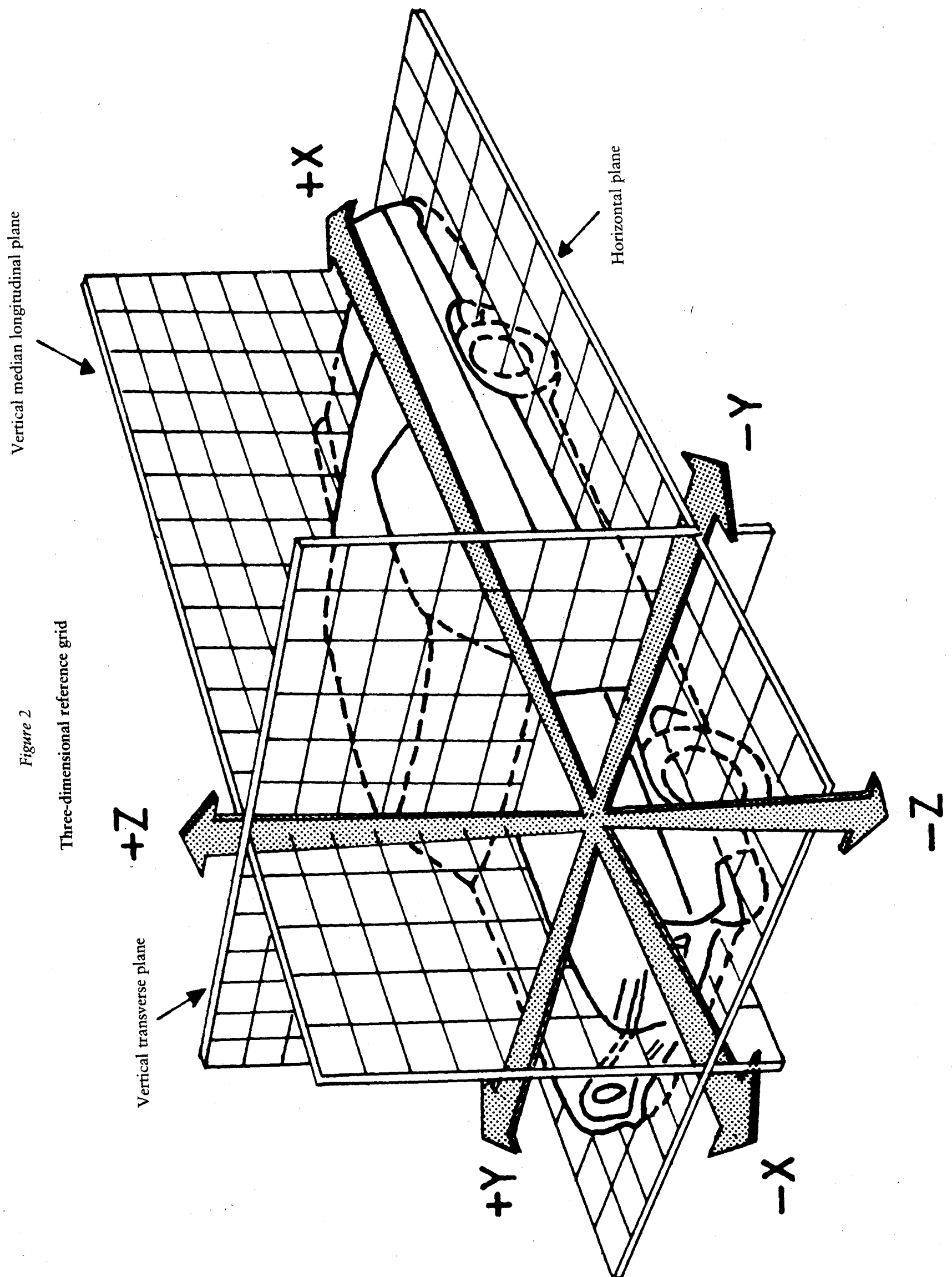
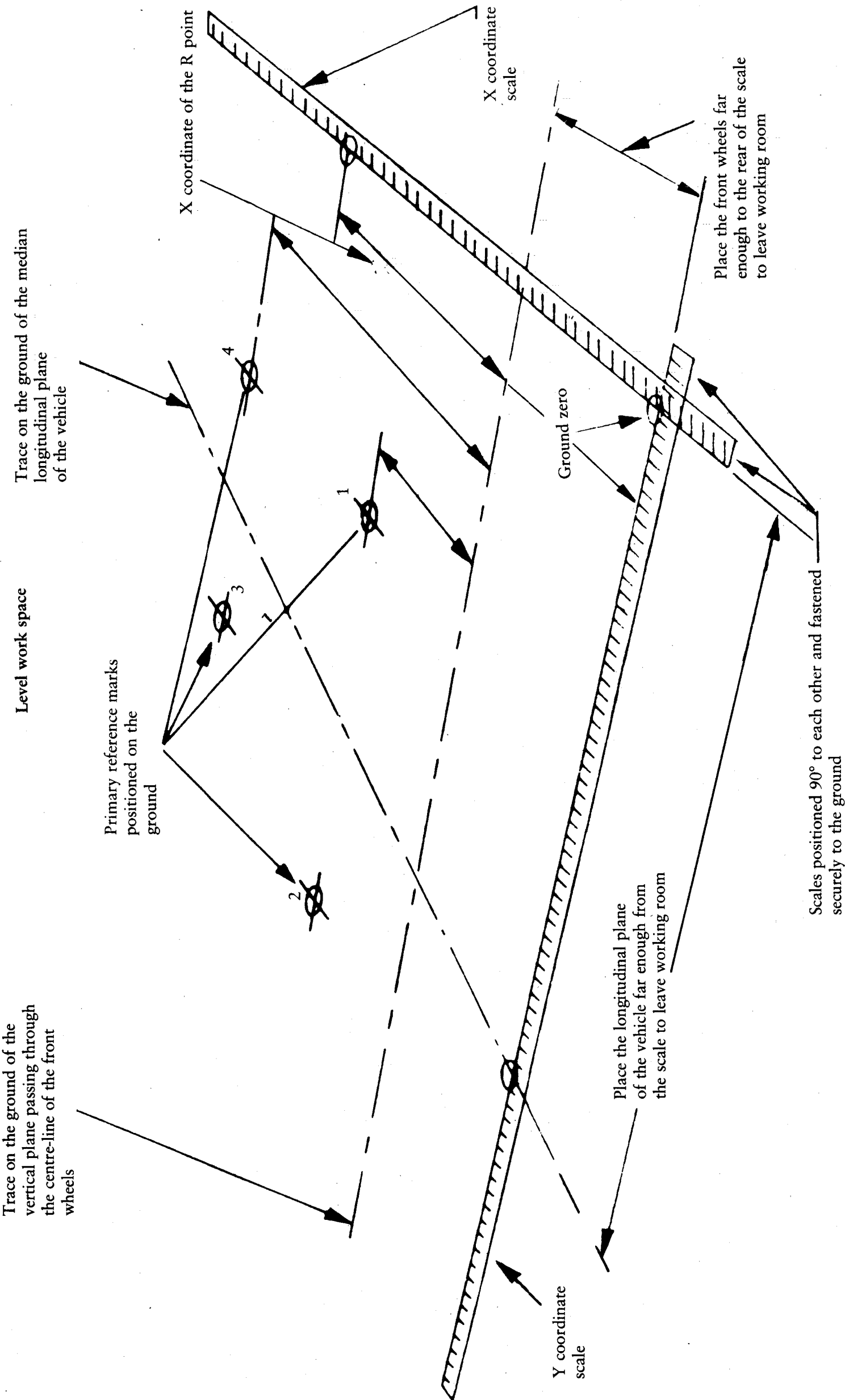


Figure 3



## ANNEX IV

PROCEDURE FOR DETERMINING VISION AREAS ON WINDSCREENS OF CATEGORY M<sub>1</sub>  
VEHICLES IN RELATION TO THE V POINTS

## 1. POSITIONS OF THE V POINTS

- 1.1. The positions of the V points in relation to the R point, as indicated by XYZ coordinates from the three-dimensional reference grid, are as shown in Tables I and II.
- 1.2. Table I indicates the basic coordinates for a design seat-back angle of 25°. The positive direction for the coordinates is indicated in figure 1 of Annex III.

TABLE I

| V point        | X     | Y      | Z      |
|----------------|-------|--------|--------|
| V <sub>1</sub> | 68 mm | — 5 mm | 665 mm |
| V <sub>2</sub> | 68 mm | — 5 mm | 589 mm |

## 1.3. Correction for design seat-back angles other than 25°

- 1.3.1. Table II shows the further corrections to be made to the X and Z coordinates of each V point when the design seat-back angle is not 25°. The positive direction for the coordinates is shown in figure 1 of Annex III.

TABLE II

| Seat-back angle (in °) | Horizontal coordinates $\Delta X$ | Vertical coordinates $\Delta Z$ | Seat-back angle (in °) | Horizontal coordinates $\Delta X$ | Vertical coordinates $\Delta Z$ |
|------------------------|-----------------------------------|---------------------------------|------------------------|-----------------------------------|---------------------------------|
| 5                      | — 186 mm                          | 28 mm                           | 23                     | — 18 mm                           | 5 mm                            |
| 6                      | — 177 mm                          | 27 mm                           | 24                     | — 9 mm                            | 3 mm                            |
| 7                      | — 167 mm                          | 27 mm                           | 25                     | 0 mm                              | 0 mm                            |
| 8                      | — 157 mm                          | 27 mm                           | 26                     | 9 mm                              | — 3 mm                          |
| 9                      | — 147 mm                          | 26 mm                           | 27                     | 17 mm                             | — 5 mm                          |
| 10                     | — 137 mm                          | 25 mm                           | 28                     | 26 mm                             | — 8 mm                          |
| 11                     | — 128 mm                          | 24 mm                           | 29                     | 34 mm                             | — 11 mm                         |
| 12                     | — 118 mm                          | 23 mm                           | 30                     | 43 mm                             | — 14 mm                         |
| 13                     | — 109 mm                          | 22 mm                           | 31                     | 51 mm                             | — 18 mm                         |
| 14                     | — 99 mm                           | 21 mm                           | 32                     | 59 mm                             | — 21 mm                         |
| 15                     | — 90 mm                           | 20 mm                           | 33                     | 67 mm                             | — 24 mm                         |
| 16                     | — 81 mm                           | 18 mm                           | 34                     | 76 mm                             | — 28 mm                         |
| 17                     | — 72 mm                           | 17 mm                           | 35                     | 84 mm                             | — 32 mm                         |
| 18                     | — 62 mm                           | 15 mm                           | 36                     | 92 mm                             | — 35 mm                         |
| 19                     | — 53 mm                           | 13 mm                           | 37                     | 100 mm                            | — 39 mm                         |
| 20                     | — 44 mm                           | 11 mm                           | 38                     | 108 mm                            | — 43 mm                         |
| 21                     | — 35 mm                           | 9 mm                            | 39                     | 115 mm                            | — 48 mm                         |
| 22                     | — 26 mm                           | 7 mm                            | 40                     | 123 mm                            | — 52 mm                         |

## 2. VISION AREAS

- 2.1. Two vision areas shall be determined from the V points.
- 2.2. Vision area A is the area on the outer surface of the windscreen bounded by the following four planes extending forward from the V point (see figure 1):

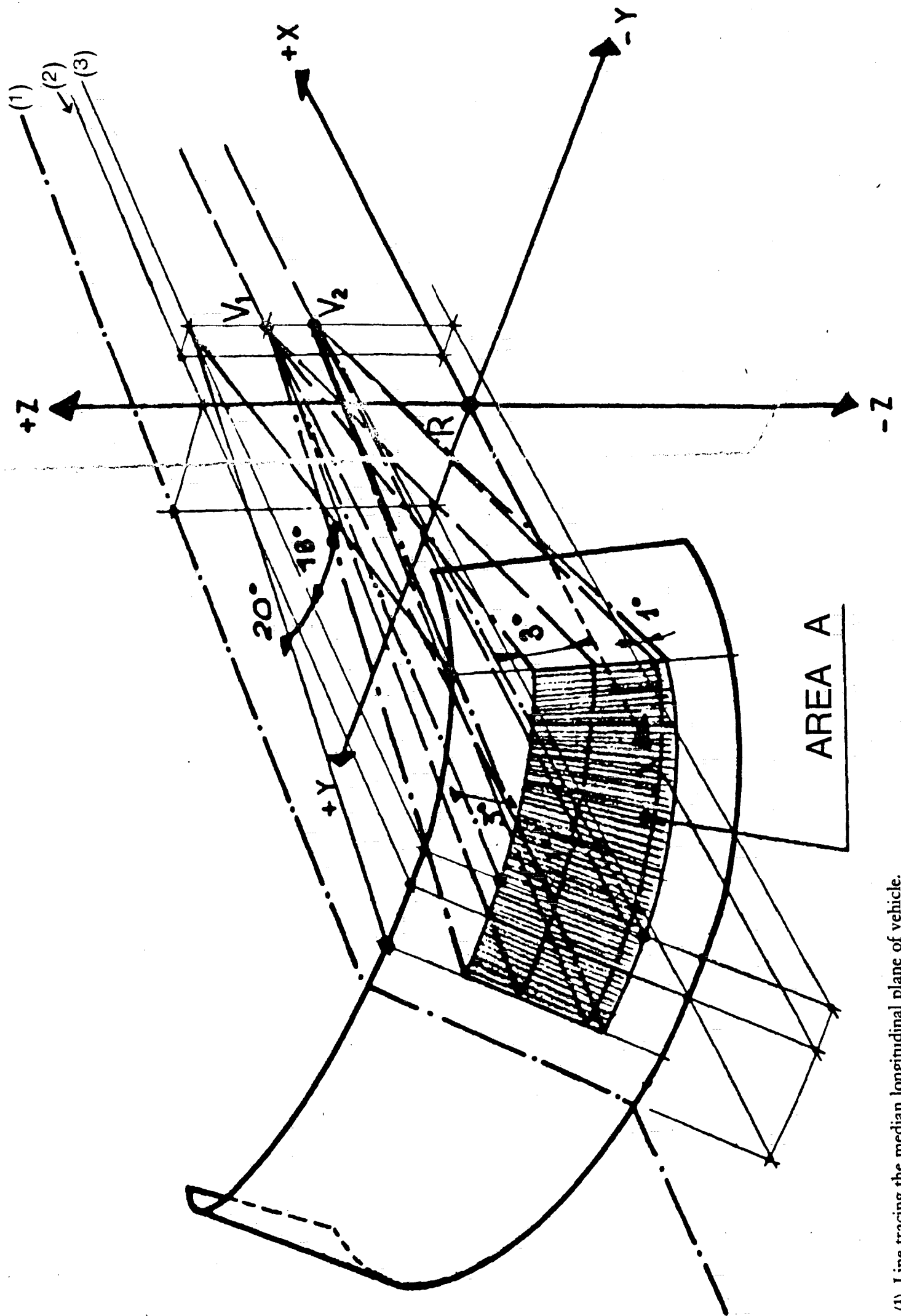
- a vertical plane passing through  $V_1$  and  $V_2$  and at an angle of  $13^\circ$  to the left of the X axis;
- a plane parallel to the Y axis, passing through  $V_1$  and at an upward angle of  $3^\circ$  from the X axis;
- a plane parallel to the Y axis, passing through  $V_2$  and at a downward angle of  $1^\circ$  from the X axis;
- a vertical plane passing through  $V_1$  and  $V_2$  and at an angle of  $20^\circ$  to the right of the X axis.

2.3. Vision area B is the area of the outer surface of the windscreen which is more than 25 mm from the outer edge of the transparent area and is bounded by the intersection of the following four planes with the outer surface of the windscreen (see figure 2):

- a plane parallel to the Y axis, passing through  $V_1$  and at an upward angle of  $7^\circ$  from the X axis;
- a plane parallel to the Y axis, passing through  $V_2$  and at a downward angle of  $5^\circ$  from the X axis;
- a vertical plane passing through  $V_1$  and  $V_2$  and at an angle of  $17^\circ$  to the left of the X axis;
- a plane symmetrical to the former plane in relation to the median longitudinal plane of the vehicle.

Figure 1

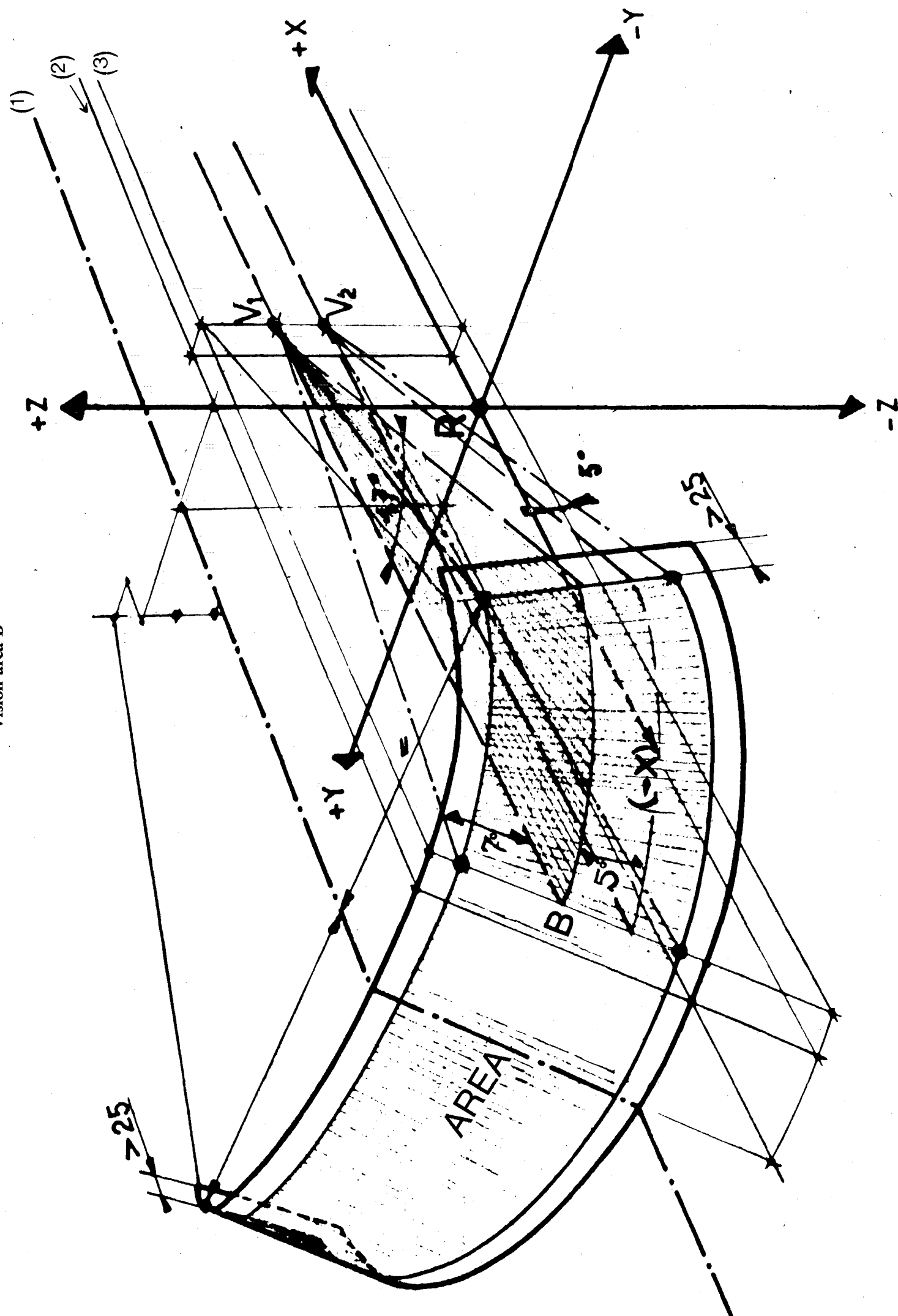
Vision area A



- (1) Line tracing the median longitudinal plane of vehicle.
- (2) Line tracing the vertical plane passing through R.
- (3) Line tracing the vertical plane passing through  $V_1$  and  $V_2$ .

Figure 2

Vision area B



- (1) Line tracing the median longitudinal plane of vehicle.
- (2) Line tracing the longitudinal plane passing through R.
- (3) Line tracing the longitudinal plane passing through  $V_1$  and  $V_2$ .

## ANNEX V

**TEST-MIXTURE SPECIFICATION FOR WINDSCREEN-WIPER SYSTEM AND WINDSCREEN-WASHER SYSTEM TESTS**

The test mixture referred to in 6.1.9. of Annex I shall consist of the following (by volume): 92.5% water (with a hardness of less than 205 g/tonne after evaporation), 5% aqueous saturated salt (sodium chloride) solution and 2.5% dust constituted in accordance with Tables I and II.

TABLE I

**Analysis of test dust**

| Constituent                    | % mass     |
|--------------------------------|------------|
| SiO <sub>2</sub>               | 67 to 69   |
| Fe <sub>2</sub> O <sub>3</sub> | 3 to 5     |
| Al <sub>2</sub> O <sub>3</sub> | 15 to 17   |
| CaO                            | 2 to 4     |
| MgO                            | 0.5 to 1.5 |
| Alkalis                        | 3 to 5     |
| Ignition loss                  | 2 to 3     |

TABLE II

**Particle-size distribution of coarse-grade dust**

| Particle size<br>(in $\mu\text{m}$ ) | Particle size<br>distribution (%) |
|--------------------------------------|-----------------------------------|
| 0 to 5                               | 12 $\pm$ 2                        |
| 5 to 10                              | 12 $\pm$ 3                        |
| 10 to 20                             | 14 $\pm$ 3                        |
| 20 to 40                             | 23 $\pm$ 3                        |
| 40 to 80                             | 30 $\pm$ 3                        |
| 80 to 200                            | 9 $\pm$ 3                         |

## ANNEX VI

## MODEL

(Maximum format: A4 (210 × 297 mm))

Name of administration

ANNEX TO THE EEC VEHICLE TYPE-APPROVAL CERTIFICATE WITH REGARD TO THE  
WINDSCREEN-WIPER AND WINDSCREEN-WASHER SYSTEMS

(Articles 4 (2) and 10 of Council Directive 70/156/EEC 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)

- EEC type-approval No .....
1. Trade name or mark of the vehicle .....
  2. Vehicle type .....
  3. Manufacturer's name and address .....
  4. If applicable, name and address of manufacturer's authorized representative .....
  5. Brief description of the vehicle .....
  6. Characteristics of the windscreen-wiper and windscreen-washer systems .....
  7. Identification data for R point of driver's designated seating position in relation to position of primary reference marks .....
  8. Identification, location and relative positions of primary reference marks .....
  9. Vehicle submitted for type-approval on .....
  10. Technical service conducting type-approval tests .....
  11. Date of report issued by that service.....
  12. Number of report issued by that service .....
  13. Type-approval in respect of windscreen-wiper and windscreen-washer systems is granted/refused (\*)
  14. Place .....
  15. Date .....

(\*) Delete where inapplicable.

16. Signature .....
17. The following documents, bearing the type-approval number shown above, are annexed to this certificate:
- ..... dimensional drawings
- ..... exploded view or photograph of the passenger compartment
18. Remarks .....
-

ANNEX VII

MODEL

(Maximum format: A4 (210 × 297 mm))

Name of administration

EEC TYPE-APPROVAL CERTIFICATE OF A SEPARATE TECHNICAL UNIT

(Article 9a of Council Directive 70/156/EEC 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)

Separate technical unit: type of windscreen-washer system

EEC type-approval No of the separate technical unit

1. Trade name or mark of the system

2. Type of system

3. Manufacturer's name and address

4. If applicable, name and address of manufacturer's authorized representative

5. Description of the characteristics of the system

6. Electric pump if fitted: rated voltage of pump motor

7. Any restrictions on use or conditions for fitting

8. Date of submission of system for EEC type-approval of a separate technical unit

9. Technical service conducting the EEC type-approval tests for a separate technical unit

10. Date of report issued by that service

11. Number of report issued by that service

12. EEC type-approval of a separate technical unit for the windscreen-washer system granted/  
refused (\*)

13. Place

14. Date

15. Signature

16. The following documents, bearing the EEC type-approval number of the separate technical unit  
shown above, are annexed to this certificate:  

(give details where appropriate)

17. Remarks

(\*) Delete where inapplicable.