

COMMISSION OF THE EUROPEAN COMMUNITIES

COM(76) 571 final.

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PROPOSAL FOR A COUNCIL DIRECTIVE

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

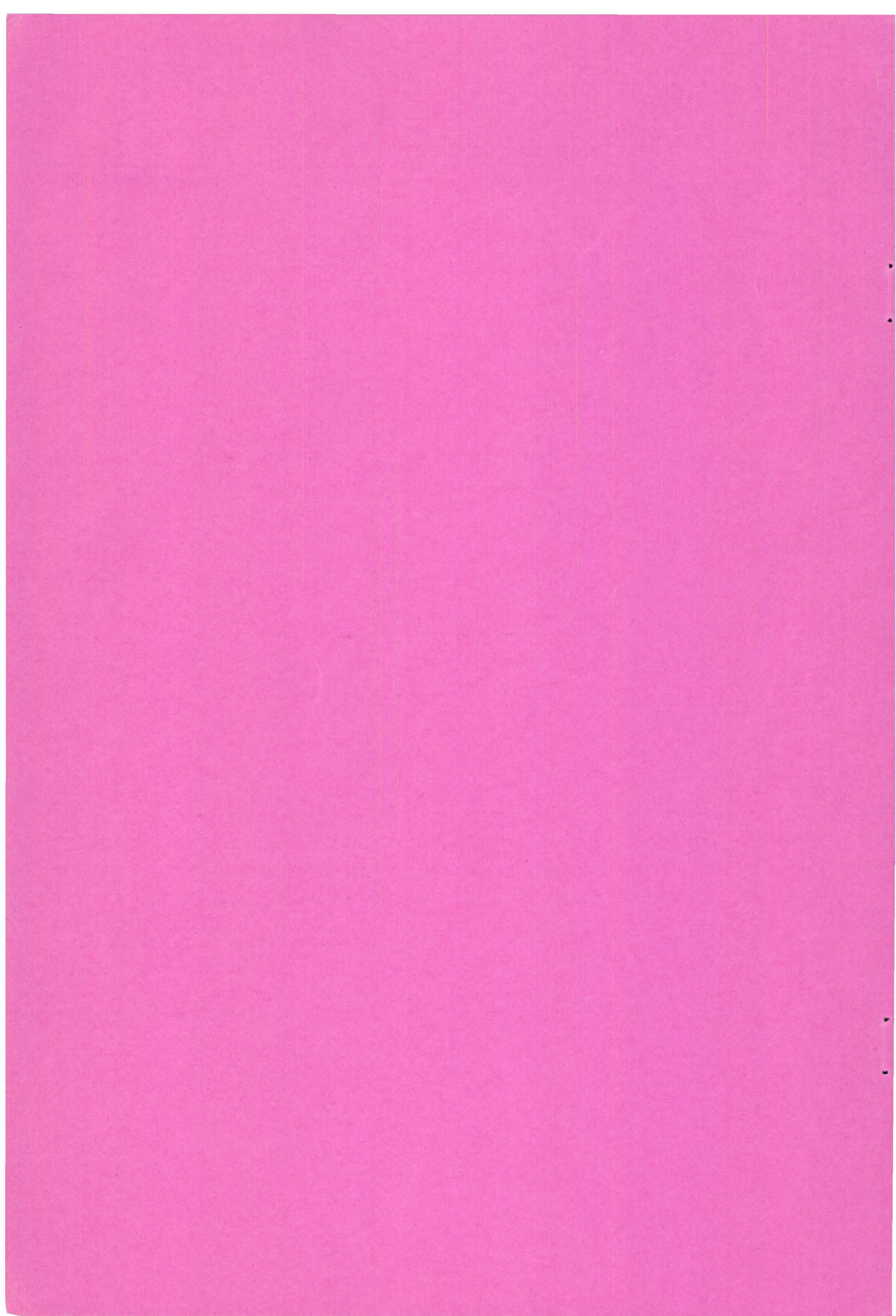
PROPOSAL FOR A COUNCIL DIRECTIVE

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

PROPOSAL FOR A COUNCIL DIRECTIVE

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)

(submitted to the Council by the Commission)



EXPLANATORY MEMORANDUM

I. General

1. The procedure for the Community type approval of motor vehicles and their trailers, covered by the Council Directive of 6 February 1970⁽¹⁾, also includes the windowwiper, the windowwasher and the defroster. These components, which together form the demisting system, are intended to guarantee good visibility to the driver in bad weather. The field of vision that a vehicle must provide for the driver by means of its external and internal shapes and fittings has already been covered by a proposal for a Directive⁽²⁾. The field of vision that a rear-view mirror must provide for the driver has been covered by Council Directive 71/127/EEC of 1 March 1971⁽³⁾. That Directive is currently being studied by the Committee on Motor Vehicles with a view to adapting it to the technical progress achieved in the meantime. With these two new Directives an important step will be taken towards greater driving safety.

2. On 5 August 1968⁽⁴⁾ the Commission addressed to the Council a proposal on, inter alia, windowwipers and windowwashers. The Council felt that it was inappropriate to examine these requirements before the adoption of the Directive on type approval since this Directive instituted the administrative procedure for the various directives of a technical nature. In the meantime, other international organizations have begun work on harmonization in this field. Desiring the harmonization of the technical requirements to extend in scope beyond the frontiers of the European Communities, so that Community motor manufacturers are not obliged to substantially modify vehicles intended for sale in non-member countries, the Commission thought it reasonable that the Council should not begin to examine its proposal until the international work on the subject had reached a certain stage of maturity. After difficult and laborious discussions, this work finally resulted in draft regulations on which these proposals are based.

(1) OJ N° L 42, 23 February 1970.

(2) COM (75)619 of 28 November 1975.

(3) OJ N° L 68, 22 March 1971.

(4) OJ N° C 125 of 28 November 1968.

The initial redrafting of the proposal for a directive of July 1968 was so extensive that the Commission felt it worthwhile to put forward a new proposal for a directive.

II. Comments on the proposal for a Directive

Its scope is restricted to motor vehicles falling within category M₁ (private motor vehicles), intended for use on the road, having at least four wheels and a maximum design speed in excess of 25 km/h (Article 1).

Article 2 incorporates in the EEC procedure for type approval the requirements relating to the window-wiper, the window-washer, the defroster and the demisting system.

Since at the moment some new Member States do not operate their own type approval procedure it is necessary to lay down provisions enabling vehicles complying with the requirements of the Directive (Article 3) ⁽¹⁾ to be used in those Member States.

Where the prototype has been modified, the Member States which has carried out type approval must be able to assess whether new tests should be carried out (Article 4).

Article 5 lays down the procedure for adapting the requirements set out in the annexes to technical progress. This procedure is set out in Article 13 of the Council Directive of 6 February 1970 on the type approval of motor vehicles and of their trailers.

(1) OJ N° L 73 of 27 March 1972 "Documents concerning the accession to the European Communities of the Kingdom of Denmark, Ireland, the United Kingdom and Northern Ireland".

Act concerning the conditions of accession and the adjustments to the Treaties - Annex I, Title X.

Article 6 provides for two deadlines : before expiry of the first deadline the Member States have to adopt and publish the measures necessary in order to comply with the Directive. The second deadline determines the date on which all of the Member States must simultaneously implement the common rules (Article 6, (1)).

Finally, the Commission must be informed, within reasonable time, of any draft provision drawn up by the Member States in the field covered by the Directive, since such information will enable the Commission to prepare any comments on the draft considered necessary (Article 6, (2)).

CONSULTATION OF THE EUROPEAN PARLIAMENT AND OF THE ECONOMIC AND SOCIAL COMMITTEE

The opinion of both these bodies is required as laid down in the provisions of Article 100, (2).

PROPOSAL
FOR A
COUNCIL DIRECTIVE

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

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;

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

Whereas the technical requirements which motor vehicles must satisfy pursuant to national law relate, inter alia, to the window -wipers and -washers 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 regulations, in order, in particular, to allow the EEC type-approval procedure, which was the subject of Council Directive n° 70/156/EEC of 6 February 1970 on the approximation of laws of the Member States relating to the type-approval of motor vehicles and their trailers⁽¹⁾, to be applied in respect of each type of vehicle;

Whereas it is appropriate to utilize basically certain technical requirements adopted by the UN Economic Commission for Europe in its Regulation N° ... (2), which is annexed to the Agreement of 20 March 1958 concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts;

(1) OJ N° L 42, 23.2.1970, p. 1.

(2) ECE document from Geneva ...

Whereas these requirements apply to motor vehicles of category M₁ (the international classification of motor vehicles is given in the above mentioned Council Directive 70/156/EEC of 6 February 1970);

Whereas approximation of the national laws relating to motor vehicles involves the mutual recognition by Member States of the tests carried out by each of them on the basis of the common requirements, and whereas, for such a system to function successfully, these requirements must be applied by all Member States with effect from the same date.

HAS ADOPTED THIS DIRECTIVE :

V/ / / / /
M/ / / / /

Article 1

For the purposes of this Directive, "vehicle" means any motor vehicle of class M₁ (as defined in Annex I of Council Directive No.70/156/EEC of 6 February 1970) designed 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 window-wiper and washer systems if they satisfy the requirements laid down in Annexes II, III, IV and V hereto.

Article 3

No Member State may refuse the registration or may prohibit the sale, entry into service or use of any vehicle on grounds relating to the window-wiper and washer systems if they satisfy the requirements laid down in Annexes I, II, III, IV and V hereto.

Article 4

The Member State which has granted type-approval shall take the necessary measures to ensure that it is informed of any modification of a part or characteristic referred to in item 2.2. of Annex I. The competent authorities of that State shall determine whether fresh tests should be carried out on the modified vehicle type and a fresh report drawn up. Where such tests reveal a failure to comply with the requirements of this Directive, the modification shall not be approved.

Article 5

The amendments necessary to adapt the provisions of Annexes I, II, III, IV, V and VI to take account of technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Council Directive No.70/156/EEC of 6 February 1970.

Article 6

1. Member States shall adopt and publish by 1st January 1978 the provisions necessary to comply with this Directive and shall forthwith inform the Commission thereof. They shall apply these provisions with effect from 1st January 1980.

2. After notification of this Directive, Member States shall take steps to inform the Commission, in sufficient time for it to submit its comments, of any draft laws, regulations or administrative provisions which they intend to adopt in the field covered by this Directive.

Article 7

This Directive is addressed to the Member States.

List of Annexes

- Annex I: Scope, definitions, application for EEC type-approval, EEC type-approval, specific requirements, test procedures (*).
- Annex II: Procedure for determining the "H" point and the actual seat-back angle and for verifying their relationship to the "R" point and the design seat-back angle (*).
- Annex III: Method for determining the dimensional relationship between the vehicle's primary reference marks and the three-dimensional reference system (*).
- Annex IV: Procedure for determining vision areas on windcreens on vehicles of class M₁ in relation to the "V" points (*).
- Annex V: Test-mixture specification for windscreen-wiper-system and windscreen-washer-system capability test (*).
- Annex VI: Annex to the EEC vehicle type-approval certificate with regard to the windscreen-wiper and windscreen-washer systems.

(*) The technical requirements of this Annex are basically similar to that of UN Economic Commission for Europe Regulation No, in particular the sub-divisions of the sections are the same. Where an item of Regulation ... has no corresponding item in this Annex, the number is shown in brackets for the record.

ANNEX I

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

1. SCOPE

- 1.1. This Directive applies to the 180° forward field of view of the drivers of vehicles of class M₁.
- 1.1.1. It is designed to ensure good visibility under adverse weather conditions by specifying the requirements for the windscreen-wiper and windscreen-washer systems of vehicles of class M₁.
- 1.2. The requirements of this Directive are so worded as to apply to vehicles of class M₁ in which the driver's seat is on the left. In vehicles of class M₁ having the driver's seat on the right, these requirements shall be applied mutatis mutandis by inverting the criteria prescribed for lateral vision.

2. DEFINITIONS

For the purpose of this Directive

(2.1.)

- 2.2. "vehicle type as regards its windscreen-wiper and windscreen-washer systems" means motor vehicles which do not differ from one another with respect to the following essential features :
 - 2.2.1. external and internal shape and arrangements within the area specified in item 1. which may affect visibility;
 - 2.2.2. the shape and dimension of the windscreen and its mounting;
 - 2.2.3. the characteristics of the windscreen-wiper and windscreen-washer systems;
- 2.3. "three-dimensional reference system" means a reference system consisting of a vertical longitudinal plane X-Z, a horizontal plane X-Y and a vertical transverse plane Y-Z (see annex III, figure 2) and used to determine the relative distances between the positions prescribed for points on the planes and their real positions on the vehicle. The method of situating the vehicle relative to the three planes is shown in annex III; all co-ordinates referred to ground zero shall be calculated for a vehicle in running order (*) with one front-seat passenger, having a mass of 75 kg;

(*) As defined in Item 2.6. of Annex I to Directive 70/156/EEC. .../...

- 2.4. "primary reference marks" means holes, surfaces, marks and identification signs on the vehicle body. The type of reference mark used, the position of each mark by the X, Y and Z co-ordinates of the three-dimensional reference system, and its distance from an imaginary plane representing the ground, shall be specified by the manufacturer. The marks may be those used for assembling the body;
- 2.5. "seat-back angle" (see annex II);
- 2.6. "actual seat-back angle" (see annex III);
- 2.7. "design seat-back angle" (see annex II);
- 2.8. "'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" 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" means that area of a vehicle windscreen whose light transmittance, measured at right angles to the surface, is not less than 70 per cent;
- 2.13. "horizontal seat-adjustment range" means the range designated by the manufacturer for the adjustment of the driver's seat in the direction of the X axis (see item 2.3. above);
- 2.14. "extended seat-adjustment range" means the range designated by the manufacturer for the adjustment of the seat in the direction of the X axis (see item 2.3.) beyond the range of normal driving positions specified in item 2.13. and used for converting seats into beds or facilitating entry into the vehicle;
- 2.15. "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" means that area of the outer face of a wet windscreen that is swept by the windscreen wiper;
- 2.17. "windscreen-washer system" means the system consisting of a device for storing a fluid and applying it to the glazed outer face of the windscreen, together with the controls necessary for starting and stopping the device;
- 2.18. "windscreen-washer control" means a device or accessory for starting and stopping the windscreen-washer system. Starting and stopping may be co-ordinated with the operation of the windscreen-wiper or be totally independent thereof;
- 2.19. "windscreen-washer pump" means a device for transferring the windscreen-washer fluid from the reservoir to the glazed surface of the windscreen;
- 2.20. "nozzle" means a device adjustable as to orientation and serving to direct the windscreen-washer fluid on to the windscreen;
- 2.21. "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;
- (2.22.)
3. APPLICATION FOR EEC TYPE-APPROVAL
- 3.1. The application for EEC type-approval of a vehicle type with regard to its windscreen-wiper and windscreen-washer systems shall be submitted by the vehicle manufacturer or by his agent.
- 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 item 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 for easy identification and verification of the position of each in relation to the others and to the "R" point;
- 3.2.3. a technical description of the windscreen-wiper and windscreen-washer systems together with data in sufficient detail.
- 3.3. A vehicle representative of the vehicle type to be type-approved shall be submitted to the technical service conducting the type-approval tests.

4. EEC TYPE-APPROVAL

(4.1.)

(4.2.)

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

(4.4.)

(4.5.)

(4.6.)

(4.7.)

(4.8.)

5. SPECIFIC REQUIREMENTS

5.1. Windscreen-wiper system

- 5.1.1. Every vehicle shall 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 shall cover not less than 80 per cent of vision area "B" as defined in annex IV, item 2.3.
 - 5.1.2.1. In addition, the windscreen-wiper field shall cover not less than 98 per cent of vision area "A" as defined in annex IV, item 2.2.
- 5.1.3. The windscreen-wiper shall have at least two sweep frequencies:
 - 5.1.3.1. one of not less than 45 cycles/minute, and
 - 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 shall be at least 15 cycles/minute.
- 5.1.4. The sweep frequencies prescribed in item 5.1.3. shall be achieved as indicated in items 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, provided that one of the frequencies complies with the requirements of item 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. The windscreen-wiper-system control shall enable the blades to return automatically to their position of rest.
- 5.1.7. The system shall withstand stalling for 15 seconds. The test procedure and conditions are prescribed in item 6.1.7.
- 5.1.8. The windscreen-wiper field shall meet the minimum requirements of item 5.1.2. when the wipers are tested at a sweep frequency conforming to the provisions of item 5.1.3.2. in the conditions prescribed in item 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, shall be determined in the following conditions:
 - 5.1.9.1. when the windscreen-wiper systems are subjected to a relative air speed equal to 80 per cent of the vehicle's maximum speed but not exceeding 160 km/h, they shall when operating at maximum frequency continue to sweep a field meeting the same efficiency requirements as in item 5.1.2.1.
- 5.1.10. The wiper-arm mounting shall allow for removal of the wiper arm from the windscreen for manual cleaning of the latter.
- 5.1.11. The windscreen-wiper system shall be capable of operating for two minutes on a dry windscreen with the outside temperature at $-18^{\circ} \pm 3^{\circ}\text{C}$ and the control set at maximum frequency. For the purpose of verifying compliance with this requirement, the temperature shall be reduced from ambient level to $-18^{\circ} \pm 3^{\circ}\text{C}$ in a minimum of four hours. No requirement is laid down regarding the field swept.

5.2. Windscreen-washer system

- 5.2.1. Every vehicle shall be fitted with a windscreen-washer system. It shall be capable of withstanding loads induced when the nozzles are plugged and the system is actuated in accordance with the procedure prescribed in items 6.2.1. and 6.2.2.
- 5.2.2. The performance of the windscreen-washer and windscreen-wiper systems shall not be adversely affected by exposure to temperature cycles as detailed in items 6.2.3. and 6.2.4.
- 5.2.3. The windscreen-washer system shall be capable of delivering sufficient fluid to clear 60 per cent of the area defined in item 5.1.2.1. within 10 cycles of the windscreen-wiper system operating automatically at a frequency of not less than 45 cycles/minute.
- 5.2.4. The capacity of the fluid reservoir shall be not less than 1 litre.

6. TEST PROCEDURES

6.1. Windscreen-wiper system

- 6.1.1. The tests described below shall be performed under the following conditions:
- 6.1.2. the ambient temperature shall be not less than 10°C and not more than 40°C;
- 6.1.3. the windscreen shall be kept constantly wet;
- 6.1.4. in the case of an electric windscreen-wiper system the electrical state shall be as follows:
 - 6.1.4.1. the battery shall be fully charged;
 - 6.1.4.2. the engine shall be running at 30 per cent of the speed at which it develops maximum power;
 - 6.1.4.3. the passing lights shall be switched on;
 - 6.1.4.4. heating and/or ventilation systems, if provided, shall be operating at maximum electrical consumption; and
 - 6.1.4.5. defrosting and demisting systems, if provided, shall be operating at maximum electrical consumption.
- 6.1.5. Compressed-air-operated or vacuum-operated windscreen-wiper systems shall be able to operate continuously at the prescribed sweep frequencies whatever the engine speed or engine load.

- 6.1.6. The sweep frequencies of windscreen-wiper systems shall comply with the requirements of item 5.1.3. after a preliminary operating time of 20 minutes on a wet surface.
- 6.1.7. The requirements of item 5.1.7. shall be satisfied with the wiper arms restrained in their vertical position for a period of 15 seconds and the windscreen-wiper-system control set at the maximum sweep frequency.
- 6.1.8. The outer face of the windscreen shall be thoroughly de-greased by means of methylated spirit or an equivalent degreasing agent. After drying, a solution of ammonia of not less than 3 per cent and not more than 10 per cent shall be applied. The surface shall be allowed to dry again and then wiped with a dry cotton cloth.
- 6.1.9. A coating of test mixture as specified in annex V shall be applied uniformly to the glazed 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 items 5.1.2. and 5.1.2.1., the outer face of the windscreen shall be treated as indicated in items 6.1.8. and 6.1.9. above.
- 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 items 5.1.2. and 5.1.2.1. in order to verify that the requirements are met.

6.2. Windscreen-washer system

Test conditions

6.2.1. Test No. 1

6.2.1.1. The windscreen-washer system shall be filled and primed with water and placed in an ambient temperature of $20^{\circ} \pm 2^{\circ}\text{C}$. 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 supply situation shall be that specified in item 6.1.4.

6.2.2. Test No. 2

The windscreen-washer system shall be filled and fully primed with water and the temperature shall then be reduced to $-18^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and held at that level 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, the force prescribed in item 6.2.1. above being applied. The ambient temperature shall then be increased gradually to $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ until the ice has completely thawed.

The performance of the system shall still be as prescribed in item

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

/2.21

6.2.3.1. The windscreen-washer system shall be filled and fully primed with water and the temperature shall then be reduced to $-18^{\circ}\text{C} \pm 3^{\circ}\text{C}$ in a minimum of four hours; the total mass of the water in the washer system shall be frozen. The ambient temperature shall then be increased gradually to $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 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.

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 205g/1000 kg.

6.2.3.2.1. The temperature shall be reduced to $-18^{\circ}\text{C} \pm 3^{\circ}\text{C}$ until the windscreen-washer system has stabilized at this temperature. The performance of the windscreen-washer system shall be verified by actuating it as prescribed in item 6.2.1.

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

6.2.4.1. The windscreen-washer system shall be filled and fully primed with water and the ambient temperature shall then be gradually increased to $80^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and held at that level for eight hours, then gradually reduced to $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$. When the temperature has stabilized, the performance of the windscreen-washer system shall be verified by actuating it as prescribed in item 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 and fully primed with water and the temperature in the engine compartment shall then be gradually increased to $80^{\circ} \pm 3^{\circ}\text{C}$. The performance of the windscreen-washer system shall be verified by actuating it as prescribed in item 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 and fully primed with water and the ambient temperature shall then be gradually increased to $60^{\circ} \pm 3^{\circ}\text{C}$. The performance of the windscreen-washer system shall be verified by actuating it as prescribed in item 6.2.1.

6.2.5. Test No. 5 (Windscreen-washer-system capability test prescribed in item 5.2.3.)

6.2.5.1. The windscreen-washer system shall be filled and fully primed with water. The washer nozzle or nozzles shall be adjusted under static conditions towards the target area of the glazed outer face of the windscreen and actuated as prescribed in item 6.2.1.

6.2.5.2. The outer face of the windscreen shall be treated as prescribed in items 6.1.8. and 6.1.9.

6.2.5.3. The windscreen-washer system shall then be continuously activated for 10 cycles of the windscreen-wiper system in an automatic mode at maximum frequency and the proportion of the vision area prescribed in item 2.2. of annex IV that is cleared of the test mixture shall then be measured.

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ANNEX II

PROCEDURE FOR DETERMINING THE "H" POINT AND THE ACTUAL SEAT-BACK ANGLE AND FOR VERIFYING THEIR RELATIONSHIP TO THE "R" POINT AND THE DESIGN SEAT-BACK ANGLE (*)

1. DEFINITIONS

- 1.1. The "H" point, which indicates the position of a seated occupant in the passenger compartment, is the trace, in a longitudinal vertical plane, of the theoretical axis of rotation between the legs and the torso of a human body represented by the manikin described in item 3.
- 1.2. The "R" point or "seating reference point" is the reference point specified by the manufacturer which
 - 1.2.1. has co-ordinates determined in relation to the vehicle structure;
 - 1.2.2. corresponds to the theoretical position of the point of torso/legs rotation("H" point) for the lowest and most rearward normal driving position or position of use given to each seat provided by the vehicle manufacturer.
- 1.3. "Seat-back angle" means the inclination of the seat back in relation to the vertical.
- 1.4. "Actual seat-back angle" means the angle formed by the vertical through the "H" point with the torso reference line of the human body represented by the manikin described in item 3.
- 1.5. "Design seat-back angle" means the angle prescribed by the manufacturer which
 - 1.5.1. determines the seat-back angle for the lowest and most rearward normal driving position or position of use given to each seat by the vehicle manufacturer;
 - 1.5.2. is formed at the "R" point by the vertical and the torso reference line; and
 - 1.5.3. corresponds theoretically to the actual seat-back angle.

2. DETERMINATION OF "H" POINTS AND ACTUAL SEAT-BACK ANGLES

- 2.1. An "H" point and an "actual seat-back angle" shall be determined for each seat provided by the manufacturer. If the seats in the same row can be regarded as similar (bench seat, identical seats, etc.), only one "H" point and one "actual seat-back angle" shall be determined for each row of seats, the manikin described in item 3. being seated in a place regarded as representative for the row. This place shall be:
- 2.1.1. in the case of the front row, the driver's seat;
- 2.1.2. in the case of the rear row or rows, an outer seat.
- 2.2. When an "H" point and an "actual seat-back angle" are being determined, the seat considered shall be placed in the lowest and most rearward normal driving position or position of use provided for it by the manufacturer. The seat back shall if its inclination is adjustable be locked as specified by the manufacturer or in the absence of any specification to an actual seat-back angle of as nearly as possible 25° from the vertical.

3. DESCRIPTION OF THE MANIKIN

- 3.1. A three-dimensional manikin of a weight and contour corresponding to those of an adult male of average height shall be used. Such a manikin is depicted in figures 1 and 2 of the appendix to this annex.
- 3.2. The manikin shall comprise:
- 3.2.1. two components, one simulating the back and the other the seat of the body, pivoting on an axis representing the axis of rotation between the torso and the thigh. The trace of this axis on the side of the manikin is the manikin's "H" point;
- 3.2.2. two components simulating the legs and pivotally attached to the component simulating the seat; and
- 3.2.3. two components simulating the feet and connected to the legs by pivotal joints simulating ankles.
- 3.2.4. In addition, the component simulating the seat of the body shall be provided with a level enabling its transverse orientation to be verified.

- 3.3. Body-segment weights shall be attached at appropriate points corresponding to the relevant centres of gravity, so as to bring the total masses of the manikin up to about 75 kg. Details of the various weights are given in the table on page 2 of the appendix to this annex.
- 3.4. The torso reference line of the manikin is taken into account by a straight line passing through the joint between the leg and the pelvis and the theoretical joint between the neck and the thorax (see the appendix to this annex, figure 1).

4. SETTING UP THE MANIKIN

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

- 4.1. the vehicle shall be placed on a horizontal plane and the seats adjusted as prescribed in item 2.2.;
- 4.2. the seat to be tested shall be covered with a piece of cloth to facilitate correct setting up of the manikin;
- 4.3. the manikin shall be placed on the seat concerned, its pivotal axis being perpendicular to the longitudinal plane of symmetry of the vehicle;
- 4.4. the feet of the manikin shall be placed as follows:
 - 4.4.1. in the front seats, in such a way that the level verifying the transverse orientation of the seat of the manikin is brought to the horizontal;
 - 4.4.2. in the rear seats, so far as possible in such a way as to be in contact with the front seats. If the feet then rest on parts of the floor which are at different levels, the foot which first comes into contact with the front seat shall serve as a reference point and the other foot shall be so arranged that the level enabling the transverse orientation of the seat of the manikin to be verified is brought to the horizontal;
 - 4.4.3. if the "H" point is being determined at a centre seat, the feet shall be placed one on each side of the tunnel;
- 4.5. the weights shall be placed on the thighs, the level verifying the transverse orientation of the seat of the manikin shall be brought to the horizontal, and the weights shall be placed on the component representing the seat of the manikin;

- 4.6. the manikin shall be moved away from the seat back by means of the knee-pivot bar and the back of the manikin shall be pivoted forwards. The manikin shall be repositioned on the seat of the vehicle by being slid backwards on its seat until resistance is encountered, the back of the manikin then being replaced against the seat back;
- 4.7. a horizontal load of approximately 10 ± 1 daN shall be applied to the manikin twice. The direction and point of application of the load are shown by a black arrow in figure 2 of the appendix;
- 4.8. the weights shall be installed on the right and left sides, and the torso weights shall then be placed in position. The transverse level of the manikin shall be kept horizontal;
- 4.9. the transverse level of the manikin being kept horizontal, the back of the manikin shall be pivoted forwards until the torso weights are above the "H" point, so as to eliminate any friction with the seat back;
- 4.10. the back of the manikin shall be gently moved rearwards so as to complete the setting-up operation. The transverse level of the manikin shall be horizontal. If it is not, the procedure described above shall be repeated.

5. RESULTS

- 5.1. When the manikin has been set up as described in item 4. above, the "H" point and the actual seat-back angle of the vehicle seat considered are constituted by the "H" point and the angle of inclination of the manikin's torso reference line.
 - 5.2. The co-ordinates of the "H" point in relation to three mutually perpendicular planes, and the actual seat-back angle, shall be measured for comparison with the data supplied by the vehicle manufacturer.
- ## 6. 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
- 6.1. The results of the measurements carried out in conformity with item 5.2. for the "H" point and the actual seat-back angle shall be compared with the co-ordinates of the "R" point and the design seat-back angle as supplied by the vehicle manufacturer.

- 6.2. The relative positions of the "R" point and the "H" point and the relationship between the design seat-back angle and the actual seat-back angle shall be considered to be satisfactory for the seat in question if the "H" point, as defined by its co-ordinates, lies within a longitudinal rectangle whose horizontal and vertical sides are 30 mm and 20 mm long respectively and whose diagonals intersect at the "R" point, and if the actual seat-back angle is within 3° of the design seat-back angle.
- 6.2.1. If these conditions are met, the "R" point and the design seat-back angle shall be used for the test and, if necessary, the manikin shall be so adjusted that the "H" point coincides with the "R" point and the actual seat-back angle coincides with the design seat-back angle.
- 6.3. If the "H" point or the actual seat-back angle does not satisfy the requirements of item 6.2., above, the "H" point or the actual seat-back angle shall be determined twice more (three times in all). If the results of two of these three operations satisfy the requirements the results of the test shall be considered to be satisfactory.
- 6.4. If at least two of the three test results do not satisfy the requirements of item 6.2., the result of the test shall be considered to be not satisfactory.
- 6.5. If the situation described in item 6.4. above arises, or if verification cannot be effected because the manufacturer has failed to supply information regarding the position of the "R" point or regarding the design seat-back angle, the average of the results of the three determinations may be used and be regarded as applicable in all cases where the "R" point or the design seat-back angle is referred to in this Directive.
- 6.6. For verifying the relative positions of the "R" point and the "H" point and the relationship between the design seat-back angle and the actual seat-back angle in a serially-produced vehicle the rectangle referred to in item 6.2. shall be replaced by a square of 50 mm side and the actual seat-back angle shall not differ by more than $\pm 5^{\circ}$ from the design seat-back angle.

Annex II - Appendix
page 1

Annex II - Appendix
COMPONENTS OF THREE-DIMENSIONAL MANIKIN
Back

Torso
reference
line

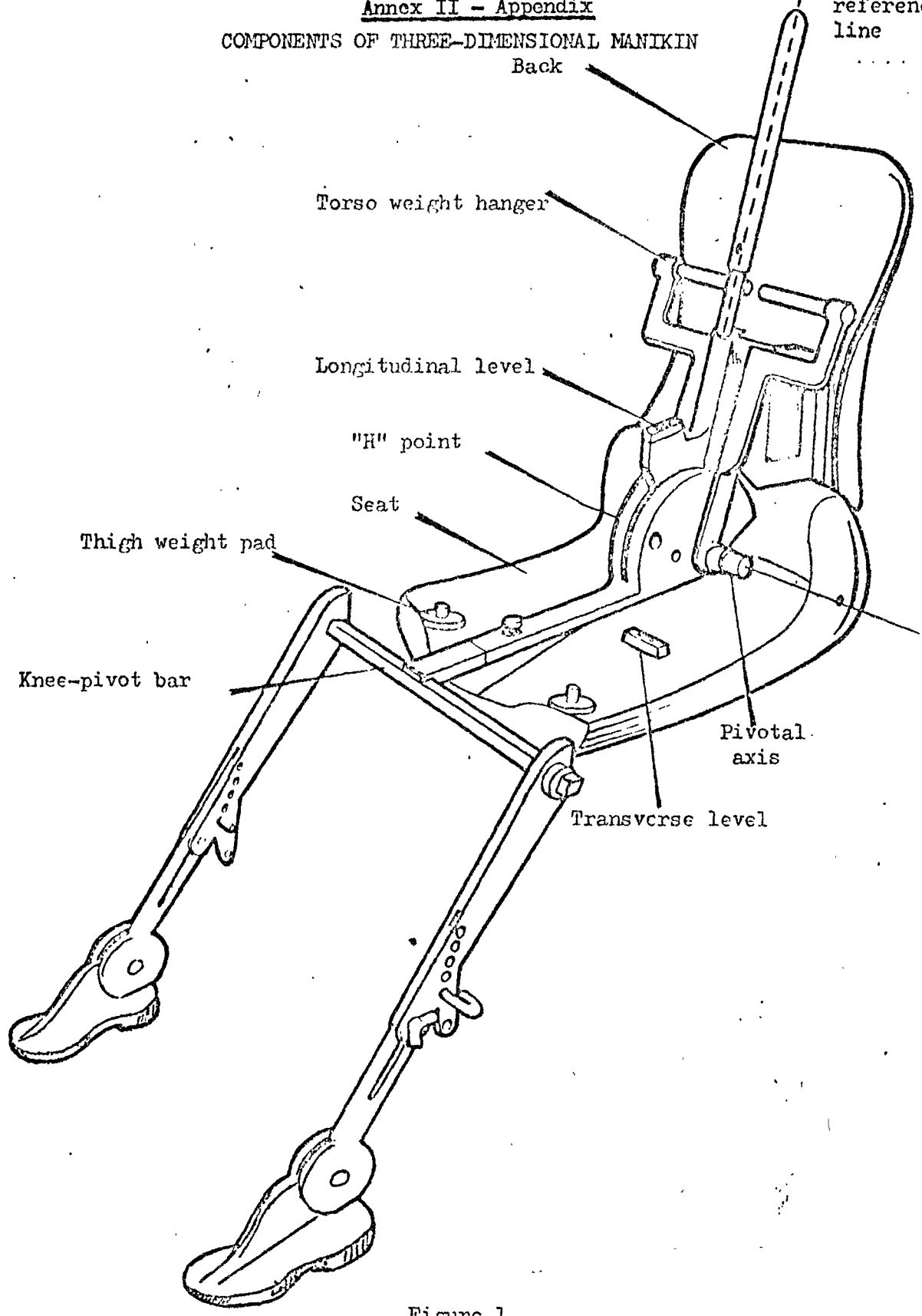


Figure 1

DIMENSIONS AND WEIGHT OF MANIKIN

<u>Mass of manikin</u>	<u>kg</u>
Components simulating back and seat of body	16
Torso weights	31
Seat weights	8
Thigh weights	7
Leg weights	13
<hr/>	<hr/>
Total:	75

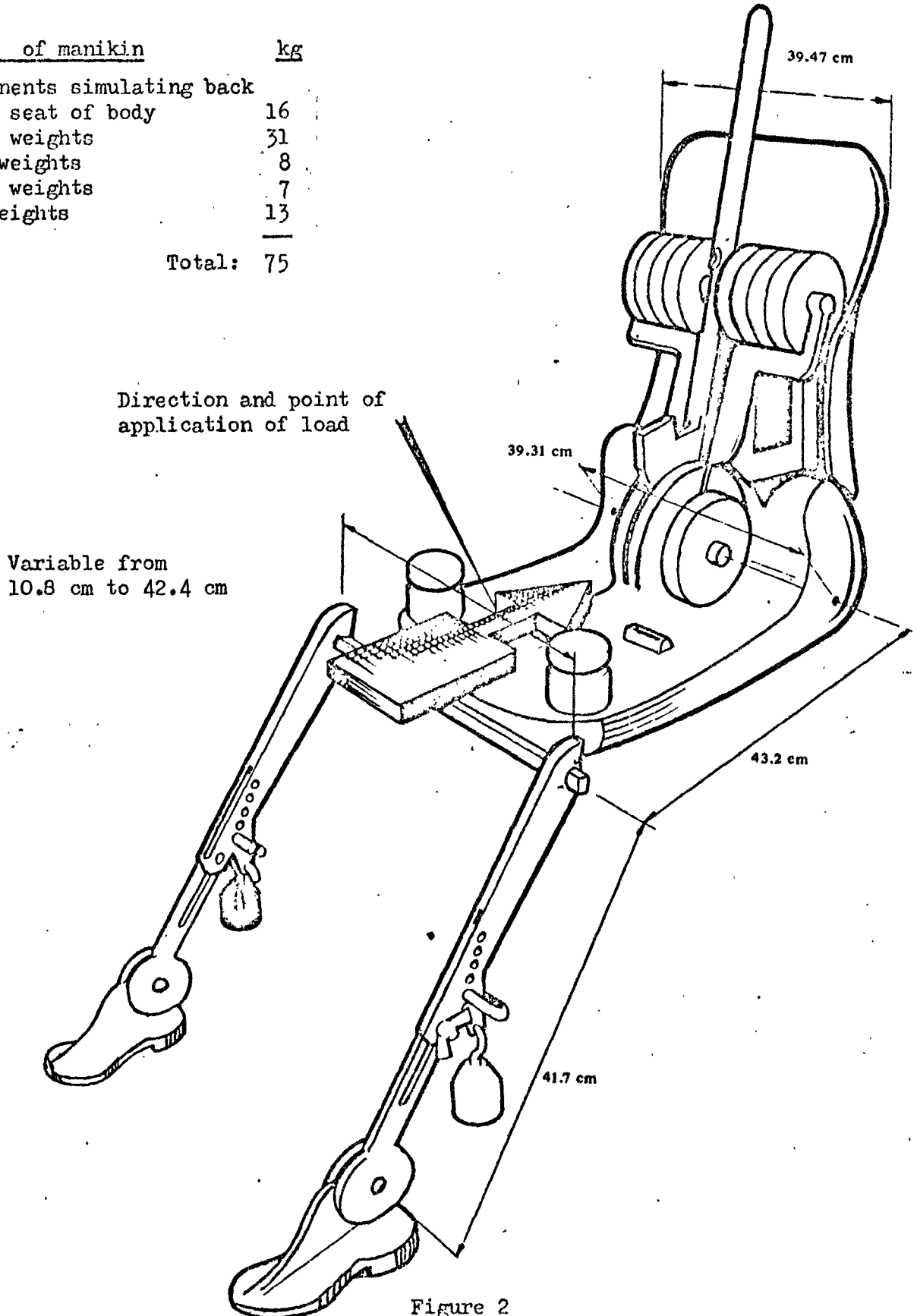


Figure 2

ANNEX III

METHOD FOR DETERMINING THE DIMENSIONAL RELATIONSHIP BETWEEN THE VEHICLE'S PRIMARY REFERENCE MARKS AND THE THREE-DIMENSIONAL REFERENCE SYSTEM

1. RELATIONSHIP BETWEEN REFERENCE SYSTEM AND VEHICLE'S PRIMARY REFERENCE MARKS

To verify characteristic internal and external dimensions of a vehicle submitted for type-approval in accordance with this Directive, the relationship between the co-ordinates fixed at the initial vehicle-design stage according to the three-dimensional reference system defined in item 2.3. of the Annex I¹⁶ and the positions of the primary reference marks defined in item 2.4. of the Annex I shall be accurately established so that specific points on the manufacturer's drawings can be located on an actual vehicle produced from those drawings.

2. METHOD OF ESTABLISHING THE RELATIONSHIP BETWEEN THE REFERENCE SYSTEM AND THE REFERENCE MARKS

To determine this relationship a ground reference plane is constructed, with graduated X and Y axes. One method of doing this is shown in figure 3 of the appendix to this annex. The reference plane is a hard, flat, level surface on which the vehicle stands, and on which two steel tape measures are firmly fixed. The tapes are graduated in millimetres and must have a length of at least 8 metres for the X tape and 4 metres for the Y tape. The two tapes are set at right angles to each other and their intersection is the "ground zero".

3. VERIFICATION OF ACCURACY

To verify that the reference plane or test area is level it is necessary to establish the deviations along the X and the Y tapes at intervals of 250 mm from ground zero and to record the results obtained, so that corrections can be made when checking the vehicle.

4. ACTUAL TEST ATTITUDE

In order to take account of minor changes in suspension height, etc., it is necessary to have a means of bringing the reference marks back to the positions whose co-ordinates were fixed at the design stage. In addition, it shall 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 plane.

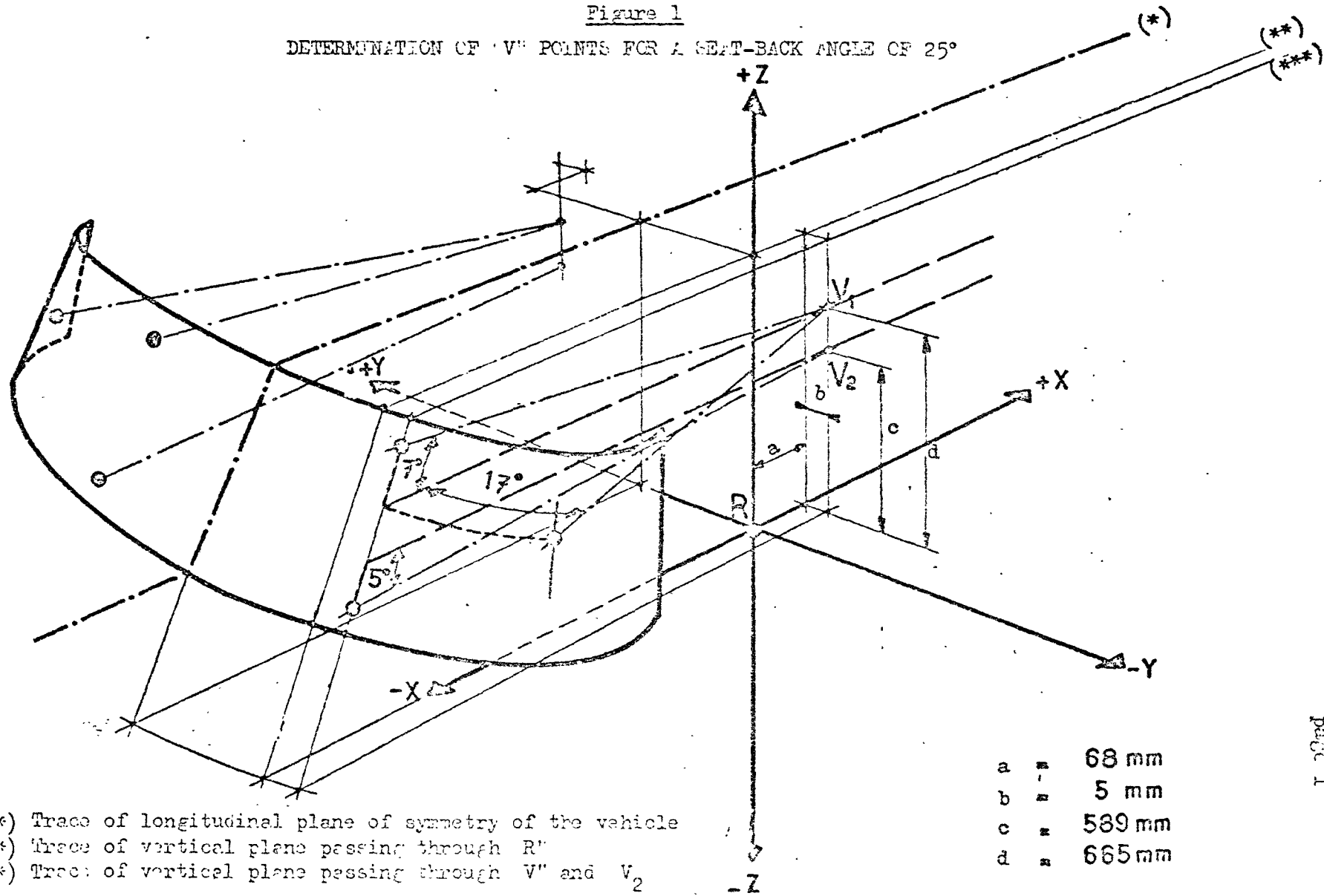
5. RESULTS

The vehicle having been correctly placed relative to the reference system and in its designed position, the position of the points necessary for studying the forward visibility conditions can be readily determined. Methods of determining these may include the use of theodolites, light sources, shadow devices, or any other method which can be shown to give equivalent results.

Annex III - Appendix

Figure 1

DETERMINATION OF V" POINTS FOR A SEAT-BACK ANGLE OF 25°



- (*) Trace of longitudinal plane of symmetry of the vehicle
- (* *) Trace of vertical plane passing through R'
- (* **) Trace of vertical plane passing through V'' and V₂

a	=	68 mm
b	=	5 mm
c	=	589 mm
d	=	665 mm

THREE-DIMENSIONAL REFERENCE SYSTEM VERTICAL LONGITUDINAL PLANE

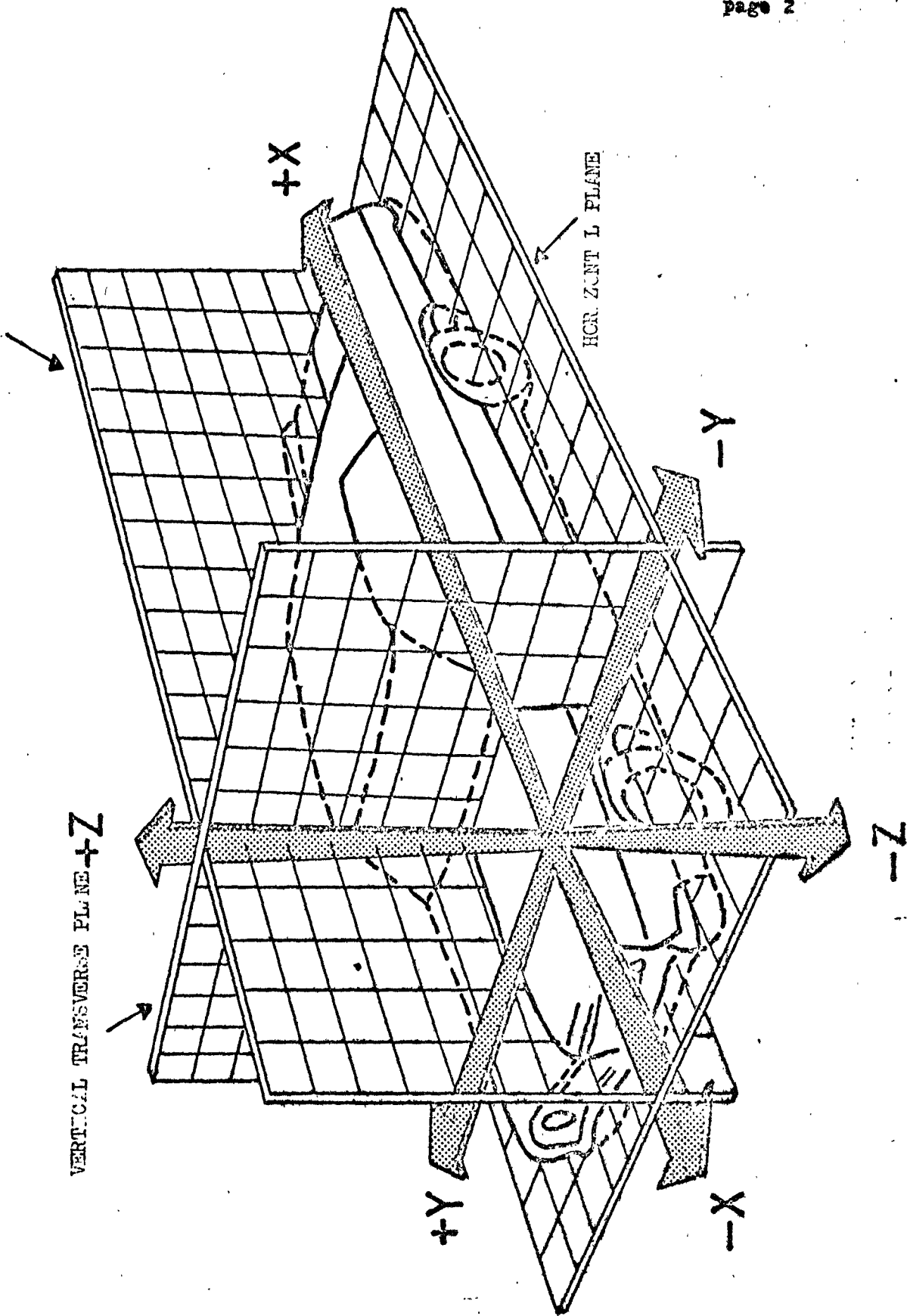
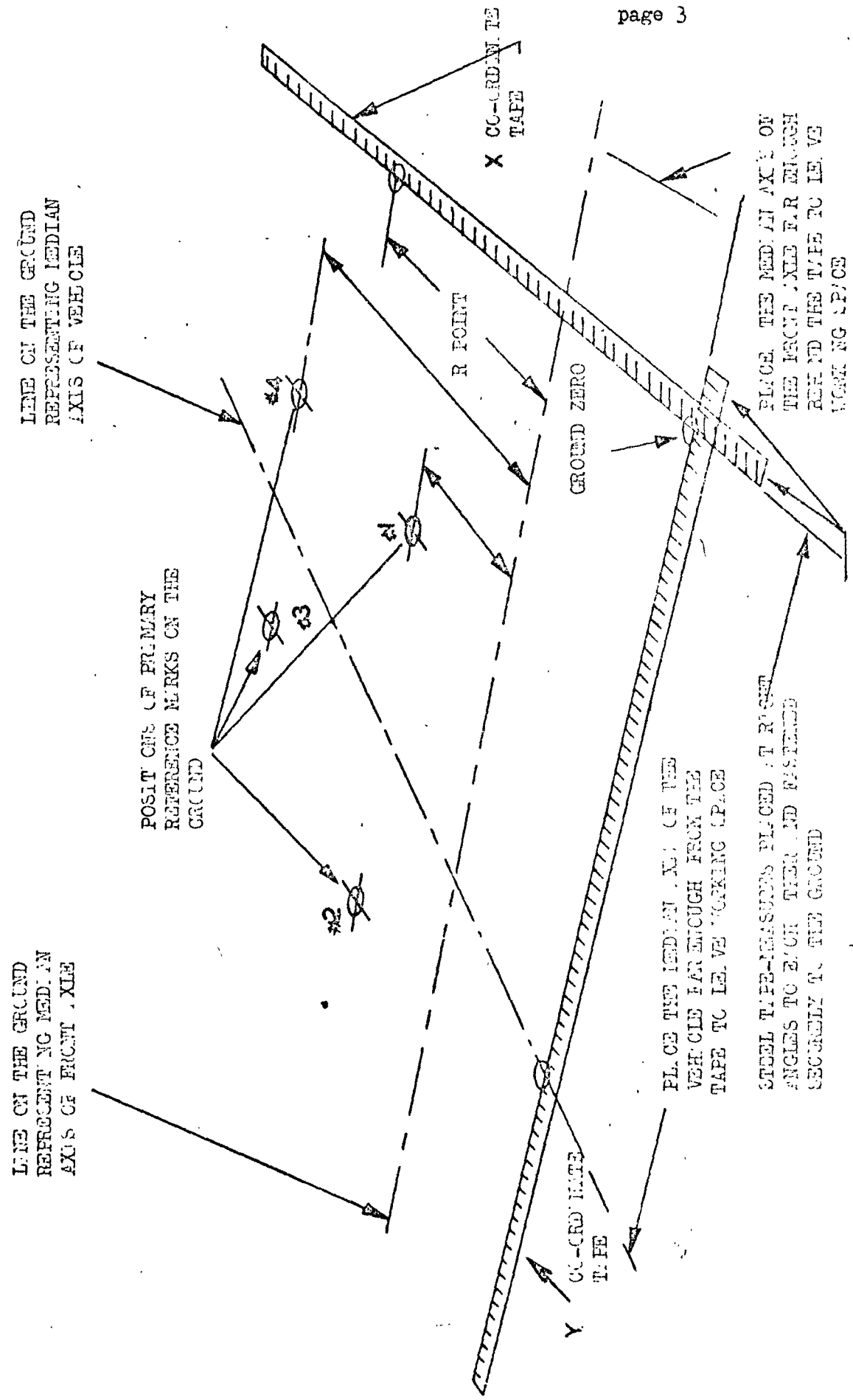


Figure 3
HORIZONTAL MEASURING SURFACE



LINE ON THE GROUND REPRESENTING MEDIAN REPRESENTING MEDIAN AXIS OF FRONT AXLE

POSITIVE OF PRIMARY REFERENCE MARKS ON THE GROUND

PLACE THE MEDIAN LINE OF THE VEHICLE FAR ENOUGH FROM THE TAPE TO LEAVE WORKING SPACE

STEEL TAPE-MEASURERS PLACED AT RIGHT ANGLES TO EACH OTHER AND FASTENED SECURELY TO THE GROUND

PLACE THE MEDIAN LINE OF THE FRONT AXLE FAR ENOUGH BEHIND THE TAPE TO LEAVE WORKING SPACE

ANNEX IV

PROCEDURE FOR DETERMINING VISION AREAS ON WINDSCREENS OF VEHICLES OF CLASS M₁ IN RELATION TO THE "V" POINTS

1. POSITIONS OF THE "V" POINTS

1.1. The position of the "V" points in relation to the "R" point, as indicated by the X, Y and Z co-ordinates in the three-dimensional reference system, are shown in tables I and II.

1.2. Table I gives the basic co-ordinates for a design seat-back angle of 25°. The positive direction of the co-ordinates is shown in annex III, figure 1.

TABLE I

"V" Point	X	Y	Z
V ₁	68 mm	- 5 mm	665 mm
V ₂	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 co-ordinates of each "V" point when the design seat-back angle is not 25°. The positive direction of the co-ordinates is shown in annex III, figure 1.

TABLE II

Seat-back angle (in °)	Horizontal co-ordinates ▲ X	Vertical co-ordinates ▲ Z	Seat-back angle (in °)	Horizontal co-ordinates ▲ X	Vertical co-ordinates ▲ Z
5	- 186 mm	28 mm	23	- 17 mm	5 mm
6	- 176 mm	27 mm	24	- 9 mm	2 mm
7	- 167 mm	27 mm	25	0 mm	0 mm
8	- 157 mm	26 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	- 17 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	- 71 mm	17 mm	35	84 mm	- 31 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	107 mm	- 43 mm
21	- 35 mm	9 mm	39	115 mm	- 47 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 apparent outer surface of the windscreen bounded by the following four planes extending forward from the "V" point (see appendix, figure 1):

- a vertical plane passing through "V"₁ and "V"₂ and inclined at 13° to the left of the X axis;
- a plane parallel to the Y axis, passing through "V"₁ and inclined upwards at 3° from the X axis;
- a plane parallel to the Y axis, passing through "V"₂ and inclined downwards at 1° from the X axis; and
- a vertical plane passing through "V"₁ and "V"₂ and inclined at 20° to the right of the X axis.

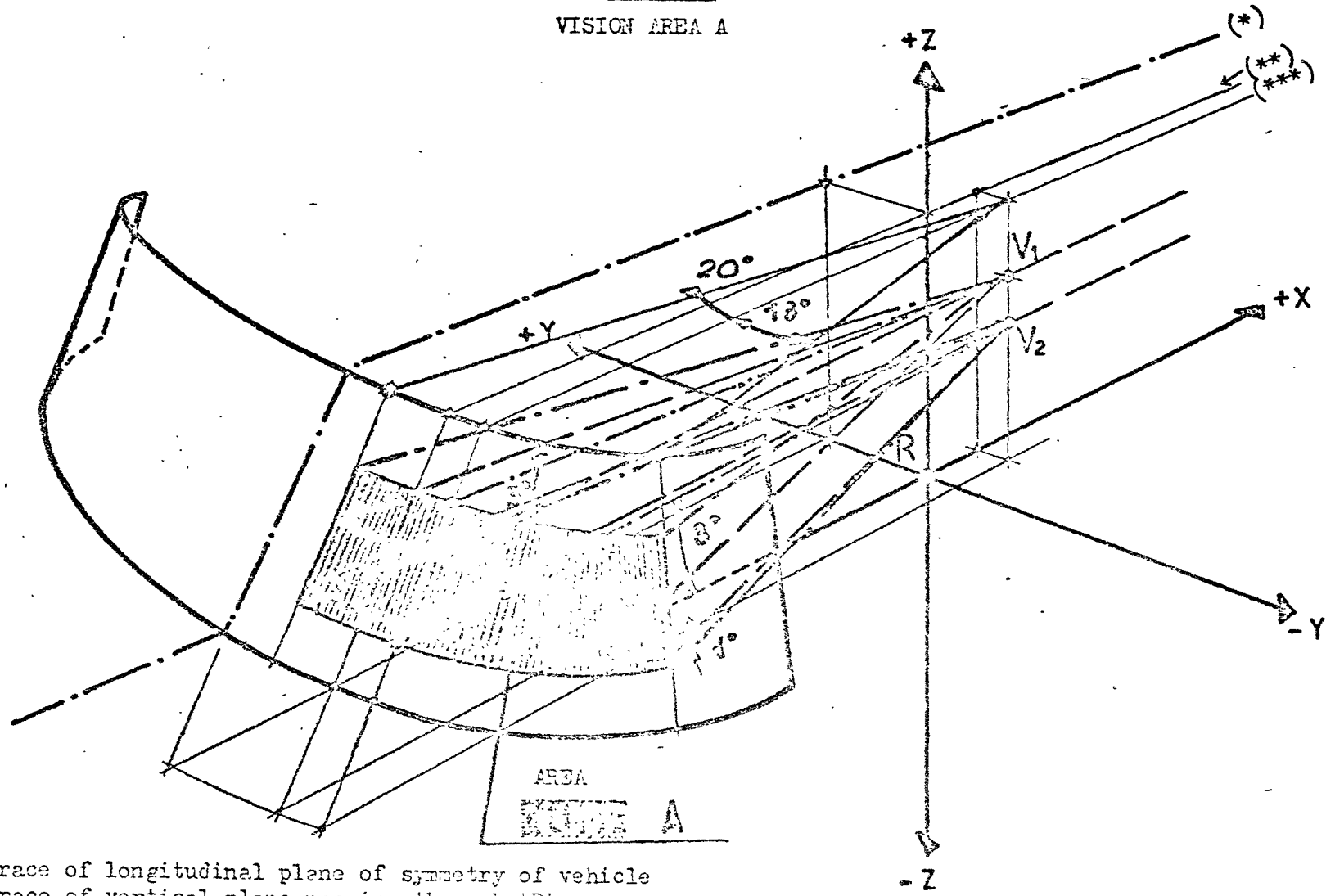
2.3. Vision area B is the area of the outer surface of the windscreen which is more than 25 mm from the outer edge of the transparent area and is bounded by the intersection of the following four planes with the outer surface of the windscreen (see appendix, figure 2):

- a plane inclined upwards from the X axis at 7°, passing through "V"₁ and parallel to the Y axis;
- a plane inclined downward from the X axis at 5°, passing through "V"₂ and parallel to the Y axis;
- a vertical plane passing through "V"₁ and "V"₂ and forming an angle of 17° with the X axis;
- a plane symmetrical with respect to the former plane in relation to the longitudinal median plane of the vehicle.

Annex IV - Appendix

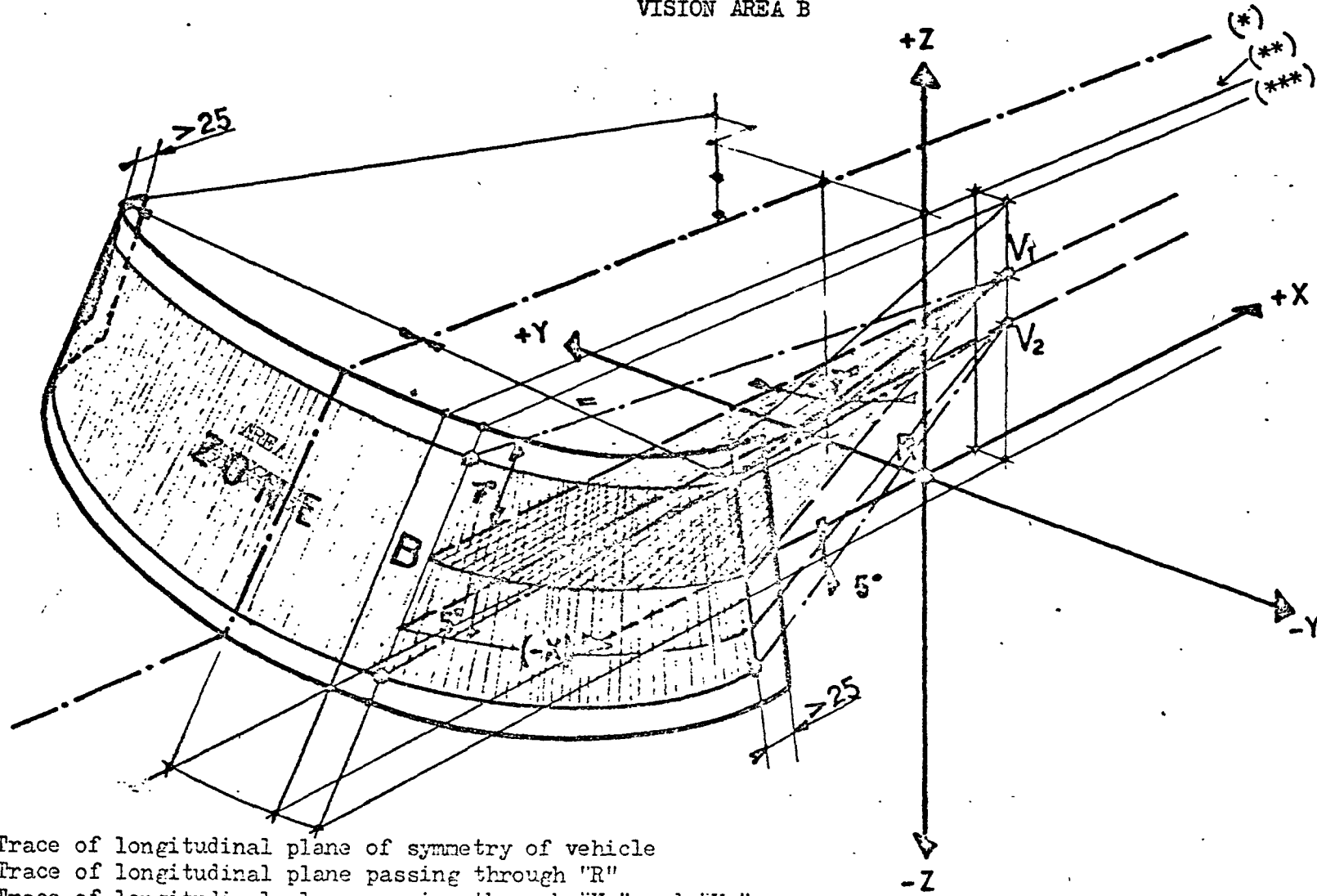
Figure 1

VISION AREA A



- (*) Trace of longitudinal plane of symmetry of vehicle
- (**) Trace of vertical plane passing through "R"
- (***) Trace of vertical plane passing through "V₁" and "V₂"

Figure 2
VISION AREA B



- (*) Trace of longitudinal plane of symmetry of vehicle
- (***) Trace of longitudinal plane passing through "R"
- (**) Trace of longitudinal plane passing through "V₁" and "V₂".

ANNEX V

TEST-MIXTURE SPECIFICATION FOR WINDSCREEN-WIPER-SYSTEM AND WINDSCREEN-WASHER-SYSTEM CAPABILITY TEST

The test mixture referred to in item 6.1.9. of annex I shall consist of the following

(by volume): 92.5 per cent tap water (water of less than 205g/1000 kg hardness after evaporation), 5 per cent saturated salt (sodium chloride) and 2.5 per cent dust constituted in accordance with tables 1 and 2 .

Table 1. Analysis of test dust

Constituent	Mass %
SiO ₂	67 to 69
Fe ₂ O ₃	3 to 5
Al ₂ O ₃	15 to 17
CaO	2 to 4
MgO	0.5 to 1.5
Total alkalis	3 to 5
Ignition loss	2 to 3

Table 2. Particle-size distribution of coarse-grade dust

Particle size (in μ)	Particle-size 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

(Maximum format: A4 (210 x 297 mm))

Name of administration

Annex to the EEC vehicle type-approval certificate with regard to the windscreen-wiper and the windscreen-washer systems (Article 4 (2) and Article 10 of the Council Directive No 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers).

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. 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. Date on which vehicle submitted for type-approval
- 10. Technical service conducting type-approval tests
- 11. Date of test report issued by that service
- 12. Number of test report issued by that service
- 13. Type-approval in respect of windscreen-wiper and windscreen-washer systems
granted/refused (*)

~~.....~~
(*) Delete as appropriate

14. Place

15. Date

16. Signature

17. The following documents, bearing the type-approval number shown above,
are annexed to this communication:

..... dimensional drawings

..... exploded view or photograph of the
passenger compartment

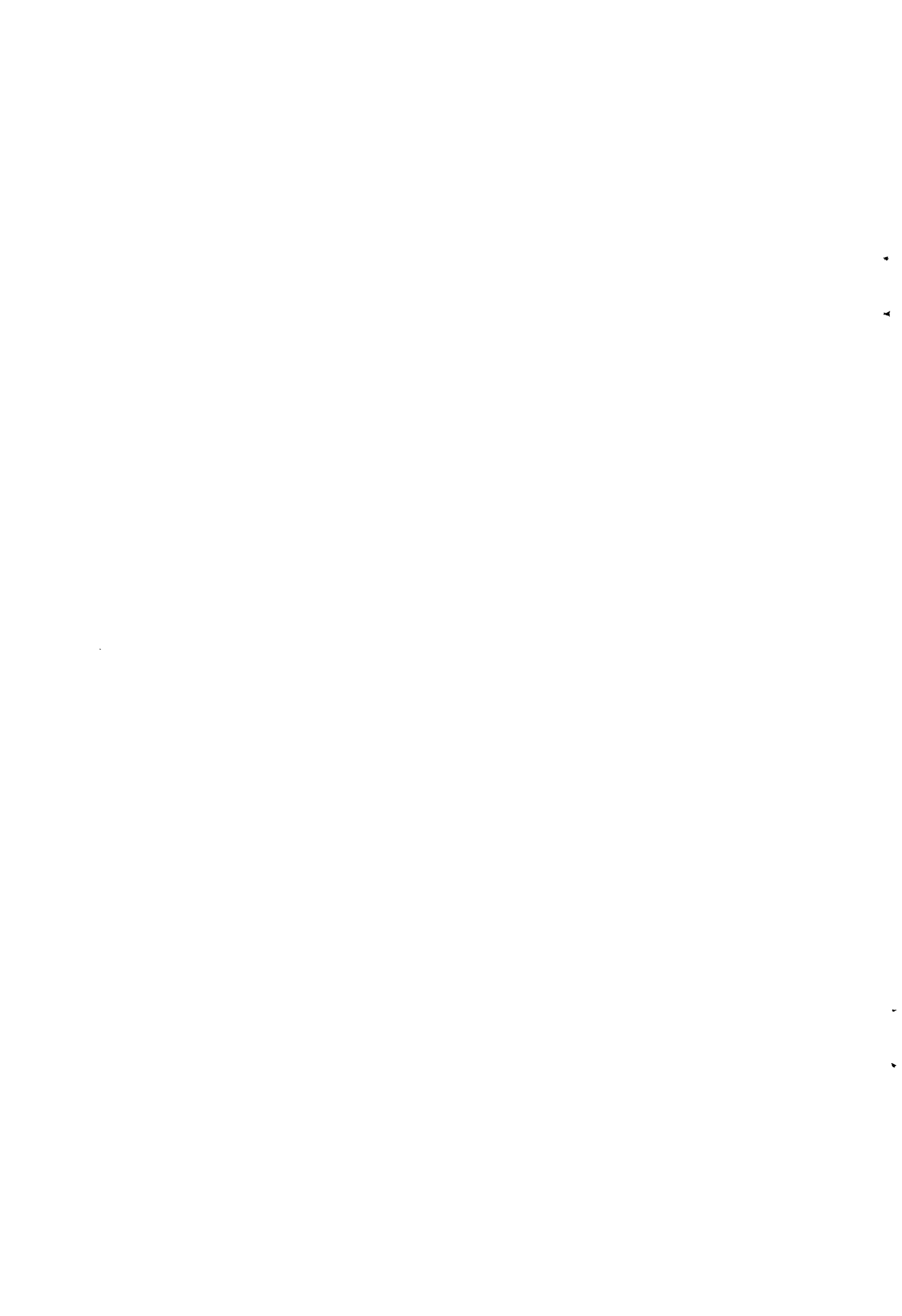




PROPOSAL FOR A

COUNCIL DIRECTIVE

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



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;

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

Whereas the technical requirements which motor vehicles must satisfy
pursuant to national law relate, inter alia, to the defrosting and
demisting systems of motor vehicle;

Whereas these requirements differ from one Member State to another;
whereas it is therefore necessary that all Member States adopt the same
requirements either in addition to or in place of their existing regulations
in order, in particular, to allow of the EEC type-approval procedure, which
was the subject of Council Directive n° 70/156/EEC (1) of 6 February 1970
on the approximation of laws of the Member States relating to the type-approval
of motor vehicles and their trailers, to be applied in respect of each type of
vehicle;

Whereas it is appropriate to utilize basically certain technical requirements
adopted by the UN Economic Commission for Europe in its Regulation N°
.....
..... (2) which is annexed to the
Agreement of 20 March 1958 concerning the adoption of uniform conditions of
approval and reciprocal recognition of approval for motor vehicle equipment
and parts;

(1) CJ N° L 42, 23.2.1970, p. 1.

(2) EEC document from Genova ...

Whereas these requirements apply to motor vehicles of category M₁ (the international classification of motor vehicles is given in the above mentioned Council Directive 70/156/EEC of 6 February 1970);

Whereas approximation of the national laws relating to motor vehicles entails recognition by the Member States of the tests carried out by each of them on the basis of the common requirements, and whereas in order to function properly such a system calls for the implementation of these requirements by all of the Member States with effect from the same date.

HAS ADOPTED THIS DIRECTIVE :

Article 1

For the purposes of this Directive, "vehicle" means any motor vehicle of class M₁ (defined in Annex I of Council Directive N. 70/156/EEC of 6 February 1970) designed 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~~ defrosting and demisting systems if they satisfy the requirements laid down in Annexes I, II, III, IV and V.

Article 3

No Member State may refuse the registration or may prohibit the sale, entry into service or use of any vehicle on grounds relating to the defrosting and demisting systems 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 necessary measures to ensure that it is informed of any modification of a part or characteristic referred to in item 2.2. of Annex I. The competent authorities of that State shall determine whether fresh tests should be carried out on the modified vehicle type and a fresh report drawn up. Where such tests reveal a failure to comply with the requirements of this Directive, the modification shall not be approved.

Article 5

The amendments necessary to adapt the provisions of Annexes I, II, III, IV, V and VI to take account of technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Council Directive N. 70/156/EEC of 6 February 1970.

Article 6

1. Member States shall adopt and publish by 1 January 1978 the provisions necessary to comply with this Directive and shall forthwith inform the Commission thereof. They shall implement these provisions with effect from 1 January 1980.
2. After notification of this Directive, Member States shall take steps to inform the Commission, in sufficient time for it to make comments, of any draft laws, regulations or administrative provisions which they intend to adopt in the field covered by this Directive.

Article 7

This Directive is addressed to the Member States.

LIST OF ANNEXES

- ANNEX I : Scope, definitions, application for EEC type-approval, EEC-type-approval, specific requirements, test procedures (x).
- ANNEX II : Procedure for determining the "H" point and the actual seat-back angle and for verifying their relationship to the "R" point and the design seat-back angle (x).
- ANNEX III : Method for determining the dimensional relationship between the vehicle's primary reference marks and the three-dimensional reference system (x).
- ANNEX IV : Procedure for determining vision areas on windscreens of vehicles of class M₁ in relation to the "V" points (x).
- ANNEX V : Steam generator (x).
- ANNEX VI : Annex to the EEC vehicle type-approval certificate with regard to the windscreen defrosting and demisting systems.

(x) The technical requirements of this annex are basically similar to that of UN Economic Commission for Europe Regulation N°, in particular the sub-divisions of the sections are the same. Where an item of Regulation has no corresponding item in this Annex, the number is shown in brackets for the record.

ANNEX I

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

1. SCOPE

- 1.1. This Directive applies to the 180° forward field of view of the drivers of vehicles of class M₁.
- 1.1.1. It is designed to ensure good visibility under certain conditions by specifying the requirements for defrosting and demisting systems for the windscreens of vehicles of class M₁.
- 1.2. The requirements of this Directive are so worded as to apply to vehicles of class M₁ in which the driver's seat is on the left. In vehicles of class M₁ having the driver's seat on the right, these requirements shall be applied mutatis mutandis by inverting the criteria prescribed for lateral vision.

2. DEFINITIONS

For the purposes of this Directive

(2.1.)

2.2. "vehicle type" as regards its windscreen defrosting and demisting systems means ~~motor vehicles~~ which do not differ from one another with respect to the following essential features :

- 2.2.1. external and internal shape and arrangements within the area specified in item 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; and
- 2.2.4. the number of seats;

2.3. "three-dimensional reference system" means a reference system consisting of a vertical longitudinal plane X-Z, a horizontal plane X-Y and a vertical transverse plane Y-Z (see annex III, fig. 2) and used to determine the relative distances between the positions prescribed for points on the planes and their real positions on the vehicle. The method of situating the vehicle relative to the three planes is shown in annex III; all co-ordinates referred to ground zero shall be calculated for a vehicle in running order (*) with one front-seat passenger, having a

mass of 75 kg;
(*) As defined in item 2.6 of Annex I to Directive 70/150/EEC.

- 2.4. "primary reference marks" means holes, surfaces, marks and identification signs on the vehicle body. The type of reference mark used, the position of each mark by the X, Y and Z co-ordinates of the three-dimensional reference system, and its distance from an imaginary plane representing the ground, shall be specified by the manufacturer. The marks may be those used for assembling the body;
- 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" 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" 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" means that area of a vehicle windscreen whose light transmittance, measured at right angles to the surface, is not less than 70 per cent;
- 2.13. "horizontal seat-adjustment range" means the range designated by the manufacturer for the adjustment of the driver's seat in the direction of the X axis (see item 2.3. above);
- 2.14. "extended seat-adjustment range" means the range designated by the manufacturer for the adjustment of the seat in the direction of the X axis (see item 2.3.) beyond the range of normal driving positions specified in item 2.13. and used for converting seats into beds or facilitating entry into the vehicle;
- 2.15. "defrosting system" means the system intended to melt frost or ice on the surface of the windscreen and thus restore visibility;

- 2.16. "defrosting" means the elimination of frost or ice covering the glazed surfaces by the operation of defrosting or wind-screen-wiper systems;
- 2.17. "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 wind-screen wipers. It excludes the area of the windscreen covered with dry frost;
- 2.18. "windscreen 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" means a film of condensate on the inside face of the glazed surfaces;
- 2.20. "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 the 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 agent.
- 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 item 2.2. above, 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 for easy identification and verification of the position of each in relation to the others and to the "R" point;
 - 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 form 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 time.
- 5.1.3. The tests required under items 5.1.1. and 5.1.2. above shall be conducted by the method set out in item 6.1. of this Annex.
- 5.1.4. The following requirements shall be satisfied :
 - 5.1.4.1. Twenty minutes after the start of the test period, the area defined in Annex IV, item 2.2. (area A) shall be 80 per cent defrosted.
 - 5.1.4.2. Twenty-five 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 item 5.1.4.1. for the driver's side.
 - 5.1.4.3. Forty minutes after the start of the test period, the area defined in Annex IV, item 2.3. (area B) shall be 95 per cent 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 item 6.2.

5.2.3. The following requirements shall be satisfied :

5.2.3.1. The area defined in annex IV, item 2.2. (area A) shall be 90 per cent demisted in 10 minutes.

(5.2.3.2.)

5.2.3.3. The area defined in annex IV, item 2.3. (area B) shall be 80 per cent demisted in 10 minutes.

(5.2.4.)

6. TEST PROCEDURES

6.1. Windscreen defrosting

6.1.1. The tests shall be made at the temperature specified below :

- 18 °C ± 3 °C

- 6.1.2. The test shall be made in a cold chamber large enough to contain the complete vehicle and equipped to maintain the temperature mentioned in item 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 per cent and not more than 10 per cent 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 ten hours at the test temperature prescribed in item 6.1.1. above.
- 6.1.4.1. If instruments are available to check that the engine coolant and lubricant are stabilized at the prescribed test temperature, this period may be shortened.
- 6.1.5. Following the exposure period prescribed in item 6.1.4. an even layer of ice of 0.044 g/cm² shall be formed over the entire outside surface of the windscreen by means of a water-spray gun working at 3.5 bar ± 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 glass, 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 flow rate of 0.395 l/min, and capable of producing a pattern of 300 mm diameter on the glass at a distance 200 mm from the surface, may be used to satisfy the requirements of item 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 thirty minutes and not more than forty minutes.
- 6.1.7. After the period prescribed in item 6.1.6. has elapsed, one or two observers shall enter the vehicle, and the engine may then be started by some external means. The test period shall begin when the engine is started.
- 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 thirty-five minutes of the test period (or during the entire test period if the five-minute warming-up procedure is not followed) the engine shall run :
- 6.1.7.2.1. at a speed not exceeding 50 per cent of the speed corresponding to its maximum power output; moreover,
- (6.1.7.2.2.)
- 6.1.7.2.3. the battery shall be fully charged;
- 6.1.7.2.4. the voltage at the terminals of the defrosting device may be not more than 20 per cent 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, shall 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, shall be closed; one or two windows may be opened on 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 in 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 state 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 outlined on the inner face of the windscreen as required by item 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, white spirit or an equivalent degreasing agent. After drying, a solution of ammonia of not less than 3 per cent and not more than 10 per cent shall be applied. The surface shall be allowed to dry again and then wiped with a dry cotton cloth.
- 6.2.2. The test shall be made in an environmental chamber large enough to take the complete vehicle and capable of producing and maintaining a test temperature of $-3^{\circ} \pm 1^{\circ} \text{C}$ 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, shall be as low as possible and in any event less than 8 km/h;

- 6.2.2.3. the engine bonnet, the doors and the vents, except the in-takes and outlets of the heating and ventilation system, shall be closed; one or two windows may be opened on 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 shall contain enough water to generate at least 70 ± 5 g/h of steam for each seating position designated by the manufacturer, in an environment at $-3 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$.
- 6.2.4. The inside surface of the windscreen shall be cleaned as prescribed in item 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 $-3 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$.
- 6.2.5. The steam generator shall be placed with its outlets in the median plane of the vehicle at a height of $580 \text{ mm} \pm 80 \text{ mm}$ 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 and the output of the generator shall be reduced by 70 ± 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 be reckoned from the time when the engine is started.
- 6.2.7.1. Throughout the test the engine shall run
- 6.2.7.1.1. at a speed not exceeding 50 per cent of the speed corresponding to its maximum power output; moreover,
- (6.2.7.1.2.)

- 6.2.7.1.3. the vehicle demister controls shall be set as recommended by the vehicle manufacturer for the test temperature;
- 6.2.7.1.4. the battery shall be fully charged;
- 6.2.7.1.5. the voltage at the terminals of the demisting device may be not more than 20 per cent 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 THEIR RELATIONSHIP TO THE "R" POINT AND
THE DESIGN SEAT-BACK ANGLE

1. DEFINITIONS

- 1.1. The "H" point, which indicates the position of a seated occupant in the passenger compartment, is the trace, in a longitudinal vertical plane, of the theoretical axis of rotation between the legs and the torso of a human body represented by the manikin described in item 3 below.
- 1.2. The "R" point or "seating reference point" is the reference point specified by the manufacturer which
 - 1.2.1. has co-ordinates determined in relation to the vehicle structure;
 - 1.2.2. corresponds to the theoretical position of the point of torso/legs rotation ("H" point) for the lowest and most rearward normal driving position or position of use given to each seat provided by the vehicle manufacturer.
- 1.3. "Seat-back angle" means the inclination of the seat back in relation to the vertical.
- 1.4. "Actual seat-back angle" means the angle formed by the vertical through the "H" point with the torso reference line of the human body represented by the manikin described in item 3. below.
- 1.5. "Design seat-back angle" means the angle prescribed by the manufacturer which
 - 1.5.1. determines the seat-back angle for the lowest and most rearward normal driving position or position of use given to each seat by the vehicle manufacturer;
 - 1.5.2. is formed at the "R" point by the vertical and the torso reference line; and
 - 1.5.3. corresponds theoretically to the actual seat-back angle.

2. DETERMINATION OF "H" POINTS AND ACTUAL SEAT-BACK ANGLES

- 2.1. An "H" point and an "actual seat-back angle" shall be determined for each seat provided by the manufacturer. If the seats in the same row can be regarded as similar (bench seat, identical seats, etc.), only one "H" point and one "actual seat-back angle" shall be determined for each row of seats, the manikin described in item 3. below being seated in a place regarded as representative for the row. This place shall be :
 - 2.1.1. in the case of the front row, the driver's seat;
 - 2.1.2. in the case of the rear row or rows, an outer seat.
- 2.2. When an "H" point and an "actual seat-back angle" are being determined, the seat considered shall be placed in the lowest and most rearward normal driving position or position of use provided for it by the manufacturer. The seat back shall if its inclination is adjustable be locked as specified by the manufacturer or in the absence of any specification to an actual seat-back angle of as nearly as possible 25° from the vertical.

3. DESCRIPTION OF THE MANIKIN

- 3.1. A three-dimensional manikin of a weight and contour corresponding to those of an adult male of average height shall be used. Such a manikin is depicted in figures 1 and 2 of the appendix to this annex.
- 3.2. The manikin shall comprise :
 - 3.2.1. two components, one simulating the back and the other the seat of the body, pivoting on an axis representing the axis of rotation between the torso and the thigh. The trace of this axis on the side of the manikin is the manikin's "H" point;
 - 3.2.2. two components simulating the legs and pivotally attached to the component simulating the seat; and
 - 3.2.3. two components simulating the feet and connected to the legs by pivotal joints simulating ankles.
 - 3.2.4. In addition, the component simulating the seat of the body shall be provided with a level enabling its transverse orientation to be verified.

- 3.3. Body-segment weights shall be attached at appropriate points corresponding to the relevant centres of gravity, so as to bring the total mass of the manikin up to about 75 kg. Details of the various weights are given in the table on page 2 of the appendix to this annex.
- 3.4. The torso reference line of the manikin is taken into account by a straight line passing through the joint between the leg and the pelvis and the theoretical joint between the neck and the thorax (see the appendix to this annex, figure 1).

4. SETTING UP THE MANIKIN (

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

- 4.1. the vehicle shall be placed on a horizontal plane and the seats adjusted as prescribed in item 2.2. above;
- 4.2. the seat to be tested shall be covered with a piece of cloth to facilitate correct setting up of the manikin;
- 4.3. the manikin shall be placed on the seat concerned, its pivotal axis being perpendicular to the longitudinal plane of symmetry of the vehicle;
- 4.4. the feet of the manikin shall be placed as follows :
 - 4.4.1. in the front seats, in such a way that the level verifying the transverse orientation of the seat of the manikin is brought to the horizontal;
 - 4.4.2. in the rear seats, so far as possible in such a way as to be in contact with the front seats. If the feet then rest on parts of the floor which are at different levels, the foot which first comes into contact with the front seat shall serve as a reference point and the other foot shall be so arranged that the level enabling the transverse orientation of the seat of the manikin to be verified is brought to the horizontal;
 - 4.4.3. if the "H" point is being determined at a centre seat, the feet shall be placed one on each side of the tunnel;
- 4.5. the weights shall be placed on the thighs, the level verifying the transverse orientation of the seat of the manikin shall be brought to the horizontal, and the weights shall be placed on the component representing the seat of the manikin;

- 4.6. the manikin shall be moved away from the seat back by means of the knee-pivot bar and the back of the manikin shall be pivoted forwards. The manikin shall be repositioned on the seat of the vehicle by being slid backwards on its seat until resistance is encountered, the back of the manikin then being replaced against the seat back;
- 4.7. a horizontal load of approximately 10 ± 1 daN shall be applied to the manikin twice. The direction and point of application of the load are shown by a black arrow in figure 2 of the appendix;
- 4.8. the weights shall be installed on the right and left sides, and the torso weights shall then be placed in position. The transverse level of the manikin shall be kept horizontal;
- 4.9. the transverse level of the manikin being kept horizontal, the back of the manikin shall be pivoted forwards until the torso weights are above the "H" point, so as to eliminate any friction with the seat back;
- 4.10. the back of the manikin shall be gently moved rearwards so as to complete the setting-up operation. The transverse level of the manikin shall be horizontal. If it is not, the procedure described above shall be repeated.

5. RESULTS

- 5.1. When the manikin has been set up as described in item 4., the "H" point and the actual seat-back angle of the vehicle seat considered are constituted by the "H" point and the angle of inclination of the manikin's torso reference line.
- 5.2. The co-ordinates of the "H" point in relation to three mutually perpendicular planes, and the actual seat-back angle, shall be measured for comparison with the data supplied by the vehicle manufacturer.

6. 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

- 6.1. The results of the measurements carried out in conformity with item 5.2. for the "H" point and the actual seat-back angle shall be compared with the co-ordinates of the "R" point and the design seat-back angle as supplied by the vehicle manufacturer.

- 6.2. The relative positions of the "R" point and the "H" point and the relationship between the design seat-back angle and the actual seat-back angle shall be considered to be satisfactory for the seat in question if the "H" point, as defined by its co-ordinates, lies within a longitudinal rectangle whose horizontal and vertical sides are 30 mm and 20 mm long respectively and whose diagonals intersect at the "R" point, and if the actual seat-back angle is within 3° of the design seat-back angle.
- 6.2.1. If these conditions are met, the "R" point and the design seat-back angle shall be used for the test and, if necessary, the manikin shall be so adjusted that the "H" point coincides with the "R" point and the actual seat-back angle coincides with the design seat-back angle.
- 6.3. If the "H" point or the actual seat-back angle does not satisfy the requirements of item 6.2., the "H" point or the actual seat-back angle shall be determined twice more (three times in all). If the results of two of these three operations satisfy the requirements the results of the test shall be considered to be satisfactory.
- 6.4. If at least two of the three test results do not satisfy the requirements of item 6.2., the result of the test shall be considered to be not satisfactory.
- 6.5. If the situation described in item 6.4. arises, or if verification cannot be effected because the manufacturer has failed to supply information regarding the position of the "R" point or regarding the design seat-back angle, the average of the results of the three determinations may be used and be regarded as applicable in all cases where the "R" point or the design seat-back angle is referred to in this Directive.
- 6.6. For verifying the relative positions of the "R" point and the "H" point and the relationship between the design seat-back angle and the actual seat-back angle in a serially-produced vehicle the rectangle referred to in item 6.2. shall be replaced by a square of 50 mm side and the actual seat-back angle shall not differ by more than $\pm 5^\circ$ from the design seat-back angle.

Annex II - Appendix
COMPONENTS OF THREE-DIMENSIONAL MANIKIN

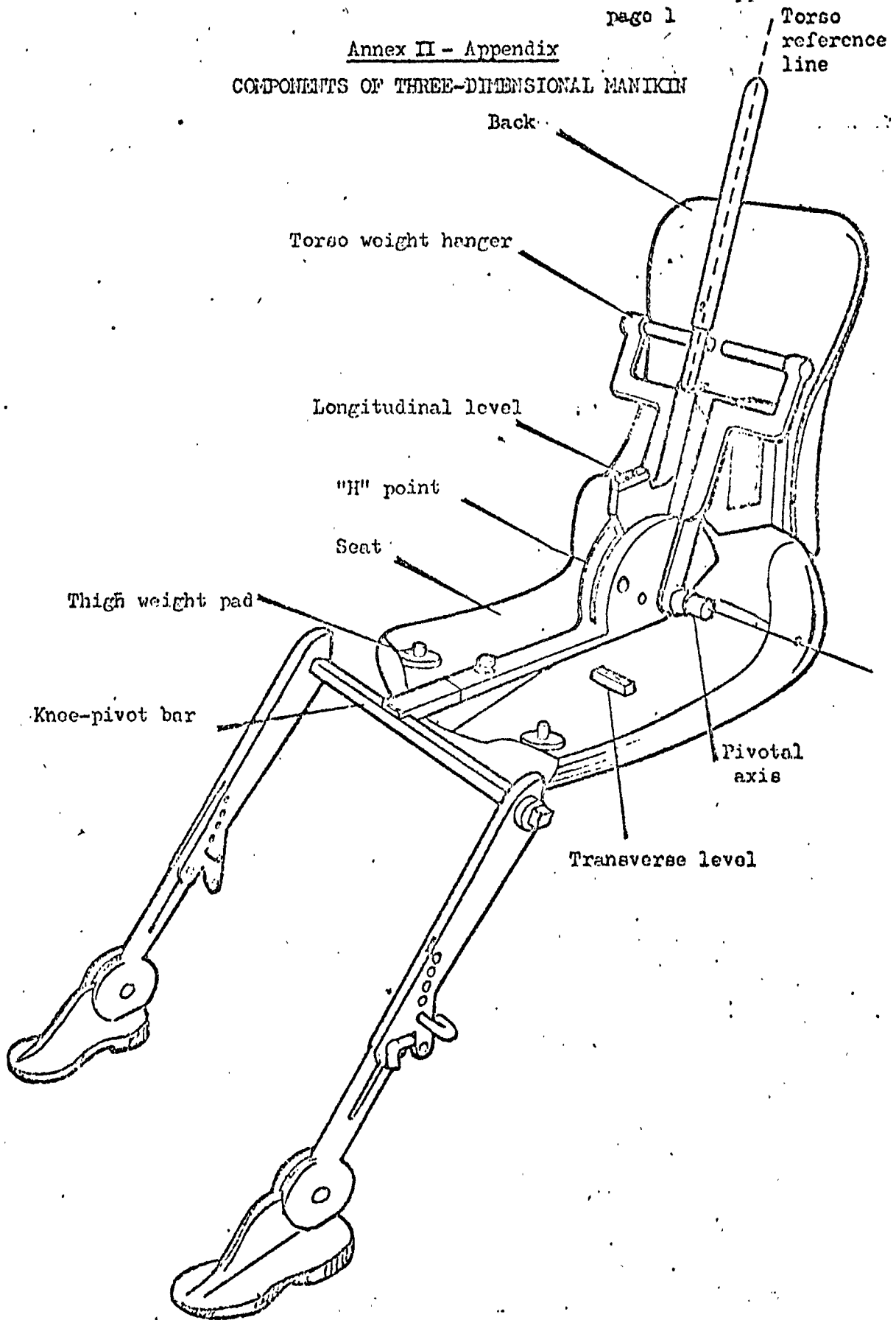


Figure 1

DIMENSIONS AND WEIGHT OF MANIKIN

<u>Mass of manikin</u>	<u>kg</u>
Components simulating back and seat of body	16
Torso weights	31
Seat weights	8
Thigh weights	7
Leg weights	13
Total:	75

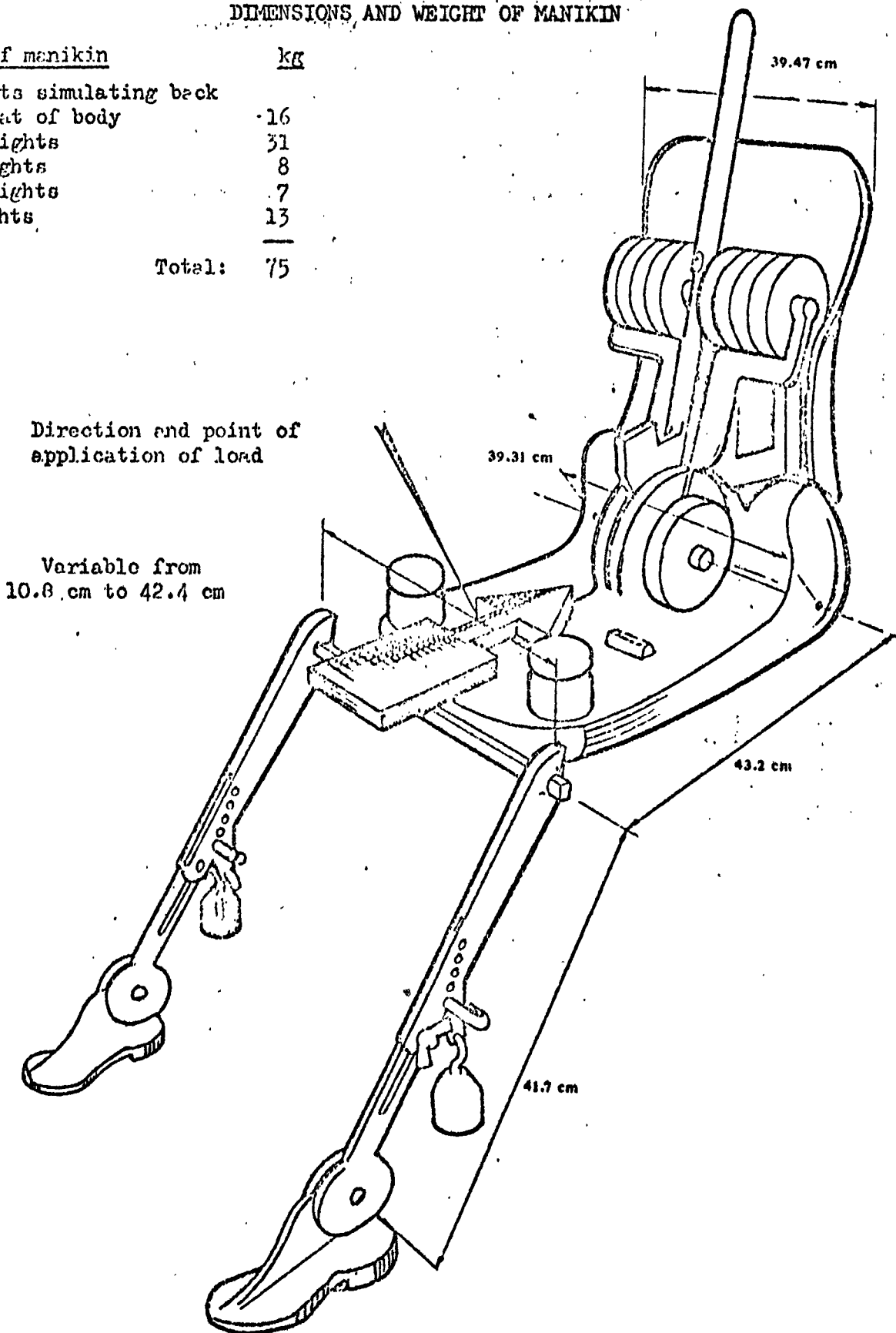


Figure 2

ANNEX III

METHOD FOR DETERMINING THE DIMENSIONAL RELATIONSHIP BETWEEN THE VEHICLE'S PRIMARY REFERENCE MARKS AND THE THREE-DIMENSIONAL REFERENCE SYSTEM

1. RELATIONSHIP BETWEEN REFERENCE SYSTEM AND VEHICLE'S PRIMARY REFERENCE MARKS

To verify characteristic internal and external dimensions of a vehicle submitted for type-approval in accordance with this Directive, the relationship between the co-ordinates fixed at the initial vehicle-design stage according to the three-dimensional reference system defined in item 2.3. of Annex I and the positions of the primary reference marks defined in item 2.4. of Annex I shall be accurately established so that specific points on the manufacturer's drawings can be located on an actual vehicle produced from those drawings.

2. METHOD OF ESTABLISHING THE RELATIONSHIP BETWEEN THE REFERENCE SYSTEM AND THE REFERENCE MARKS

To determine this relationship a ground reference plane is constructed, with graduated X and Y axes. One method of doing this is shown in figure 3 of the appendix to this annex. The reference plane is a hard, flat, level surface on which the vehicle stands, and on which two steel tape measures are firmly fixed. The tapes are graduated in millimetres and shall have a length of at least 8 metres for the X tape and 4 metres for the Y tape. The two tapes are set at right angles to each other and their intersection is the "ground zero".

3. VERIFICATION OF ACCURACY

To verify that the reference plane or test area is level it is necessary to establish the deviations along the X and the Y tapes at intervals of 250 mm from ground zero and to record the results obtained, so that corrections can be made when checking the vehicle.

4. ACTUAL TEST ATTITUDE

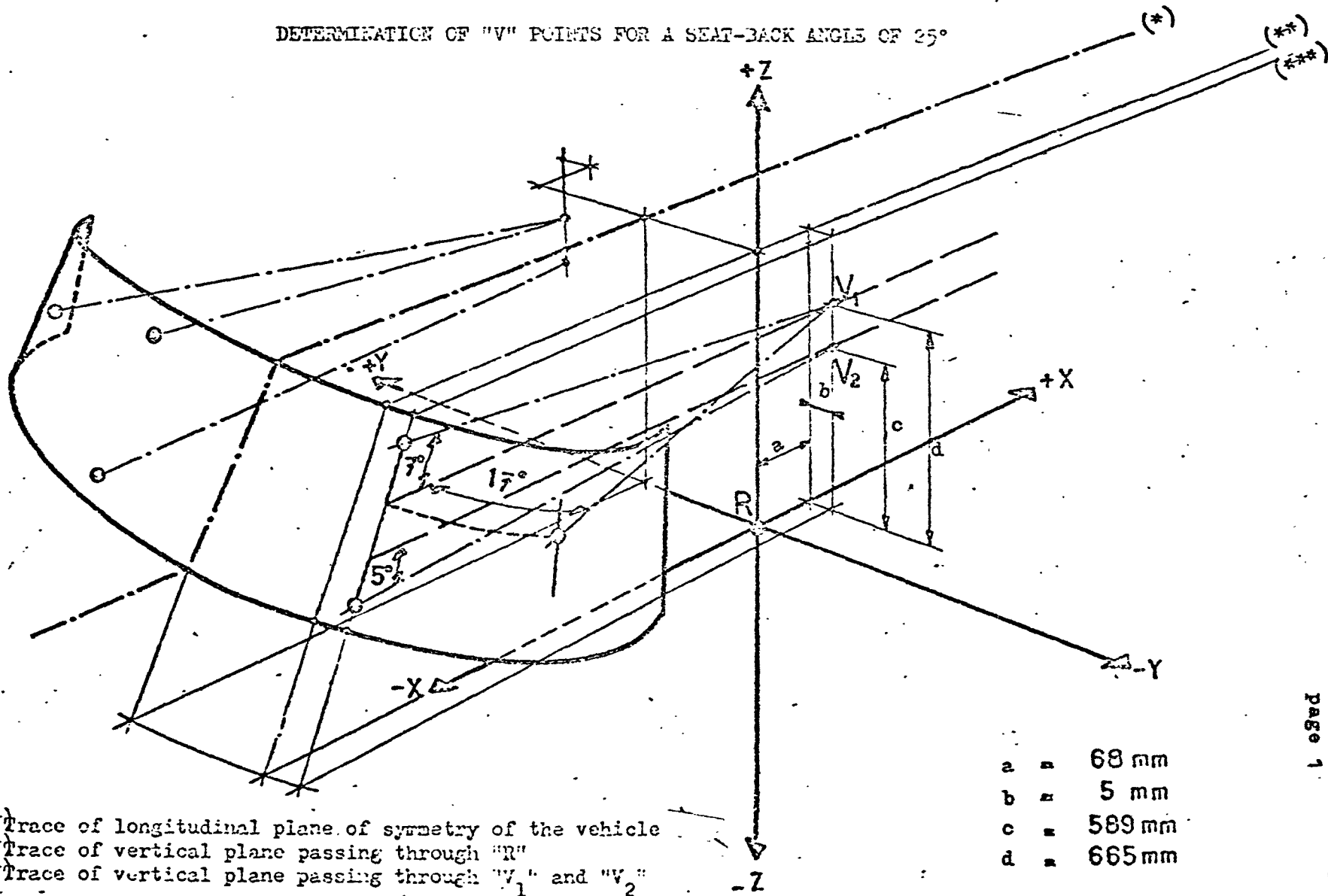
In order to take account of minor changes in suspension height, etc., it is necessary to have a means of bringing the reference marks back to the positions whose co-ordinates were fixed at the design stage. In addition, it shall be possible to make minor lateral and/or longitudinal adjustments to the vehicle's position so as to place it correctly in relation to the reference plane.

5. RESULTS

The vehicle having been correctly placed relative to the reference system and in its designed position, the position of the points necessary for studying the forward visibility conditions can be readily determined. Methods of determining these may include the use of theodolites, light sources, 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°



- (*) Trace of longitudinal plane of symmetry of the vehicle
- (**) Trace of vertical plane passing through "R"
- (***) Trace of vertical plane passing through "V₁" and "V₂"

a	=	68 mm
b	=	5 mm
c	=	589 mm
d	=	665 mm

Figure 2
THREE-DIMENSIONAL REFERENCE SYSTEM:
VERTICAL LONGITUDINAL PLANE
VERTICAL TRANSVERSE PLANE

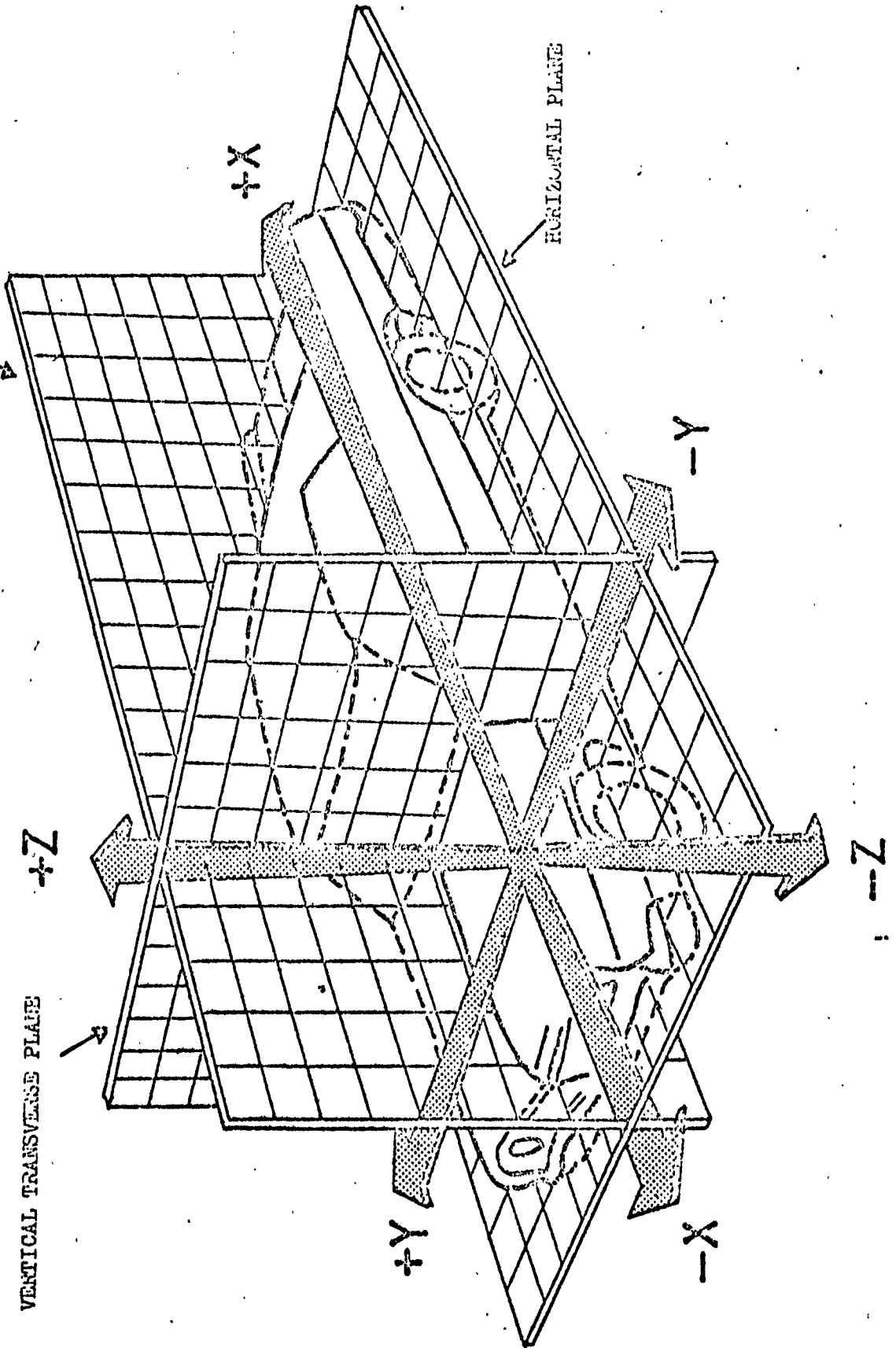
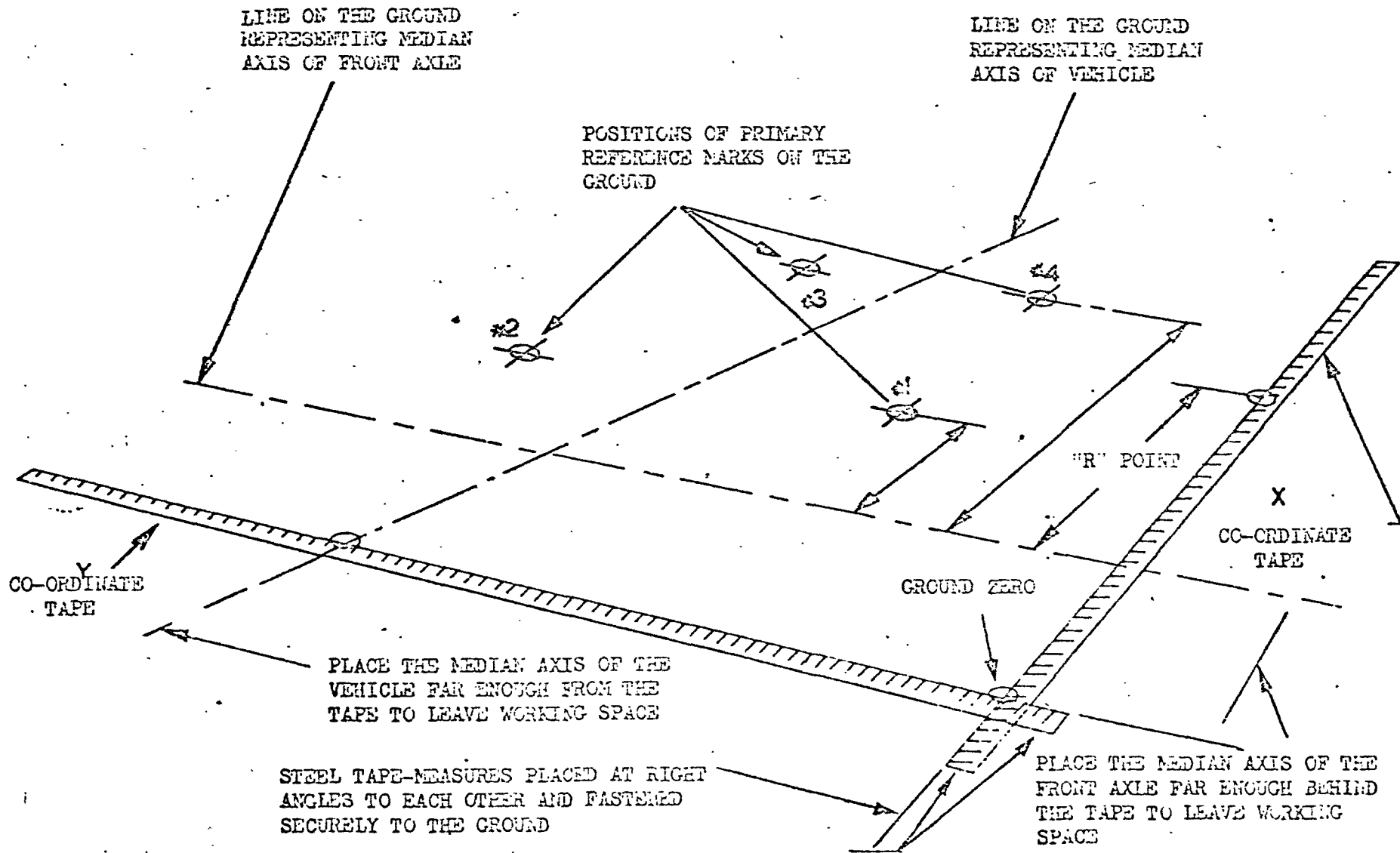


Figure 3
HORIZONTAL MEASURING SURFACE



ANNEX IV

PROCEDURE FOR DETERMINING VISION AREAS ON WINDSCREENS OF VEHICLES OF CLASS M₁ IN RELATION TO THE "V" POINTS

1. POSITIONS OF THE "V" POINTS

1.1. The position of the "V" points in relation to the "R" point, as indicated by the X, Y and Z co-ordinates in the three-dimensional reference system, are shown in tables I and II.

1.2. Table I gives the basic co-ordinates for a design seat-back angle of 25°. The positive direction of the co-ordinates is shown in annex III, figure 1.

TABLE I

"V" POINT	X	Y	Z
V ₁	68 mm	- 5 mm	665 mm
V ₂	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 co-ordinates of each "V" point when the design seat-back angle is not 25°. The positive direction of the co-ordinates is shown in annex III, figure 1.

TABLE II

Seat-back angle (in °)	Horizontal co-ordinates Δ X	Vertical co-ordinates Δ Z	Seat back angle (in °)	Horizontal co-ordinates Δ X	Vertical co-ordinates Δ Z
5	-186 mm	28 mm	23	- 17 mm	5 mm
6	-176 mm	27 mm	24	- 9 mm	2 mm
7	-167 mm	27 mm	25	0 mm	0 mm
8	-157 mm	26 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	- 17 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	- 71 mm	17 mm	35	84 mm	- 31 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	107 mm	- 43 mm
21	- 35 mm	9 mm	39	115 mm	- 47 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 apparent outer surface of the windscreen bounded by the following four planes extending forward from the "V" points (see appendix figure 1) :

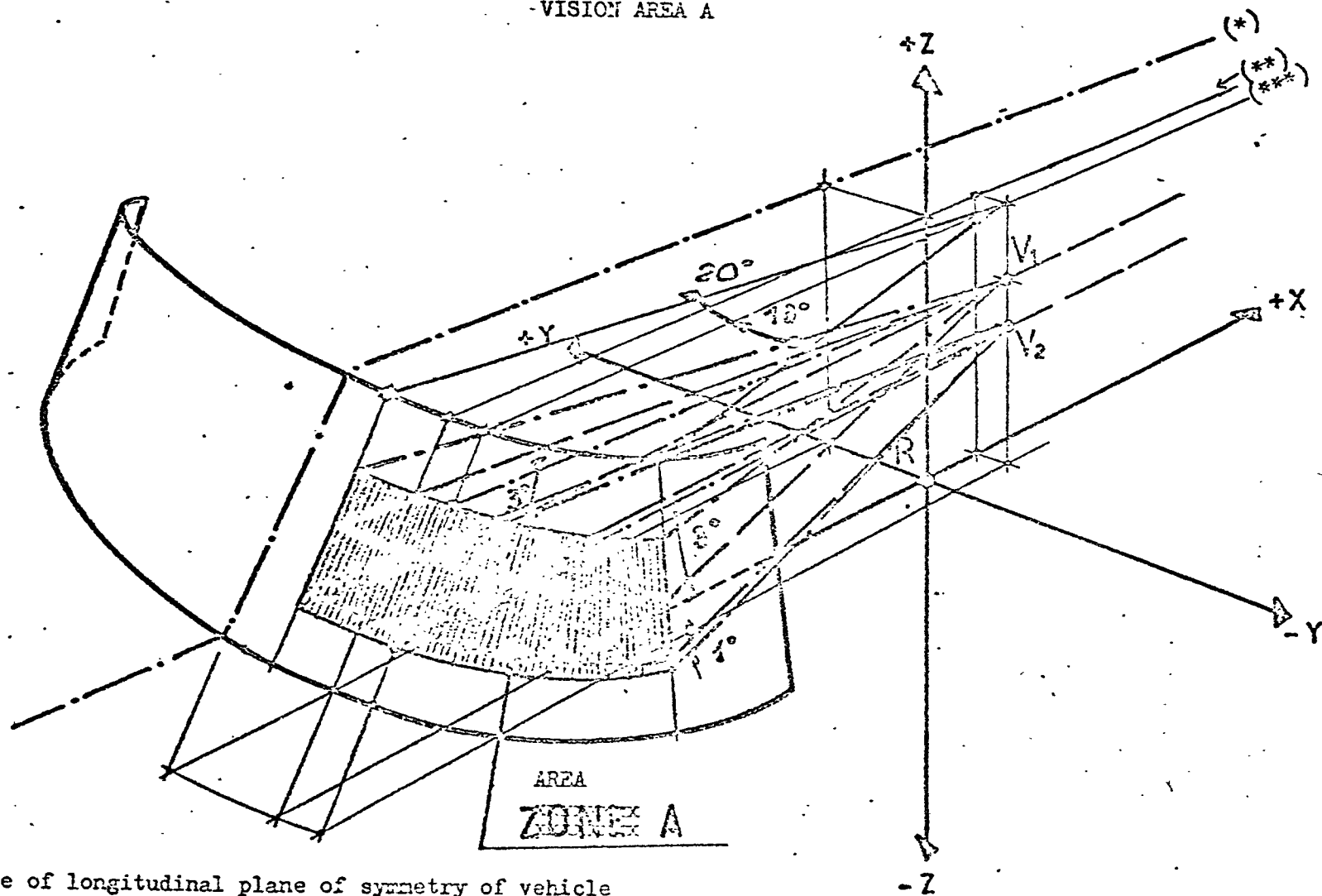
- a vertical plane passing through "V₁" and "V₂" and inclined at 13° to the left of the X axis;
- a plane parallel to the Y axis passing through "V₁" and inclined upwards at 3° from the X axis;
- a plane parallel to the Y axis passing through "V₂" and inclined downwards at 1° from the X axis; and
- a vertical plane passing through "V₁" and "V₂" and inclined at 20° 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 appendix, figure 2) :

- a plane inclined upward from the X axis at 7°, passing through "V₁" and parallel to the Y axis;
- a plane inclined downward from the X axis at 5°, passing through "V₂" and parallel to the Y axis;
- a vertical plane passing through "V₁" and "V₂" and forming an angle of 17° with the X axis; and
- a plane symmetrical with respect to the former plane in relation to the longitudinal median plane of the vehicle.

Figure 1

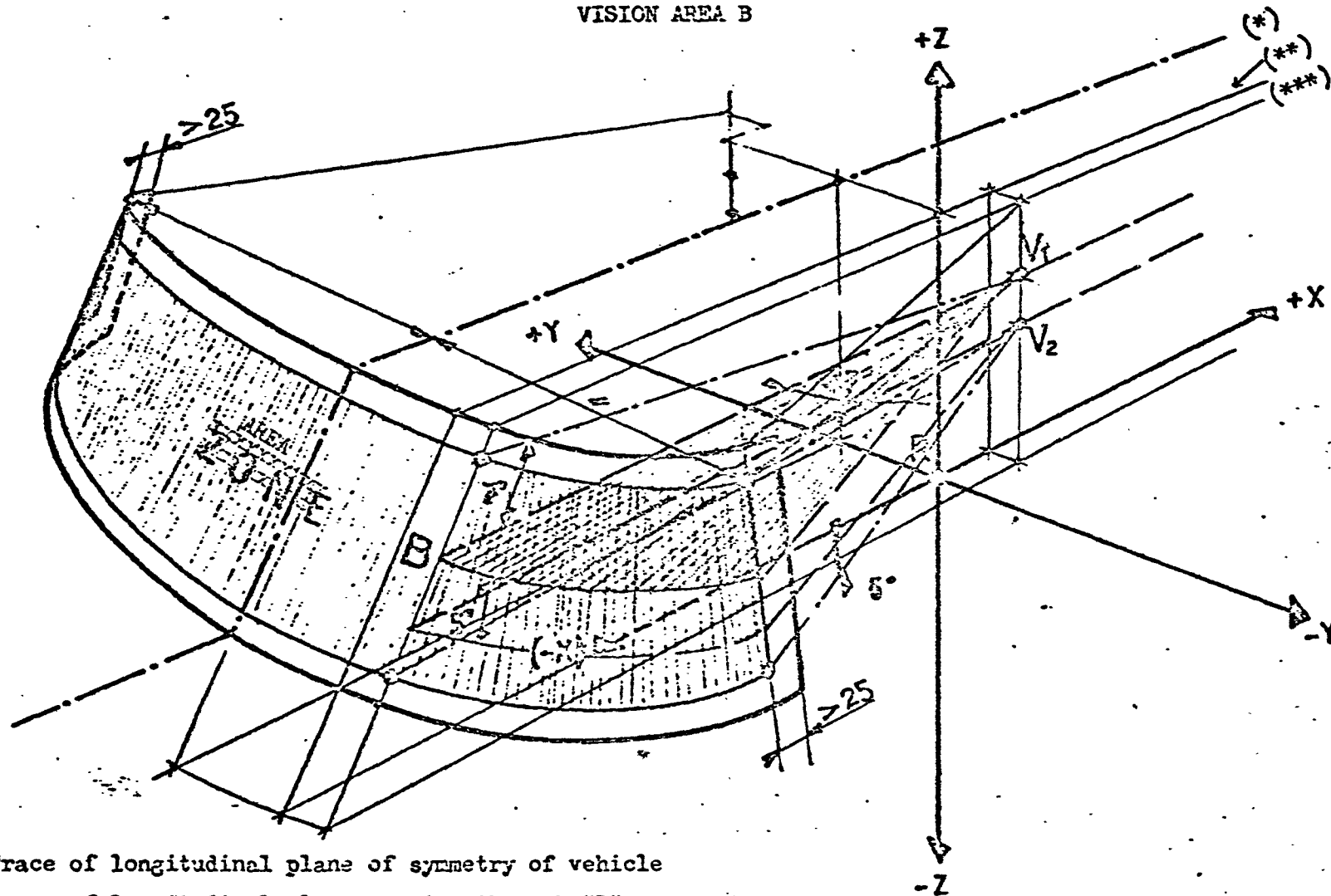
-VISION AREA A



- (*) Trace of longitudinal plane of symmetry of vehicle
- (**) Trace of vertical plane passing through "R"
- (***) Trace of vertical plane passing through "V₁" and "V₂"

Figure 2

VISION AREA B



- (*) Trace of longitudinal plane of symmetry of vehicle
- (**) Trace of longitudinal plane passing through "R"
- (***) Trace of longitudinal plane passing through "V₁" and "V₂"

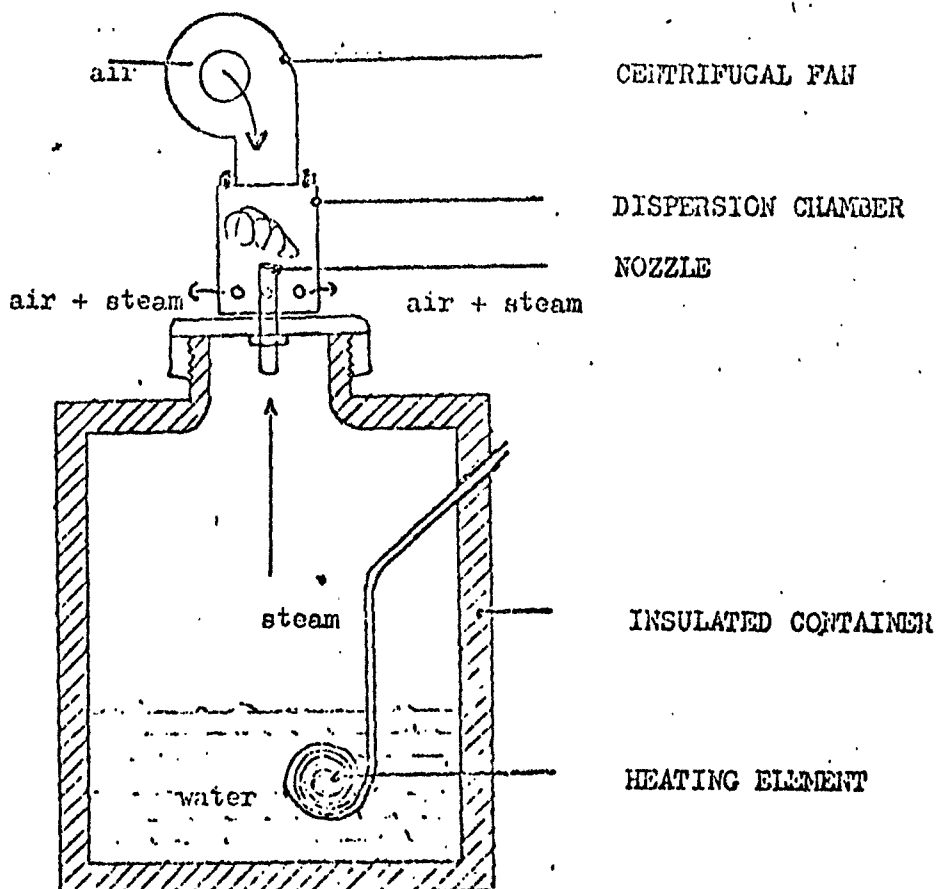
ANNEX V

STEAM GENERATOR

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

- a) the water container shall have a capacity of at least 2.25 l;
- b) the heat loss at boiling point shall not exceed 75 W in an ambient temperature of $-3\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$;
- c) the fan shall have a capacity of 0.07 to 0.10 m³/min at 50 Pa static pressure;
- d) six steam outlet holes of 6.5 mm diameter shall be provided round the top of the generator;
- e) the generator shall be calibrated at $-3 \pm 1\text{ }^{\circ}\text{C}$ to give readings for each 70 g/h \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 (b) inside diameter 1.5 cm	Brass
Dispersion chamber	(a) length 11.5 cm (b) length 7.5 cm (c) 6 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

(Maximum format : A4 (210 x 297 mm))

Name of administration

Annex to the EEC vehicle type-approval certificate with regard to the windscreen defrosting and demisting systems (Article 4 (2) and Article 10 of the Council Directive N° 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers)

Type-approval N°

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. Rated voltage of electrical installation
9. Characteristics of windscreen :
 - laminated/toughened (⊗)
 - thickness of component parts : mm
10. Particulars of windscreen mounting
11. Identification data for "R" point of driver's designated seating position in relation to position of primary reference marks

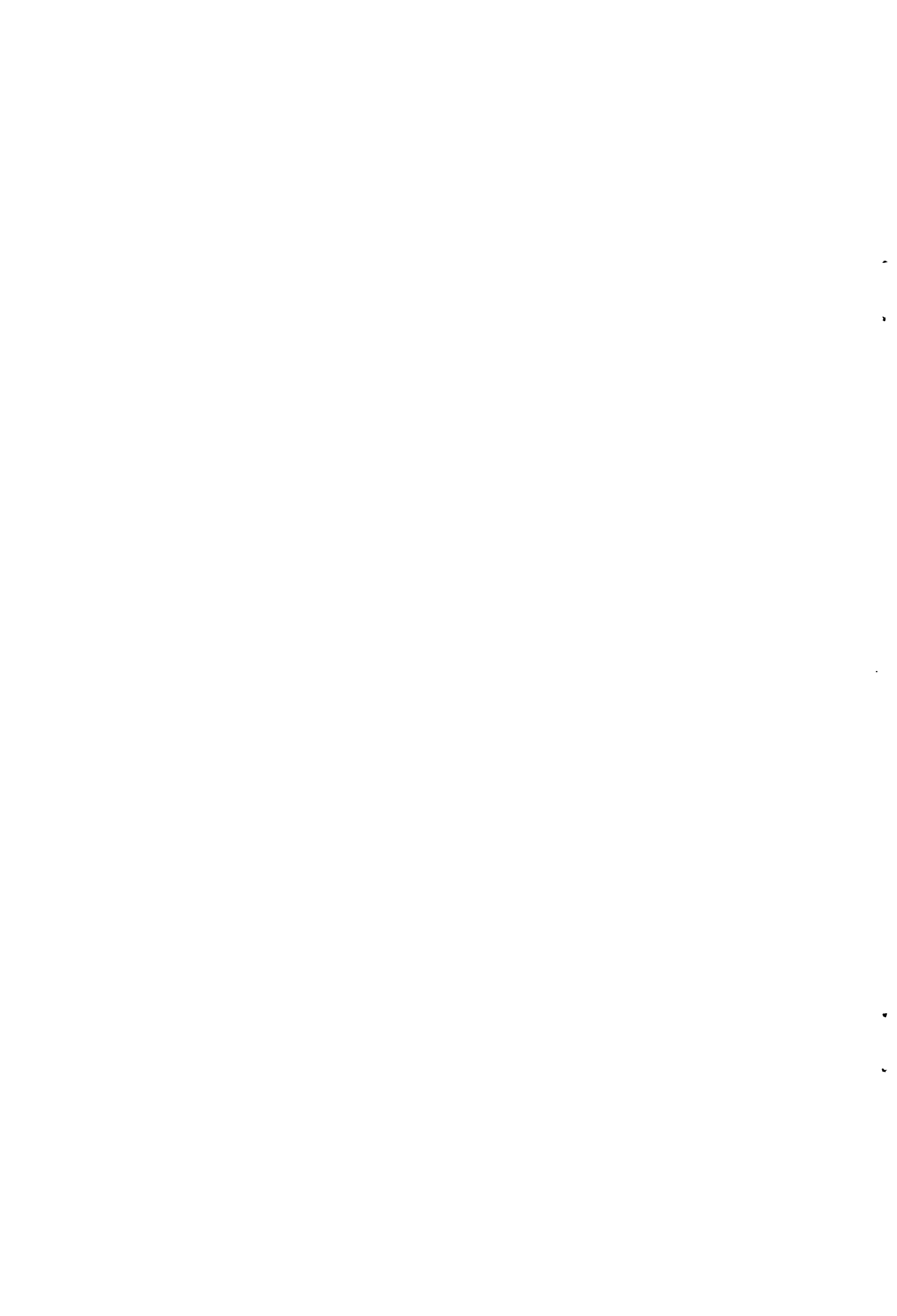
(⊗) Strike out what does not apply.

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

(*) Strike out what does not apply.



PROPOSAL FOR A COUNCIL DIRECTIVE
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)



EXPLANATORY MEMORANDUM

I. General

The Chapter on the arrangement and identification of controls also forms part of the procedure for the Community type approval of motor vehicles and of their trailers covered by the Council Directive of 6 February 1970 (1). This proposal of directive concerns in particular the requirements for the identification of controls, tell-tales and indicators and shows in the annexes the symbols to be used. However, for two symbols (the symbol of the tell-tale signalling a defect in the braking system and that of the parking brake control and tell-tale) the Commission's group of experts on "Motor Vehicles" felt that these were not yet representative enough and that it would be better to complete this directive once an agreement has been made on an international framework broader than the Community.

Moreover, in drafting this proposal, the Commission based itself on the work accomplished in this field by the Economic Commission for Europe in Geneva and by the International Standard Organization (ISO). As far as trade is concerned, this is bound to offer an additional advantage, as a very large number of States are represented in these organizations.

II. Comments on the proposal for a directive

Its scope covers all motor vehicles having at least four wheels and a maximum design speed in excess of 25 km/h (Article 1).

Article 2 incorporates the requirements relating to the identification of controls, tell-tales and indicators in the EEC type approval procedure.

Since at the moment some new Member States do not operate their own type approval procedure it is necessary to lay down provisions enabling vehicles complying with the requirements of the Directive (Article 3) (2) to be used in those Member States.

(1) OJ No L 42, 23 February 1970.

(2) OJ No L 73 of 27 March 1972 "Documents concerning the accession to the European Communities of the Kingdom of Denmark, Ireland, the United Kingdom of Great Britain and Northern Ireland".

Act concerning the conditions of accession and the adjustments to the Treaties - Annex I, Title X.

Article 4 lays down the procedure for adapting the requirements set out in the annexes to technical progress. This procedure is set out in Article 13 of the Council Directive of 6 February 1970 on the type approval of motor vehicles and of their trailers.

Article 5 provides for two deadlines : before expiry of the first deadline the Member States shall adopt and publish the measures necessary in order to comply with the Directive. The second deadline determines the date on which all the Member States must simultaneously implement the common rules (Article 5, (1)).

Finally, the Commission must be informed, within reasonable time, of any draft provision drawn up by the Member States in the field covered by the Directive, since such information will enable the Commission to prepare any comments on the draft considered necessary (Article 5, (2)).

CONSULTATION OF THE EUROPEAN PARLIAMENT AND OF THE ECONOMIC AND SOCIAL COMMITTEE

The opinion of both these bodies is required as laid down in the provisions of Article 100, (2).

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;

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

Whereas the technical requirements which motor vehicles must satisfy pursuant to national law 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 N° 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 (1), to be applied in respect of each type of vehicle;

Whereas it is appropriate to utilize basically certain technical requirements adopted by the UN Economic Commission for Europe in its Regulation N° (Uniform provisions concerning the approval of vehicles with regard to the identification of controls, tell-tales and indicators) (2) which is annexed to the Agreement of 20 March 1958 concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts;

Whereas it will be necessary, at the appropriate time, to supplement this Directive with certain requirements concerning symbols of the tell-tale signalling a defect in the braking system and of the parking-brake control and tell-tale;

(1) OJ N° L 42, 23.2.1970, p. 1

(2) ECE document from Geneva

Whereas approximation of the national laws relating to motor vehicles includes the mutual recognition by Member States of the tests carried out by each of them on the basis of the common requirements; whereas, for such a system to function successfully, these requirements must be applied by all Member States with effect from the same date,

HAS ADOPTED THIS DIRECTIVE :

Article 1

For the purpose 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 they satisfy the requirements laid down in Annexes I, II, III and IV hereto.

Article 3

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

Article 4

The amendments necessary to adapt the provisions of Annexes I, II, III, IV and V to take account of technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Council Directive N° 70/156/EEC of 6 February 1970.

Article 5

1. Member States shall adopt and publish by 1 January 1978 the provisions necessary to comply with this Directive and shall forthwith inform the Commission thereof. They shall apply these provisions with effect from 1 January 1980.
2. After notification of this Directive, the Member States shall take steps to inform the Commission, in sufficient time for it to submit its comments, of any draft laws, regulations or administrative provisions which they intend to adopt in the field covered by this Directive.

Article 6

This Directive is addressed to the Member States.

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 mandatory for their identification where it is contemplated (⌘).
- 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.

(⌘) The technical requirements of this Annex are basically similar to those of UN Economic Commission for Europe Regulation N°, in particular the sub-divisions of the sections are the same. Where an item of Regulation has no corresponding item in this Annex, the number is shown 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

For the purposes of this Directive :

(2.1)

- 2.2. "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" 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" means a device by which the supply to an electrical circuit can be connected or cut off;
- 2.5. "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 disconnexion between the two positions;
- 2.6. "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" 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" means an optical signal which indicates the actuation of a device, correct or defective functioning or condition, or failure to function;
- 2.9. "symbol" means a diagram identifying a control, a tell-tale or an indicator;

- 2.10. "master lighting switch" means a switch connecting or cutting off the supply of electric current to the lights and light signalling devices of the vehicle;
- 2.11. "battery charging indicator" means a device showing whether the battery is being charged or not;
- 2.12. "battery charging tell-tale" means a signal which when alight indicates that the battery is not being charged;
- 2.13. "fuel-level indicator" means a device which presents information on the amount of fuel in the tank;
- 2.14. "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" means a device which presents information on the temperature of the coolant;
- 2.16. "engine coolant temperature tell-tale" means a signal which when alight indicates that the temperature of the engine coolant is above the normal engine running temperature prescribed by the manufacturer;
- 2.17. "oil pressure indicator" means a device which presents information on the pressure of the oil in the engine lubrication circuit;
- 2.18. "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" means a signal which when alight warns the occupant of a seat that the buckle of his belt is not locked.

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 agent.
- 3.2. It shall be accompanied by the following documents in triplicate and by the following particulars :
 - 3.2.1. drawings, on an appropriate scale and in sufficient detail, of the parts of the vehicle to which the requirements of this Directive are considered to apply and of the symbols referred to in Item 5 below.

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 shall be submitted to the technical service responsible for conducting the type-approval tests.

4. EEC TYPE-APPROVAL

(4.1)

(4.2)

4.3. A form conforming to the model shown in Annex IV 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 shall be identified by symbols. The symbols shall be 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 shall 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.

5.2. Characteristics of the Symbols

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

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

- 5.2.3. The symbols shall 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 shall 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

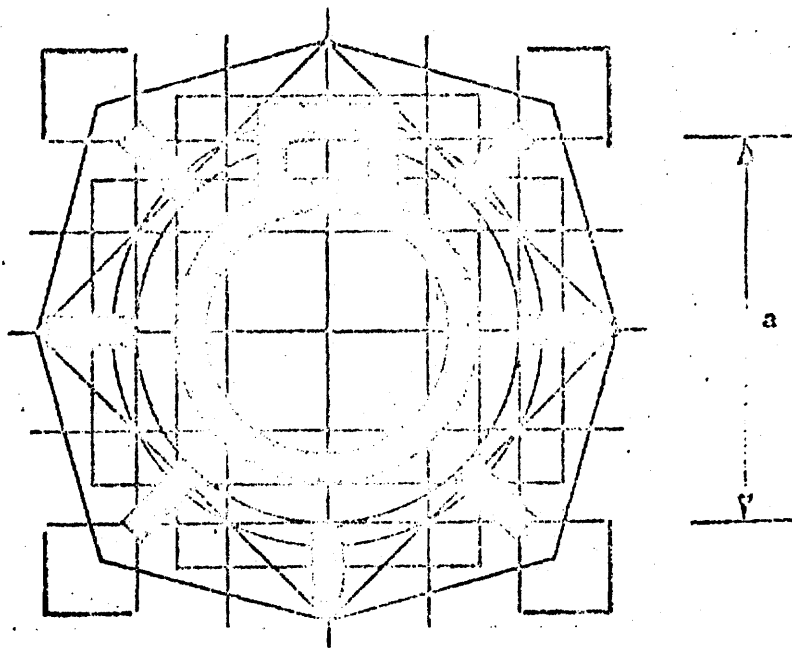
Notes

- 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 shall 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 OR COMBINED
ON/OFF-SELECTOR SWITCH FOR LIGHTING, AND TELL-TALE

ORIGINAL SYMBOL (a ≈ 50mm)



Real dimensions

height 1.37 a

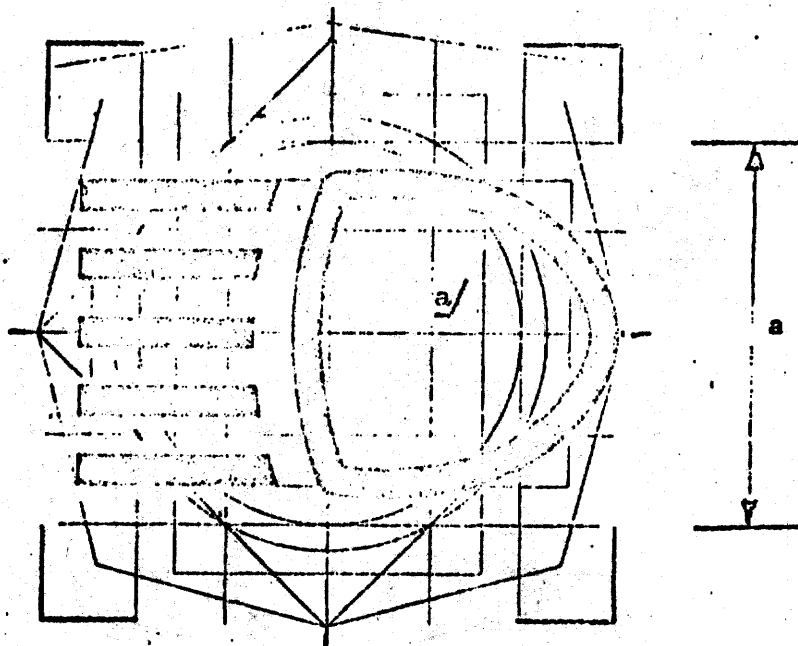
width 1.50 a

Colour : green .

FIGURE 2

MAIN-BEAM HEAD-LAMP CONTROL, IF SEPARATE d/

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

height 0.85 a

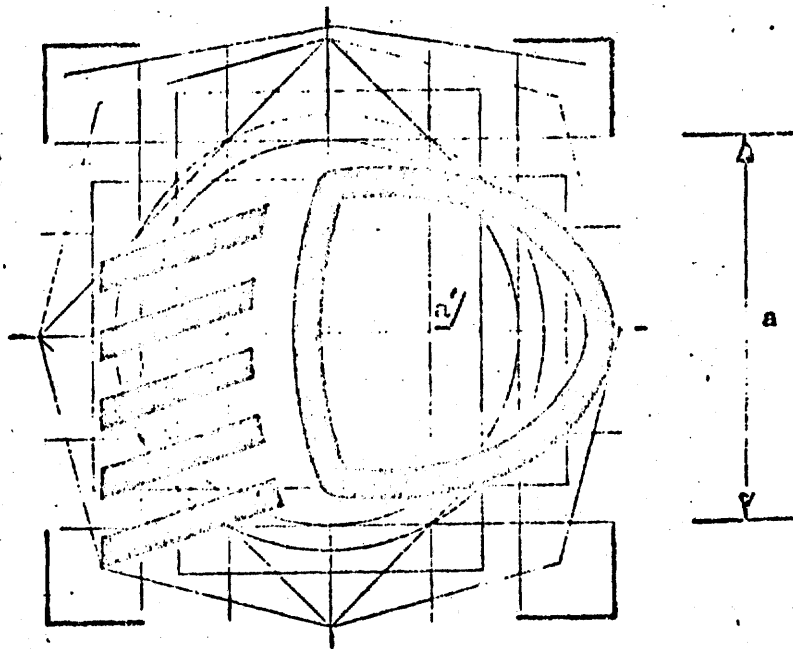
width 1.38 a

Colour : blue

FIGURE 3

DIPPED-BEAM HEAD-LAMP CONTROL, IF SEPARATE $d/$

ORIGINAL SYMBOL (a \cong 50mm)



Real dimensions

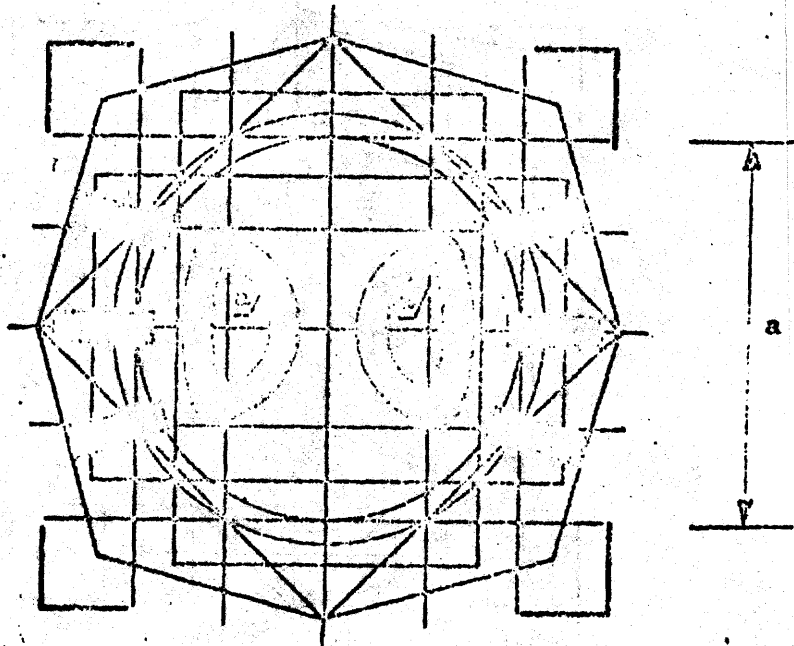
height 1.92 a

width 1.33 a

FIGURE 4

POSITION (SIDE) LAMPS CONTROL, IF SEPARATE d/

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

height 0.64 a

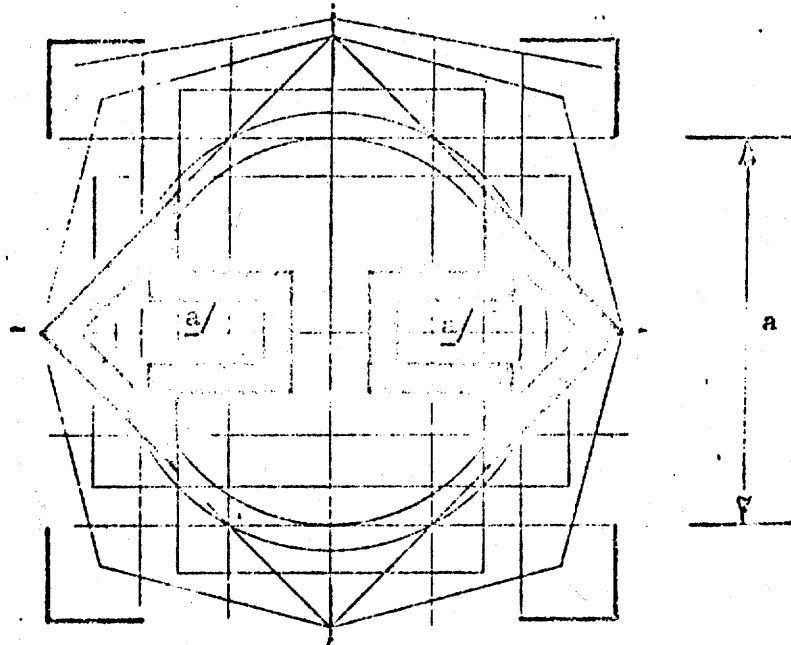
width 1.50 a

Colour : green

FIGURE 5

DIRECTION INDICATOR LAMP CONTROL AND TELL-TALE b/

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

height 0.75 a

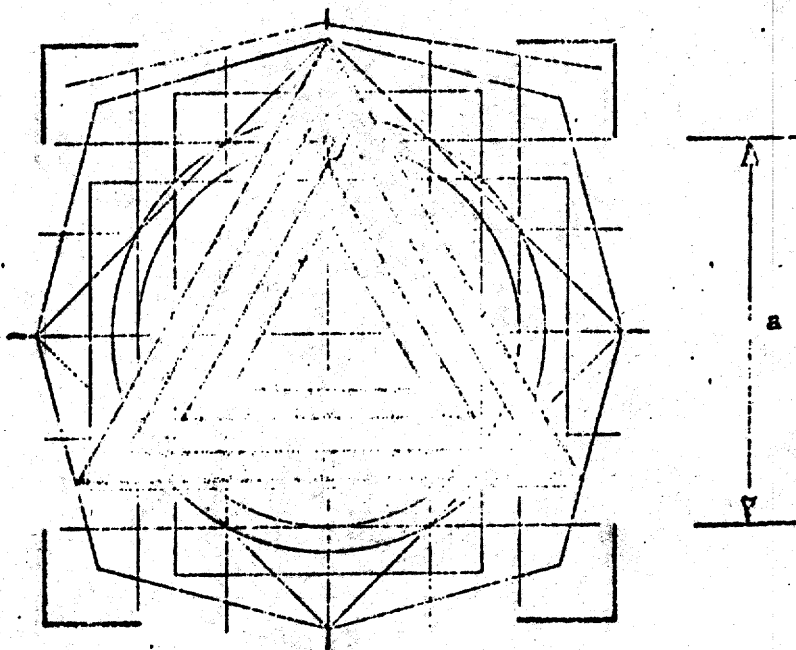
width 1.50 a

Colour : green

FIGURE 6

HAZARD WARNING CONTROL AND TELL-TALE

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

height 1.13 a

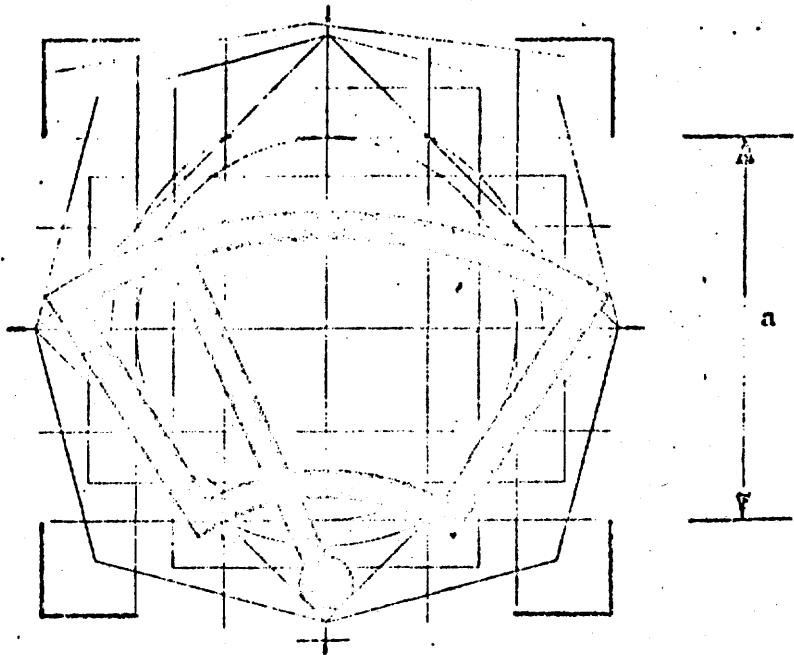
width 1.30 a

Colour : red

FIGURE 7

WINDSCREEN WIPER CONTROL

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

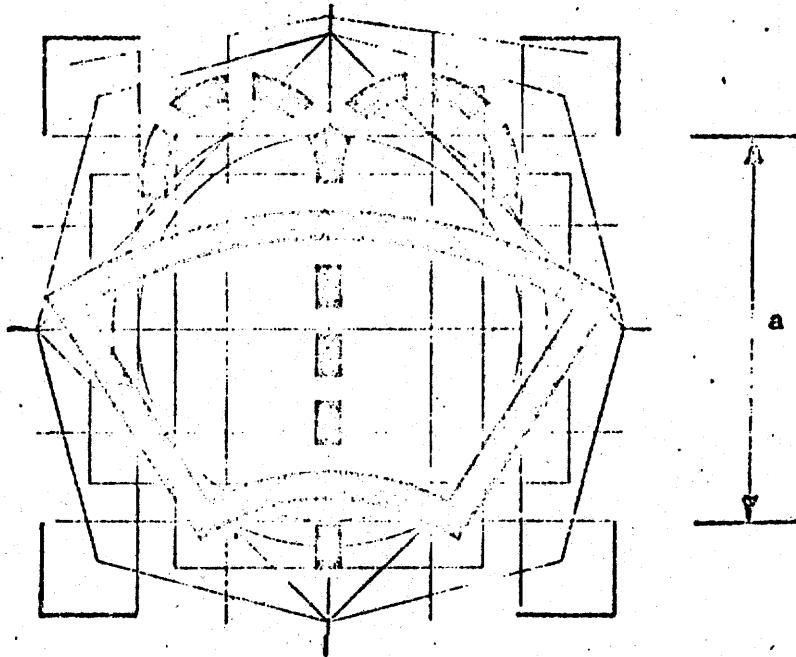
height 1.03 a

width 1.48 a

FIGURE 8

WINDSCREEN WASHER CONTROL

ORIGINAL SYMBOL ($a \cong 50\text{mm}$)



Real dimensions

height 1.26 a

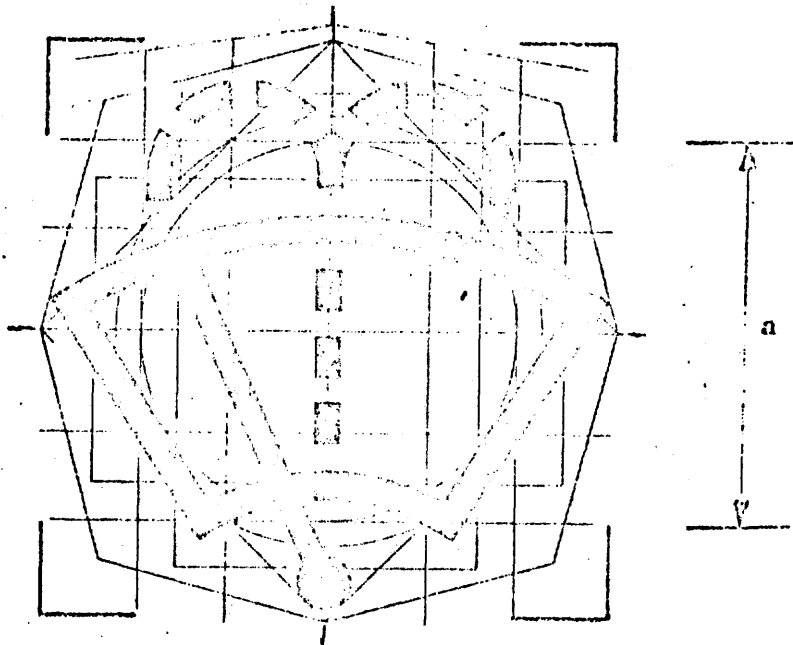
width 1.48 a

FIGURE 9

COMBINED WINDSCREEN WIPER AND WINDSCREEN WASHER CONTROL

ORIGINAL SYMBOL

($a \cong 50\text{mm}$)



Real dimensions

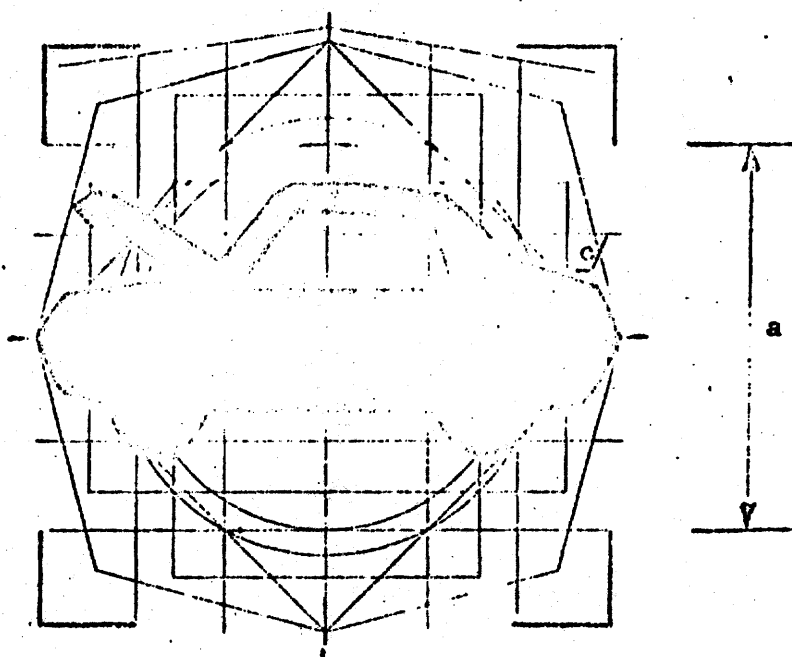
height 1.36 a

width 1.46 a

FIGURE 10

FRONT BONNET OPENER CONTROL

ORIGINAL SYMBOL (a \leq 50mm)



Real dimensions

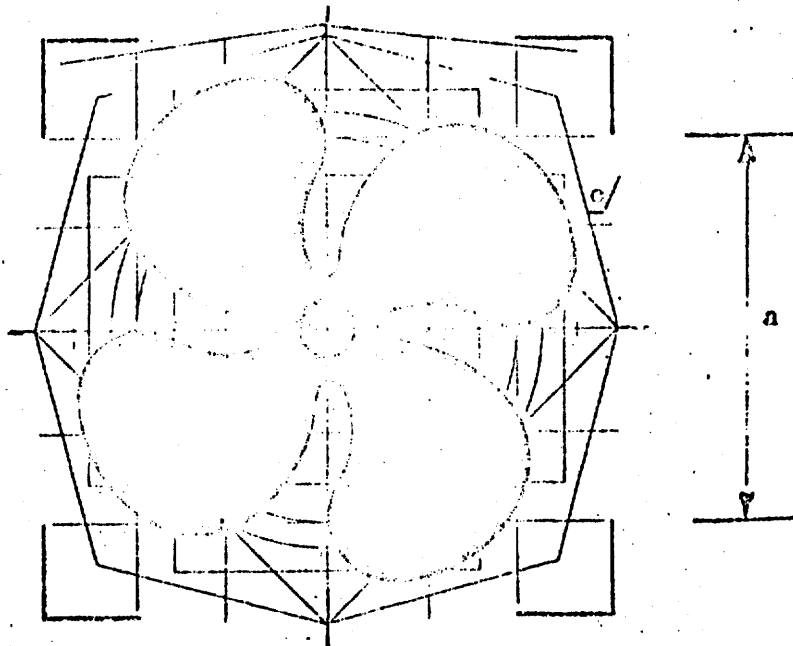
height 0.69 a

width 1.50 a

FIGURE 11

FAN (WARM AIR/COLD AIR) CONTROL

ORIGINAL SYMBOL (a $\hat{=}$ 50mm)



Real dimensions

height 1.31 a

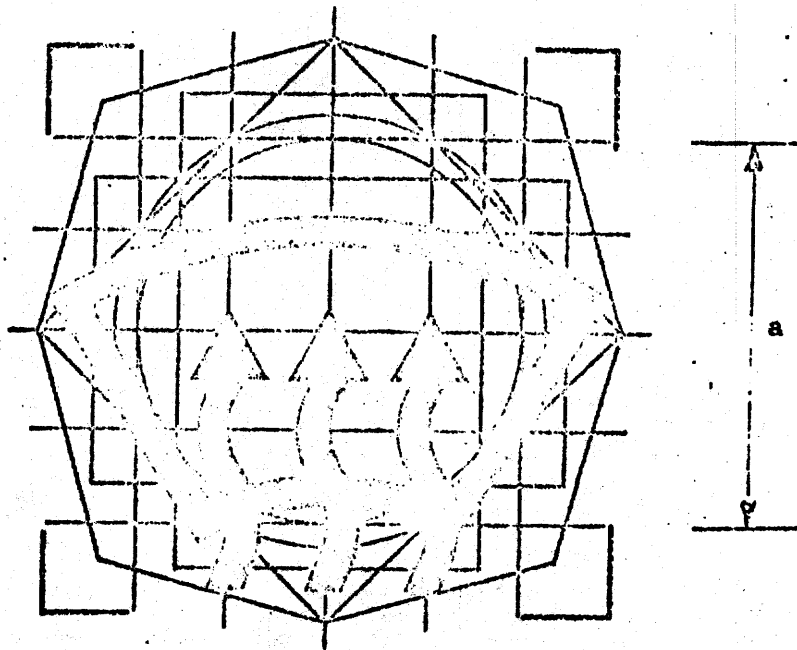
width 1.31 a

FIGURE 12

**WINDSCREEN DEFROSTER AND DEMISTER
ACTUATING CONTROL, IF SEPARATE, AND TELL-TALE**

ORIGINAL SYMBOL

($a \cong 50\text{mm}$)



Real dimensions

height 1.04 a

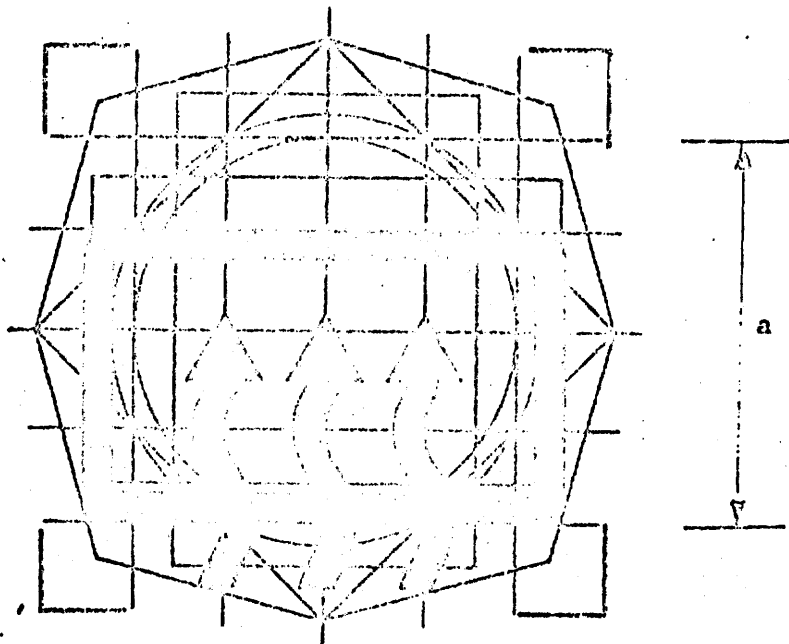
width 1.48 a

Colour : amber

FIGURE 13

REAR WINDOW DEFROSTER AND DEMISTER
ACTUATING CONTROL, IF SEPARATE, AND TELL-TALE

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

height 1.06 a

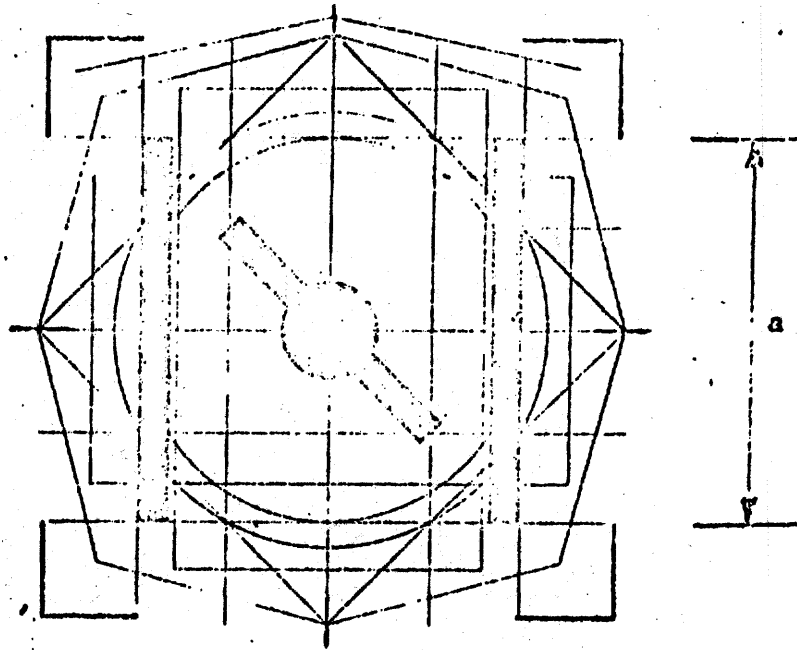
width 1.32 a

Colour : amber

FIGURE 14

COLD STARTING DEVICE CONTROL

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

height 1.0 a

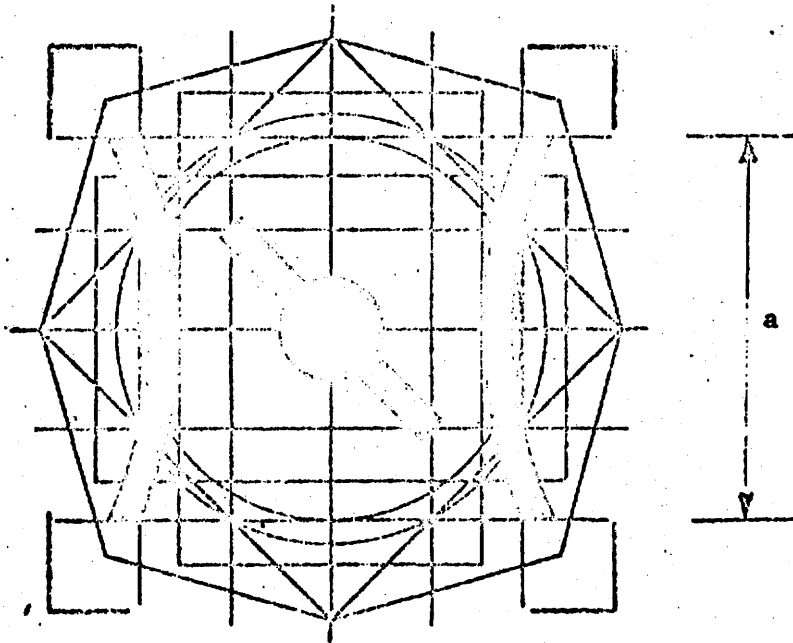
width 1.0 a

Colour : amber

FIGURE 15

HAND ACCELERATOR CONTROL

ORIGINAL SYMBOL (a = 50mm)



Real dimensions

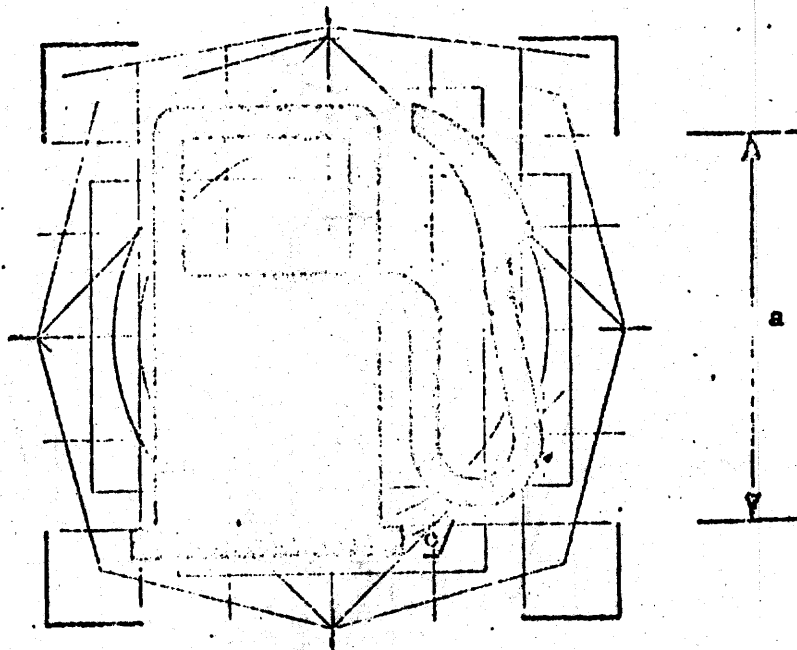
height 1.0 a

width 1.2 a

FIGURE 16

FUEL LEVEL INDICATOR AND TELL-TALE ϕ

ORIGINAL SYMBOL ($a \cong 50\text{mm}$)



Real dimensions

height 1.17 a

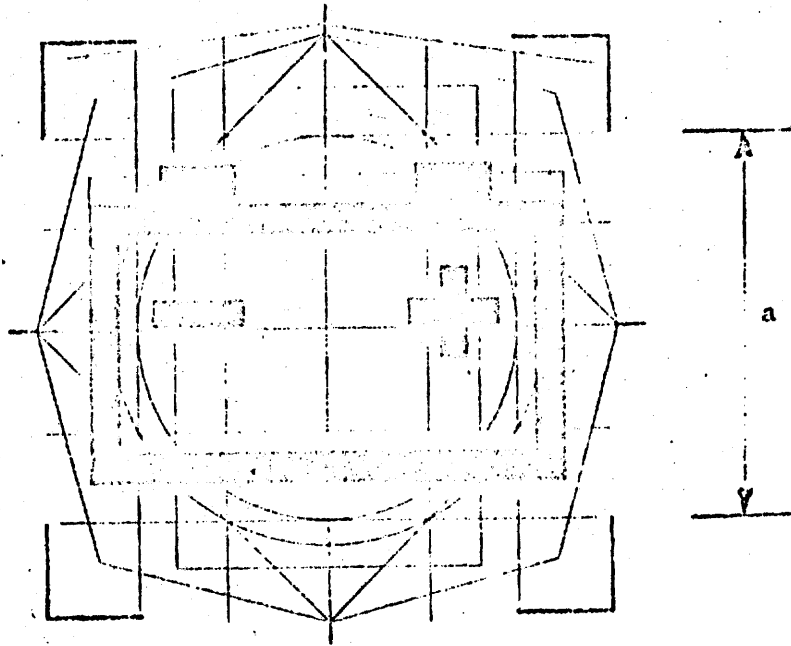
width 1.08 a

Colour : amber

FIGURE 17

BATTERY CHARGING INDICATOR AND TELL-TALE

ORIGINAL SYMBOL (a \leq 50mm)



Real dimensions

height 0.83 a

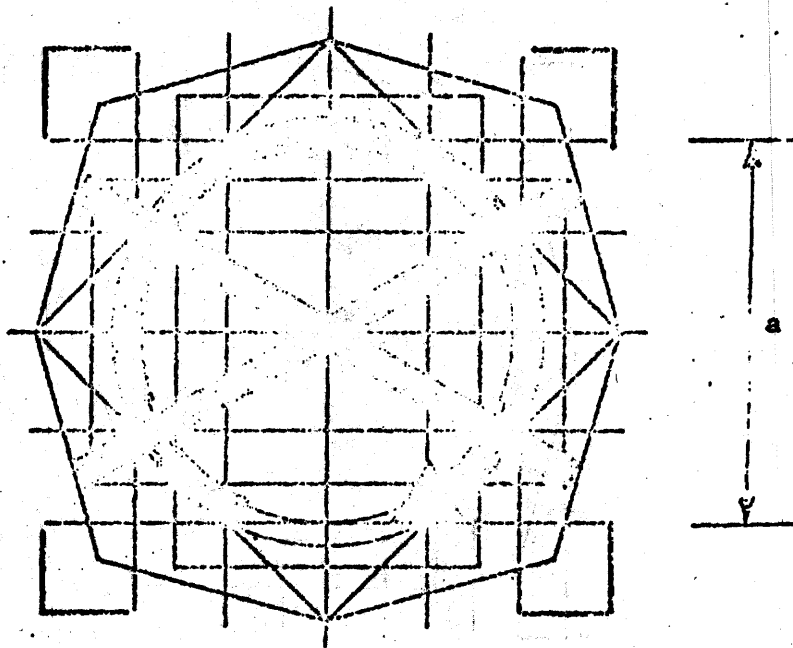
width 1.26 a

Colour : red

FIGURE 18

(DIESEL) ENGINE CUT-OFF CONTROL, IF INTENDED
FOR INSTALLATION ON DASHBOARD

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

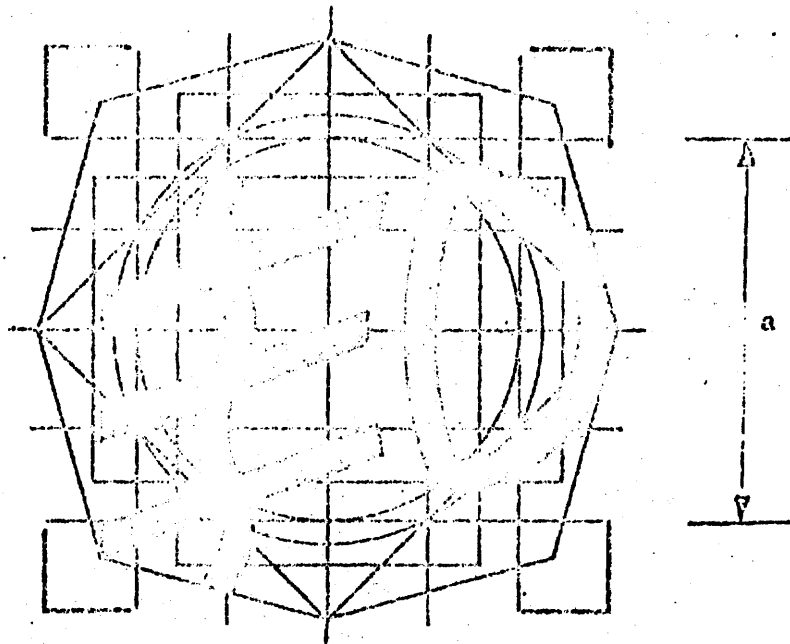
height 1.24 a

width 1.24 a

FIGURE 19

FRONT FOG LAMP CONTROL AND TELL-TALE

ORIGINAL SYMBOL (a 50 mm)



Real dimensions

height 1.0 a

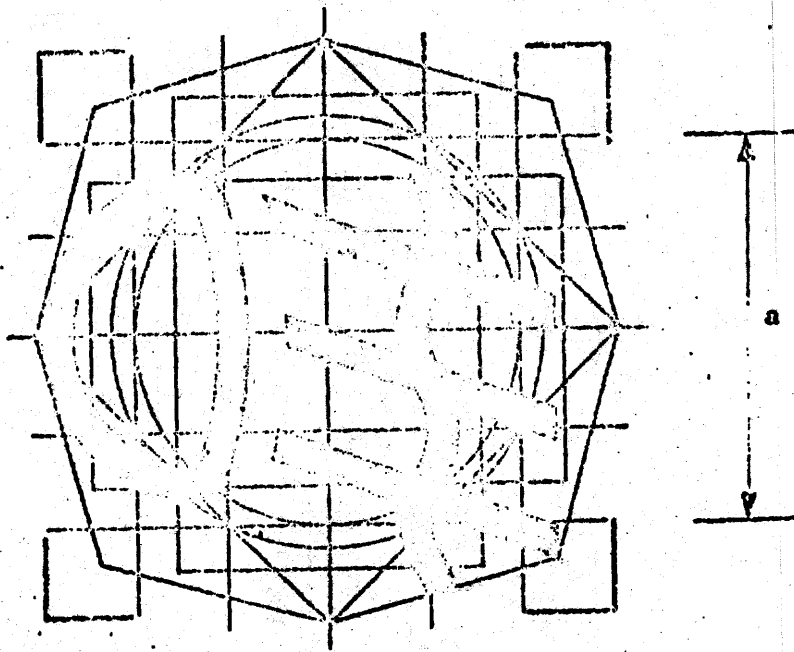
width 1.28 a

Colour : green

FIGURE 20

REAR FOG LAMP CONTROL AND TELL-TALE

ORIGINAL SYMBOL (a \cong 50mm)



Real dimensions

height 1.0 a

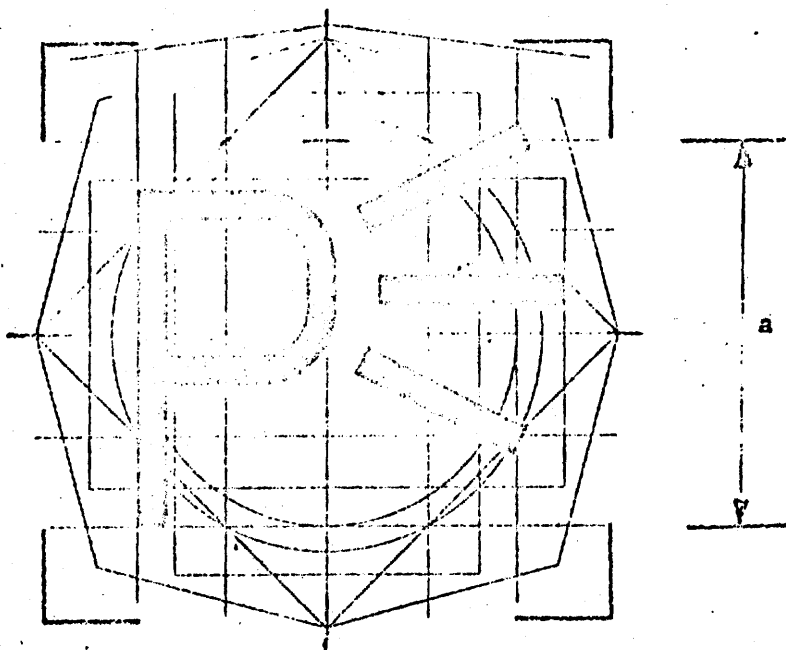
width 1.36 a

Colour : amber

FIGURE 21

CONTROL OF PARKING LAMP, IF SEPARATE d/

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

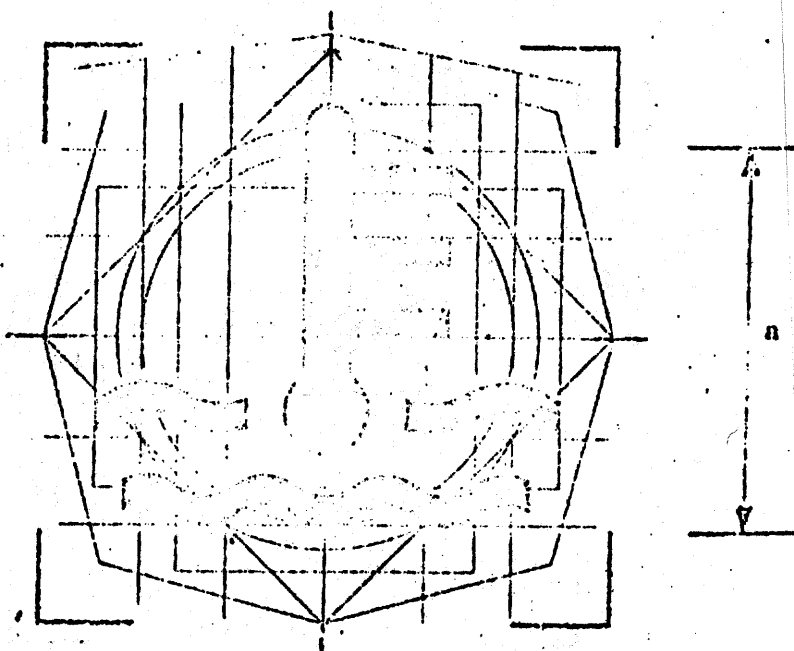
height 1.05 a

width 1.12 a

FIGURE 22

ENGINE COOLANT TEMPERATURE INDICATOR AND TELL-TALE

ORIGINAL SYMBOL (a $\hat{=}$ 50mm.)



Real dimensions

height 1.10 a

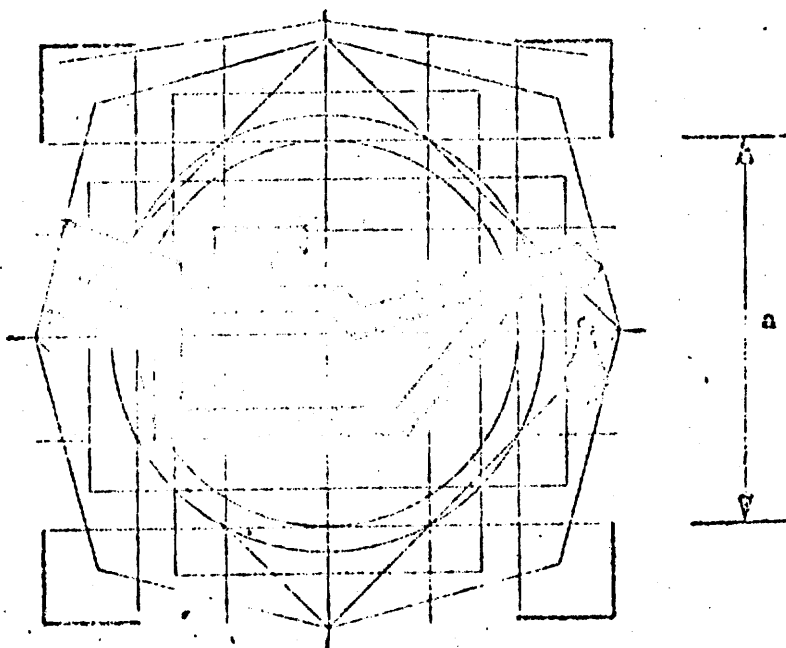
width 1.22 a

Colour : red

FIGURE 23

OIL PRESSURE INDICATOR AND TELL-TALE

ORIGINAL SYMBOL ($a \approx 50\text{mm}$)



Real dimensions

height 0.54 a

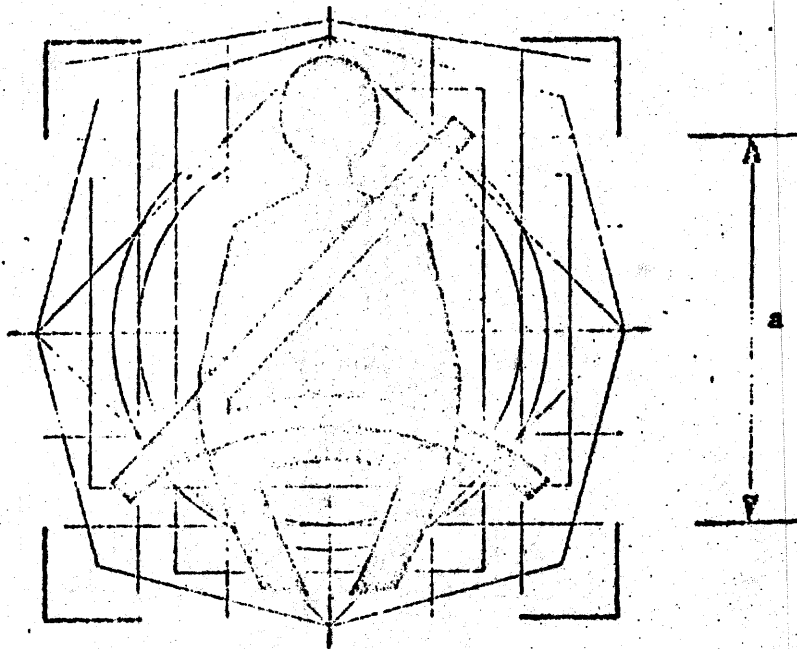
width 1.44 a

Colour : red

FIGURE 24

SAFETY-BELT TELL-TALE

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

height 1.40 a

width 1.40 a

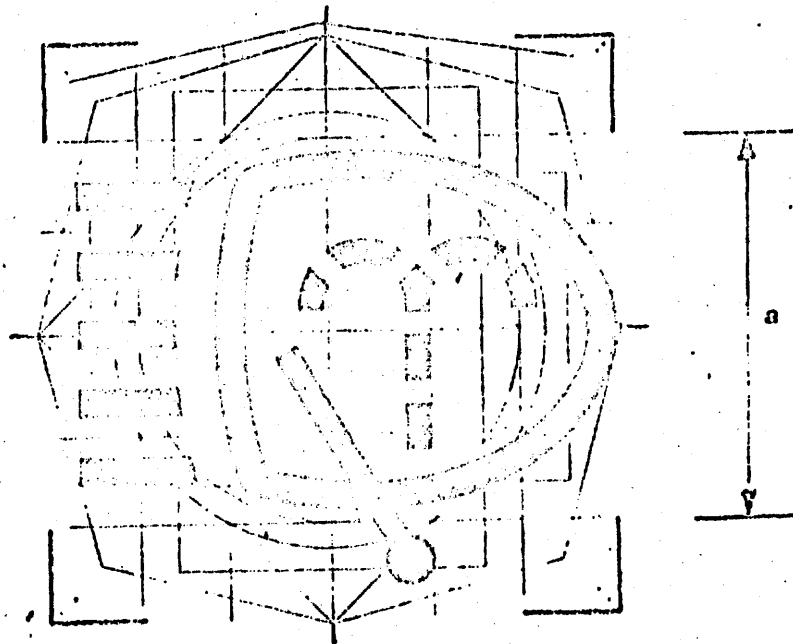
Colour : red

FIGURE 25

HEADLAMP CLEANING DEVICE HAND CONTROL

ORIGINAL SYMBOL

($a \approx 50\text{mm}$)



Real dimensions

height 1.13 a

width 1.41 a

ANNEX III

CONTROLS, TELL-TALES AND INDICATORS FOR WHICH, WHEN FITTED,
IDENTIFICATION IS OPTIONAL, AND SYMBOLS MANDATORY
FOR THEIR IDENTIFICATION WHERE IT IS CONTEMPLATED

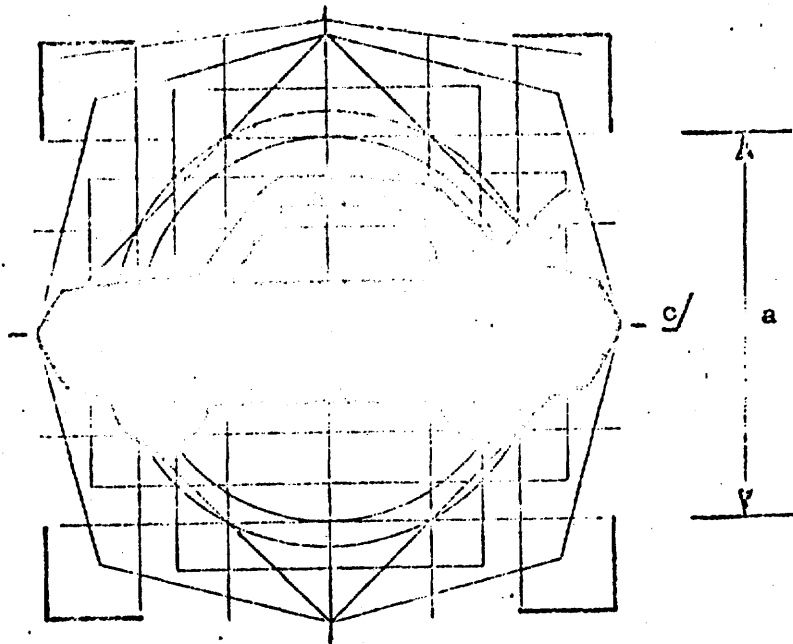
Note

See note c/ in Annex II, p. 1

FIGURE 1

REAR COMPARTMENT CLOSURE RELEASE CONTROL

ORIGINAL SYMBOL (a \approx 50mm)



Real dimensions

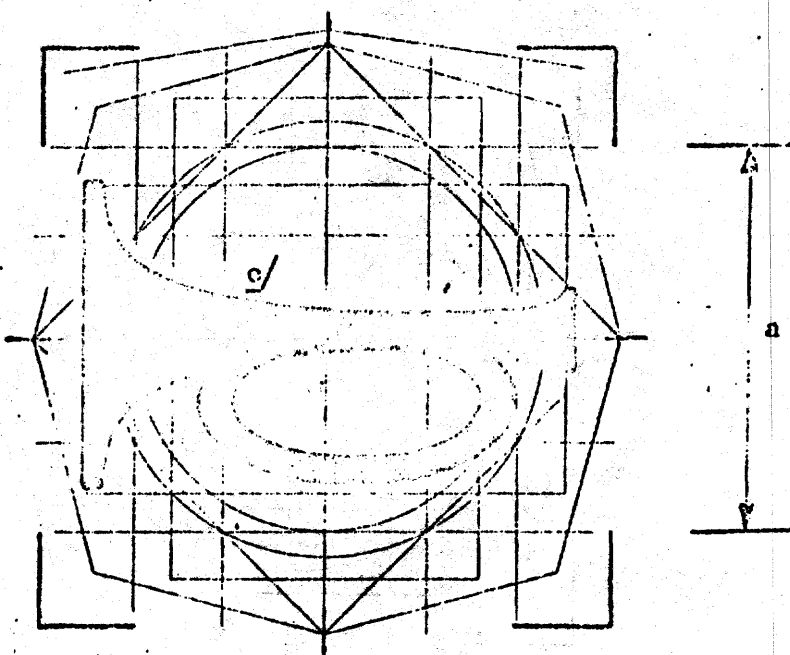
height 0.69 a

width 1.50 a

FIGURE 2

AUDIBLE WARNING DEVICE CONTROL

ORIGINAL SYMBOL (a \cong 50mm)



Real dimensions

height 0.80 a

width 1.29 a

ANNEX IV

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

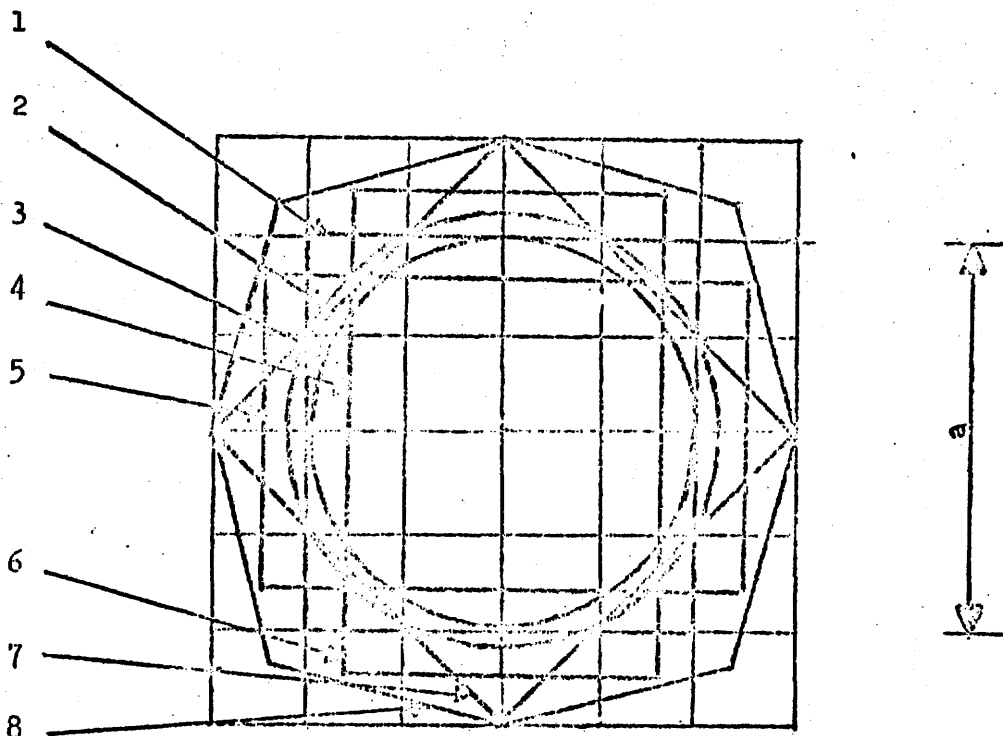


Figure 1 - Basic pattern

The basic pattern comprises :

- 1) a basic square of side 50 mm; this measure is equal to the nominal measure, a , of the original;
- 2) a basic circle of 56 mm diameter having approximately the same area as the basic square;
- 3) a second circle of 50 mm diameter, being the inscribed circle of the basic square (1);
- 4) a second square which touches the basic circle (2) with its corners;
- 5) and 6) rectangles having the same area as the basic square (1); they are mutually perpendicular, each being drawn to cross symmetrically opposite sides of the basic square;
- 7) a third square formed by the lines passing through the points of intersection of the basic square (1) and the basic circle (2), rotated 45° and forming the largest horizontal and vertical dimensions of the basic pattern;
- 8) an irregular octagon, formed by lines at 30° on the sides of square (7).

The basic pattern is laid upon a grid having a line spacing of 12.5 mm and which coincides with the basic square (1).

ANNEX V

(Maximum format : A4 (210 x 297 mm))

Name of
administration

Annex to the EEC vehicle type-approval certificate with regard to the identification of controls, tell-tales and indicators (Article 4(2) and Article 10 of the Council Directive N° 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers).

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 agent
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 (x)
11. Place
12. Date
13. Signature
14. The following documents, bearing the type-approval number shown above, are annexed to this certificate :
 drawings, diagrams and layout plans of the controls, tell-tales and indicators and of the parts of the vehicle considered to be of importance for the purposes of this Directive.

(x) Delete as appropriate



