COMMISSION OF THE EUROPEAN COMMUNITIES

— COM(83) 269 final

Brussels, 17 May 1983

Proposal for a

COUNCIL DIRECTIVE

on the approximation of the laws of the Member States relating to the power take-offs of wheeled agricultural and forestry tractors and their protection

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(submitted to the Council by the Commission)

Explanatory Memorandum

I. GENERAL REMARKS

This proposal, like the Directives already adopted in this field, is in line with the Community type-approval procedure which was the subject of Council Directive 74/150/EEC of 4 March 1974[1].

It contains the Commission's proposals concerning the power take-offs of wheeled agricultural or forestry tractors and their protection. These proposals specify the types of power take-offs to be employed and the design and positioning requirements relating to the latter and their protection, with a view to minimizing the risk of accidents.

In drawing up this proposal, the Commission has taken full account of the opinions of the experts representing both national governments and the industries concerned within the Working Group on Agricultural Tractors and Machinery. Nevertheless, in the case of the requirements relating to the characteristics of protective guards, it was obliged to rule on the need for a provision designed to prevent the removal of the protective guard without the aid of a tool. In view of the differences of opinion among the Member States' experts, the Commission decided to include a specific provision to this effect with a view to ensuring user safety.

II. COMMENTS ON THE ARTICLES

The Directive applies to wheeled agricultural or forestry tractors having a maximum design speed of between 6 and 30 km/h (Article 1).

Article 2 incorporates into the EEC type-approval procedure the requirements relating to power take-offs and their protection, together with the provisions guaranteeing the use of tractors which comply with the requirements of the Directive in some of the new Member States in which a national type-approval procedure does not as yet exist.

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[1] OJ No L 84, 28.3.1974, p. 10.

Article 3 stipulates that the Directive shall be adapted to technical progress by the procedure laid down in Article 13 of the Council Directive of 4 March 1974 on the type approval of wheeled agricultural or forestry tractors.

Article 4 specifies the date by which Member States must comply with the Directive (Article 4(1)).

Lastly, the Commission must be informed, in sufficient time for it to submit any comments, of draft provisions drawn up by the Member States in the field covered by the Directive (Article 4(2)).

III. CONSULTATION OF PARLIAMENT AND THE ECONOMIC AND SOCIAL COMMITTEE

Pursuant to the second paragraph of Article 100 of the EEC Treaty, the opinion of these two bodies must be obtained.

IV. IMPLEMENTATION OF THIS DIRECTIVE BY THE MEMBER STATES

The Commission does not anticipate any difficulties in the implementation of this Directive by the Member States.

More than twenty Directives relating to wheeled agricultural or forestry tractors have already been adopted since 1974.

The Member States have been familiar with texts of this type for some considerable time and have departments capable of incorporating them into national legislation.

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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 wheeled agricultural or forestry tractors must satisfy pursuant to existing national legislation relate, inter alia, to the power take-off and its protection;

Whereas these requirements differ from one Member State to another; whereas it is therefore necessary for all the Member States to adopt the same requirements, either in addition to or as a substitute for their existing regulations, in particular in order to make possible the implementation, in respect of each tractor type, of the EEC type-approval procedure which is the subject of Council Directive 74/150/EEC of 4 March 1974 on the approximation of the laws of the Member States relating to the type approval of wheeled agricultural or forestry tractors[1];

Whereas the Council Resolution of 29 June 1978 concerning an action programme of the European Communities on safety and health at work (2) provides for the application of the principles of accident prevention in the design and creation of plant and machinery, including the agricultural sector; whereas the provisions concerning power take-offs and their protection constitute obvious safety factors;

Whereas the approximation of national laws relating to wheeled agricultural or forestry tractors involves the mutual recognition by the Member States of tests conducted by each of them on the basis of common requirements,

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. "Agricultural or forestry tractors" means any motor vehicle, fitted with wheels or endless tracks, having at least two axles, the main function of which lies in its tractive power and which is specially

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[1] OJ No L 84, 28.3.1974, p. 10.

2 OJ No C 165, 11.7.1978, p. 3.

designed to tow, push, carry or power certain tools, machinery or trailers intended for agricultural or forestry use. It may be equipped to carry a load or a crew.

2. This Directive applies exclusively to the tractors defined in paragraph 1 above, which are fitted with pneumatic tyres and have at least two axles and a maximum design speed of between 6 and 30 km/h.

Article 2

Member States may not refuse to grant EEC or national type-approval in respect of a tractor, or refuse or prohibit the sale, registration, entry into service or use of a tractor, on grounds relating to the power take-off and its protection if the latter satisfy the requirements set out in Annex I.

Article 3

Any amendments necessary for the adaptation to technical progress of the requirements of Annex I and the model annex to the EEC type-approval certificate shown in Annex II shall be adopted pursuant to the procedure laid down in Article 13 of Directive 74/150/EEC.

Article 4

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than 1 October 1984. They shall forthwith inform the Commission thereof.

2. As soon as this Directive has been notified, Member States shall also ensure that the Commission is informed, 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 5

This Directive is addressed to the Member States.

ANNEX I

DEFINITION AND SCOPE, APPLICATION FOR EEC TYPE-APPROVAL, EEC TYPE-APPROVAL, TYPES OF POWER TAKE-OFF AND DESIGN AND POSITIONING REQUIREMENTS IN RESPECT OF THE LATTER AND THEIR PROTECTIVE GUARDS

1. DEFINITION AND SCOPE

1.1 "Power take-off" (PTO) means the splined end of the tractor drive shaft which transmits motion to a machine via a universal-joint drive shaft.

1.2 The provisions of this Directive apply exclusively to power take-offs located at the rear of the tractor.

2. APPLICATION FOR EEC TYPE-APPROVAL

2.1 The application for the type approval of a tractor type as regards the power take-off and its protection must be submitted by the tractor manufacturer or his authorized representative.

2.2 It must be accompanied by:

2.2.1 drawings, in triplicate, on an appropriate and suitably detailed scale, of those parts of the tractor subject to the requirements of this Directive.

2.3 A tractor representative of the type submitted for approval or those part(s) of the tractor considered indispensable for the execution of the tests required by this Directive must be supplied to the technical service responsible for conducting the type-approval tests.

3. EEC TYPE-APPROVAL

3.1 A certificate conforming to the model which appears in Annex II must be attached to the EEC type-approval certificate.

4. TYPES OF POWER TAKE-OFF

4.1 The characteristics of PTOs must conform to one of the types described in Table 1 below:

TABLE 1 - CHARACTERISTICS OF TYPES OF PTO

Type	Nominal Diameter mm	Number of splines	Nominal PTO rotation speed (*) rpm
1	35	6 straight splines	540 and/or 1000
2	35	21 Involute	
3	45	20 serrations	
(*) The nominal rotation speed of the three types of PTO must be obtained at not less than 80 % of the rated engine speed.			

4.2 The rotation speed of the PTO must be maintained by suitable means.

4.3 Should more than one ratio between the engine speed and the PTO rotation speed be provided, any change of ratio must be perceptible. In addition, specific design measures must be taken to ensure that unintentional changes of ratio - in particular changing to a higher rotation speed - cannot occur. This safety device must operate each time the PTO is engaged.

4.4 Means must be provided by which the PTO rotation speed can be clearly indicated at all times.

5. DESIGN AND POSITIONING REQUIREMENTS

5.1 Depending on the type, the dimensions in mm of the main PTO of agricultural tractors must correspond to the dimensions shown in Figures 1, 2 and 3 and Tables 2, 3 and 4.

Dimensions in mm

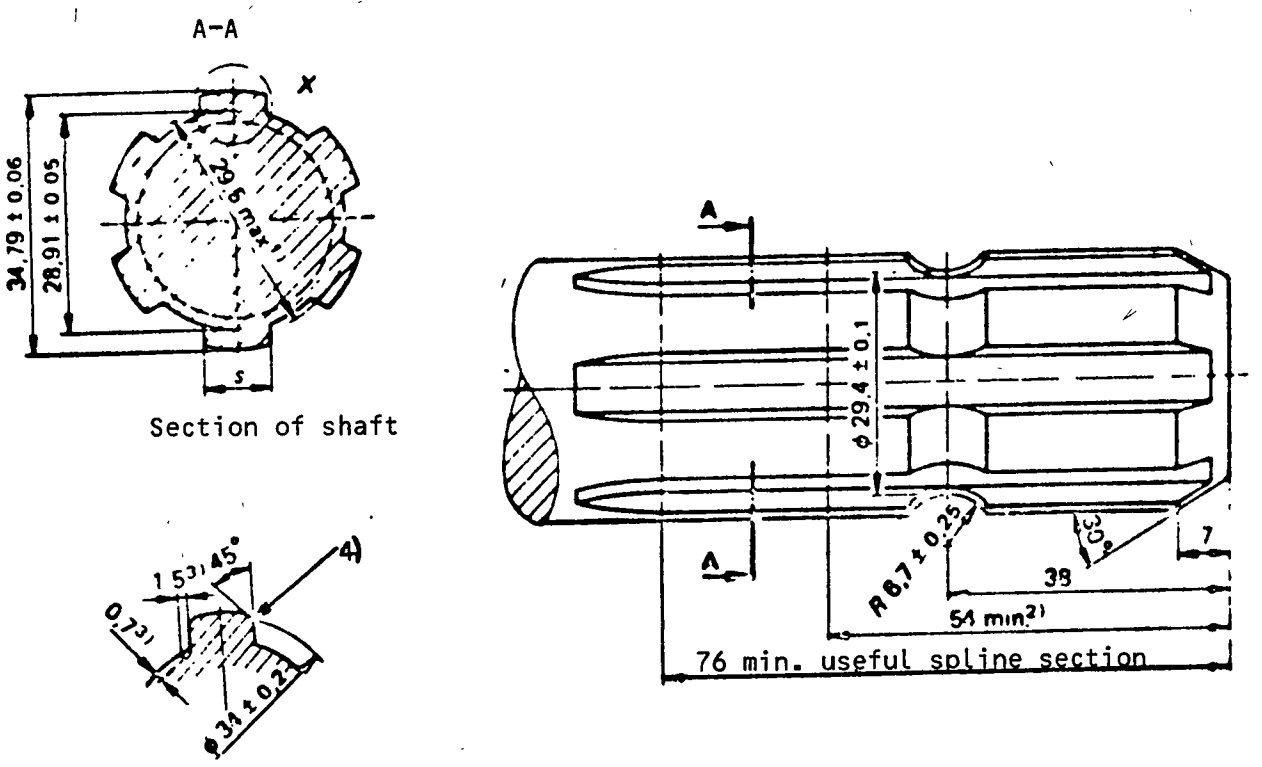

Fig. 1 - Type 1 PTO

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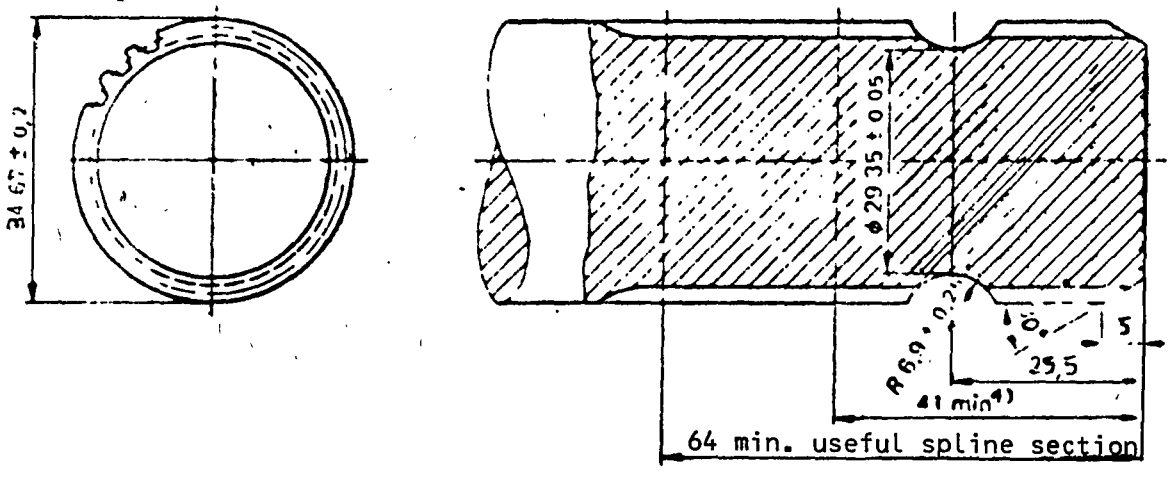
1) Spline circle diameter
2) Hardened area : 48-56 Rockwell C hardness
3) With or without neck
4) Size of bevel left to manufacturer.

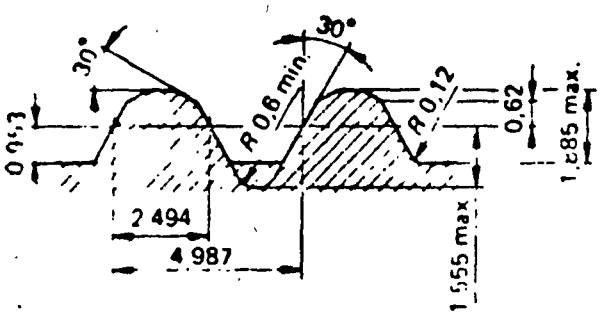
TABLE 2 - TYPE 1 PTO SPLINE TOLERANCES

Dimensions in mm

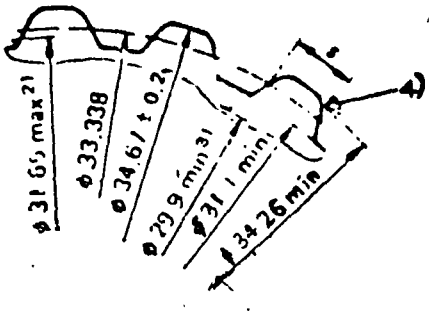
Type 1 PTO	Shaft	
Nominal dimension	s	
	8,69	
Verified dimension	Direct measurement	8,60 max 8,53 min
	With GO ring gauge	8,64 max

Dimensions in mm





Base section of shaft



Section of shaft

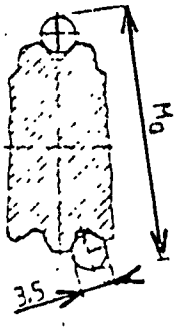
Angle of pressure a = 30°; number of teeth z = 21; modulus m = 1.5875 (diametral pitch 16)

Fig. 2 - Type 2 PTO

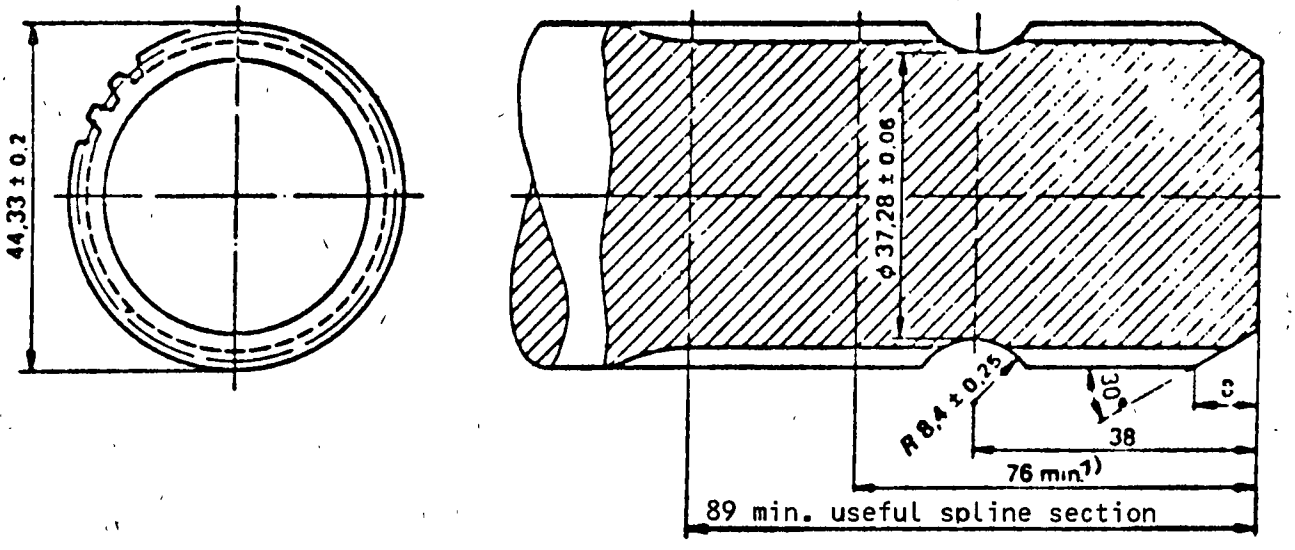
1) Hardened area : 48-56 Rockwell C hardness
2) Spline circle diameter
3) Only for a system in which the teeth mesh fully
4) Size of bevel left to manufacturer.

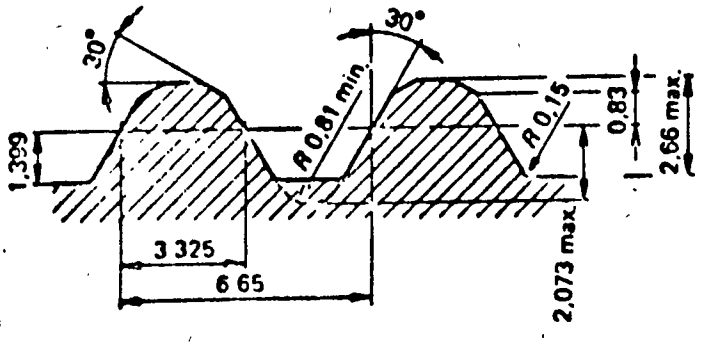
TABLE 3 - TYPE 2 PTO SPLINE TOLERANCES

Dimensions in mm

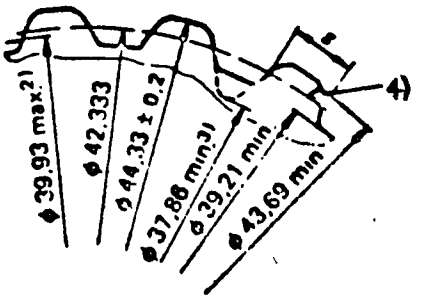
Type 2 PTO	Shaft	
Nominal dimension	S	
	2.494	
Verified dimension	Direct measurements	2.369 max 2.306 min
	with appropriate GO ring gauge	2.406 max
Nominal dimension	Distance between outermost points of wire gauges, M_a	
	31.182	
Tolerances	1.473	
Verification figure		39.00 max 38.90 min

Dimensions in mm





Base section of shaft



Section of shaft

Angle of pressure a = 30°; number of teeth z = 20; modulus m = 2,1167 (diametral pitch 12)

Fig. 3 - Type 3 PTO

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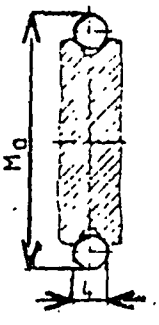
1) Hardened area : 48-56 Rockwell C hardness.
2) Spline circle diameter.
3) Only for a system in which the teeth mesh fully.
4) Size of bevel left to manufacturer.

TABLE 4 - TYPE 3 PTO SPLINE TOLERANCES

Dimensions in mm

Type 3 PTO	Shaft	
Nominal dimension	s	
	3.325	
Verified dimension	Direct measurements	3.200 max 3.173 min
	With appropriate GO ring gauge	3.237 max
Nominal dimension	Distance between outermost points of wire gauges M_a	
	48.432	
Tolerance	1.544	
Verification figure		48.239 max 48.142 min

5.2 DIRECTION OF ROTATION OF THE REAR PTO

Clockwise when the PTO is observed in the direction of travel of the tractor.

5.3 POSITION OF THE REAR PTO

The PTO must be positioned as shown in Figure 4 in relation to the ground.

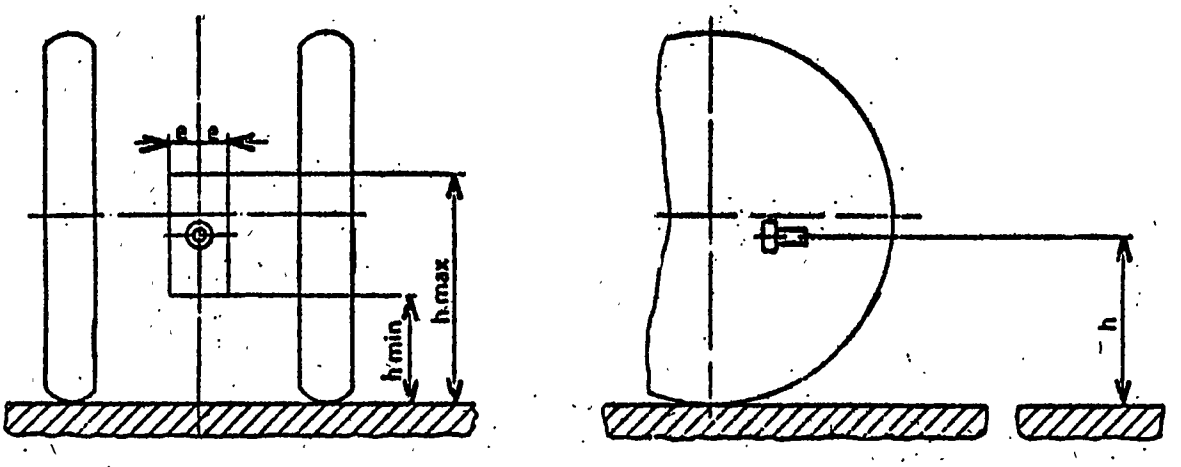


Fig. 4 Position of PTO in relation to the ground

If the tractor is fitted with two PTOs, e max should be so adjusted that one of them is outside the shaft clearance area.

TABLE 5 - POSITION OF PTO IN RELATION TO THE GROUND

Dimensions in mm

PTO type	h	e max
1	450 to 675	50
2	550 to 775	50
3	650 to 875	50

5.4 ZONE OF CLEARANCE AROUND THE PTO

The PTO zone of clearance must be in conformity with Fig. 5

Dimensions in mm

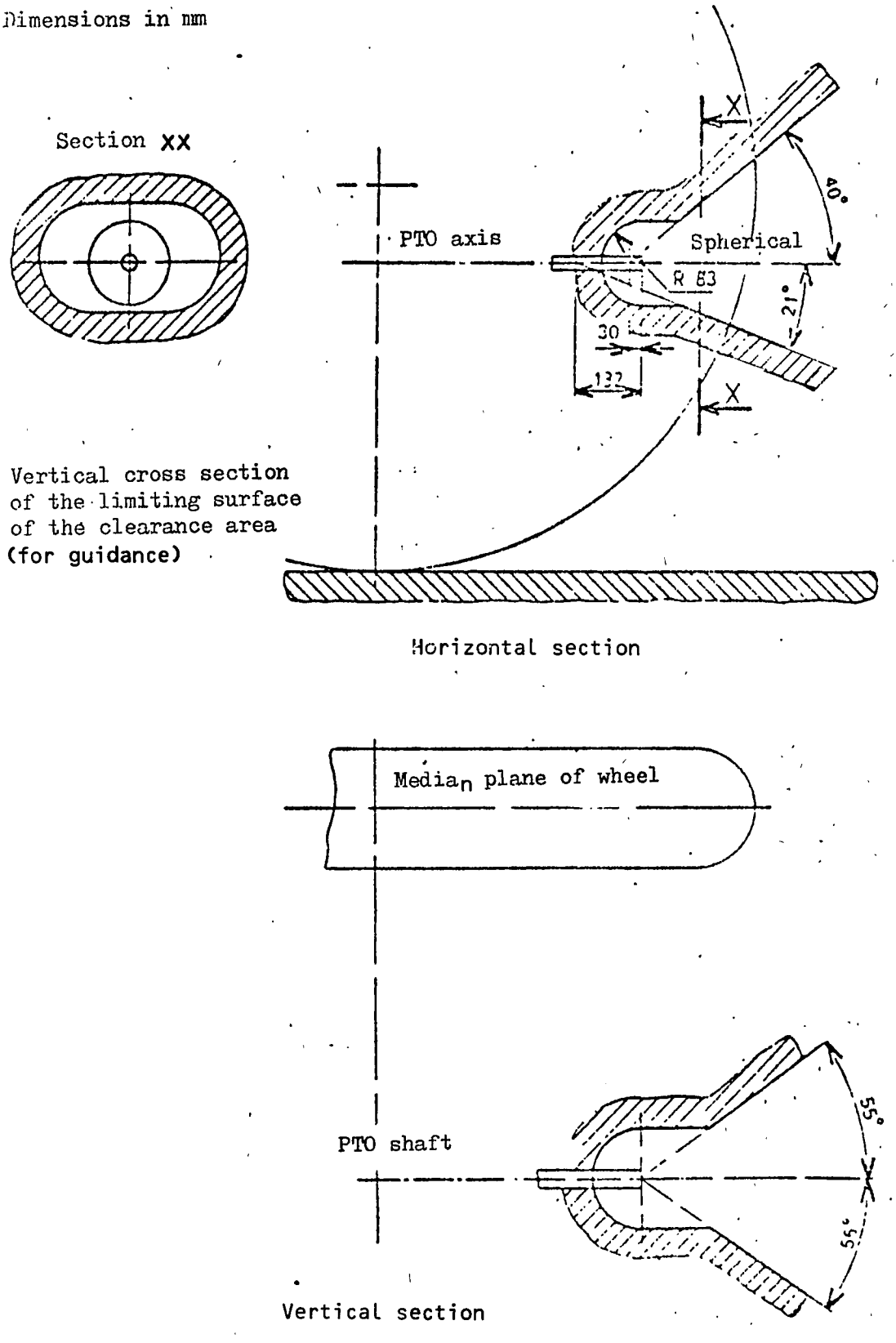


Fig. 5 - Zone of clearance around PTO

5.5 PROTECTION OF PTOs :

5.5.1 Protection

5.5.1.1 The power take-off must be protected by a guard mounted on the tractor which covers at least the top part and the two sides of the PTO as shown in Fig. 6 below, or by other means providing a similar degree of protection such as the location of the PTO in a recess that is part of the tractor or is formed by a separate part (tow-hook mounts, coupling cover, etc.)

5.5.1.2 The dimensions of the protective guard are laid down, as a function of the type of PTO, in Table 6 below;

5.5.1.3 An additional non-rotating protective device which fully covers the PTO must also be supplied with the tractor to protect the PTO when the latter is not in use.

5.5.2 Characteristics of protective guards

5.5.2.1 The protective guard must be designed so as not to impede (or in order to facilitate) the use and maintenance of the tractor.

It must be possible to carry out maintenance operations without removing the protective guard.

5.5.2.2 The materials used must be able to withstand bad weather, must retain their mechanical properties in cold weather and must be sufficiently sturdy.

5.5.2.3 It must not be possible to remove the protective guard without the use of a tool; in addition, the protective guard must have no points or sharp edges, must contain no orifices other than that necessary for attaching the chain of the protective device for the universal-joint drive shaft and, if fitted in such a way that it can be used as a step, must be able to bear a weight of 120 daN.

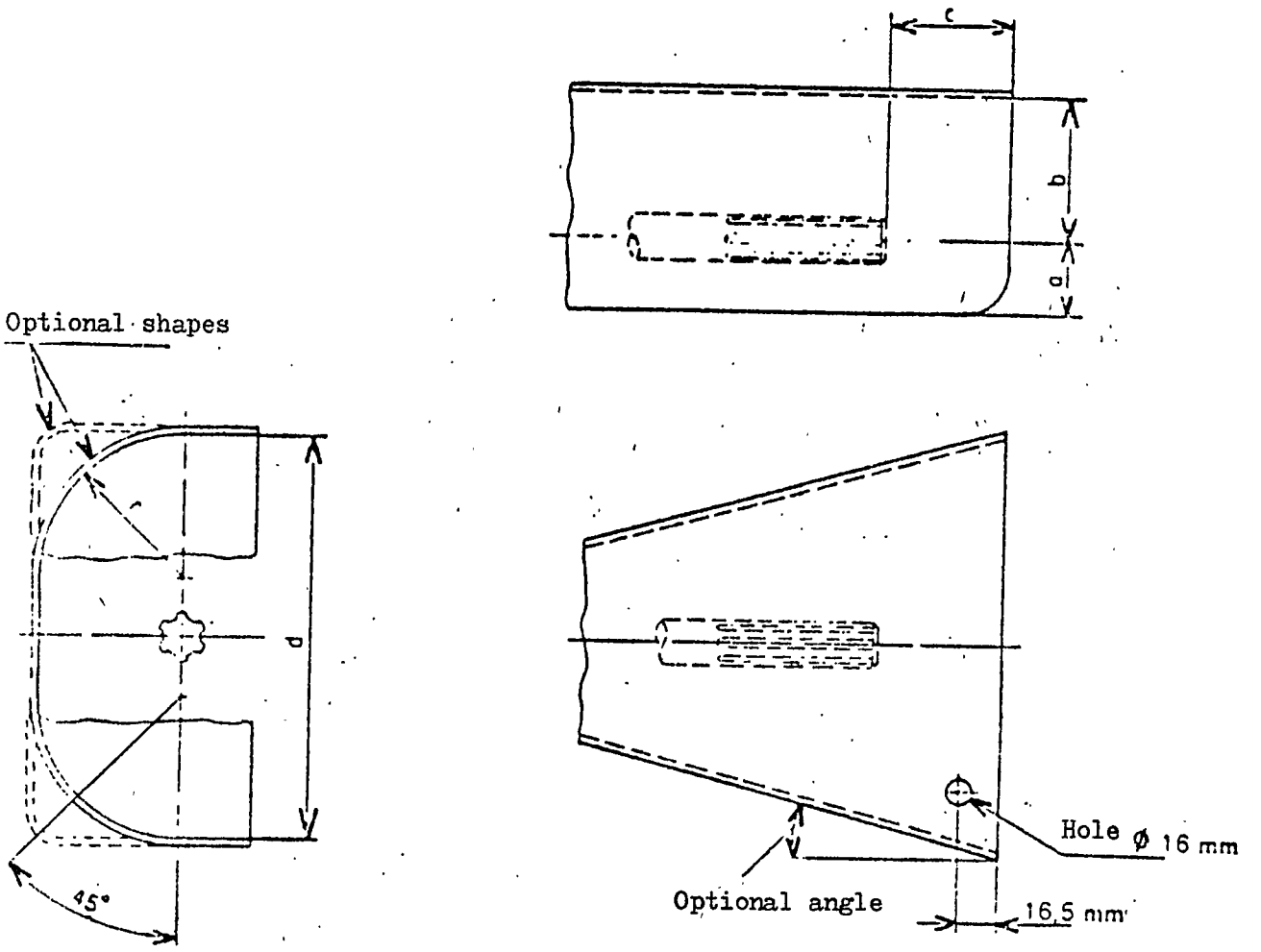


Fig. 6 - Protective guard for type 1, 2 and 3 PTOs

TABLE 6 - DIMENSIONS OF THE POWER TAKE-OFF PROTECTIVE GUARD

Type	Dimensions of protective guard (*) mm				
	a	b ± 5	c ± 5	d ± 5	r_{max}
1	70	125	85	285	125
2	70	125	85	285	125
3	80	150	100	300	150

(*) In the case of tractors having two rear PTO shafts, the dimensions b and/or d may be adjusted in order to maintain equivalent clearance areas between the shafts and the protective guard.

ANNEX II

MODEL

[Maximum size: A4 (210 x 297 mm)]

Name of competent authority

ANNEX TO THE EEC TYPE-APPROVED CERTIFICATE FOR A TRACTOR TYPE WITH REGARD TO THE POWER TAKE-OFF AND ITS PROTECTION

(Articles 4(2) and 10 of Council Directive 74/150/EEC of 4 March 1974 on the approximation of the laws of the Member States relating to the type approval of wheeled agricultural or forestry tractors)

EEC type-approval No .....

1. Trade name or mark of tractor .....
   .....

2. Tractor type .....

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

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

5. Brief description of type of power take-off and its protection .....
   .....

6. Tractor submitted for type approval on .....

7. Technical service responsible for type-approval tests .....

8. Date of report by that service .....

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

10. EEC type-approval with regard to the power take-off and its protection has been granted/refused*

11. The following diagrams bearing the above-mentioned type-approval No are attached to this communication:

    An appropriate set of diagrams of those parts of the tractor considered of interest for the purposes of Council Directive ..... of .. .. on the approximation of the laws of the Member States relating to power take-offs and their protection. These diagrams will be supplied to the competent authorities of the Member States at their express request.

12. Remarks, if any .....

13. Place .....

14. Date .....

15. Signature .....

* Delete where applicable