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COMMISSION OF THE EUROPEAN COMMUNITIES

COM(73) 2091 final

Brussels, 18 December 1973

Amending of the proposal for a Directive on the approximation of the
laws of the Member States relating to certain components and
characteristics of wheeled agricultural tractors

(Amendment presented by the Commission to the Council
pursuant to Article 149, second paragraph, of the EEC
Treaty)

Explanatory memorandum

1. GENERAL

Into the framework formed by the Community-wide type-approval procedure which was the subject of the Directive approved by the Council on 19 December 1972, is to be fitted a whole series of specific directives concerning technical requirements and methods of checking to which wheeled agricultural tractors are to be subject when EEC type-approval is applied for.

As part of that procedure, the Commission forwarded to the Council on 23 July 1968 a proposal for a Directive on the approximation of the laws of the Member States relating to certain components and characteristics of wheeled agricultural tractors¹.

As regards the requirements relating to the field of vision which are the subject of Title XII of the Annex to the above-mentioned proposal for a Directive, the Commission, in view of the fact that, it has not yet been possible to formulate the general requirements relating to the field of vision of motor vehicles to which it was proposed to make reference, and the fact that a technical solution was established for the field of vision of agricultural tractors, thought it appropriate to amend its original proposal by submitting technical requirements intended to providing a Community solution for this characteristic.

¹ OJ No C 125, 28 November 1968, page 37

II. CONTENT OF THE PROPOSAL FOR A DIRECTIVE

The new Title XII provides that all tractors must be so constructed and equipped as to ensure that the driver has an adequate field of vision in all the usual conditions of road traffic or work in the fields. Detailed requirements lay down the conditions to be fulfilled for the field of vision to be considered adequate. In particular, a procedure is prescribed for delimiting masked zones as are an alternative mathematical method, and requirements relating to the transparent area of the windscreen and to windscreen wipers if fitted.

The text of Title XII of the original proposal is therefore replaced by the following:

T I T L E X I I

F I E L D O F V I S I O N

DEFINITIONS AND REQUIREMENTS RELATING TO CONSTRUCTION AND CHECKING

1. DEFINITIONS

1.1. Field of vision

"Field of vision" means all forward and sideward directions in which the driver of the tractor can see.

1.2. Reference point

"Reference point" means the conventionally fixed position of the tractor driver's eyes, which are notionally located at a single point. The reference point is situated in the plane parallel to the longitudinal median plane of the tractor and passing through the centre of the seat, 700 mm vertically above the line of intersection of that plane and the surface of the seat and 270 mm in the direction of the pelvic support from the vertical plane tangent to the front edge of the surface of the seat and perpendicular to the longitudinal median plane of the tractor (Figure 1).

1.3. Hemicycle of vision

"Hemicycle of vision" means the semicircle described by the radius of 12 m about a point situated in the horizontal plane of the road vertically below the reference point in such a way that the arc of the semicircle, as viewed in the direction of motion, lies in front of the tractor, and that the diameter delimiting the hemicycle is at right angles to the longitudinal axis of the tractor (Figure 2).

1.4. Masked zones

"Masked zones" means the horizontal surfaces in the plane of the hemicycle of vision which cannot be seen from the reference point owing to structures forming an inherent part of the tractor.

1.5. Masking effect

"Masking effect" means the chords of the sectors of the hemicycle of vision which cannot be seen owing to structural components, e.g., roof pillars.

1.6. Sector of vision

"Sector of vision" means the portion of the field of vision delimited:

1.6.1. upwards

by a horizontal plane passing through the reference point;

1.6.2. in the plane of the road,

by the zone lying outside the hemicycle of vision, and forming the continuation of the sector of the hemicycle of vision, whose 9.5 m chord is perpendicular to the plane parallel to the longitudinal median plane of the tractor passing through the centre of the driver's seat, and is bisected by that plane.

1.7. Field covered by the windscreen wipers

"Field covered by the windscreen wipers" means the area of the outer surface of the windscreen swept by the windscreen wipers.

2. CONSTRUCTION AND CHECKING REQUIREMENTS

2.1. General

The tractor must be constructed and equipped in such a way that in road traffic the driver has an adequate field of vision in all the usual road and atmospheric conditions. The field of vision is considered adequate when the following requirements are fulfilled.

2.2. Checking of the field of vision

2.2.1. Procedure for determining masked zones

2.2.1.1 The tractor must be placed on a horizontal surface in a room, which can be darkened, in accordance with Figure 2.

Place a point light source at the reference point in order to determine the extent of masked zones appearing in the plane of the hemicycle of vision.

- 2.2.1.2. The masked zones as defined in item 1.4. must not overlap hemisphere of vision.
- 2.2.1.3. The masking effect referred to in item 1.5. may not exceed the values given in Figure 3 by the lowest separation curb illustrated in the graph in that Figure.
- 2.2.1.4. Masking effects due to adjacent structural components, over 80 mm in width must be positioned in such a way that the line joining the centres of the chords of the sectors of the hemisphere of vision which cannot be seen is not less than 2.50 m in length.
- 2.2.1.5. There may be no more than six masking effects in the hemisphere of vision and no more than two inside the sector of vision defined in item 1.6.
- 2.2.1.6. Masking effects having values between the upper and lower separation curbs in the graph in Figure 3 are permitted if the structural components causing them cannot be shaped or positioned otherwise. There may be not more than two masking effects of this kind, and they must not be within the sector of vision.
- 2.2.1.7. Obstacles to vision due to the presence of a rear-view mirror of an approved type are disregarded.
- 2.2.2. Mathematical determination of masking effects
- 2.2.2.1. As an alternative to the check referred to in item 2.2.1., the acceptability of masking effects may be verified mathematically. The requirements of items 2.2.1.4. and 2.2.1.5. apply as regards the distribution of masking effects according to their number.
- 2.2.2.2. For binocular vision and inter-ocular distance of 65 mm the masking effect is given by the formula

$$\frac{b - 65}{a} \times 12,000$$

in which:

- a is the distance in millimetres between the component obstructing vision and the reference point measured along the visual radius joining the reference point, the centre of the component and the perimeter of the hemisphere of vision.
- b is the width in millimetres of the component obstructing vision measured horizontally and perpendicular to the visual radius.
- 2.2.2.3. The masking effects determined by the procedure specified in item 2.2.2.2. shall not exceed 60 mm. Two 1200 mm masking effects are permitted, however, provided that they are outside the sector of vision and are caused by components which cannot be shaped or arranged otherwise.

2.3. Transparent area of the windscreen.

If the tractor is provided with a windscreen, the transparent area thereof must be such that the requirements of item 2 are satisfied.

2.4. Windscreen wipers.

2.4.1. If the tractor is provided with a windscreen it must also be equipped with motor-driven windscreen wipers. The field covered by the windscreen wipers must ensure unobstructed forward vision corresponding to at least 8 m of the chord of the sector of vision.

2.4.2. The rate of operation of the windscreen wipers must be at least 20 cycles per minute.

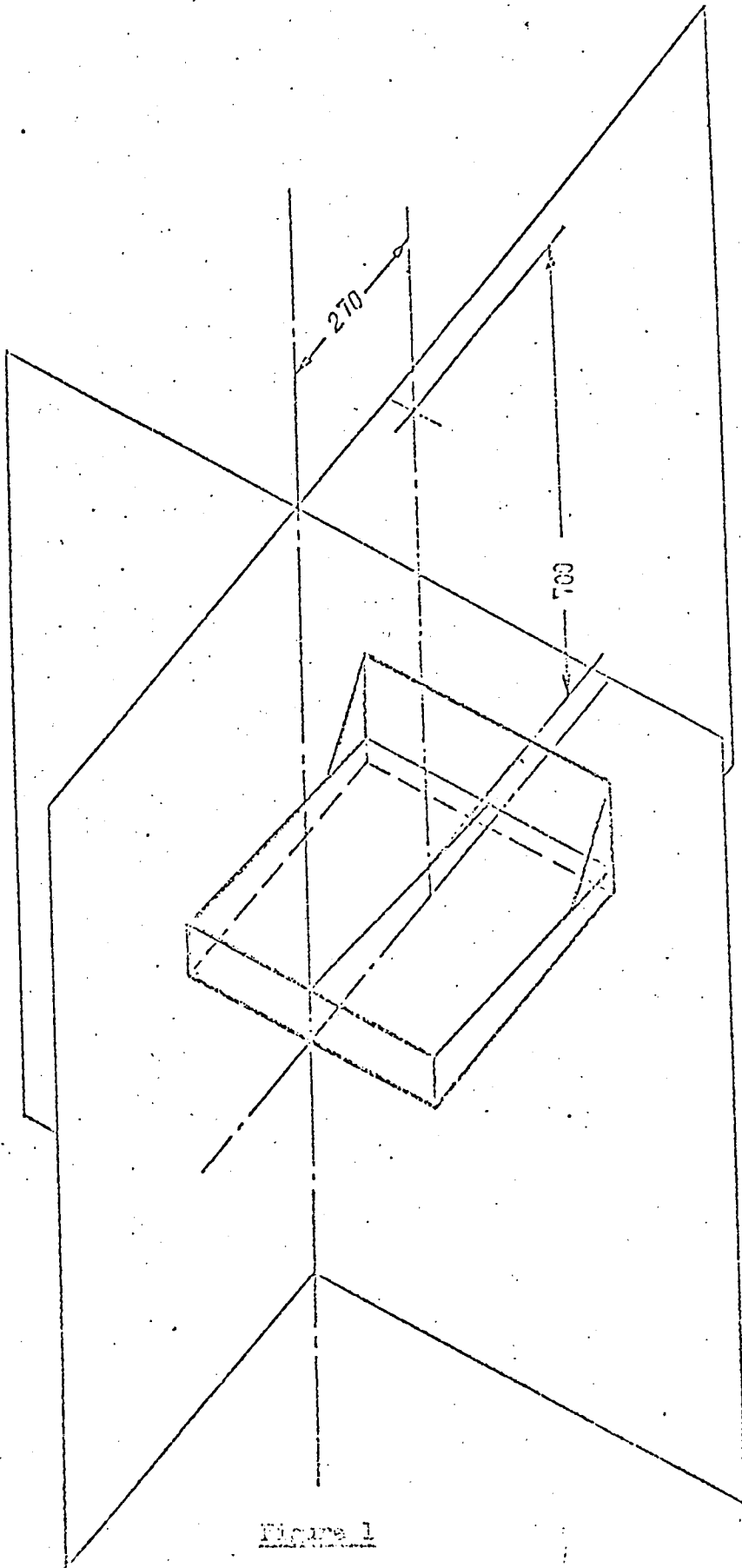


Figure 1

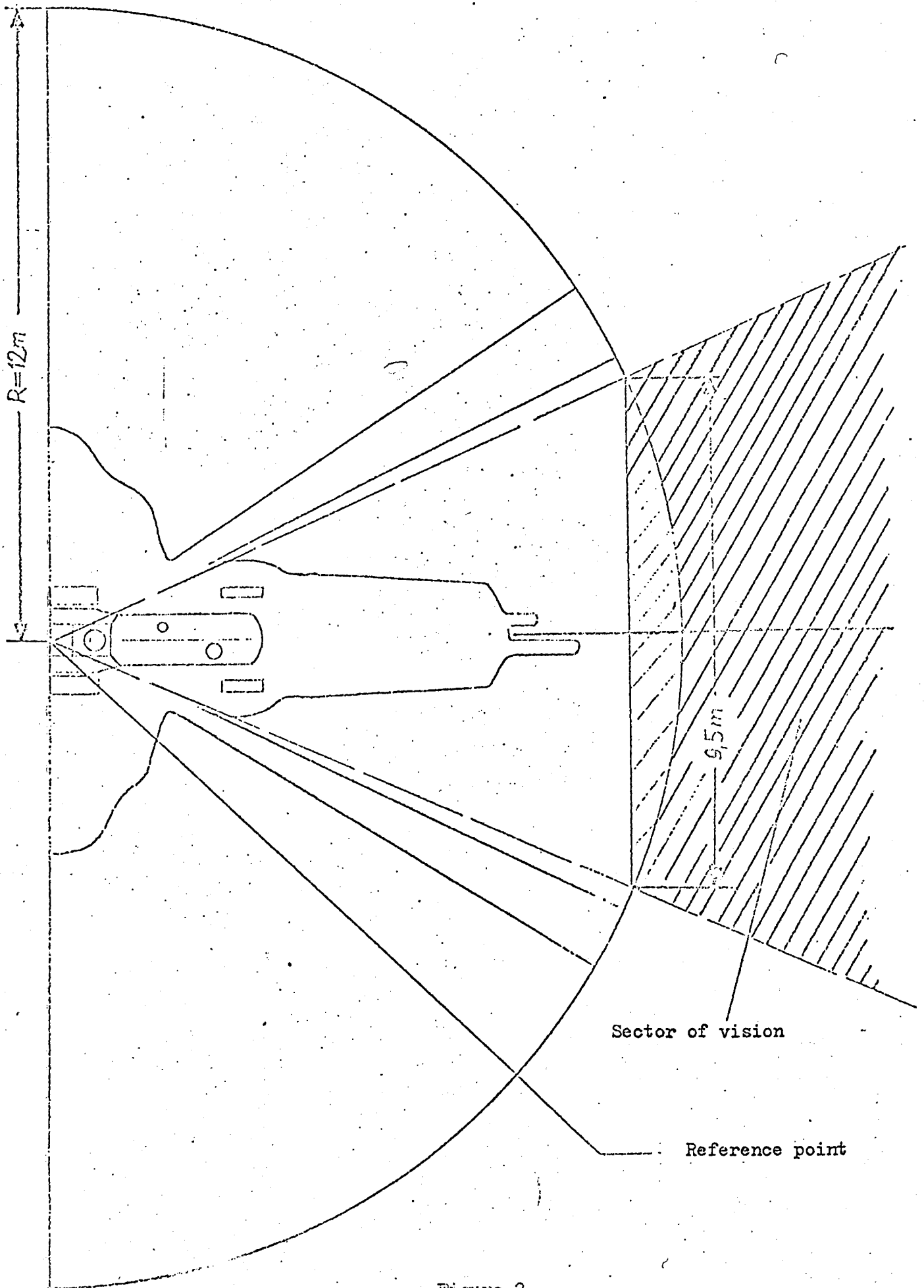


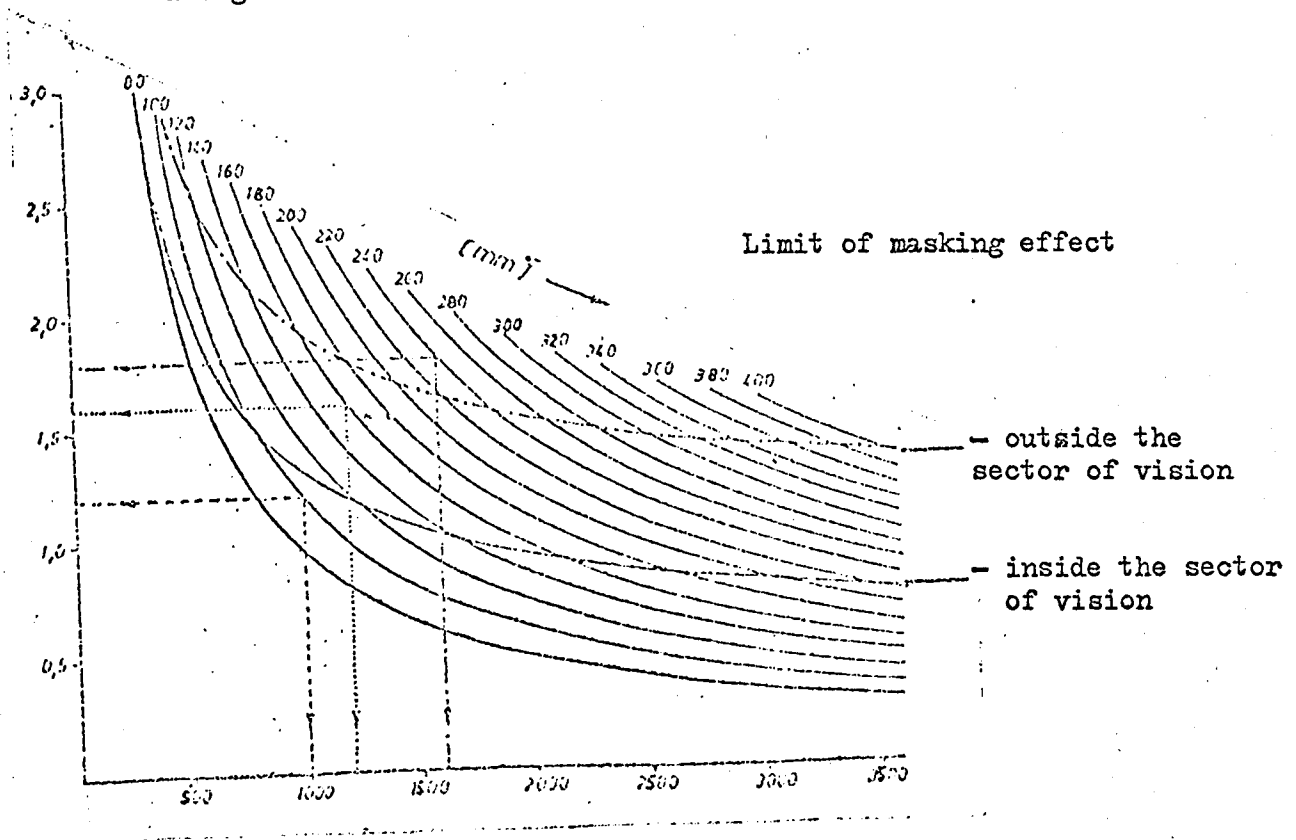
Figure 2

MASKING EFFECT ON THE HEMICYCLE OF VISION
(EYES COINCIDE AT THE REFERENCE POINT)

Example:

Width	Distance	Masking effect	Comment
—100	1000	1.2	Acceptable
—240	1600	1.6	Unacceptable
... 160	1200	1.6	Unacceptable in sector of vision but acceptable outside it in certain cases.

Width of structural component obstructing vision, measure along the visual radius.



Distance between the structural component obstructing vision and the reference point (mm).

Figure 3