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Proposal for a

COUNCIL DIRECTIVE ON THE APPROXIMATION OF THE LAWS OF THE MEMBER STATES RELATING TO ANCHORAGES FOR MOTOR-VEHICLE SAFETY BELTS

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(submitted to the Council by the Commission)

# EXPLANATORY MEMORANDUM

## I. GENERAL

Technical requirements relating to safety belt anchorages exist in the majority of the Member States. These national requirements diverge at present on many points and do not take sufficient account of recent technical developments. This necessitates the speedy adoption of Community specifications that will not only ensure the free movement of goods in respect of motor vehicles but also provide the users of these vehicles with the greatest safety and comfort possible in the present state of the art.

This proposal for a Directive comes within the scope of the EEC type-approval procedure for motor vehicles (1) and of the Community programme of action on industrial policy of 21 December 1973.

The technical requirements involved concern the position, strength and testing of safety-belt anchorages. The provisions proposed envisage in particular that all of the seats in all private motor cars and vehicles derived therefrom should be fitted with anchorages. This measure forms the essential basis for the Community provisions currently in preparation with a view to fitting vehicles with safety belts. A proposal for a Directive will be transmitted to the Council before the end of the year 1974 on this subject. It will be accompanied by a proposal for a Directive relating to head restraints, thus constituting a further measure by the Community on the protection of the occupants of motor vehicles.

The present proposal for a Directive has been prepared in close collaboration with national experts and with the representatives of consumer interests of the automobile industry and of equipment manufacturers and has obtained a large measure of agreement.

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(1) Council Directive 70/156/EEC, 6 February 1970, OJ N° L 42, 23 February 1970.

Discussions with experts have, however, shown that it will be difficult for certain types of vehicle such as convertible cars or cars with a removable roof to comply with the proposed requirements on the position of the upper anchorages by the date envisaged for entry into effect. Since it appreciates these difficulties the Commission proposes that such vehicles should be subject to modified requirements, the applicability of which would, however, be restricted to two years following the date of notification of the Directive.

## II. COMMENTS ON THE PROPOSAL FOR A DIRECTIVE

The proposed Directive covers motor vehicles having at least four wheels and a maximum design speed of more than 25 km/h (Article 1).

Article 2 links the requirements concerning safety belt anchorages with the EEC type/approval procedure.

Since certain of the new Member States do not at present operate a national type approval procedure it has been necessary to introduce a special Article to ensure that vehicles complying with the requirements of the Directive can be used in those States (Article 3) (1).

If the prototype is modified the Member State which issued the type approval shall determine whether new tests are necessary (Article 4).

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(1) See O.J. N° L 73 of 27 March 1972 "Documents concerning the Accession to the European Communities of the Kingdom of Denmark, Ireland, the Kingdom of Norway and 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 5 provides that the procedure for adjusting the requirements of the Annexes so as to take account of technical progress should be that set out in Article 13 of the Council Directive of 6 February 1970 on type approval of motor vehicles and their trailers.

Article 6 lays down two deadlines; before expiry of the first deadline the Member States must adopt and publish the provisions needed in order to comply with this Directive. They may do so at any time within this deadline. The second deadline constitutes the single date on which all the Member States must simultaneously implement the common rules (Article 6, 1)).

Finally, the Commission must be notified of any draft provisions drawn up by the Member States in the field covered by this Directive, in sufficient time to enable it to submit its comments, if any, on that draft (Article 6, 2)).

## III. CONSULTATION OF THE EUROPEAN PARLIAMENT AND THE ECONOMIC AND SOCIAL COMMITTEE

The Opinion of these two institutions is required under the provisions of the second paragraph of Article 100.

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 laws relate inter alia to safety-belt anchorages;

Whereas those requirements differ from one Member State to another; whereas it is therefore necessary that all Member States adopt the same requirements either in addition to or in place of their existing rules, in order, in particular, to allow the EEC type approval procedure which was the subject of the Council Directive 70/156/EEC(1) 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 to be applied in respect of each type of vehicle;

Whereas common requirements concerning the interior of the passenger compartment, the layout of the controls, the roof, the backrest and rear part of the seats have been laid down by Council Directive 74/60/EEC of 17 December 1973 (2); whereas requirements on interior fittings relating to the protection of the driver against the steering unit in the event of impact were laid down by the Council Directive of ... (3); whereas requirements concerning the strength of seats and their anchorages were laid down on ....(4); and whereas other requirements on interior fittings, and in particular head restraints, safety belts and the identification of controls, will be laid down at a later date;

(1) O.J. No L 42 of 23 February 1970, p. 1.
(2) O.J. No L 38 of 11 February 1974.
(3) COM(72) 955 of 15 September 1972.
(4) COM(73) 682 of 14 May 1973 and COM(74) 146 of 13 February 1974.

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

1. For the purposesof this Directive "vehicle" means any motor vehicle in category M1 as(defined in Annex I of Directive 70/156/EEC (1)) designed for use on the road, having at least four wheels and a maximum design speed of more than 25 km/h.

2. This Directive applies to anchorages for safety belts for adult occupants of forward-facing seats.

Article 2

No Member State may refuse to grant EEC type-approval or national type-approval of a vehicle on grounds relating to the anchorages for safety belts if these anchorages satisfy the requirements set out in Annexes I, III, IV and V.

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 anchor for safety belts if these anchorages satisfy the requirements set out in Annexes I, 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 Annex I, point 1.1. The competent authorities of that State shall determine whether fresh tests should be carried out on the modified prototype and a fresh report drawn up.

Where such tests reveal failure to comply with the requirements of this Directive, the modification shall not be approved.

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(1) O.J. N° L 42, 23 February 1970, p. 1.

Article 5

Any amendments necessary in order to adjust the requirements of Annexes I to V so as to take account of technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers.

Article 6

1. The Member States shall adopt and publish the provisions necessary in order to comply with this Directive before 1 October 1975 and shall forthwith inform the Commission thereof.

   They shall apply these provisions with effect from 1 April 1976.

2. Once this Directive has been notified, the Member States shall ensure that the Commission is informed in sufficient time to enable it submit its comments, of all draft laws, regulations or administrative provisions which they are proposing to adopt in the field covered by the Directive.

Article 7

This Directive is addressed to the Member States.

Done at Brussels,

ANNEXE I

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

1. DEFINITIONS

For the purpose of this Directive :

1.1. "vehicle type as regards belt enchorages"means a category of power-driven vehicles which do not differ in such essential respects as the dimensions, lines and materials of components of the vehicle structure or seat structure or any other part of the vehicle to which the belt anchorages are attached;

1.2. "belt anchorages" means the parts of the vehicle structure or seat structure or any other part of the vehicle to which the safety belt assemblies are to be secured;

1.3. "safety belt (seat belt, belt)" means an arrangement of straps with a securing buckle, adjusting devices and attachments which is capable of being anchored to a power-driven vehicle and is designed to diminish the risk of injury to its wearer, in the event of collision or of abrupt deceleration of the vehicle, by limiting the mobility of the wearer's body. Such an arrangement is generally referred to as a "belt assembly", which term also embraces any device for absorbung or for retracting the belt.

1.4. Effective belt anchorage : menas the point used to determine conventionally, as specified in point 4.4. the angle of each part of the safety belt in relation to the wearer, that is, the point to which a strap would need to be attached to provide the same lie as the intended lie of the belt when worn, and which may or may not be the actual belt anchorage depending on the configuration of the safety belt hardware at its attachment to the belt anchorage.

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For example, in the case

1.4.1. where a safety belt incorporates a rigid part which is attached to a lower belt anchorage and which is either fixed or free to swivel, the effective belt anchorage for all positions of seat adjustment is the point where the strap is attached to thar rigid part;

1.4.2. where a strap guide is used on the vehicle structure or on the seat structure, the middle point of the guide at the place where the strap leaves the guide on the belt wearer's side, shall be considered as the effective belt anchorage; and,

1.4.3. where the belt runs directly from the wearer to a retractor attached to the vehicle structure or the seat structure without an intervening strap guide, the effective belt anchorage shall be considered as being the intefsection of the axis of the reel for storing the strap with the plane passing through the centre line of the strap on the reel.

1.5. "seat" means a structure which may or may not be integral with the vehicle structure complete with trim, intended to seat one adult person. The term covers both an individual seat or part of a bench seat intended to seat one person;

1.6. "bench seat" means a structure complete with trim, intended to seat more than one adult person;

1.7. "group of seats" means either a bench-type seat, or seats which are separate but side by side (i.e. fixed so tha( the front seat anchorages of one of these seats are in line with the front or rear anchorages of the other or between the anchorages of the other seat) and accommodate one or more seatet adult person;

1.8. "folding (tip-up) seat" means an auxiliary seat intended for occasional use, and which is normally folded out of the way;

1.9. "seat type" means a category of seats which do not differ in such essential respects as :

1.9.1. the shape dimensions and materials of the seat structure;

1.9.2. the types and dimensions of the adjustment systems and all locking systems;

1.9.3. the type and dimensions of the belt anchorages on the seat, of the seat anchorage and of the affected parts of the vehicle structure;

1.10. "seat anchorage" means the system by which the seat assembly is secured to the vehicle structure, includind the affected parts of the vehicle structure;

1.11. "adjustment system" means the device by which the seat or its parts can be adjusted to a position suited to the morphology of the seated occupant; this device may, in particular, permit of :

1.11.1. longitudinal displacement;

1.11.2. vertical displacement;

1.11.3. angular displacement;

1.12. "displacement system" means a device enabling the seat or one of its parts to be displaced angularly or longitudinally, wothout a fixed intermediate position, to facilitate access by passengers;

1.13. "locking system" means any device ensuring that the seat and its parts are maintauned in any position of use and includes both devices to lock the seat back relative to the seat and the seat relative to the vehicle.

2. APPLICATION FOR EEC TYPE-APPROVAL

2.1. The application for EEC type-approval of a vehicle type with regard to the belt anchorages shall ve submitted by the vehicle manufacturer or by his representative .

2.2. It shall be accompanied by the undermentioned documents in triplicate and by the following particulars :

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2.2.1. General arrangement drawings of the vehicle structure on an appropriate scale, showing the sites of the belt anchorages, and detailed drawings of the belt anchorages and the structure to which they are attached.

2.2.2. A specification of the materials used which may affect the strength of the belt anchorages;

2.2.3. a technical description of the belt anchorages;

2.2.4. in the case of belt anchorages affixed to rhe seat structure a detailed description of the vehicle type with regard to the design of the seats, of the seat anchorages and of their adjustment and locking systems;

2.2.5. drawings, on an appropriate scale and in sufficient detail, of the seats, of their anchorage to the vehicle, and of their adjustment and locking systels.

2.3. The manufacturer, shall submit to the technical service either a vehicle representative of the vehicle type to be approved or the parts of the vehicle considered essential for the belt anchorage tests by the technical service conducting approval tests.

3. EEC TYPE-APPROVAL

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

4. SPECIFICATIONS

4.1. Definitions (see Annex III)

4.1.1. Point H is a reference point determined by the procedure prescribed in Annex IV to this Directive.

4.1.2. Reference line is a straight line which is indicated by the manikin reproduced in Annex IV, for determining the H point. The reference line is that shown in Figure 1 to that Annex. It represents a line passing through the joint of the leg with the pelvis and the joint of the neck with the thorax on a manikin representing a 50th percentile adult male.

4.1.3. Points $B_1$ and $B_2$ are the lower effective belt anchorages.

4.1.4. Point C is a point situated 450 mm vettically above point H.

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4.1.5. The angles $\alpha_1$ and $\alpha_2$ are respectively the angles between a horizontal plane and planes perpendicualr to the median longitudinal plane of the vehicle and passing through point H and points $B_1$ and $B_2$.

4.1.6. S is the distance in millimeters of the effective upper belt anchorage from a reference plane P parallel to the longitudinal median plane of the vehicle defined as follows :

4.1.6.1. If the seating position is well defined by the shape of the seat, the plane P shall be the median plane of this seat.

4.1.6.2. In the absence of a well defined position :

4.1.6.2.1 the plane P for the driver shall be a vertical plane passing through the centre of the steering wheel in its mean position id adjusteble;

4.1.6.2.2. the plane P for the front outboard passenger shall be symmetrical with that of the driver.

4.1.6.2.3. plane P for the rear outboard seating position shall be that specified by the manufacturer on condition the following limits for distance A between the longitudinal median plane of the vehicle and plane P are respected :

$A \geqslant$ 200 mm if the bench seat has been designed to accomodate two passengers only,

$A \geqslant$ 300 mm if the bench seat has been designed to accomodate two or three passengers.

4.2. General Specifications

4.2.1. Anchorages for a safety belt shall be so designed, made and situated as to :

4.2.1.1. enable the installation of a suitable safety belt. The belt anchorages of the front outboard positions shall be suitable for safety belts incorporating a retractor and pulley taking into consideration in particular the strenght characteristics of the belt anchorages, unless the manufacturer supplies the vehicle equipped with other types of safety belts which incorporate retractor. If the anchorages are suitable only for particular types of safety belts there types shall be stated on the form mentioned in point 3.1. above;

4.2.1.2. reduce to a minimum the risk of the belt slipping when worn correctly;

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4.2.1.3. reduce to a minimum the risk of strap damage due to contact with sharp rigid parts of the vehicle or seat structures.

4.2.1.4. for belt anchorages which take up different positions to allow persons to enter the vehicle and to restrain the occupants, the specifications of this Directive shall apply to the belt anchorages in the effective restraint position.

4.3. Minimum number of belt anchorages to be previed

4.3.1. For front outboard seats two lower belt anchorages and one upper belt anchorage shall be provided.

4.3.2. For rear outboard seats, there shall be two lower belt anchorages and one upper belt anchorage but when no upper belt anchorages can be installed such as in some convertible cars or cars with an removable reof, two lower belt anchorages shall be acceptable.

4.3.3. For all other seats, except folding (tip-up) seats there shall be two lower belt anchorages.

4.3.4. For folding (tip-up) seats there is no requirement for belt anchorages. However, if the vehicle is fitted with belt anchorages for such a seat, these anchorages shall satisfy the provisions of the present Directive.

4.4. Location for belt anchorages

4.4.1. The location of the belt anchorages required by point 4.3. must comply with the following requirements.

4.4.2. General

4.4.2.1. The belt anchorages for any one belt may be located either wholly in the vehicle structure or in seat structure or any other part of the vehicle or dispersed between these locations.

4.4.2.2. Any one belt anchorage may be used for attaching the ends of two adjacent safety belts provided that the test requirements are met.

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4.4.2.3. In the case of a bench seat provided with belt anchorages for two or more seating positions the lower belt anchorages shall all be either integral with the seat or in the body structure. A similar requirement shall also apply to upper belt anchorages.

4.4.3. Location of the effective lower belt anchorages

4.4.3.1. The angles $\alpha_1$ and $\alpha_2$ shall be within the range of 30° to 80° in all normal travelling positions of the seat. Provided that where in the case of the front seats, there is no seat adjustment or where the belt anchorages are on the seat itself, the angles $\alpha_1$ and $\alpha_2$ shall be 60° ± 10°.

4.4.3.2. In the case of the rear seats the angles $\alpha_1$ and $\alpha_2$ may be less than the minimum specified in point 4.4.3.1. provided they are not less than 20°.

4.4.3.3. The distance between the two vertical planes parallel to the median longitudinal plane of the seat and each passing through a different one of two effective lower anchorages $B_1$ and $B_2$ of the same seat belt shall not be less than 350 mm. The median longitudinal plane of the seat shall pass between points $B_1$ and $B_2$ and shall be at least 120 mm from these points.

4.4.4. Location of the effective upper belt anchorage

4.4.4.1. In the case where a strap guide or similar device is used which affects the location of the effective upper belt anchorage, this location will be determined in a conventional way by considering the position of the anchorage when the longitudinal centre line of the strap passes through a point J of coordinates x = 60 mm, y = 120 mm and z = 530 mm in the following system of coordinates :

Hz is the torso reference line,

Hy is a horizontal transverse line directed towards the side nearer to the anchorage,

Hx is a perpendicular to yHz in a forward direction.

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4.4.4.2. If located to the rear of a plane perpendicular to the median longitudinal plane of the seat and passing through the reference line, the effective upper belt anchorage shall lie below the plane FN perpendicular to the median longitudinal plane of the seat and forming an angle of 65° to the reference line. In the case of rear seats this angle may be reduced to 60°. The plane FN is so positioned that it intersects the reference line at a point D such that DH equals 315 mm + 1.6 S.

If located on or forward of a plane perpendicular to the median longitudinal plane of the seat and passing through the reference line, the effective upper belt anchorage shall be below the plane $F_1N_1$ perpendicular to the median longitudinal plane of the seat and forming an angle of 65° to the reference line. In the case of rear seats, this angle may be reduced to 60°. The plane $F_1N_1$ is so positioned that it intersects the reference line at a point D' such that D'H equals 315 mm + 1.8 S.

4.4.4.3. If located to the rear of a plane perpendicular to the median longitudinal plane of the seat and passing through the reference line, the effective upper belt anchorage shall lie behind a plane FK, perpendicular to the median longitudinal plane of the seat, intersecting the reference line at an angle of 120° at a point B such that BH equals 260 mm + 1.2 S.

If located on or forward of a plane perpendicular to the median longitudinal plan of the seat and passing through the reference line, the effective upper belt anchorage shall lie behind a plane $F_1K_1$ perpendicular to the median longitudinal plane of the seat, intersecting the reference line at an angle of 120° at a point B that B'H equals 260 mm + S.

4.4.4.4. The value of S shall not be less that 140 mm.

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4.4.4.5. The effective upper belt anchorage shall be situated to the rear of a vertical plane perpendicular to the median longitudinal plane of the vehicle and passing through the H point as shown in Annex III.

4.4.4.6. The effective upper belt anchorage shall be situated above the horizontal plane passing through point C.

4.4.4.7. By way of an exception to the reguirement of point 4.4.4.6. and for a period of 2 years from the notification of this Directive, the effective upper belt anchorage may be placed in the area included between horizontal plane C-Y and plane C-M perpendicular to the median longitudinal plane of the vehicle and forming a 20 degree angle with plane C-Y where the configuration of the vehicle does not allow the location of the seat anchorage above the plane C-Y. In this case the seat back shall be designed so as to support the strap above the point where the seat back intersects the plane C-Y when tested in accordance with point 5 Also the seat back shall reach a height not less than the height of a horizontal plane through the point C and a strap guide must be provided to prevent the strap from sliding off the shoulder.

4.5. Dimensions of threaded belt anchorage holes

4.5.1. A belt anchorage shall have a threaded hole of 11,11 mm (7/16) 20 UNF 2B.

5. TESTING

5.1. General

5.1.1. Subject to application of the provisions of point 5.2. and at the request of the manufacturer.

5.1.1.1. the tests may be carried out either on a vehicle structure or on a completely finished vehicle;

5.1.1.2. windows and doors may be fitted or not and closed or not;

5.1.1.3. any fitting provided in the vehicle type and likely to contribute to the rigidity of the vehicle structure may be fitted.

5.1.2. The seats shall be fitted and shall be placed in the position for driving or use chosen by the technical service conducting approval tests to give the most adverse conditions with respect to the strength of the system. The position of the seats shall be stated in the report. If the angle between the seat back and the cushion is adjustable it shall be set as specified in Annex IV point 2.2.

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5.2. Securing of the vehicle

5.2.1. The method used to secure the vehicle during the test shall not be such as to strengthen the belt anchorages or the belt anchorage areas or to lessen the normal deformation of the structure.

5.2.2. A securing device shall be regarded as satisfactory if it produces no effect on an area extending over the whole width of the structure and if the vehicle or the structure is blocked or fixed in front at a distance of not less than 500 mm from the belt anchorage to be tested and is held of fixed at the rear not less than 300 mm from that anchorage.

5.2.3. It is recommended that the structure should rest on supports arranged approximately in line with the axis of the wheels or, if that is not possible, in line with the points of attachment of the suspension.

5.3. General test specifications

5.3.1. See the belt anchorages of the same group of seats shall be tested simultaneously.

5.3.2. The tractive force shall be applied in a forward direction at an angle of 10° ± 5° above the horizontal in a plane parallel to the median longitudinal plane of the vehicle.

5.3.3. Full application of the load shall be achieved as rapidly as possible. The belt anchorages must withstand the specified load for not less than 0.2 second.

5.3.4. Traction devices to be used in the tests described in point 5.4. below are shown in Annex V.

5.3.5. The belt anchorages for seats for which upper belt anchorages are provided shall be tested under the following conditions :

5.3.5.1. Front outboard seats :

The belt anchorages shall be submitted to the test prescribed in point 5.4.1. in which the loads are transmitted to them by means of a device reproducing the geometry of a safety belt equipped with a retractor having a pulley or strap guide at the upper belt anchorage.

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5.3.5.2. Rear outboard seats and all centre seats :
The belt anchorages shall be subjected to the test prescribed in point 5.4.2. in which the loads are transmitted to them by means of a device reproducing the geometry of a three point safety belt without a retractor, and to the test prescribed in point 5.4.3. in which the loads are transmitted to the two lower belt anchorages by means of a device reproducing the geometry of a lap belt. The two tests can be performed on two different structures if the manufacturer so requests.

5.3.5.3 Notwithstanding the requirements of 5.3.5.1. and 5.3.5.2 when a manufacturer supplies his vehicle with safety belts, installed which incorporate retractor, the correspondig belt anchorages shall be submitted to the test in which the loads are transmitted to them by means of a device reproducing the geometry of the safety belt (s) for which these anchorages are to be approved.

5.3.6. If no upper belt anchorages are provided for the rear outboard seats and the centre seats, the lower belt anchorages shall be submitted to the test prescribed in point 5.4.3. in which the loads are transmitted to these anchorages by means of a device reproducing the geometry of a lap belt.

5.3.7. If the vehicle is designed to accept other devices which do not enable the straps to be directly attached to belt anchorages without intervening sheaves , etc. or which require belt anchorages supplementary to these mentioned in point 4.3., the safety belt or an arrangement of wires, sheaves, etc. representing the equipment of the safety belt, shall be attached by such a device to the belt anchorages in the vehicle and the belt anchorages shall be subjected to the tests prescribed in point 5.4. as appropriate.

5.3.8. A test method other than those prescribed in point 5.3. may be used, but evidence must be furnished that it is equivalent.

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5.4. Particular test specifications

5.4.1. Test in configuration of a three point belt incorporating a retractor having a pulley orstrap guide at the upper belt anchorage

5.4.1.1. A special pulley or guide for the wire or strap appropriate to transmit the load from the traction device, or the pulley or strap guide supplied by the manufacturer shall be fitted to the upper belt anchorage.

5.4.1.2. A test load of 1350 daN ± 20 daN shall be applied to a traction device (see Annex V, figure 2) attached to the belt anchorages of the same belt, by means of a device reproducing the geometry of the upper torso strap of such a safety belt.

5.4.1.3. At the same time a tractive force of 1350 daN ± 20 daN shall be applied to a traction device (see Annex V, figure 1) attached to the two lower belt anchorages.

5.4.2. Test in configuration of a three point belt without retractor or with a retractor at the upper belt anchorage.

5.4.2.1. A test load of 1350 daN ± 20 daN shall be applied to a traction device (see Annex V, figure 2) attached to the upper belt anchorage and to the opposite lower belt anchorage of the same belt, using, if supplied by the manufacturer, a retractor fixed at the upper belt anchorage.

5.4.2.2. At the same time a tractive force of 1350 daN ± 20 daN shall be applied to a traction device (see Annex V, figure 1) attached to the lower belt anchorages.

5.4.3. Test in configuration of a lap belt.

A test load of 2225 daN ± 20 daN shall be applied to a traction device (see Annex V, figure 1) attached to the two lower belt anchorages.

5.4.4. Test for belt anchorages located wholly within the seat structure or dispersed between the vehicle structure and the seat structure.

5.4.4.1. The tests specified in points 5.4.1., 5.4.2. and 5.4.3. above shall be

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performed, as appropriate, at the same time superimposing for each seat and for each group of seats a force as stated below.

5.4.4.2. The loads indicated in points 5.4.1., 5.4.2. and 5.4.3. shall be supplemented by a force equal to 20 times the weight of the complete seat applied horizontally and longitudinally through the centre of gravity of the seat.

5.5. Results of Tests

5.5.1. All the anchorages shall be capable of withstanding the test prescribed in point 5.3. and 5.4. Permanent deformation including partial rupture or breakage, of any anchorage or surrounding area shall not constitute failure if the required force is sustained for the specified time. During the test, the minimum spacings for the effective lower belt anchorages specified in 4.4.3.3. an the requirements of 4.4.4.6. and 4.4.4.7. for effective upper belt anchorages shall be respected.

5.5.2. In the case of a two door car, the displacement and locking system enabling the occupants of the rear seats to leave the vehicle must still be operable by hand after removal of the tractive force.

5.5.3. After testing, any damage to the belt anchorages and structures supporting load during tests shall be noted.

6. CONFORMITY OF PRODUCTION

6.1. In order to verify conformity with the approved type, a sufficient number of random checks shall be performed on serially-produced vehicles.

6.2. As a general rule the checks as aforesaid shall be confined to the taking of measurements. However, if necessary, the vehicles shall be subjected to tests conforming to the requirements of point 5 above.

7. INSTRUCTIONS

For every vehicle conforming to the approved type the manufacturer shall state clearly in the instructions for operating the vehicle, where the belt anchorages are and for what type of safety belts they are intended.

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ANNEX II

Name of administration

ANNEX TO THE EEC VEHICLE TYPE APPROVAL FORM :
APPROVAL OF ANCHORAGE FOR SAFETY BELTS

(Article 4 (2) and Article 10 of the Council Directive of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers).

EEC type-approval number .....

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

2. Vehicle type .....

3. Name and address of manufacturer .....

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

Annex II

5. Designation of the types of belts authorized for fitting to the anchorage with which the vehicle is equipped :

| | | | | Anchorage (+) | |
|---|---|---|---|---|---|
| | | | | Vehicle structure | Seat structure |
| Front | Right hand seat | Lower anchorages | outboard | | |
| | | | inboard | | |
| | | Upper anchorage | right | | |
| | Middle seat | Lower anchorages | | | |
| | | | left | | |
| | | Upper anchorage | | | |
| | Left hand seat | Lower anchorages | outboard | | |
| | | | inboard | | |
| | | Upper anchorage | | | |
| Rear | Right hand side | Lower anchorages | outboard | | |
| | | | inboard | | |
| | | Upper anchorage | | | |
| | Middle seat | Lower anchorages | right | | |
| | | | left | | |
| | | Upper anchorage | | | |
| | left hand seat | Lower anchorages | outboard | | |
| | | | inboard | | |
| | | Upper anchorage | | | |

Remarks : .....

.....

(x)Insert in the actual position the following letter or letters :

"A"for a three-point belt including the case where a retractor is attached directly to the anchorage without a oulley or strap guide at the upper anchorage.

"B"for a lat belt

"S"for special-type belts; in this case state the nature of the types under "Remarks"

"Ar", "Br" or "Sr" for a belt incorporating retractors using a pulley or strap guide

"Ae", Be", or"Se" for a belt with a energy absorption device

"Are",Bre", or "Sre" for a belt fitted with a retractor using a pulley or strap guide and an energy absorption device on at least one anchorage.

Annex II

(++) 6. Description of seats .....

(++) 7. Description of the adjustment, displacement and locking system either of the seat or of its parts .....

(++) 8. Description of seat anchorage .....

9. Description of particular type of safety belt required in the case of an anchorage located in the seat back or incorporating an energy-dissipating device .....
.....

10. Number of report issued by that service .....

11. Approval granted/refused (+++) .....

12. Place .....

13. Date .....

14. Signature .....

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

... drawings, technical descriptiobs of the belt anchorages and of the vehicle structure including photographs where necessary,

... drawings, technical descriptions of the seats, their anchorage on the vehicle and their adjustment, displacement and locking systems including photographs where necessary.

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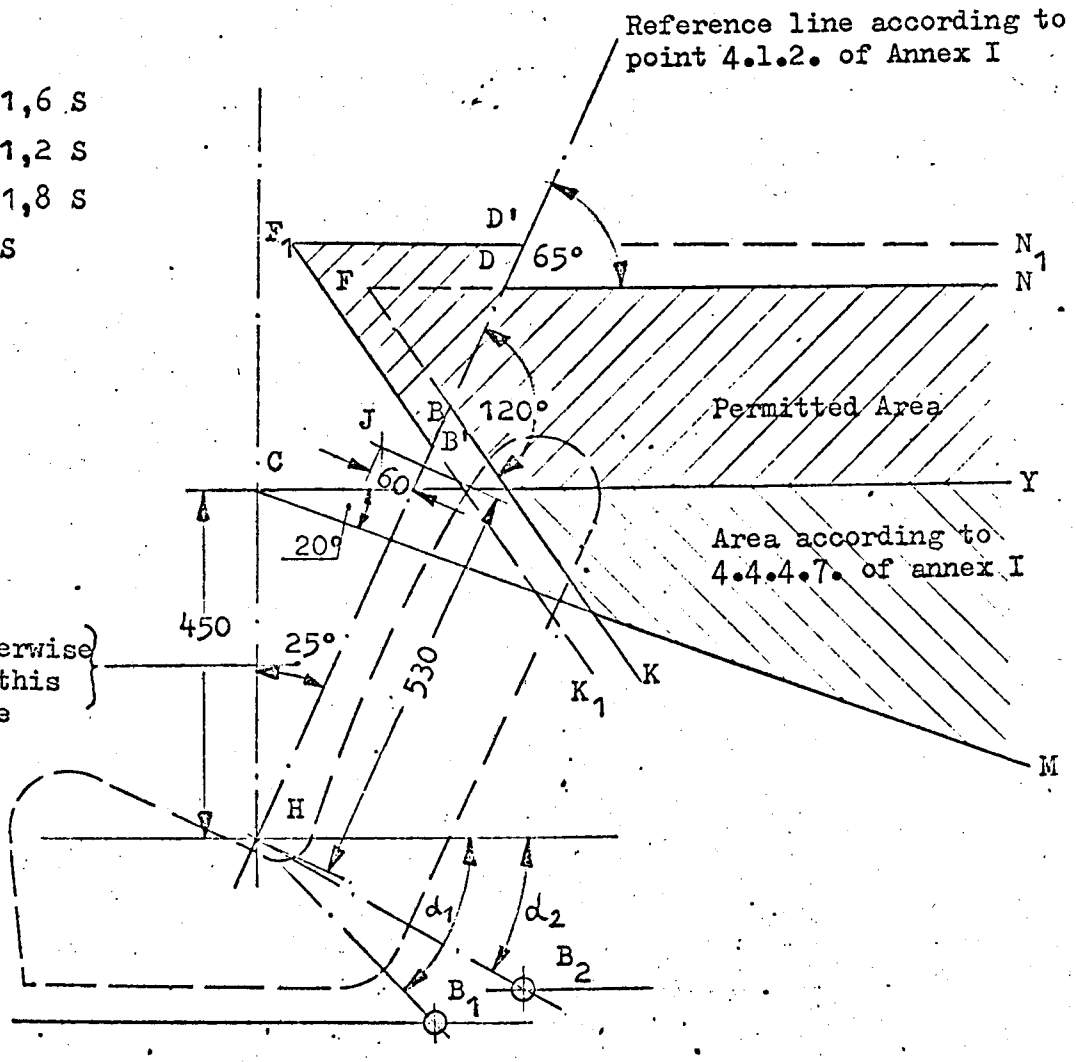
(++) Only if the anchorage is affixed on the seat or if the seat supports the belt strap.

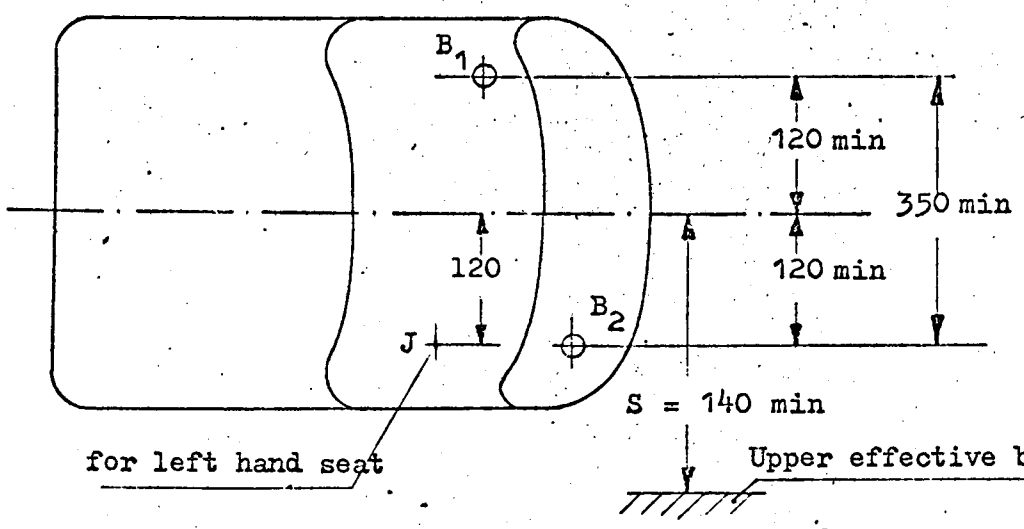
(+++) Strike out what does not apply.

ANNEX III

AREAS OF LOCATIONS
OF EFFECTIVE BELT ANCHORAGES

DH = 315 + 1,6 S
BH = 260 + 1,2 S
D'H = 315 + 1,8 S
B'H = 260 + S




All dimensions are in millimeters

ANNEX IV

PROCEDURE FOR DETERMINING THE "H" POINT AND VERIFYING THE RELATIVE POSITIONS OF THE "H" AND "R" POINTS

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 point 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.

2. DETERMINATION OF "H" POINTS

2.1. An H point shall be determined for each seat provided by the manufacturer of the vehicle. If the seats in the same row can be regarded as similar (bench seat, identical seats, etc.) only one H point shall be determined for each row of seats, the manikin described in point 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 is 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.

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 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 75.6 kg. Details of the various masses are given in the table in figure 2.

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 point 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 axes 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 axis representing the transverse inclination of the seat of the manikin is brought to the horizontal;

4.4.2. in the rear seats, so far as possible in such as 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 axis representing the transverse inclination of the seat of the manikin is brought to the horizontal;

4.4.3. if the "H" point is being determined for 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 axis representing the transverse inclination 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 $\pm$ 1 daN shall be twice applied to the manikin. The direction and point of application of the load are shown by a black arrow in figure 2.

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 axis of the manikin shall be kept horizontal.

4.9. The transverse axis 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 axis 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 point 4 above, the "H" point of the vehicle seat considered is constituted by the "H" point of the manikin.

5.2. The co-ordinates of the "H" point in the three mutually perpendicular planes, shall be measured for comparison with the data supplied by the vehicle manufacturer.

6. VERIFYING THE RELATIVE POSITIONS OF THE "R" AND "H" POINTS

6.1. The results of the measurements carried out as described in point 5.2. for the "H" point shall be compared with the co ordinates of the "R" point as supplied by the vehicle manufacturer.

6.2. The relative positions of the "R" point and the "H" point 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.

6.2.1. If these conditions are met, the "R" point shall be used for the test and, if necessary, the manikin shall be so adjusted that the "H" point coincides with the "R" point.

6.3. If the "H" point does not satisfy the requirements of point 6.2. above, the "H" point shall be determined twice more (three times in all). If the results of two or these three operations satisfy the requirements the result 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 point 6.2., the result of the test shall be considered to be not satisfactory.

6.5. If the situation described in point 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, the average of the results of the three determinations may be used and be regarded as applicable in all cases where the "R" point is referred to in this Directive.

6.6. For verifying the relative positions of the "R" point and the "H" point in a serially produced vehicle the rectangle referred to in point 6.2. above shall be replaced by a square of 50 mm side.

COMPONENTS OF THREE-DIMENSIONAL MANIKIN

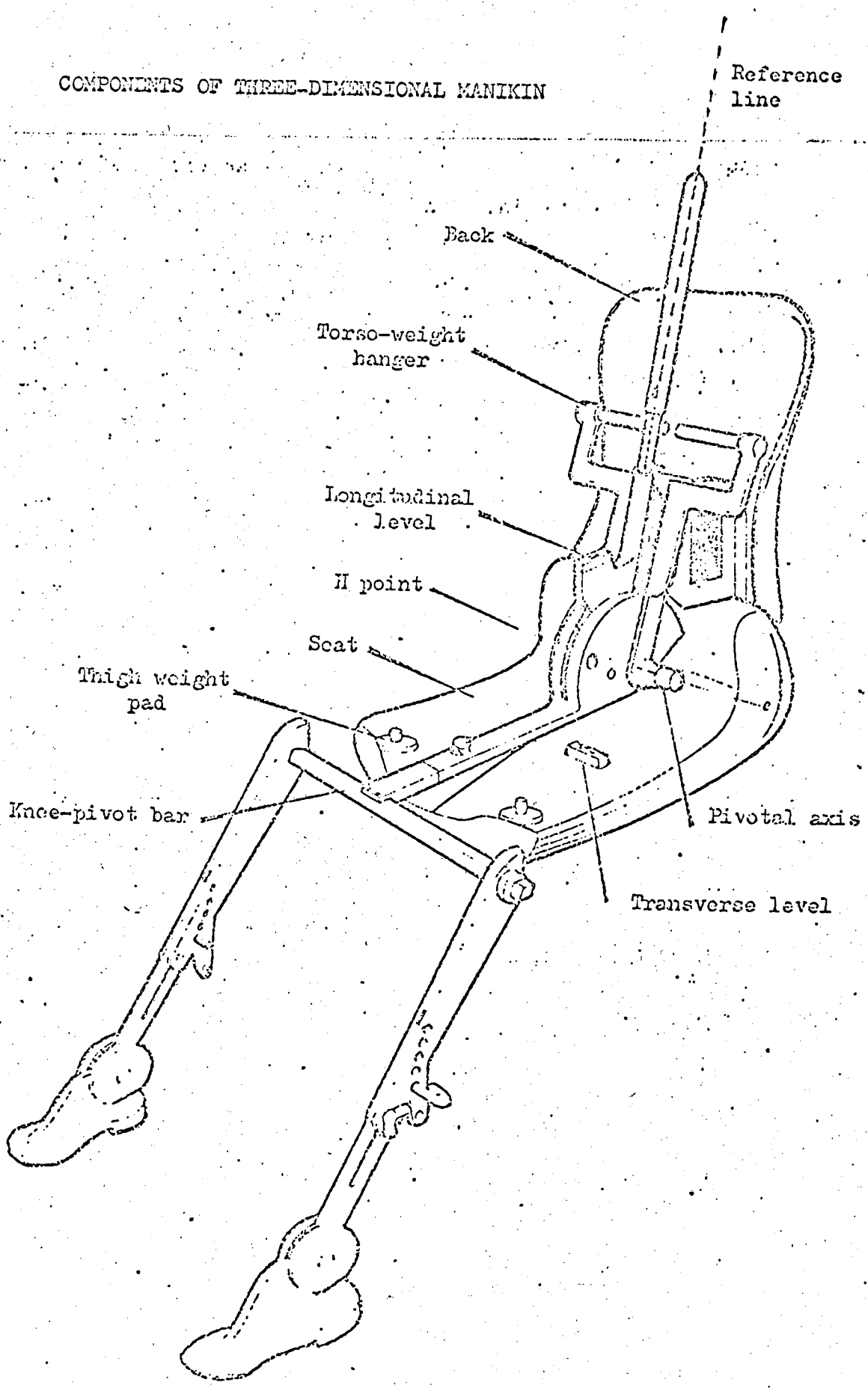



Fig. 1

DIMENSIONS AND WEIGHT OF MANIKIN

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

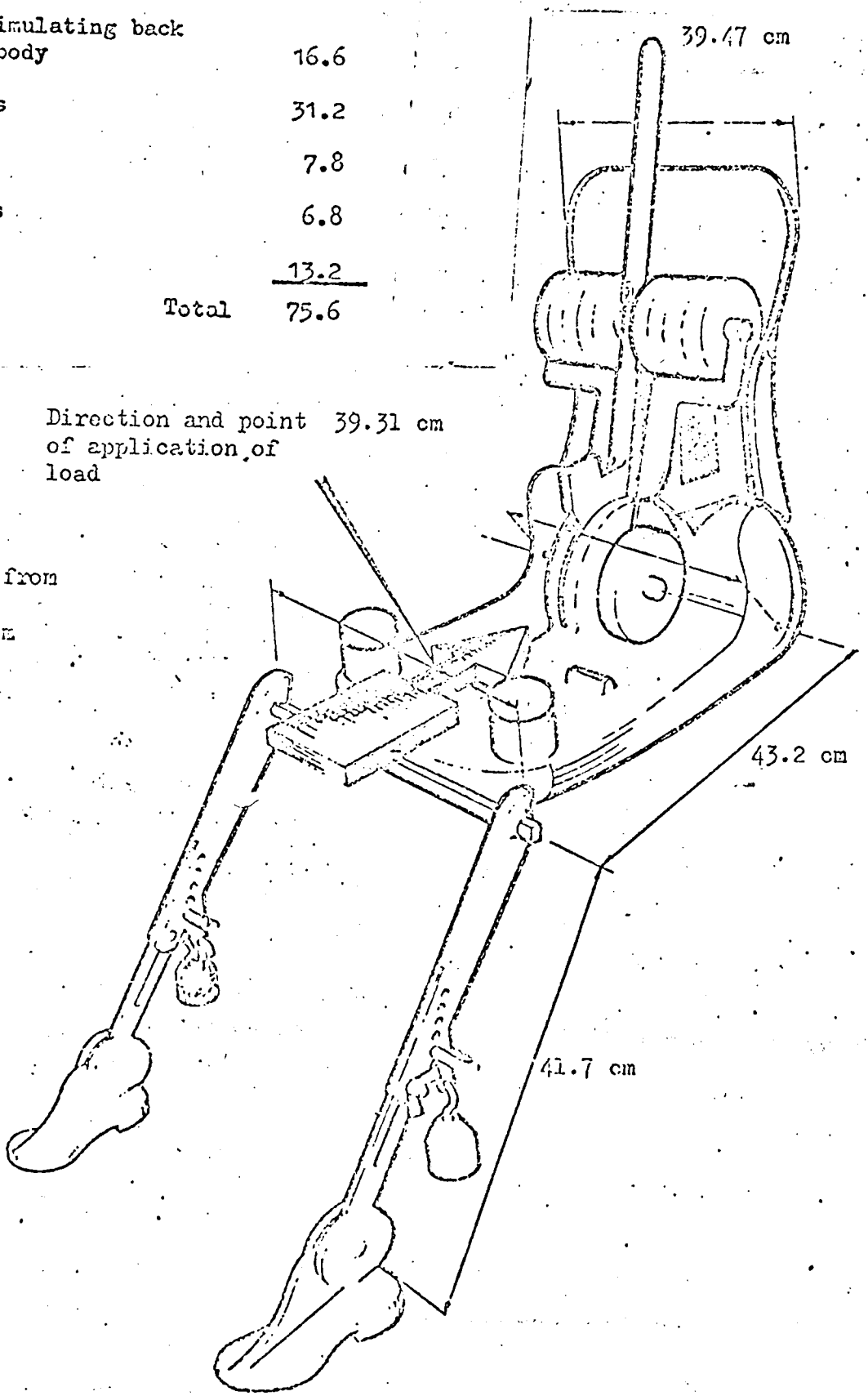
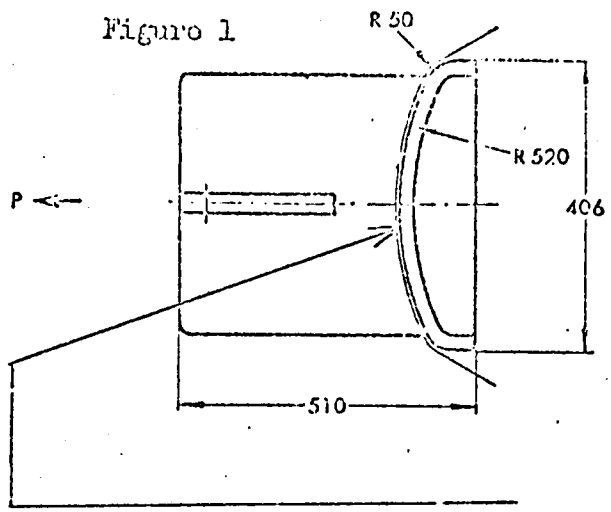



Figure 2

Annex V

TRACTION DEVICE

Figure 1




Cloth-covered foam, thickness 25

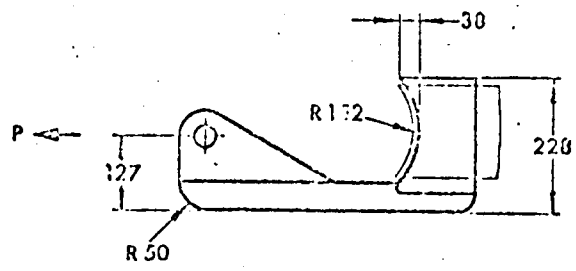
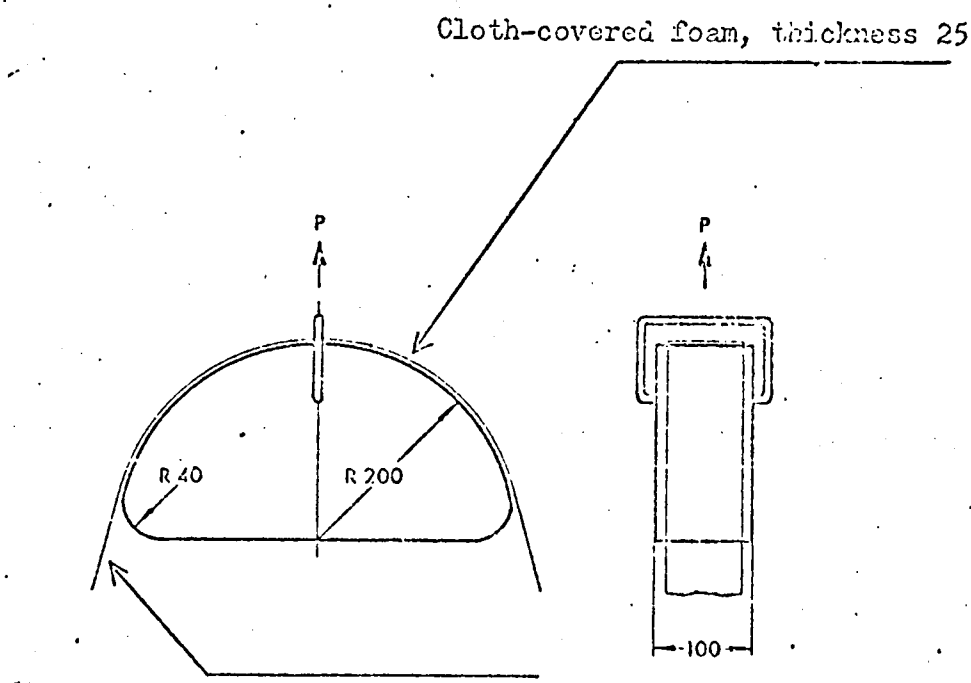



Figure 2




Strap connecting block to anchorage points
(dimensions in mm)