

## II

(Preparatory Acts)

## COMMISSION

Proposal for a European Parliament and Council Directive on the approximation of the laws of the Member States relating to the noise emission by equipment used outdoors

(98/C 124/01)

(Text with EEA relevance)

COM(98) 46 final — 98/0029(COD)

(Presented by the Commission on 18 February 1998)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION

Having regard to the Treaty establishing the European Community, and in particular Article 100a thereof,

Having regard to the proposal from the Commission,

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

Having regard to the Opinion of the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 189b of the Treaty,

Whereas within the framework of the internal market, requirements for the noise emission by equipment used outdoors have to be harmonised, while a high level concerning health, environmental protection and consumer protection has to be achieved without creating obstacles to the free movement of equipment used outdoors;

Whereas Community legislation concerning noise emission by equipment used outdoors has consisted to

date of the following nine directives covering some types of construction machinery and lawnmowers: Council Directive 79/113/EEC of 19 December 1978 on the approximation of the laws of the Member States relating to the determination of the noise emission of construction plant and equipment<sup>(1)</sup>, Council Directive 84/532/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to common provisions for construction plant and equipment<sup>(2)</sup>, Council Directive 84/533/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to the permissible sound power level of compressors<sup>(3)</sup>, Council Directive 84/534/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to the permissible sound power level of tower cranes<sup>(4)</sup>, Council Directive 84/535/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to the permissible sound

<sup>(1)</sup> OJ L 33, 8.2.1979, p. 15. Directive as last amended by Directive 85/405/EEC (OJ L 233, 30.8.1985, p. 9).

<sup>(2)</sup> OJ L 300, 19.11.1984, p. 111. Directive as last amended by Directive 88/665/EEC (OJ L 382, 31.12.1988, p. 42).

<sup>(3)</sup> OJ L 300, 19.11.1984, p. 123. Directive as last amended by Directive 85/406/EEC (OJ L 233, 30.8.1985, p. 11).

<sup>(4)</sup> OJ L 300, 19.11.1984, p. 130. Directive as last amended by Directive 87/405/EEC (OJ L 220, 8.8.1987, p. 60).

power level of welding generators <sup>(1)</sup>, Council Directive 84/536/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to the permissible sound power level of power generators <sup>(2)</sup>, Council Directive 84/537/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to the permissible sound power level of powered hand-held concrete-breakers and picks <sup>(3)</sup>, Council Directive 84/538/EEC of 17 September 1984 on the approximation of the laws of the Member States relating to the permissible sound power level of lawnmowers <sup>(4)</sup> and Council Directive 86/662/EEC of 22 December 1986 on the limitation of noise emitted by hydraulic excavators, rope-operated excavators, dozers, loaders and excavator-loaders <sup>(5)</sup>, hereinafter referred to as 'existing Directives' whereas these directives lay down the requirements with regard to permissible noise levels, noise test codes, marking and conformity assessment procedures for each type of equipment separately; whereas a simplification of this legislation and the creation of a framework for the reduction of noise emission by equipment used outdoors is appropriate;

Whereas the Fifth Environmental Action Programme <sup>(6)</sup> identifies noise as one of the most pressing environmental problems in urban areas and the need to take action with regard to various noise sources;

Whereas in its Green Paper 'Future Noise Policy' <sup>(7)</sup>, the European Commission addressed noise in the environment as one of the main local environmental problems in Europe, and announced its intention to propose a framework directive to control noise emission by equipment used outdoors;

Whereas noise caused by equipment used outdoors affecting health and well-being is mainly perceived by

citizens at the local level; whereas therefore the Committee of the Regions should be consulted;

Whereas to obtain a high level of protection, the level of noise emitted by equipment used outdoors should be reduced in order to protect the health and well-being of citizens and to provide the interest public with information on the noise emitted by equipment used outdoors;

Whereas Member States shall ensure that equipment covered by this Directive complies with the requirements when placed on the market and put into service in the Member States; whereas requirements protecting workers by regulating the use of outdoor equipment are not affected by this Directive;

Whereas Member States shall not prohibit, restrict or impede the placing on the market or putting into service in their territory of equipment which complies with the requirements of this Directive and which bears the CE marking;

Whereas the manufacturer, his authorised representative or any person placing the equipment on the market or putting it into service in the Community shall be responsible for ensuring that the equipment is in conformity with the provisions of this Directive and of any other Directives that apply to it; whereas the manufacturer, his authorised representative or any person placing the equipment on the market or putting it into service in the Community shall affix the CE marking to the equipment in order to guarantee that the equipment is in conformity with the provisions of this Directive and any other pertinent Directives;

Whereas Member States, if necessary in cooperation with other Member States, shall take the appropriate measures to ensure that non-complying equipment will comply in future or is withdrawn from the market;

Whereas marking of equipment used outdoors with its noise emission value is essential in order to enable consumers to make an informed choice of equipment and as a basis for regulations on use or economic instruments to be adopted at the local or national level; whereas this marking must be clear and unambiguous; whereas the indicated values should be guaranteed by the manufacturer; whereas it is appropriate that information concerning noise emission should accompany the CE marking; whereas a unified, fixed procedure to assess noise emission values is an indispensable condition for reliable marking;

<sup>(1)</sup> OJ L 300, 19.11.1984, p. 142. Directive as last amended by Directive 85/407/EEC (OJ L 233, 30.8.1985, p. 16).

<sup>(2)</sup> OJ L 300, 19.11.1984, p. 149. Directive as last amended by Directive 85/408/EEC (OJ L 233, 30.8.1985, p. 18).

<sup>(3)</sup> OJ L 300, 19.11.1984, p. 156. Directive as last amended by Directive 85/409/EEC (OJ L 233, 30.8.1985, p. 20).

<sup>(4)</sup> OJ L 300, 19.11.1984, p. 171. Directive as last amended by Directive 88/181/EEC (OJ L 81, 26.3.1988, p. 71).

<sup>(5)</sup> OJ L 384, 31.12.1986, p. 1. Directive as last amended by Directive 95/27/EC (OJ L 168, 18.7.1995, p. 14).

<sup>(6)</sup> OJ C 138, 17.5.1993, p. 1.

<sup>(7)</sup> COM(96) 540 final.

Whereas existing Directives concerning compressors, tower cranes, welding and power generators, and concrete-breakers and picks require the Commission to submit proposals to reduce the permissible noise levels; whereas noise reduction technology for some other equipment used outdoors (graders, loader-type landfill compactors, dumpers, combustion-engine driven counterbalanced lift trucks, mobile cranes, builders' hoists and construction winches) is available but not generally used; whereas surveys show that the noise emission values of equipment used outdoors of the same power currently on the market can differ by more than 10 dB(A); whereas it is appropriate to reduce noise emissions by equipment subject to noise limits down to the level of the better performers on the market today in two steps, in order to allow manufacturers who do not already comply with the requirements sufficient time to adapt their equipment to the more demanding limit values;

Whereas different conformity assessment procedures may be considered appropriate for different categories of equipment; whereas Council Decision 93/465/EEC of 22 July 1993 concerning the modules for the various phases of the conformity assessment procedures and the rules for the affixing and use of the CE conformity marking, which are intended to be used in the technical harmonisation directives<sup>(1)</sup>, offers different modules for use in conformity assessment procedures; whereas equipment covered by existing Directives and subject to permissible noise levels has been subject to type-examination and this or an equivalent procedure is considered to be the appropriate conformity assessment procedure; whereas self-certification is considered to be appropriate for equipment not subject to permissible noise levels; whereas monitoring is indispensable;

Whereas the technical and administrative standards of notified bodies throughout the Community should be the same; whereas this can only be achieved by setting minimum criteria they have to meet;

Whereas the duration of the validity of type-examination certificates issued under the existing Directives and under the present Directive has to be exactly defined taking into account transitional periods;

Whereas the collection of noise data is considered to be indispensable as a basis for informed consumer choice and for the Commission's further assessment of new technological development and the need for further legislative action;

Whereas, in order to protect citizens against unreasonably high noise exposure, Member States should be able to restrict the use of equipment in the environment;

Whereas the technical provisions must be supplemented and adapted as necessary to technical progress; whereas to this end provision should be made for the establishment of a Committee on the Adaptation to Technical Progress in order to adapt the technical annexes to the Directive;

Whereas this Directive replaces the existing Directives; whereas the existing Directives must be repealed when the requirements of this Directive come into force; whereas transitional periods are necessary to allow a smooth transition from the existing Directives to this Directive,

HAVE ADOPTED THIS DIRECTIVE:

#### *Article 1*

##### **Objectives**

The aim of this Directive is to approximate the laws of the Member States relating to noise emission standards, conformity assessment procedures, marking, and collection of data concerning equipment used outdoors. It will contribute to the smooth functioning of the internal market, while protecting human health and well-being.

#### *Article 2*

##### **Scope**

1. This Directive applies to equipment used outdoors listed in Annex I.B and I.C.

This Directive only covers equipment that is placed on the market or put into service as an entire unit suitable for the intended use. Non-powered attachments that are separately placed on the market or put into service are excluded, except for hand-held concrete-breakers and picks, which are covered by this Directive.

2. Excluded from the scope of this Directive is all equipment primarily intended for the transport of goods or persons by public road or rail or by air or on waterways. Also excluded from this Directive is equipment specially designed and constructed for military and police purposes.

<sup>(1)</sup> OJ L 220, 30.8.1993, p. 23.

*Article 3***Definitions**

For the purpose of this Directive the following definitions shall apply:

- (a) 'equipment used outdoors' means all machinery defined in Article 1(2) of Council Directive 89/392/EEC of 14 June 1989 on the approximation of the laws of the Member States relating to machinery <sup>(1)</sup> which is either self-propelled or can be moved and which, irrespective of the driving element(s), is intended to be used, according to its type, in the open air and which contributes to environmental noise exposure. The use of equipment in an ambience where the transmission of sound is not or not significantly affected (for instance under tents, under roofs for protection against rain or in the shell of houses) is regarded as use in the open air. It also means non-powered equipment for industrial or environmental applications which is intended, according to its type, to be used outdoors and which contributes to environmental noise exposure. All these types of equipment are hereinafter referred to as 'equipment';
- (b) 'conformity assessment procedures' means the procedures laid down in Decision 93/465/EEC;
- (c) 'marking' means the visibly, legibly and indelibly affixing on the equipment of the CE marking defined in Decision 93/465/EEC accompanied by the indication of the guaranteed sound power level  $L_{WA}$  in dB(A) in relation to 1 pW;
- (d) 'sound power level  $L_{WA}$  in dB(A) in relation to 1 pW guaranteed by the manufacturer' means a single-number noise emission value including the uncertainties due to production variation and measurement procedures which is validated using one of the verification procedures laid down in Annex X(6), second to fifth subparagraph.

*Article 4***Market surveillance**

1. Member States shall take all appropriate measures to ensure that equipment referred to in Article 2(1) may be placed on the market and put into service only if it conforms with the provisions of this Directive and bears the CE marking.

2. In order to meet the obligation under paragraph 1, Member States shall ensure verification of equipment referred to in Article 2(1) placed on the market or put

into service. This verification shall be carried out using the procedure laid down in Annex X(6), second to fifth subparagraph.

Member States shall inform each other of the results of the verification in order to avoid duplicating verification of the same equipment.

Member States shall inform the Commission of the specific measures undertaken to ensure the verification. The results of the noise measurements carried out in the framework of market surveillance shall be communicated each year to the Commission or to the institute appointed to collect the data on its behalf.

3. The provisions of this Directive shall not affect Member States' entitlement to lay down, in due observance of the Treaty, such requirements as they may deem necessary to ensure that persons and in particular workers are protected when using the equipment in question, provided that the equipment conforms with the requirements of this Directive.

*Article 5***Free movement**

1. Member States shall not prohibit, restrict or impede the placing on the market and putting into service in their territory of equipment which complies with the provisions of this Directive and which bears the CE marking.

2. At trade fairs, exhibitions, demonstrations, etc., Member States shall not prevent the showing of equipment which does not conform to the provisions of this Directive, provided that a visible sign clearly indicates that such equipment does not conform and that it is not placed on the market and put into service until it has been brought into conformity by the manufacturer or his authorised representative established in the Community.

3. Member States shall regard equipment bearing the CE marking supplemented by the information required in Article 8 and accompanied by an EC declaration of conformity provided for in Article 6 as conforming to the provisions of this Directive.

4. Where the equipment referred to in Article 2(1) is subject to other Directives concerning other aspects and which also provide for the affixing of the CE marking, the marking shall indicate that such equipment also fulfils the provisions of those Directives. However, should one or more of these Directives allow the manufacturer, during a transitional period, to choose which

<sup>(1)</sup> OJ L 183, 29.6.1989, p. 9. Directive as last amended by Directive 93/44/EEC (OJ L 175, 19.7.1993, p. 12).

arrangements to apply, the CE marking shall indicate that the equipment only fulfils the provisions of the Directives applied by the manufacturer. In this case, the particulars of those Directives, as published in the *Official Journal of the European Communities*, must be given in the documents, notices or instructions required by those Directives and accompanying such equipment.

#### Article 6

##### Declaration of conformity

1. The manufacturer, or his authorised representative established in the Community, shall, in order to certify that an item of equipment is in conformity with the provisions of this Directive, draw up an EC declaration of conformity for each machine manufactured; the minimum content of this EC declaration is laid down in Annex V. In addition, he shall affix to the equipment the CE marking supplemented by the information as required in Article 8.

2. A Member State may require that the declaration of conformity be drawn up in its official language(s) when equipment is offered for sale to the consumer in its territory.

3. The manufacturer or his authorised representative established in the Community, shall keep a copy of the declaration of conformity for 10 years from the date on which the equipment was last manufactured, together with the technical documentation.

4. Where neither the manufacturer nor his authorised representative is established in the Community, the obligations of this Directive shall fall to any person placing the equipment on the market or putting it into service in the Community.

#### Article 7

##### Non-compliance of equipment

1. Where a Member State ascertains that equipment placed on the market or put into service bearing the CE marking does not comply with the requirements of Article 9 of this Directive, it shall take all appropriate measures to withdraw it from the market or prohibit or restrict it being placed on the market or put into service.

The Member State shall immediately inform the Commission of such measures.

2. The Commission shall enter into consultations with the parties concerned as soon as possible. Where, after such consultation, the Commission finds that:

(a) the measures are justified, it shall immediately so inform the Member State which took the initiative and the other Member States;

(b) the measures are unjustified, it shall immediately so inform the Member State which took the initiative and the manufacturer or his authorised representative established in the Community.

3. Where non-complying equipment bears the CE marking, the appropriate measures shall be taken by the Member State which has authority over whomsoever affixed the marking. The Member State shall inform the Commission and the other Member States thereof.

4. The Commission shall ensure that the Member States are kept informed of the progress and outcome of this procedure.

#### Article 8

##### Marking

1. Equipment referred to in Article 2(1) placed on the market or put into service which complies with the provisions of this Directive shall bear the CE marking of conformity.

2. The CE marking of conformity shall be affixed in a visible, legible and indelible form to each item of equipment.

The CE marking shall be accompanied by the indication of the sound power level  $L_{WA}$  in dB(A) in relation to 1 pW, measured in accordance with the requirements of Annex VI and guaranteed by the manufacturer. A model of this mark is given in Annex VII to this Directive.

3. The affixing of markings or inscriptions on the equipment which are likely to mislead third parties with regard to the meaning or the form of the CE marking shall be prohibited. Any other marking may be affixed to the equipment, provided that the visibility and legibility of the CE marking is not thereby reduced.

4. Without prejudice to Article 7:

(a) where a Member State establishes that the CE marking has been affixed wrongly, the manufacturer or his authorised representative established in the Community shall be obliged to end the infringement under conditions laid down by the Member State;

(b) where non-compliance regarding the wrong affixing of the CE marking continues, or the Member State establishes that the requirements concerning the indication of the sound power have not been respected it shall take all appropriate measures to restrict or prohibit the placing on the market of the product in question or to ensure that it is withdrawn

from the market, in accordance with the procedure laid down in Article 7.

#### Article 9

##### Noise limits

The sound power level  $L_{WA}$  in dB(A) in relation to 1 pW of equipment listed in Annex I, Part B, measured in accordance with the noise test code specified for this equipment in Annex VI shall not exceed the permissible sound power level in dB(A) in relation to 1 pW specified with reference to

- the net installed power  $P$  in kW,
- or the electrical power  $P_{el}$  in kW,
- or the mass  $m$  of appliance in kg,
- or the cutting width  $L$  in cm,

as laid down in the following table:

Type of equipment	Net installed power $P$ in kW Electric power $P_{el}$ in kW Mass of appliance $m$ in kg Cutting width $L$ in cm	Permissible sound power level $L_{WA}$ in dB(A)/1 pW as from	
		Stage I 24 months after the date of entry into force of this Directive	Stage II 72 months after the date of entry into force of this Directive
Tracked dozers, loaders, excavator-loaders	$P \leq 55$	106	103
	$P > 55$	$L_{WA} = 87 + 11 \lg P$	$L_{WA} = 84 + 11 \lg P$
Wheeled dozers, loaders, excavator-loaders; graders, loader-type landfill compactors, dumpers, combustion-engine driven counterbalanced lift Trucks, mobile cranes	$P \leq 55$	104	101
	$P > 55$	$L_{WA} = 85 + 11 \lg P$	$L_{WA} = 82 + 11 \lg P$
Excavators, builders' hoists for the transport of goods, construction Winches, motor hoes	$P \leq 15$	96	93
	$P > 15$	$L_{WA} = 83 + 11 \lg P$	$L_{WA} = 80 + 11 \lg P$
Hand-held concrete-breakers and picks	$m \leq 15$	107	105
	$m > 15$	$L_{WA} = 94 + 11 \lg m$	$L_{WA} = 92 + 11 \lg m$
Tower cranes		$L_{WA} = 98 + \lg P$	$L_{WA} = 96 + \lg P$
Welding and power generators		$L_{WA} = 97 + \lg P_{el} (*)$	$L_{WA} = 95 + \lg P_{el} (*)$
Compressors	$P \leq 15$	99	97
	$P > 15$	$L_{WA} = 97 + 2 \lg P$	$L_{WA} = 95 + 2 \lg P$
Lawnmowers, lawn trimmers, lawn edge Trimmers	$L \leq 50$	96	
	$50 < L \leq 120$	100	
	$L > 120$	105	

(\*) These values may be exceeded by 1 dB(A) in the power range 2 to 10 kW.

The measured sound power level and the permissible sound power level shall be rounded to the nearest whole number (less than 0.5 use lower number; greater than or equal to 0.5 use higher number).

*Article 10***Conformity assessment**

1. Before placing equipment listed in annex I, Part B, on the market or putting this equipment into service, the manufacturer or his authorised representative established in the Community, shall subject each type of equipment to one of the following conformity assessment procedures:

- (a) either the procedure referred to in Annex IX in combination with one of the procedures in Annexes X, XI, XII;
- (b) or the procedure referred to in Annex XIII;
- (c) or the procedure referred to in Annex XIV.

2. Before placing equipment listed in Annex I, Part C, on the market or putting this equipment into service, the manufacturer, or his authorised representative established in the Community, shall subject each type of equipment to one of the following conformity assessment procedures:

- (a) either the procedure referred to in Annex VIII;
- (b) or the procedure referred to in Annex XIV.

3. Member States shall ensure that the Commission and a Member State may, on request, obtain all information used during the conformity assessment procedure concerning a type of equipment.

*Article 11***Notified bodies**

1. Member States shall appoint bodies under their jurisdiction to carry out or supervise the conformity assessment procedures referred to in Article 10(1) and 10(2)(b).

2. Member States shall appoint only such bodies which comply with the criteria set out in Annex II. The fact that a body complies with the criteria of Annex II to this Directive does not mean that a Member State is obliged to appoint that body.

3. Each Member State shall notify the Commission and the other Member States of the bodies which they have appointed, together with the specific tasks and examination procedures which these bodies have been appointed to carry out and the identification numbers assigned to them beforehand by the Commission.

4. The Commission shall publish a list of the notified bodies in the *Official Journal of the European Communities* along with their identification numbers and the tasks for which they have been appointed. The Commission shall ensure that the list is kept up to date.

5. A Member States which has appointed a body shall withdraw its notification if it finds that the body no longer meets the criteria referred to in Annex II. It shall forthwith inform the Commission and the other Member States accordingly.

*Article 12***Validity of EC type-examination certificates**

1. EC type-examination certificates are valid as long as the certified values comply with the permissible sound power level in accordance with the data — set out in Article 9.

2. In derogation from paragraph 1, type-examination certificates issued within 12 months before the entry into force of Stage II referred to in Article 9 stay valid for 12 months after entry into force of Stage II, and equipment which conforms with the type-examination certificate may be placed on the market and put into service during this period.

*Article 13***Collection of noise data**

1. The notified bodies referred to in Article 11 shall send to the Commission a copy of their type-examination certificates referred to in Annex IX, or of the certificate of conformity referred to in Annex XIII.

If the manufacturer or his authorised representative in the Community uses the conformity assessment procedure referred to in annex VIII or Annex XIV, he shall send a copy of this measurement report to the Commission.

2. The Commission shall collect the data made available in accordance with paragraph 1 for all tested equipment. The Commission may appoint an institute to collect the data on its behalf.

3. The Commission and its appointed institute shall preserve the confidentiality of commercially sensitive information.

4. Subject to paragraph 3, Member States may, on request, obtain the collected data from the Commission.

5. subject to paragraph 3, the Commission or the appointed institute shall publish the relevant information periodically. These publications shall at least contain the following data for each type of equipment:

- the net installed power or any other noise related value, if any,
- the measured sound power level.

*Article 14***Regulation of use**

Member States may take measures to regulate the use of equipment in areas which they consider sensitive, including the possibility of restricting the working hours of the equipment.

*Article 15***Committee**

1. A Committee on the Adaptation to Technical Progress of this Directive, hereinafter called 'the Committee' is hereby set up; it shall consist of representatives of the Member States with a Commission representative as chairman.

2. Any amendments which are necessary in order to adapt Annexes III, IV, V, and VI to technical progress shall be adopted by the Commission assisted by the Committee in accordance with the procedure laid down in Article 16.

*Article 16***Committee procedure**

1. The representative of the Commission shall submit to the Committee a draft of the measures to be taken. The Committee shall deliver its opinion on the draft within a time-limit which the chairman may lay down according to the urgency of the matter, if necessary by taking a vote.

2. The opinion shall be recorded in the minutes; in addition, each Member State shall have the right to ask to have its position recorded in the minutes.

3. The Commission shall take the utmost account of the opinion delivered by the Committee. It shall inform the Committee of the manner in which its opinion has been taken into account.

*Article 17***Reports**

No later than 72 months after the date of entry into force of this Directive, the Commission shall submit to the Council a report concerning experience in implementing this Directive. The report shall in particular contain:

(a) a statement of the need for revision of the lists in Annex I, especially whether new equipment should be added,

(b) a statement of the need for revision of the limit values laid down in Article 9,

(c) a statement of whether limit values should also be laid down for equipment other than that covered by Annex I B,

(d) a statement setting out an integrated range of instruments to be used in continuing the reduction of noise by equipment used outdoors.

*Article 18***Repeal**

1. Directives 79/113/EEC, 84/532/EEC, 84/533/EEC, 84/534/EEC, 84/535/EEC, 84/536/EEC, 84/537/EEC, 84/538/EEC, and 86/662/EEC are repealed at the date referred to in Article 19(1)(2).

2. By way of derogation from paragraph 1, type-examination certificates issued under the Directives mentioned in paragraph 1 shall continue to be valid of the equipment conforms with the requirements of this Directive. In all other cases they shall cease to be valid on the date referred to in Article 19(1)(2).

*Article 19***Transposal into national law**

1. Member States shall adopt and publish the laws, regulations and administrative provisions necessary to comply with this Directive no later than 12 months after the date of entry into force of this Directive, and shall forthwith inform the Commission thereof.

Member States shall apply these provisions with effect from 24 months after the date of entry into force of this Directive.

With regard to the reduced permissible sound power levels of Stage II referred to in Article 9, these provisions shall apply with effect from 72 months after the date of entry into force of the present Directive.

2. When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.

3. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.



*Article 20***Entry into force**

This Directive shall enter into force on the 20th day following the date of its publication in the *Official Journal of the European Communities*.

*Article 21*

This Directive is addressed to the Member States.

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## ANNEX I

## SCOPE, LISTS OF EQUIPMENT, DEFINITIONS

## PART A

## SCOPE

Part B contains all equipment subject to noise limits (Article 9).

Part C contains all equipment not subject to noise limits.

Part D contains the definitions of all types of equipment listed in Part B and C.

## PART B

## EQUIPMENT SUBJECT TO NOISE LIMITS (ARTICLE 9)

Builders' hoists for the transport of goods (combustion-engine-driven)

Compressor (< 350 kW)

Concrete-breakers and picks, hand-held

Construction winches (combustion-engine driven)

Dozers (< 500 kW)

Dumpers (< 500 kW)

Excavators, hydraulic or rope-operated (< 500 kW)

Excavator-loaders (< 500 kW)

Graders (< 500 kW)

Landfill compactors, loader-type with bucket (< 500 kW)

Lawnmowers (excluded are agricultural and forestry equipment; multi-purpose

Devices, the main motorized component of which has an installed power of more than 20 kW)

Lawn trimmers/lawn edge trimmers

Lift trucks (only combustion-engine driven counterbalanced lift trucks)

Loaders (< 500 kW)

Motor hoes (< 3 kW)

Mobile cranes

Power generators (< 400 kW)

Tower cranes

Welding generators

PART C  
EQUIPMENT NOT SUBJECT TO NOISE LIMITS

Brush cutters

Builders' hoists for the transport of goods (with electric motor)

Building site band saw machines

Building site circular saw benches

Chainsaws, portable

Combined high pressure flushers and suction vehicles

Compaction machines (excluding towed rollers)

Concrete or mortar mixers

Construction winches (with electric motor)

Conveying and spraying machines for concrete and mortar

Conveyor belts

Cooling equipment on trucks

Drill rigs

Equipment for loading and unloading tanks or silos on trucks

Glass-recycling containers

Grass trimmers/grass edge trimmers

Hedge-trimmers

High-pressure flushers

High-pressure water jet machines

Hydraulic power pack

Joint cutters

Leaf-blowers

Leaf-collectors

Paver-finishers

Pipelayers

Piste caterpillars

Power sweepers

Refuse collection vehicles

Road-milling machines

Scarifiers

Shredders/chippers

Snow-removing systems with rotating tools (self-propelled, excluding attachments)

Suction vehicles

Trenchers

Truck mixers

Water-pump units (not for use underwater)

#### PART D DEFINITIONS

##### **Brush cutter**

This means a combustion-engine driven portable hand-held unit fitted with a rotating blade made of metal or plastic intended to cut weeds, brush, small trees and similar vegetation. The cutting device operates in a plane approximately parallel to the ground.

##### **Builders' hoist for the transport of goods**

This means a power-operated, temporarily installed builders' hoist intended for use by persons who are permitted to enter engineering and construction sites, serving:

- (i) defined landing levels, having a platform:
  - designed for the transportation of goods only,
  - which permits the access of persons during loading and unloading,
  - which permits the access and travel by authorised persons during erection, dismantling and maintenance,
  - guided,
  - travelling vertical or along a path within 15° maximum of the vertical,
  - supported or sustained by: wire rope, chain, screwed spindle and nut; rack and pinion, hydraulic jack (direct or indirect), or an expanding linkage mechanism,
  - where masts may or may not require support from separate structures or
- (ii) either one upper landing or a work area extending to the end of the guide (for example, a roof) having a load-carrying device:
  - designed for the transportation of goods only,
  - designed that there is no need to step on it for loading or unloading purposes or for maintenance, erection and dismantling,
  - from which persons are prohibited at any time,
  - guided,
  - which is designed to travel at an angle of at least 30° to the vertical but may be used at any angle,
  - sustained by steel wire rope and a positive drive system,
  - controlled by constant pressure type controls,
  - which does not benefit from the use of any counterweight,
  - having a maximum rated load of 300 kg,
  - having a maximum speed of 1m/sec, and where the guides require support from separate structures.

##### **Building site band saw machine**

This means a hand-fed powered machine weighing less than 200 kg fitted with a single saw blade in the form of a continuous band mounted on and running between two or more pulleys.

**Building site circular saw bench**

This means a hand-fed machine weighing less than 200 kg fitted with a single circular sawblade (other than a scoring saw) with a diameter of 350 mm or more, up to a maximum diameter of 500 mm, which is fixed during the normal cutting operation, and a horizontal table, all or part of which is fixed during operation. The sawblade is mounted on a horizontal non-tilting spindle, the position of which remains stationary during machining. the machine may have any of the following features:

- the facility for the sawblade to be raised and lowered through the table,
- machine frame below the table may be open or enclosed,
- the saw may be fitted with an additional, manually operated travelling table (not adjacent to the sawblade).

**Chainsaw, portable**

This means a power-driven tool designed to cut wood with a saw chain and consisting of an integrated compact unit of handles, power source and cutting attachment, designed to be supported with two hands.

**Combined high pressure flusher and suction vehicle**

This means a vehicle which may work either as a high-pressure flusher or as a suction vehicle, (see 'high-pressure flusher', 'suction vehicle').

**Compaction machines**

This means a machine which compacts materials, for example, rock fills, soil or asphalt surfacing, through a rolling, tamping or vibrating action of the working tool. It may be self-propelled, towed, walk-behind or an attachment to a carrying machine. Compaction machines are subdivided as follows:

- rollers for ride-on operators: self-propelled compaction machines with one or more metallic cylindrical bodies (drums) or rubber tyres; the operator's station is an integral part of the machine,
- walk-behind rollers: self-propelled compaction machines with one or more metallic cylindrical bodies (drums) or rubber tyres in which the operating facilities for travelling, steering, braking and vibrating are arranged in such a way that the machines have to be operated by an attending operator or by remote control,
- towed roller: compaction machines with one or more metallic cylindrical bodies (drums) or rubber tyres which do not possess an independent drive system and where the operator's station is to be found on a tractor unit,
- vibratory plates and vibratory rammers: compaction machines with mainly flat base plates which are made to vibrate. They are operated by an attending operator or as an attachment to a carrying machine,
- explosion rammers: compaction machines with mainly a flat pad as the compacting tool which is made to move in a predominantly vertical direction by explosion pressure. The machine is operated by an attending operator.

**Compressor**

This means any machine which compresses air, gases or vapours to a pressure higher than the inlet pressure. A compressor comprises the bare compressor itself, the prime mover and any component or device supplied, which is necessary for safe operation of the compressor.

Excluded are the following two categories of device:

- fans, i. e. devices producing air circulation at a positive pressure of not more than 1.1,
- vacuum pumps, i. e. devices or appliances for extracting air from an enclosed space at a pressure not exceeding atmospheric pressure.

**Concrete or mortar mixer**

This means a machine to prepare concrete or mortar, irrespective of the loading, mixing and emptying process. It may be operated intermittently or constantly. Concrete mixers on trucks are called truck mixers (see 'truck mixers').

**Concrete-breakers and picks**

This means powered (by any method other than electrically-driven) concrete-breakers and picks used to perform work on civil engineering and building sites. Concrete-breakers and picks may be hand-held or used as an attachment.

**Construction winch**

This means a power-operated, temporarily installed lifting appliance which is equipped with means for raising and lowering a suspended load.

**Conveying and spraying machine for concrete and mortar**

This means items of plant pumping and spraying concrete or mortar, with or without agitator, whereby the material to be transported is conveyed to the placing position through pipelines, distribution devices or distribution booms. Conveyance is carried out:

- for concrete mechanically, by piston or rotor pumps,
- for mortar mechanically by piston, worm, hose and rotor pumps or pneumatically by compressors with or without air chamber.

These machines may be mounted on trucks, trailers or special vehicles.

**Conveyor belt**

This means a temporarily installed machine suitable to transport material by means of a power-driven belt.

**Cooling equipment on trucks**

This means equipment which controls — by whatever method — the temperature inside a truck body to which it is attached. It may be powered by a combustion motor or by an electrical motor (driven by battery, generator or from the mains). The engine may be an integral part of the equipment, a separate part attached to the truck body or the driving engine of the truck.

**Dozer**

This means a self-propelled wheeled or crawler machine used to exert a push or pull force through mounted equipment.

**Drill rig**

This means a machine which is used for drilling holes on construction sites by

- percussive drilling,
- rotary drilling,
- rotary percussive drilling.

Drill rigs are stationary during drilling. They may move from one place of work to another, under their own power. Self-propelled drill rigs include those mounted on lorries, wheeled chassis, tractors, crawlers or skid bases (pulled by winch). When drill rigs are mounted on lorries, tractors and trailers, or are wheel-based, transportation may be carried out at higher speeds and on public roads.

**Dumper**

This means a self-propelled wheeled or crawler machine having an open body, which either transports and dumps or spreads material. Dumpers may be quipped with integral self-loading equipment.

**Equipment for loading and unloading of silos or tanks on trucks**

This means powered devices attached to silo or tanker trucks for loading or unloading of liquids or bulk material by means of pumps or similar equipment.

**Excavator, hydraulic or rope-operated**

This means a self-propelled crawler or wheeled machine having an upper structure capable of a minimum of 360° rotation, which excavates, swings, and dumps material by the action of a bucket fitted to the boom and arm or telescopic boom, without moving the chassis or under-carriage during any one cycle of the machine.

**Excavator-loader**

This means a self-propelled wheeled or crawler machine having a main structural support designed to carry both a front-mounted bucket loading mechanism and a rear-mounted backhoe. When used in the backhoe mode, the machine normally digs below ground level with bucket motion towards the machine. The backhoe lifts, swings, and discharges material while the machine is stationary. When used in the loader mode, the machine loads or excavates through forward motion of the machine, and lifts, transports and discharges material.

**Glass-recycling container**

This means container — built of whatever material — that is used for the collection of bottles. It is equipped with at least one opening for filling in bottles and another one for emptying the container.

**Grader**

This means a self-propelled wheeled machine having an adjustable blade, positioned between front and rear axles, which cuts, moves and spreads material usually to grade requirements.

**Grass trimmer/grass edge trimmer**

This means a combustion-engine driven portable hand-held unit fitted with flexible line(s), string(s), or similar non-metallic flexible cutting elements, such as pivoting cutters, intended to cut weeds, grass or similar soft vegetation. The cutting device operates in a plane approximately parallel (grass trimmer) or perpendicular (grass edge trimmer) to the ground.

**Hedge trimmer**

This means hand-held, integrally driven powered equipment which is designed for use by one operator for trimming hedges and bushes utilising one or more linear reciprocating cutter blades.

**High-pressure flusher**

This means a vehicle equipped with a device to clean sewers or similar installations by means of a high-pressure water jet. The device may be either mounted on a proprietary vehicular truck chassis or incorporated into its own chassis embodiment. The equipment may be fixed or demountable as in the case of an exchangeable bodywork system.

**High-pressure water jet machine**

This means a machine with nozzles or other speed-increasing openings which allow water — also with admixtures — to emerge as a free jet. In general, high-pressure water jet machines consist of a drive, a pressure generator, hose lines, spraying devices, safety mechanisms, controls and measurement devices. High-pressure water jet machines may be mobile or stationary:

- (i) mobile high-pressure water jet machines are mobile, readily transportable machines which are designed to be used at various sites, and for this purpose, are generally fitted with their own undergear or are vehicle-mounted. All necessary supply lines are flexible and readily disconnectable;
- (ii) stationary high-pressure water jet machines are designed to be used at one site for a length of time but capable of being moved to another site with suitable equipment. They are generally skid or frame-mounted with supply line capable of being disconnected.

**Hydraulic power pack**

This means any machine which compresses liquids to a pressure higher than the inlet pressure. A hydraulic power supply comprises the bare compressor itself, the prime mover and any component or device supplied, which is necessary for safe operation of the hydraulic power supply.

**Joint cutter**

This means a mobile machine intended for the production of joints in concrete, asphalt and similar road surfaces. The cutting tool is a rotating high speed disc. The forward motion of the joint cutter can be:

- manual,
- manual with mechanical assistance,
- power-driven.

**Landfill compactor, loader type with bucket**

This means a self-propelled wheeled compaction machine having a front-mounted loader linkage with a bucket or a dozer blade, having steel wheels (drums) primarily designed to compact, move, grade, and load soil, landfill or sanitary (refuse) materials.

**Lawnmower**

This means a walk-behind or ride-on grass cutting machine or a machine with grass-cutting attachment(s) where the cutting device operates in a plane approximately parallel to the ground and which uses the ground to determine the height of cut by means of wheels, air cushion or skids, etc., and which utilises an engine or an electric motor for a power source. The cutting devices are:

- either rigid cutting elements,
- or non-metallic filament line(s) or freely pivoting non-metallic cutter(s) with a kinetic energy of more than 10 J each; the kinetic energy is determined using EN 786:1997, Annex B.

This also means a walk-behind or ride-on grass cutting machine or a machine with grass-cutting attachment(s) where the cutting device is rotating about a horizontal axis to provide a shearing action with a stationary cutter bar or knife (cylinder mower).

**Lawn trimmer/lawn edge trimmer**

This means an electrically-powered walk-behind or hand-held grass cutting machine with cutting element(s) of non-metallic filament line(s) or freely pivoting non-metallic cutters with a kinetic energy of not more than



10 J each, intended to cut grass or similar soft vegetation. The cutting element(s) operate(s) in a plane approximately parallel (lawn trimmer) or perpendicular (lawn edge trimmer) to the ground. The kinetic energy is determined using EN 786:1997, Annex B.

#### **Leaf-blower**

This means a powered machine appropriate to clear lawns, paths, ways, streets, etc. of leaves and other material by means of a high velocity air flow. It may be portable (hand-held) or not portable but mobile.

#### **Leaf-collector**

This means a powered machine suitable for collecting leaves and other debris using a suction device consisting of an engine which produces a vacuum inside the machine and a suction nozzle and a container for the collected material. It may be portable (hand-held) or not portable but mobile.

#### **Lift truck, counterbalanced**

This means a wheeled, internal combustion-engine driven lift truck with counterweight and lifting equipment (mast, telescopic arm or articulated arm). These are:

- rough terrain trucks,
- wheeled counterbalanced trucks intended primarily for operation on unimproved natural terrain and on disturbed terrain of, for example, construction sites,
- counterbalanced lift trucks with a rated capacity of more than 10 t excluded are those counterbalanced lift trucks that are specifically constructed for container handling.

#### **Loader**

This means a self-propelled wheeled or crawler machine having an integral front-mounted bucket-supporting structure and linkage, which loads or excavates through forward motion of the machine, and lifts, transports and discharges material.

#### **Mobile crane**

This means a self-powered jib crane capable of travelling, loaded or unloaded, without the need for fixed runways and relying on gravity for stability. It operates on tyres, crawlers or with other mobile arrangements. In fixed positions it may be supported by outriggers or other accessories increasing its stability. The superstructure of a mobile crane may be of the type of full-circle slewing, of limited slewing or non-slewing. It is normally equipped with one or more hoists and/or hydraulic cylinders for lifting and lowering the jib and the load. Mobile cranes are equipped either with telescopic jibs, with articulated jibs, with lattice jibs — or a combination of these — of such a design that may readily be lowered. The loads suspended from the jib may be handled by hook block assemblies or other load-lifting attachments for special services.

#### **Motor hoe**

This means a self-propelled machine designed to be pedestrian-controlled:

- with or without support wheel(s), in such a way that its working elements act as hoeing tools to ensure propulsion (motor hoe),
- and propelled by one or various wheel(s) directly actuated from the engine and equipped with hoeing tools (motor hoe with drive wheel(s)).

#### **Paver-finisher**

This means a mobile road construction machine used for the purpose of applying layers of construction material, such as bituminous mix, concrete and gravel on surfaces.

**Pipelayer**

This means a self-propelled crawler or wheeled machine specifically designed to handle and lay pipes and carry pipeline equipment. The machine, the design of which is based on a tractor, has especially designed components such as undercarriage, main frame, counterweight, boom and load-hoist mechanism, and vertically pivoting side boom.

**Piste caterpillar**

This means a self-propelled crawler machine used to exert a push or pull force on snow and ice through mounted equipment.

**Power generator**

This means any device comprising a motor unit driving a rotary generator producing continuous electrical power.

**Power sweeper**

This means a sweeping collection machine having equipment to sweep debris into the path of a suction inlet that would then pneumatically by way of a high velocity airstream or with a mechanical pick-up system convey the debris to a collection hopper. The sweeping and collecting devices may either be mounted to a proprietary vehicular truck chassis or incorporated into its own chassis embodiment. The equipment can be fixed or demountable as in the case of an exchangeable bodywork system.

**Refuse collection vehicle**

This means a vehicle normally used for the collection and transportation of domestic and bulky waste based on loading via containers or by hand. The vehicle may be equipped with a compaction mechanism. A refuse collection vehicle comprises a chassis with cab onto which the bodywork is mounted. The bodywork consists of two main parts, namely the body and the tailgate. It may be equipped with a container lifting device.

**Road-milling machine**

This means a mobile machine used for removing material from paved surfaces using a power-driven cylindrical body, on which surface the milling tools are fitted; the cutter drums rotate during the cutting operation.

**Scarifier**

This means a powered machine which uses the ground to determine the depth of cut and which is equipped with an assembly appropriate to slit or scratch the surface of the lawn in gardens, parks and other similar areas.

**Shredder/chipper**

This means a powered machine designed for use in a stationary position having one or more cutting device for the purpose of reducing bulk organic materials to smaller pieces. Generally it consists of a feed intake opening through which material (which may be held by an appliance or not) is inserted, an aggregate which cuts up the material by whatever method (cutting, chopping, crushing or other methods) and a discharge chute through which the cut material is discharged. A collecting device may be attached.

**Snow-removing machine with rotating tools**

This means a machine with which snow can be removed from traffic areas by rotating means, accelerated and ejected by blower means.

**Suction vehicle**

This means a vehicle equipped with a device to collect water, mud, sludge or similar material from sewers or similar installations by means of a vacuum. The device may be either mounted on a proprietary vehicular truck chassis or incorporated into its own chassis embodiment. The equipment may be fixed or demountable as in the case of an exchangeable bodywork system.

**Tower crane**

This means a slewing jib crane with the jib located at the top of a tower which stays approximately vertical in the working position. This power-driven appliance is equipped with means for raising and lowering suspended loads and for the movement of such loads by changing the load-lifting radius, slewing, travelling of the complete appliance. Certain appliances perform several but not necessarily all of these movements. The appliance can be installed in a fixed position or equipped with means for displacing or climbing.

**Trencher**

This means a self-propelled, ride-on or pedestrian-controlled, crawler or wheeled machine, having a front- or rear-mounted excavator linkage and attachment, primarily designed to produce trench in a continuous operation, through a motion of the machine.

**Truck mixer**

This means a vehicle which is equipped with a drum to transport readymixed concrete from the concrete mixing plant to the job site; the drum may rotate when the vehicle is driving or stands still. The drum is emptied on the job side by rotating the drum. The drum is driven either by the driving engine of the vehicle or by a supplementary engine.

**Water-pump unit**

This means a machine consisting of a water-pump itself and the driving system. Water-pump means a machine for the raising of water from a lower to a higher energy level.

**Welding generator**

This means any rotary device which produces a welding current.

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## ANNEX II

## MINIMUM CRITERIA TO BE TAKEN INTO ACCOUNT BY MEMBER STATES FOR THE NOTIFICATION OF BODIES

1. The body, its director and its staff responsible for carrying out verification operations may be neither the designer, builder, supplier or installer of the equipment nor the authorised representative of any of those parties. They may become involved neither directly nor as authorised representatives in the design, construction, marketing or maintenance of such equipment nor represent the parties engaged in these activities. This does not preclude the possibility of exchange of technical information between the manufacturer and the body.
  2. The body and its staff must carry out the assessments and verifications with the highest degree of professional integrity and technical competence and must be free from all pressures and inducements, particularly financial, which might influence their judgment or the results of their work, especially from persons or groups of persons with an interest in the results of verification.
  3. The body must have at its disposal the necessary staff and possess the necessary facilities to enable it to perform properly the technical and administrative tasks connected with inspection and surveillance operations; it must also have access to the equipment required for any special verification.
  4. The staff responsible for inspection must have:
    - sound technical and professional training,
    - satisfactory knowledge of the requirements for the tests they carry out and adequate practical experience of such tests,
    - the ability to draw up the certificates, records and reports required to authenticate the performance of the tests.
  5. The impartiality of inspection staff must be guaranteed. Their remuneration must not depend on the number of tests carried out or the results of such tests.
  6. The body must take out liability insurance unless its liability is assumed by the State in accordance with national law, or the Member State itself is directly responsible for the tests.
  7. The staff of the body must observe professional secrecy with regard to all information gained in carrying out its tests (except *vis-à-vis* the competent administrative authorities of the State in which its activities are carried out) under this Directive or any provisions of national law giving effect to it.
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ANNEX III

MODEL TECHNICAL DOCUMENT FOR A TYPE OF EQUIPMENT USED OUTDOORS

This model shall serve as a guide and may be changed or supplemented where necessary to identify the equipment by its technical or acoustical data (for instance, for lawnmowers, the cutting width and for concrete-breakers and picks, the mass must be indicated).

1. General

- 1.1. Name and address of manufacturer/authorised representative: .....
- 1.2. Make (name of undertaking): .....
- 1.3. Trade name: .....

2. Machine

- 2.1. Type: .....
- Series: .....
- Number: .....
- 2.2. Dimension chart (descriptive leaflet): .....

3. Technical data

- 3.1. Drive motor: .....
- Make: .....
- Type: .....
- Number: .....
- Net installed power: ..... kW at ..... r.p.m
- Other motor(s) (if appropriate): .....
- Make: .....
- Type: .....
- Number: .....
- Net installed power: ..... kW at ..... r.p.m
- 3.2. Hydraulic equipment
- 3.2.1. Travelling equipment (...)
- Producer: .....
- Type: .....
- Series: .....
- Number: .....
- Pressure in service: .....

- 3.2.2. Hydraulic system for the working equipment: .....
  - Producer: .....
  - Type: .....
  - Series: .....
  - Number: .....
  - Pressure in service: .....
- 3.2.3. Cooling machinery for the hydraulic equipment: .....
- 3.3. Other equipment (e.g., compressors, generator): .....
  
- 4. **Attach the descriptive leaflet, if any.**

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## ANNEX V

## DECLARATION OF CONFORMITY

The EC declaration of conformity must contain the following particulars:

- name and address of the manufacturer or of his authorised representative established within the Community,
  - description of the equipment,
  - conformity assessment procedure followed,
  - where appropriate, name and address of the notified body which carried out the EC type-examination referred to in Annex IX and random-checking referred to in Annex X,
  - where appropriate, name and address of the notified body which is involved in the unit verification procedure referred to in Annex XIII,
  - where appropriate, name and address of the notified body monitoring the manufacturer's quality assurance system (Annexes XI, XII, XIII),
  - where appropriate, a reference to the EC type-examination certificate or the EC certificate of conformity,
  - a reference to this Directive,
  - the declaration that the equipment conforms to the requirements of this Directive,
  - where appropriate, the references of the other Community Directives applied,
  - particulars of the signatory authorised to sign the legally-binding declaration for the manufacturer or his authorised representative established within the Community.
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## ANNEX VI

## METHOD OF MEASUREMENT OF AIRBORNE NOISE EMITTED BY EQUIPMENT USED OUTDOORS

## Scope

This Annex lays down the methods of measurement of airborne noise that shall be used for the determination of the sound power levels of equipment covered by this Directive with a view to the conformity assessment procedures of this Directive.

Part A of this Annex for each type of equipment defined by Article 2(1) lays down:

- basic noise emission standards,
- general supplements to these basic noise emission standards,

for measuring the sound pressure level on a measurement surface enveloping the source and for calculating the sound power level produced by the source.

Part B of this Annex for each type of equipment as defined in Article 2(1) lays down:

- a recommended basic noise emission standard including:
  - a reference to the basic noise emission standard chosen from Part A,
  - the test area,
  - the value of the constant  $K_2$ ,
  - the shape of the measurement surface,
  - the number and position of microphones to be used,
- operating conditions including:
  - the reference to a standard, if any,
  - requirements relating to mounting of the equipment,
  - a method to calculate the resulting sound power levels in the event that several tests with different operating conditions are to be used,
- further information.

When testing specific types of equipment, the manufacturer or the notified body may in general choose one of the basic noise emission standards of Part A and apply the operating conditions of Part B for its specific type of equipment. In the event of a dispute, however, the recommended basic noise emission standard laid down in Part B has to be used together with the operating conditions of Part B.

## PART A

## BASIC NOISE EMISSION STANDARD

For the determination of the sound power level of equipment used outdoors as defined by Article 2(1), the basic noise emission standards

EN ISO 3744: 1995

EN ISO 3746: 1995

may generally be used subject to the following general supplements:

**1. Measurement uncertainty**

Measurement uncertainties are not taken into account in the framework of conformity assessment procedures in the design phase.

## 2. Operation of source during test

### 2.1. Fan speed

If the engine of the equipment or its hydraulic system is fitted with (a) fan(s), it (they) must operate during the test. The fan speed is — in accordance with one of the following conditions — stated and set by the manufacturer of the equipment and must appear in the test report, this speed being used in further measurements.

#### (a) Fan drive directly connected to the engine

If the fan drive is directly connected to the engine and/or hydraulic equipment (for example, by belt drive) it must operate during the test.

#### (b) Fan drive with several distinct speeds

If the fan can work at several distinct speeds, the test shall — at the request of the manufacturer — be carried out:

- either at its maximum working speed,
- or in a first test with the fan set at zero speed or in a second test the fan set at maximum speed. The resulting sound pressure level  $L_{pA}$  shall then be calculated by combining both test results using the following equation:

$$L_{pA} = 10 \lg \{0,3 \times 10^{0,1 L_{pA,0 \%}} + 0,7 \times 10^{0,1 L_{pA, 100 \%}}\}$$

where:

$L_{pA,0 \%}$  is the sound pressure level determined with the fan set at zero speed,

$L_{pA,100 \%}$  is the sound pressure level determined with the fan set at maximum speed.

#### (c) Fan drive with continuous variable speed

If the fan can work at continuous variable speed, the test shall — at the request of the manufacturer — be carried out either according to 2.1(b) or with the fan speed set by the manufacturer at no less than 70 % of the maximum speed.

### 2.2. Test of powered equipment free of load

For these measurements, the engine and hydraulic system of the equipment must be warmed up in accordance with the manufacturer's instructions, and safety requirements must be observed.

The test is carried out with the equipment in a stationary position without operating the working equipment or travelling mechanism. For the purpose of the test, the engine will idle at no less than the rated speed corresponding to the net power.<sup>(1)</sup>

If the machine is powered by a generator or from the mains, the frequency of the supply current, specified for the motor by the manufacturer, shall be stable at  $\pm 1$  Hz if the machine is equipped with an induction motor, and the supply voltage at  $\pm 1$  % of the rated voltage if the machine is equipped with a commutator motor. The supply voltage is measured at the plug of a non-detachable cable or cord, or at the inlet of the machine if a detachable cable is provided. The waveform of the current supplied from the generator shall be similar to that obtained from the mains.

If the machine is powered by battery, the battery shall be fully charged.

The speed used and the corresponding net power are stated by the manufacturer of the equipment and must appear in the test report.

<sup>(1)</sup> Net power means the power in 'EEC kW' obtained on the test bench at the end of the crankshaft, or its equivalent, measured in accordance with the EC method of measuring the power of internal combustion engines for road vehicles, except that the power of the engine cooling fan is excluded.

If the equipment is fitted with several engines, they must work simultaneously during the tests. If this is not possible, each possible combination of engine(s) is to be tested.

### 2.3. *Test of powered equipment under load*

For these measurements, the engine (driving device) and hydraulic system of the equipment must be warmed up in accordance with the manufacturer's instructions and safety requirements must be observed. No signalling device such as a warning horn or reversing alarm is to be operated during the test.

The speed or velocity of the equipment during the test must be recorded and appear in the test report.

If the equipment is fitted with several engines and/or aggregates they must work simultaneously during the tests. If this is not possible, each possible combination of engine(s) and/or aggregates is to be tested.

For each type of equipment that is to be tested under load, specific operating conditions must be laid down which shall, in principle, produce effects and stresses similar to those encountered under actual working conditions.

### 2.4. *Test of hand-operated equipment*

Conventional operating conditions for each type of hand-operated equipment shall be laid down that produce effects and stresses similar to those undergone under actual working conditions.

## 3. Calculation of surface sound pressure level

The surface sound pressure level shall be determined at least three times. If at least two of the determined values do not differ by more than 1 dB(A), further measurements will not be necessary; otherwise the measurements shall be continued until two values differing by no more than 1 dB(A) are obtained. The A-weighted surface sound pressure level to be used calculating the sound power level is the arithmetic mean of the two highest values that do not differ by more than 1 dB(A).

## 4. Information to be reported

The A-weighted sound power level of the source under test shall be reported to the nearest whole number (less than 0,5, use lower number; greater than or equal to 0,5, use higher number).

The report shall contain the technical data necessary to identify the source under test as well as the noise test code and the acoustical data.

## 5. Additional microphone positions on the hemispherical measurement surface (EN ISO 3744:1995)

In addition to clauses 7.2.1 and 7.2.2 of EN ISO 3744:1995 a set of 12 microphones on the hemispherical measurement surface may be used. The coordinates of the 12 microphone positions (1-12) are listed in the following table; their positions are shown in the following figure (alternative A).

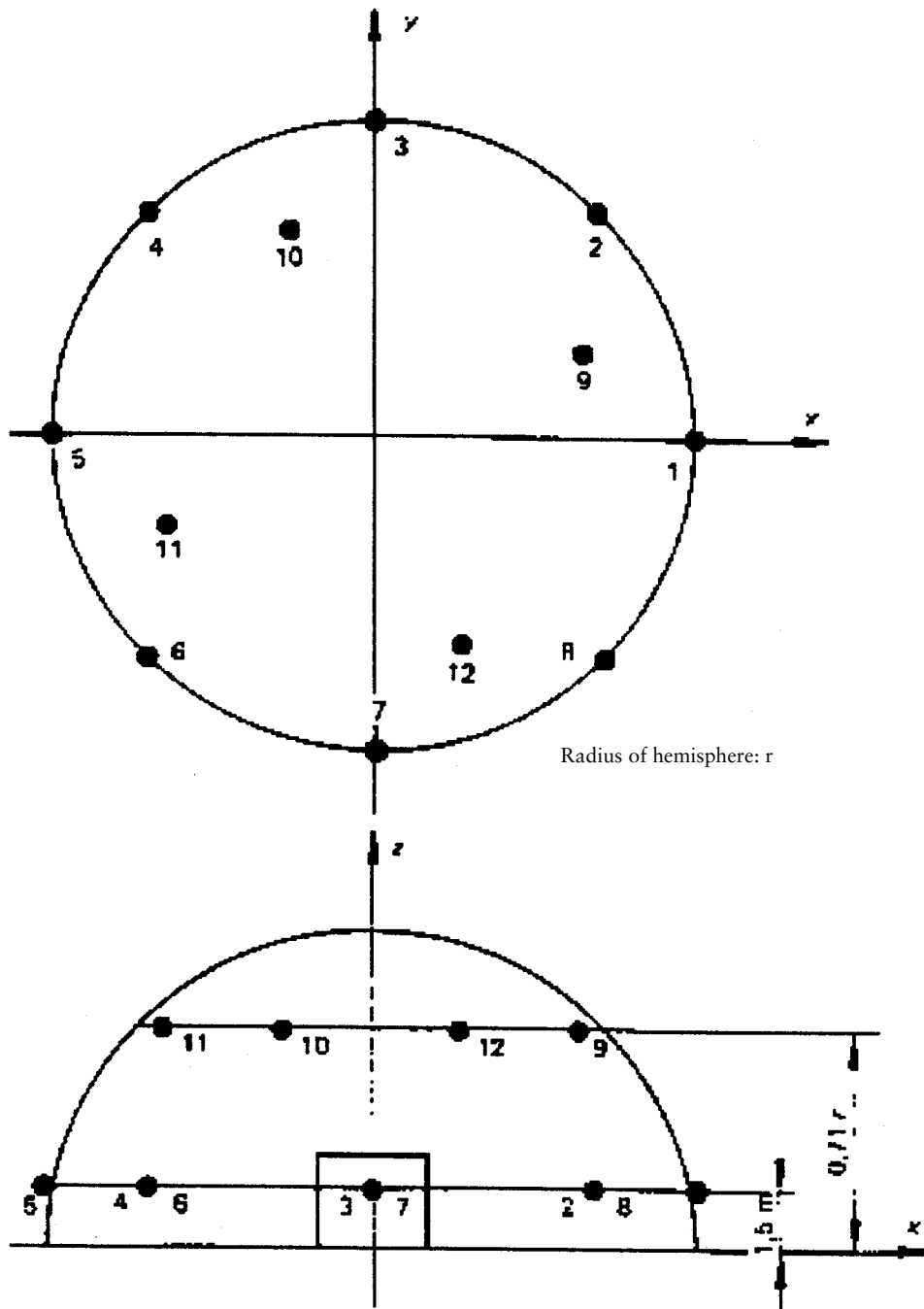
The number (12) of microphones may be reduced to six (alternative B: microphone positions 2, 4, 6, 8, 10, 12) following the requirements of clause 7.4.2 of EN ISO 3744:1995.

TABLE  
Coordinates of the 12 microphone positions

Number of microphone	x/r	y/r	z
1	1	0	1,5 m
2	0,7	0,7	1,5 m
3	0	1	1,5 m
4	- 0,7	0,7	1,5 m
5	- 1	0	1,5 m
6	- 0,7	- 0,7	1,5 m
7	0	- 1	1,5 m
8	0,7	- 0,7	1,5 m
9	0,65	0,27	0,71 r
10	- 0,27	0,65	0,71 r
11	- 0,65	- 0,27	0,71 r
12	0,27	- 0,65	0,71 r

Figure:

Additional microphone array on the hemisphere (12 microphone positions)



## PART B

## NOISE TEST CODES FOR SPECIFIC EQUIPMENT

## 1. EQUIPMENT THAT IS TESTED FREE OF LOAD

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*  $K_2 = 0$ *Measurement surface/number of microphone positions/measuring distance*

- (i) if the largest dimension of the reference parallelepiped does not exceed 8 m:  
hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/ $r=4, 10, 16$  m
- (ii) if the largest dimension of the reference parallelepiped exceeds 8 m:  
parallelepiped/ $\geq 9$  microphone positions/ $d = 1$  m.

**Operating conditions during test***Test free of load*

The noise tests shall be carried out according to Part A clause 2.2.

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

The period of observation shall be at least 15 sec.

## 2. BRUSH CUTTERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 10884: 1995

*Environmental correction  $K_2$*  $K_2 = 0$ *Measurement surface/number of microphone positions/measuring distance*

ISO 10884: 1995

**Operating conditions during test***Test under load*

ISO 10884: 1995, clause 5.3

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

ISO 10884:1995

3. BUILDERS' HOISTS FOR THE TRANSPORT OF GOODS

See No 1

The geometrical centre of the engine shall be positioned above the centre of the hemisphere; the lift shall move without load and leave the hemisphere — if necessary — in direction of point 1.

4. BUILDING SITE BAND SAW MACHINES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

parallelepiped/ $\geq 9$  microphone positions/d = 1 m

**Operating conditions during test**

*Test under load*

corresponding to ISO 7960:1995, Annex A (clause A2b only)

*Period of observation*

corresponding to ISO 7960:1995, Annex A

5. BUILDING SITE CIRCULAR SAW BENCHES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

ISO 7960: 1995, Annex A, measurement distance d = 1 m

**Operating conditions during test**

*Test under load*

ISO 7960:1995, Annex A (clause A2b only)

*Period of observation*

ISO 7960:1995, Annex A

## 6. CHAINSAWS, PORTABLE

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 9207:1995

*Environmental correction  $K_2$*  $K_2 = 0$ *Measurement surface/number of microphone positions/measuring distance*

ISO 9207:1995

**Operating conditions during test***Test under load/Test free of load*

(a) combustion-engine driven: ISO 9207:1995

(b) electric-motor operated: corresponding to full-load operating condition of ISO 9207:1995 clause 6.3

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

(a) combustion-engine driven:

ISO 9207:1995. The resulting sound power level  $L_{WA}$  is calculated by:

$$L_{WA} = 10 \lg \frac{1}{3} [10^{0,1L_{W1}} + 10^{0,1L_{W2}} + 10^{0,1L_{W3}}]$$

where  $L_{W1}$ ,  $L_{W2}$ ,  $L_{W3}$  are the average sound power levels of the three different modes of operation.

(b) electric-motor operated:

only the sound power level corresponding to full-load operating condition is considered.

## 7. COMBINED HIGH PRESSURE FLUSHERS AND SUCTION VEHICLES

If it is possible to operate both items of equipment simultaneously, this shall be done according to numbers 26 and 49. If not, they shall be measured separately and the higher value are to be stated.

## 8. COMPACTION MACHINES

(i) *SELF-PROPELLED NON-VIBRATING ROLLERS*

See No 1

(ii) *SELF-PROPELLED VIBRATING ROLLERS***Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*  $K_2 = 0$



*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, en 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Mounting of equipment*

The vibrating roller shall be installed on one or more appropriate air-cushion(s). These air-cushions shall be made of a supple material (elastomer or similar) and shall be inflated to a pressure ensuring that the machine is elevated by at least 5 cm; resonance effects shall be avoided. The dimension of the cushion(s) shall be such that the stability of the machine under test is ensured.

*Test under load;*

The machine shall be tested in a stationary position with the engine at rated speed (stated by the manufacturer) and the moving mechanism(s) disconnected. The compacting mechanism shall be operated using that combination of vibration frequency and momentum that creates the maximum compaction power.

*Period of observation*

The period of observation shall be at least 15 sec.

(iii) **VIBRATORY PLATES, EXPLOSIVE RAMMERS AND WALK — BEHIND ROLLERS**

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

EN 500-4 Annex D

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Test under load:*

EN 500-4 Annex D

*Period of observation*

EN 500-4 Annex D

9. **COMPRESSORS**

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Mounting of equipment*

The compressors shall be installed on the reflecting plane; ski-mounted compressors shall be placed on a support 0.40 m high, unless otherwise required by the manufacturer's conditions of installation.

*Test under load:*

prEN 12076 clause 7, using full-load operation

*Period of observation*

The period of observation shall be at least 15 sec.

10. CONCRETE MIXERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Test under load:*

The mixing device (drum) shall be filled to its rated capacity with sand of granulation 0-3 mm, the humidity shall be 4-10 %.

The mixing device shall be operated at least at the rated speed

*Period of observation*

The period of observation shall be at least 15 sec.

11. CONCRETE-BREAKERS AND PICKS, HAND-HELD

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Mounting of equipment*

All appliance shall be tested in the vertical position.

If the test appliance has got an air exhaust, its axis shall be equidistant from two microphone positions. The noise of the power supply shall not influence the measurement of the noise emission from the tested appliance.

**Support of the appliance**

The appliance shall be coupled during the test run to a tool embedded in a cubeshaped concrete block placed in a concrete pit, sunk into the ground. An intermediate steel piece may be inserted during tests between the appliance and the support tool. This intermediate piece shall form a stable structure between the appliance and the support tool. Figure 11.2 incorporates these requirements.

**Block characteristics**

The block shall be in the shape of a cube  $0.60\text{ m} \pm 2\text{ mm}$  long at the edge and as regular as possible; it shall be made of reinforced concrete and thoroughly vibrated in layers of up to 0.20 m to avoid excessive sedimentation.

**Quality of the concrete**

The quality of the concrete shall correspond to C 50/60 of ENV 206.

The cube shall be reinforced by 8-mm-diameter steel rods without ties, each rod being independent of the other; the design concept is illustrated in Figure 11.1.

**Supporting tool**

The tool shall be sealed into the block and shall consist of a rammer of no less than 178 mm or no more than 220 mm diameter and a tool chuck component identical to that normally used with the appliance being tested and complying with ISO recommendations R 1180 and R 1571, but sufficiently long to enable the practical test to be carried out.

Suitable treatment shall be carried out to integrate the two components. The tool shall be fixed in the block so that the bottom of the rammer is 0.30 m from the upper face of the block (see Figure 11.1).

The block shall remain mechanically sound, particularly at the point where the supporting tool and the concrete meet. Before and after each test, it shall be established that the tool sealed in the concrete block is integrated with it.

**Positioning of the cube**

The cube shall be set in a pit cemented throughout, covered by a screening slab of at least  $100\text{ kg/m}^2$ , as indicated in Figure 11.1, so that the upper surface of the screening slab is flush with the ground. To avoid any parasitic noise, the block shall be insulated against the bottom and sides of the pit by elastic blocks, the cut-off frequency of which shall not be more than half the striking rate of the appliance tested, expressed as strokes per second.

The opening in the screening slab through which the tool chuck component passes shall be as small as possible and sealed by a flexible sound-proof joint.

*Test under load:*

The appliance tested shall be connected to the supporting tool.

The test appliance shall be operated in stable conditions having the same acoustical stability as in normal service.

The test appliance shall be operated at the maximum power specified by the manufacturer's recommendations in the instructions supplied to the purchaser.

*Period of observation*

The period of observation shall be at least 15 sec.

Figure 11.1:

Test block

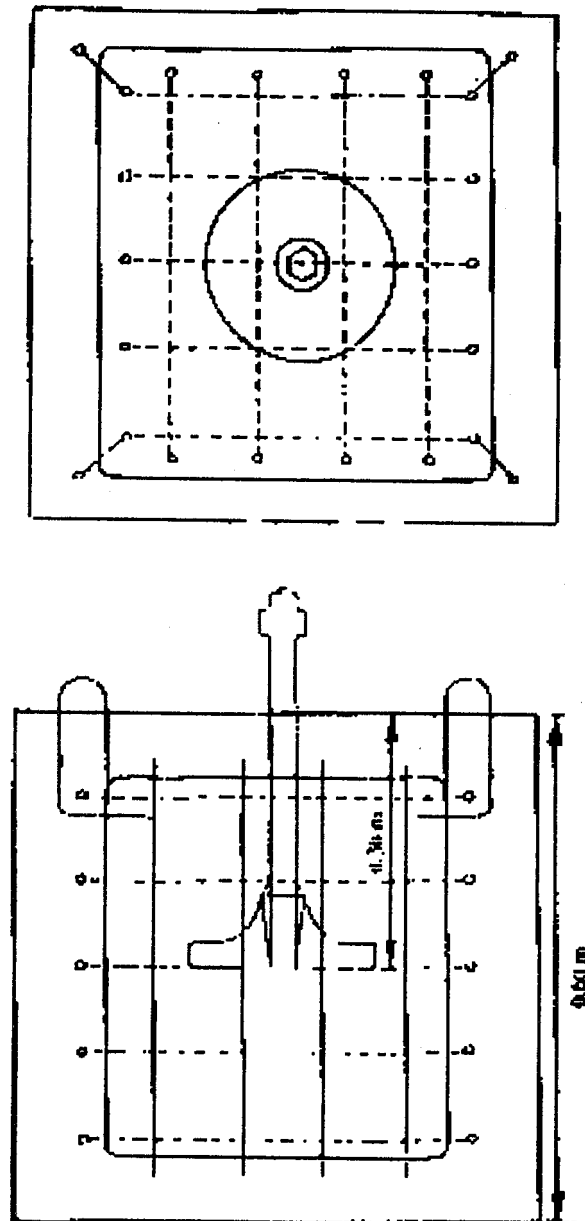
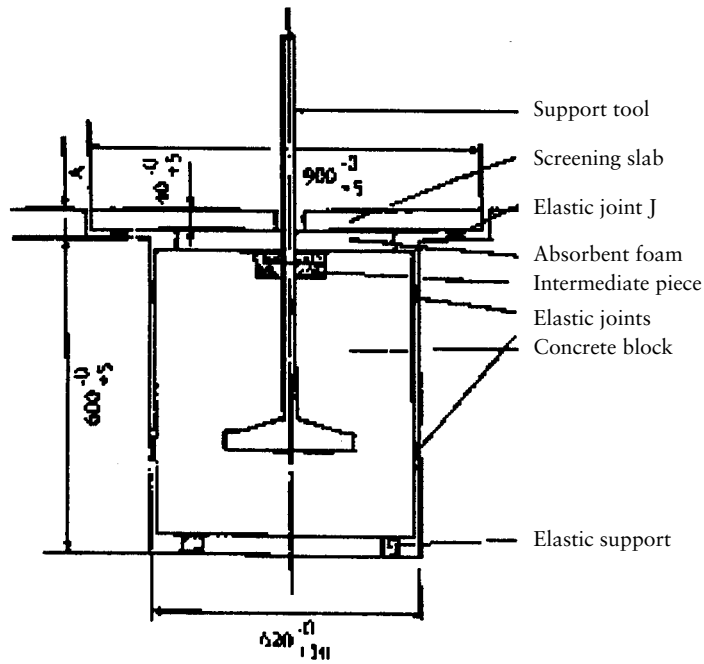


Figure 11.2:

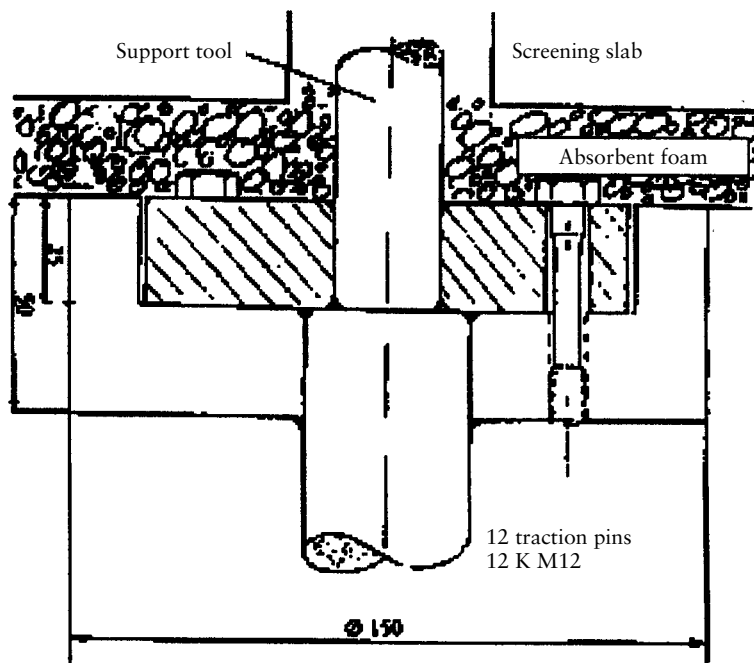
Testing device



The value of A should be such that the screening slab resting on the elastic joint J is flush with the ground

Figure 11.3:

Schematic diagram of intermediate piece



## 12. CONSTRUCTION WINCHES

See No 1

The geometrical centre of the engine shall be positioned above the centre of the hemisphere; the winch shall be connected but no load shall be applied.

## 13. CONVEYING AND SPRAYING MACHINES FOR CONCRETE AND MORTAR

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

If the machine is equipped with a boom, this is set upright and the pipe shall be lead back to the filler funnel. If this is not the case, the machine shall be equipped with a horizontal pipe of at least 30 m leading back to the filler funnel.

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/ $r = 4, 10, 16$  m

**Operating conditions during test***Test under load:*

- (i) for machines conveying and spraying concrete:

The conveying system and the pipe shall be filled with a medium similar to concrete, the cement being replaced by an admixture for example finest ash. The machine shall operate at its maximum output, the period of one working cycle being not more than 5 sec (if this period is exceeded, water shall be added to the 'concrete' in order to reach this value).

- (ii) for machines conveying and spraying mortar:

The conveying system and the pipe shall be filled with a medium similar to finishing mortar, the cement being replaced by an admixture, for example methyl cellulose. The machine shall operate at its maximum output, the period of one working cycle being not more than 5 sec (if this period is exceeded water shall be added to the 'mortar' in order to reach this value).

*Period of observation*

The period of observation shall be at least 15 sec.

## 14. CONVEYOR BELTS

See No 1

The geometrical centre of the engine shall be positioned above the centre of the hemisphere; the belt shall move without load and leave the hemisphere — if necessary — in direction of point 1.

## 15. COOLING EQUIPMENT ON TRUCKS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Test under load:*

The cooling equipment shall be tested with the truck in a stationary position. The engine driving the cooling equipment shall operate at the speed that causes the maximum speed of the cooling compressor and fan stated by the manufacturer in the instructions supplied to the purchaser.

*Period of observation*

The period of observation shall at least be 15 sec.

16. DOZERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 6395:1988

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

ISO 6395:1988

**Operating conditions during test**

*Mounting of equipment*

Crawler dozers shall be tested on the test site corresponding to 6.3.3 of ISO 6395:1988

*Test under load:*

ISO 6395:1988 Annex B

*Period(s) of observation and consideration of different operating conditions, if any*

ISO 6395:1988 Annex B

17. DRILL RIGS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Test under load:*

EN 791:1995

*Period of observation*

The period of observation shall at least be 15 sec.

18. DUMPERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 6395:1988

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

ISO 6395:1988

**Operating conditions during test**

*Test under load:*

Equivalent ISO 6395:1988 Annex C with the following amendment:

C.4.3, second paragraph is replaced by:

‘The engine shall be operated at its maximum governed speed (high idle). The transmission control shall be set to neutral. Bring the bucket to the tipped position (emptying) up to about 75 % of its maximum movement and return it to its travelling position three times. This sequence of events is considered to be a single cycle for the stationary hydraulic mode.

If no engine power is used to tip the bucket, the engine shall be operated at idling speed with the transmission in neutral. The measurement shall be performed without tipping the bucket; the period of observation shall be 15 sec.’

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

ISO 6395:1988 Annex C

19. EQUIPMENT FOR LOADING AND UNLOADING TANKS OR SILOS ON TRUCKS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$



*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Test under load*

The equipment shall be tested with the truck in a stationary position. The engine driving the equipment shall operate at the speed that causes the maximum output of the equipment stated by the manufacturer in the instructions supplied to the purchaser.

*Period of observation*

The period of observation shall at least be 15 sec.

20. EXCAVATORS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 6395:1988

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

ISO 6395:1988

**Operating conditions during test**

*Test under load*

ISO 6395:1988 Annex A

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

ISO 6395:1988 Annex A

21. EXCAVATOR-LOADERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 6395:1988

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

ISO 6395:1988

**Operating conditions during test***Test under load*

ISO 6395:1988 Annex D

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

ISO 6395:1988 Annex D

## 22. GLASS-RECYCLING CONTAINERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt.

*Environmental correction  $K_2$*  $K_2 = 0$ *Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Mounting of equipment*

The glass-recycling container shall be installed in such a way that the opening through which the bottles are thrown faces in the direction of microphone position 10.

*Test of hand-operated equipment*

The noise is measured with bottles being thrown in through one of the openings:

- (a) in the empty container,
- (b) in the container filled with bottles up to a height of about 25 cm.

For each of these two conditions the following measurements shall be carried out:

If it is possible to measure the sound pressure level at the six microphone positions simultaneously, 20 bottles (content  $\geq 0,71$ ) are thrown in the container. The highest value of the 'A'-weighted sound pressure level  $L_{pAFmax,i}$  (measured with time-constant 'FAST') is determined for each insertion.

If no simultaneous measurement is possible, the test shall be carried out until 20 values of  $L_{pAFmax,i}$  have been determined at each microphone position.

*Period of observation*

The surface sound pressure level  $L_{pAm}$  is determined by averaging the values of all determined sound pressure levels  $L_{pAFmax,i}$

## 23. GRADERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 6395:1988

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

ISO 6395:1988

**Operating conditions during test**

*Test under load*

corresponding to ISO 6395:1988 Annex B

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

ISO 6395:1988 Annex B

24. GRASS-TRIMMERS/GRASS EDGE TRIMMERS

See No 2

The trimmer shall be positioned by a suitable device in such a way that its cutting device is above the centre of the hemisphere, the centre of the cutting device shall be held at a distance of about 50 mm above the surface.

25. HEDGE-TRIMMERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 11094:1991

In case of dispute, measurements shall be carried out in the open air on the artificial surface (4.1.2 of ISO 11094:1991)

*Environmental correction  $K_2$*

Measurement in the open air:

$K_2 = 0$

Measurements indoors

The value of the constant  $K_2$ , determined in accordance with Annex A of EN ISO 3744:1995, shall be 0.5 to 2.0 dB, in which case  $K_2$  shall be disregarded.

*Measurement surface/number of microphone positions/measuring distance*

ISO 11094:1991

**Operating conditions during test**

*Mounting of equipment*

The hedge-trimmer shall be held in the natural manner for normal use either by a person or by a suitable device in such a way that its cutting device is above the centre of the hemisphere.

*Test under load*

The hedge-clipper shall be operated at its nominal speed with the cutting device working.

*Period of observation*

The period of observation shall at least be 15 sec.

## 26. HIGH-PRESSURE FLUSHERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Test under load*

The high-pressure flusher shall be tested in a stationary position. The engine and auxiliary units operate at the speed provided by the manufacturer for the operation of the working equipment; the high-pressure pump(s) is (are) operating at its (their) maximum speed and operating pressure provided by the manufacturer. Using an adapted nozzle the pressure reduction valve shall be just on the point of reacting. The flow noise of the nozzle shall not have any influence on the results of the measurements.

*Period of observation*

The period of observation shall at least be 30 sec.

## 27. HIGH-PRESSURE WATER JET MACHINES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

prEN 12639:1996

**Operating conditions during test***Mounting of equipment*

The high-pressure water jet machine shall be installed on the reflecting plane; skid — mounted machines shall be placed on a support 0.40 m high, unless otherwise required by the manufacturer's conditions of installation.

*Test under load*

The high pressure cleaning machine shall be brought to its steady-state within the range specified by the manufacturer. During testing the nozzle shall be coupled to the high-pressure cleaning machine that causes the highest pressure if used according to the manufacturer's instructions.

*Period of observation*

The period of observation shall at least be 15 sec.

## 28. HYDRAULIC POWER PACKS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Mounting of equipment*

The hydraulic power pack shall be installed on the reflecting plane; skid-mounted hydraulic power packs shall be placed on a support 0.40 m high, unless otherwise required by the manufacturer's conditions of installation.

*Test under load*

During testing, no tools shall be coupled to the hydraulic power pack.

The hydraulic power pack shall be brought to its steady-state within the range specified by the manufacturer. It shall operate at its nominal speed and its nominal pressure. The nominal speed and pressure are those appearing in the instructions supplied to the purchaser.

*Period of observation*

The period of observation shall at least be 15 sec.

## 29. JOINT CUTTERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Test under load*

The joint cutter shall be equipped with the largest possible blade foreseen by the manufacturer in the instructions supplied to the purchaser. The engine shall operate at its maximum speed with the blade idling.

*Period of observation*

The period of observation shall be at least 150 sec.

## 30. LANDFILL COMPACTORS

See No 36 for loader type landfill compactors with bucket.

## 31. LAWNMOWERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 11094:1991

In case of dispute, measurements shall be carried out in the open air on the artificial surface (4.1.2 of ISO 11094:1991).

*Environmental correction  $K_2$* 

Measurement in the open air

$K_2 = 0$

Measurements indoors

The value of the constant  $K_2$ , in accordance with Annex A of EN ISO 3744:1995, shall be 0.5 to 2.0 dB, in which case  $K_2$ , determined shall be disregarded.

*Measurement surface/number of microphone positions/measuring distance*

ISO 11094:1991

**Operating conditions during test***Mounting of equipment*

If the wheels of the lawnmower could cause a compression of the artificial surface of more than 1 cm, the wheels shall be placed on supports so that they are level with the artificial surface before compression. If the cutting device cannot be separated from the driving wheels of the lawnmower, the mower shall be tested on supports with the cutting device operating at its maximum speed laid down by the manufacturer. The supports shall be made in such a way that they do not influence the measurement results.

*Test free of load*

ISO 11094:1991

*Period of observation*

ISO 11094:1991

## 32. LAWN-TRIMMERS/LAWN EDGE TRIMMERS

See No 31

The trimmer shall be positioned by a suitable device in such a way that its cutting device is above the centre of the hemisphere, the centre of the cutting device shall be held at a distance of about 50 mm above the surface.

## 33. LEAF-BLOWERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 11094:1991

In case of dispute, measurements shall be carried out in the open air on the artificial surface (4.1.2 of ISO 11094:1991).

*Environmental correction  $K_2$* 

Measurement in the open air

$K_2 = 0$

Measurements indoors

The value of the constant  $K_2$ , determined in accordance with Annex A of EN ISO 3744:1995, shall be 0.5 to 2.0 dB, in which case  $K_2$  shall be disregarded.

*Measurement surface/number of microphone positions/measuring distance*

ISO 11094:1991

**Operating conditions during test***Mounting of equipment*

The leaf-blower shall be positioned in the natural manner for normal use in such a way that the outlet of its blowing device is situated above the centre of the hemisphere; if the leaf blower is hand-held it shall be held either by a person or by a suitable device.

*Test under load*

The leaf-blower shall be operated at its nominal speed and the nominal air flow stated by the manufacturer.

*Period of observation*

The period of observation shall at least be 15 sec.

## 34. LEAF-COLLECTORS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 11094:1991

In case of dispute, measurements shall be carried out in the open air on the artificial surface (4.1.2 of ISO 11094:1991).

*Environmental correction  $K_2$* 

Measurement in the open air

$K_2 = 0$

Measurements indoors

The value of the constant  $K_2$ , determined in accordance with Annex A of EN ISO 3744:1995, shall be 0.5 to 2.0 dB, in which case  $K_2$  shall be disregarded.

*Measurement surface/number of microphone positions/measuring distance*

ISO 11094:1991

**Operating conditions during test***Mounting of equipment*

The leaf-collector shall be positioned in the natural manner for normal use in such a way that the inlet of the collecting device is situated above the centre of the hemisphere; if the leaf-collector is hand-held it shall be held either by a person or by a suitable device.

*Test under load*

The leaf-collector shall be operated at its nominal speed with the nominal air flow in the collecting device stated by the manufacturer.

*Period of observation*

The period of observation shall be at least 15 sec.

## 35. LIFT TRUCKS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

EN ISO 3744:1995

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: four microphone positions (2, 4, 6, 8)/r = 4, 10, 16 m

**Operating conditions during test**

prEN 12053:1977

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

prEN 12053:1997

## 36. LOADERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 6395:1988



*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

ISO 6395:1988

**Operating conditions during test**

*Mounting of equipment*

Crawler loaders shall be tested on the test site corresponding to 6.3.3 of ISO 6395:1988

*Test under load*

ISO 6395:1988 Annex C

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

ISO 6395:1988 Annex C

37. MOBILE CRANES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/ $r = 4, 10, 16$  m

**Operating conditions during test**

*Mounting of equipment*

The mobile crane is installed such that the projection of the geometric middle point of the engine which drives the crane operation coincides with the middle point of the hemisphere. The driving direction of the under carriage is in the direction of point 6 and the boom of the upper carriage is in the direction of point 1. If the driving direction of the under carriage is the same as the working direction of the boom, the mobile crane is aligned to point 1.

If the mobile crane is equipped with only one engine for both driving and crane operation, the mobile crane is installed such that the middle point of the hemisphere is in the middle between the engine and the winch of the crane.

*Test under load*

The mobile crane is measured under the following four operating conditions (a - d):

(a) Hoisting and lowering

The rope speed is adjusted to the maximum which is allowed to be used at the maximum rope force.

The mobile crane is loaded with a load which creates 50 % of the maximum rope force.

The test starts with the maximum acceleration of the load and consists of the hoisting of the load and the immediately following lowering to the starting position.

(b) Slewing

With the boom adjusted to an angle of 40-50° with the measuring site and without load, the upper carriage is slewed 90° to the left immediately followed by slewing back to the starting position

A telescopic boom is at its minimum length.

(c) Boom adjusting

The test starts with raising the boom immediately followed by the lowering of the boom to its original position. This movement is executed without load, at maximum speed and with maximum acceleration and deceleration.

(d) Telescoping

With the boom adjusted to an angle of 40-50° to the measuring site and without load, the fully withdrawn first part of the boom is extended to its full length and immediately withdrawn. The movement is executed at maximum speed.

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

(a) Hoisting and lowering

The length of the boom is chosen so that a full test lasts 15-20 sec.

(b) Slewing

The observation period is the time needed to carry out the working cycle.

(c) Boom adjusting

The test shall at least last 20 sec.

(d) Telescoping

The observation period is the time needed to carry out the working cycle.

The highest of the four determined sound power levels is the characteristic sound power level which shall be compared with the permissible sound power levels of the Directive.

38. MOTOR HOES

See No 31

The tool shall be disconnected during measurement.

39. PAVER-FINISHERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Test under load*

The engine of the machine shall operate at the nominal speed indicated by the manufacturer. All working units shall be activated and operate at the following speeds:

— conveying system	at least 10 % of maximum value,
— spreading system	at least 40 % of maximum value,
— tamper (speed, stroke)	at least 50 % of maximum value,
— vibrators (speed, unbalance moment)	at least 50 % of maximum value,
— pressure bars (frequency, pressure)	at least 50 % of maximum value.

*Period of observation*

The period of observation shall at least be 15 sec.

## 40. PIPELAYERS

See No 1

## 41. PISTE CATERPILLARS

See No 1

## 42. POWER GENERATORS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$  for measurements made outdoors; according to ISO/DIS 8528-10, clause 13 for measurements made indoors

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m; if  $l > 2$  m: a parallelepiped may be used with  $d = 1$  m.

**Operating conditions during test***Mounting of equipment*

Power generators may be tested outdoors or indoors. If they are tested indoors, the environmental correction should be less than 2 dB.

The power generators shall be installed on the reflecting plane; skid-mounted power generators shall be placed on a support 0.40 m high, unless otherwise required by the manufacturer's conditions of installation.

*Test under load*

ISO/DIS 8528-10, clause 9.1

*Period of observation*

The period of observation shall at least be 15 sec.

## 43. POWER SWEEPERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*  $K_2 = 0$ *Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Test under load:*

The power sweeper shall be tested in a stationary position. The engine and auxiliary units operate at the speed provided by the manufacturer for the operation of the working equipments; the broom operates at its highest speed, it is not in contact with the ground; the suction system shall work at its maximum suction power with the distance between ground and mouth of the suction system not exceeding 25 mm.

*Period of observation*

The period of observation shall at least be 15 sec.

## 44. REFUSE COLLECTION VEHICLES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*  $K_2 = 0$ *Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Test under load:*

The refuse collection vehicle shall be tested in a stationary position. The engine operates at the speed provided by the manufacturer for the operation of the working equipment; the conveying and compacting equipment is running; the container is empty.

1. If the refuse collection vehicle is equipped with charging equipment this shall be operated as follows:

The largest possible empty dustbin made of plastics shall be attached to the charging equipment. A workcycle consisting of lifting with maximum speed, tipping to the stop (no jarring or jolting) and lowering to the ground is carried out four times in a row.

2. If the refuse collection vehicle is not equipped with charging equipment, the noise emission of the refuse vehicles is determined with all the other equipment operating at the speed provided by the manufacturer.

*Period of observation*

The period of observation shall be:

1. the time of four workcycles operated in a row,
2. at least 60 sec.

## 45. ROAD MILLING MACHINES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Mounting of equipment*

The longitudinal axis of the road milling machine shall be parallel to the y-axis.

*Test under load*

The road milling machine shall be brought to its steady state within the range specified by the manufacturer in the instructions supplied to the purchaser. The engine and all attachments shall be running at their respective rated speeds in the idling mode.

*Period of observation*

The period of observation shall at least be 15 sec.

## 46. SCARIFIERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 11094:1991

In case of dispute, measurements shall be carried out in the open air on the artificial surface (4.1.2 of ISO 11094:1991).

*Environmental correction  $K_2$* 

Measurement in the open air

$K_2 = 0$

Measurements indoors

The value of the constant  $K_2$ , determined in accordance with Annex A of EN ISO 3744:1995, shall be 0.5 to 2.0 dB, in which case  $K_2$  shall be disregarded.

*Measurement surface/number of microphone positions/measuring distance*

ISO 11094: 1991

**Operating conditions during test**

*Test under load*

The scarifier shall be operated with the engine at its nominal speed and its working device idling (operating, but not ripping).

*Period of observation*

The period of observation shall at least be 15 sec.

47. SHREDDERS/CHIPPERS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

ISO 11094: 1991

*Environmental correction  $K_2$*

Measurement in the open air

$K_2 = 0$

Measurements indoors

The value of the constant  $K_2$ , determined in accordance with Annex A of EN ISO 3744:1995, shall be 0.5 to 2.0 dB, in which case  $K_2$  shall be disregarded.

*Measurement surface/number of microphone positions/measuring distance*

ISO 11094:1991

**Operating conditions during test**

*Test under load*

The shredder/chipper shall be tested chipping one or more pieces of wood.

- (i) If there is a guide for the wood pieces to be chipped this shall be used. The workcycle consists of chipping a round piece of wood (dry pine or plywood) of at least 1.5 m length, that is sharpened at one end and has a diameter depending on the permissible diameter to be used laid down in the following tabel:

Permissible diameter in mm	Diameter of piece of wood in mm
< 50	25
50-100	50
100-140	70
140-200	100
200-280	140

- (ii) If there is no guide for the wood pieces to be chipped, the workcycle consists of chipping three pieces of wood (dry pine or plywood,  $12 \times 24 \text{ mm}^2$ , length 200 mm, one end sharpened) that are thrown in the shredder/chipper at the same time.

*Period of observation/determination of resulting sound power level*

The period of observation shall end when there is no more material in the chipping area, but it shall not exceed 20 sec. If both operation conditions are possible, the higher sound power level has to be given.

## 48. SNOW-REMOVING SYSTEMS WITH ROTATING TOOLS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Test under load*

The snow-blower shall be tested in a stationary position. The snow-blower shall — according to the manufacturer's recommendations — operate with the working equipment at its maximum speed and the engine at the corresponding speed.

*Period of observation*

The period of observation shall at least be 15 sec.

## 49. SUCTION VEHICLES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$* 

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test***Test under load*

The suction vehicle shall be tested in a stationary position. The engine and auxiliary units operate at the speed provided by the manufacturer for the operation of the working equipment; the vacuum

pump(s) is (are) operating at its (their) maximum speed provided by the manufacturer. The suction equipment is operated in such a way that the internal pressure is equal to atmospheric pressure ('0 % vacuum'). The flow noise of the suction nozzle shall not have any influence on the results of the measurements.

*Period of observation*

The period of observation shall at least be 15 sec.

50. TOWER CRANES

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

measurements at ground-level

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

Measurements carried out at jib-height:

Where the lifting mechanism is located at the jib-height, the measurement surface shall be a sphere of 4 m radius, the centre of which shall coincide with the geometrical centre of the winch.

Where the measurement is carried out with the lifting mechanism on the jib stay of the crane, the area of measurement surface is a sphere; S is equal to 200 m<sup>2</sup>.

The microphone positions shall be as follows (see Figure 50.1):

Four microphone positions on a horizontal plane passing through the geometric centre of the mechanism ( $H = h/2$ )

with  $L = 2.80$  m

and  $d = 2.80$  m -  $l/2$

$L$  = half-distance between two consecutive microphone positions;

$l$  = length of mechanism (along axis of jib);

$b$  = width of mechanism;

$h$  = height of mechanism;

$d$  = distance between microphone support and mechanism in direction of jib.

The other two microphone positions shall be located at the points of intersection of the sphere and the vertical line passing through the geometric centre of the mechanism.

**Operating conditions during test**

*Mounting of equipment*

Measurement of lifting mechanism

The lifting mechanism during the test shall be mounted in one of the following ways. The position shall be described in the test report.

(a) Lifting mechanism at ground level

The mounted crane shall be placed on a flat reflecting surface of concrete or non-porous asphalt.



## (b) Lifting mechanism on the jib stay

The lifting mechanism shall be at least 12 m above the ground.

## (c) Lifting mechanism fixed to the ground

The lifting mechanism shall be fixed to a flat reflecting surface of concrete or non-porous asphalt.

## Measurement of the energy generator

Where the energy generator is attached to the crane, whether or not it is linked to the lifting mechanism, the crane shall be mounted on a flat reflecting surface of concrete or non-porous asphalt.

Where the lifting mechanism is situated on the jib stay, the noise measurement may be carried out with the mechanism either mounted on the jib stay or fixed to the ground.

Where the energy source powering the crane is independent from it (electrical power generator or mains, or hydraulic or pneumatic power source), only the noise level of the mechanism winch shall be measured.

Where the energy generator is attached to the crane, the energy generator and the lifting mechanism shall be measured separately if they are not combined. Where these two devices are combined, the measurement shall refer to the whole assembly.

During the test the lifting mechanism and the energy generator shall be installed and used in accordance with the manufacturer's instructions.

*Test free of load*

The energy generator incorporated in the crane shall operate at the full power rating indicated by the manufacturer.

The lifting mechanism shall operate free of load, with its drum turning at the rotation speed corresponding to the maximum hook-displacement speed, in the raising and lowering modes. This speed shall be specified by the manufacturer. The greater of the two sound power levels (raising or lowering) shall be used for the results of the test.

*Test under load*

The energy generator incorporated in the crane shall operate at the full power rating indicated by the manufacturer. The lifting mechanism shall operate with a cable tension at the drum corresponding to the maximum load (for the minimum radius) with the hook moving at the maximum speed. The load and speed figures shall be specified by the manufacturer. The speed shall be checked during the test.

*Period(s) of observation/determination of resulting sound power level if more than one operating condition is used*

For the measurement of the sound pressure level of the lifting mechanism, the measuring period shall be  $(t_r + t_f)$  seconds:

$t_r$  being the period in seconds prior to activation of the brake, with the lifting mechanism operating in the manner specified above. For the purpose of the test  $t_r = 3$  seconds,

$t_f$  being the period in seconds between the moment when the brake is activated and that when the hook comes to a complete stillstand.

If an integrator is used, the integration period shall be equal to  $(t_r + t_f)$  seconds.

The root mean square value at a microphone position  $i$  shall be given by:

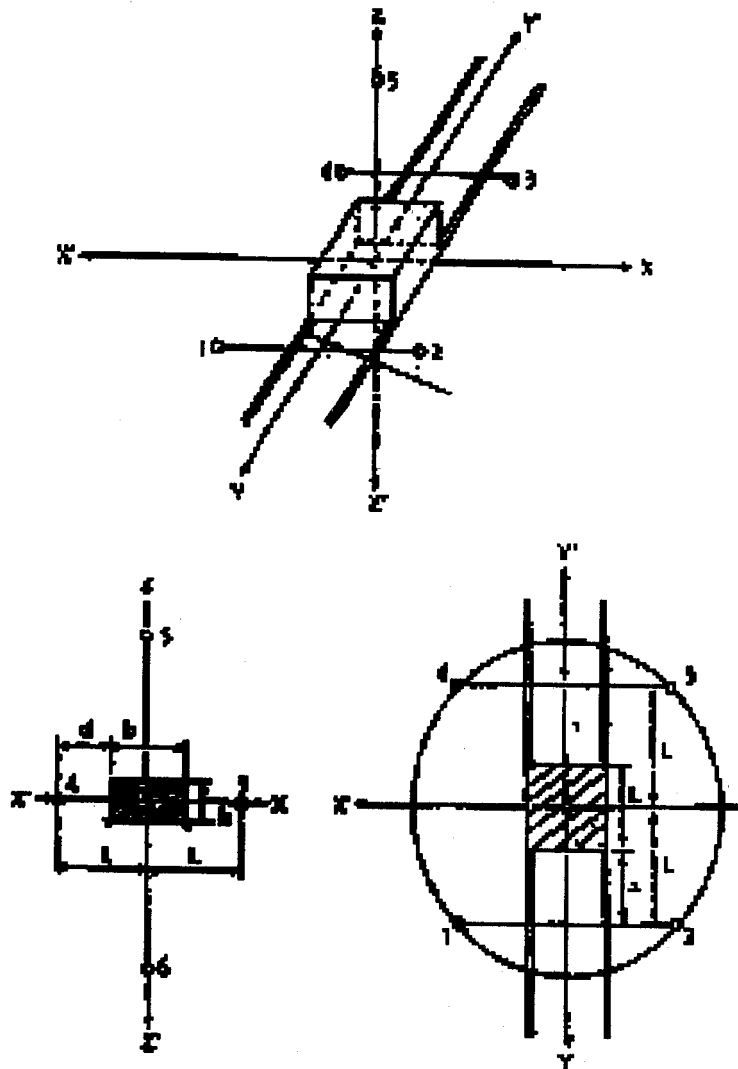
$$L_{pi} = 10 \lg [(t_r 10^{0,1L_{ri}} + t_f 10^{0,1L_{fi}})/(t_r + t_f)]$$

$L_{ri}$  being the sound pressure level at microphone position  $i$  during period  $t_r$ ,

$L_{fi}$  being the sound pressure level at microphone position  $i$  during breaking period  $t_f$

Figure 50.1:

Arrangement of microphone positions where the lifting mechanism is located on the jib stay



51. TRENCHERS

See No 1

52. TRUCK MIXERS

Basic noise emission standard

EN ISO 3744:1995

Test area

Flat reflecting surface of concrete or non-porous asphalt

Environmental correction  $K_2$

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/r = 4, 10, 16 m

**Operating conditions during test**

*Test under load*

The truck mixer shall be tested in a stationary position. The drum is filled with concrete of medium consistency (propagation measure 42-47 cm) complying to the rated capacity. The engine driving the drum shall operate at the speed that causes the maximum speed of the drum stated by the manufacturer in the instructions supplied to the purchaser.

*Period of observation*

The period of observation shall at least be 15 sec.

53. WATER-PUMP UNITS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

prEN 12639:1996

**Operating conditions during test**

*Mounting of equipment*

The water pump unit shall be installed on the reflecting plane; skid-mounted water pump units shall be placed on a support 0.40 m high, unless otherwise required by the manufacturer's conditions of installation.

*Test under load*

The engine must operate at the point of best efficiency given in the manufacturer's instructions (prEN 12639:1996).

*Period of observation*

The period of observation shall at least be 15 sec.

54. WELDING GENERATORS

**Basic noise emission standard**

EN ISO 3744:1995

*Test area*

Flat reflecting surface of concrete or non-porous asphalt

*Environmental correction  $K_2$*

$K_2 = 0$

*Measurement surface/number of microphone positions/measuring distance*

Hemisphere/alternative B: six microphone positions (2, 4, 6, 8, 10, 12)/ $r = 4, 10, 16$  m

**Operating conditions during test***Mounting of equipment*

The welding generators shall be installed on the reflecting plane; skid-mounted welding generators shall be placed on a support 0.40 m high, unless otherwise required by the manufacturer's condition of installation.

*Test under load*

ISO/DOS 8528-10, clause 9.2

*Period of observation*

The period of observation shall at least be 15 sec.

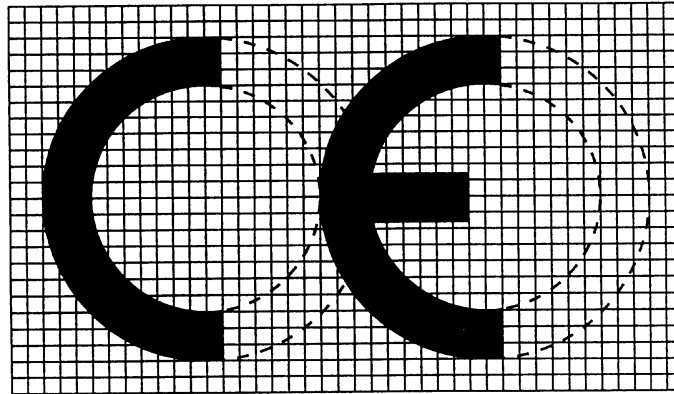
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## ANNEX VII

## MODEL OF THE MARK DEFINED IN ARTICLE 8

In accordance with Article 8, the CE marking of conformity is accompanied by the indication of the sound power level  $L_{WA}$  in dB(A) in relation to 1 pW, measured under the requirements of Annex VI and guaranteed by the manufacturer.

The CE conformity marking must consist of the initials 'CE' taking the following form:



The vertical dimension of the CE-marking shall not be smaller than 5 mm. If the marking is enlarged, the proportions given in the above graduated drawing must be respected.

The CE marking is followed by the identification number of the notified body if it intervenes in the control of production. Under the responsibility of the notified body, the manufacturer must affix that body's number during the manufacturing process.

The indication concerning the sound power level must consist of the the wording 'NOISE EMISSION', the sign  $L_{WA}$  and the value of the sound power level guaranteed by the manufacturer taking the following form:

NOISE EMISSION

$L_{WA}$  104

The vertical dimension of the characters shall be at least 20 mm.

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## ANNEX VIII

## INTERNAL CONTROL OF PRODUCTION (module A)

1. This Annex describes the procedure whereby the manufacturer or his authorised representative established within the Community, who carries out the obligations laid down in point 2, ensures and declares that the equipment concerned satisfies the requirements of the Directives that apply to the equipment. The manufacturer or his authorised representative established within the Community must affix the CE marking supplemented by the information as required in Article 8 to each product and draw up a written declaration of conformity.
2. The manufacturer must draw up the technical documentation described in point 3 and he must keep it for a period ending at least 10 years after the last product has been manufactured at the disposal of the relevant national authorities for inspection purposes.

Where neither the manufacturer nor his authorised representative is established within the Community, the obligation to keep the technical documentation available is the responsibility of the person who places the product on the Community market.

3. Technical documentation must enable the conformity of the product with the requirements of this Directive to be assessed. It must contain at least the following information:
  - name and address of the manufacturer (or his authorised representative established within the Community),
  - a description of the product especially with regard to noise reduction measures,
  - make,
  - trade name,
  - type, series and numbers,
  - the relevant technical data (especially net installed power or other power related data),
  - the reference to this Directive,
  - the results of noise measurements carried out in accordance with the provisions of this Directive, before affixing the CE marking accompanied by the indication of the guaranteed sound power level on the machine(s) (noise test report according to Annex VI Section A).
4. The manufacturer or his authorised representative established within the Community must keep a copy of the declaration of conformity with the technical documentation.
5. The manufacturer must take all measures necessary in order that the manufacturing process ensures compliance of the manufactured product with the technical documentation referred to in point 2 and with the requirements of the Directives that apply to it.

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## ANNEX IX

## EC TYPE-EXAMINATION (module B)

1. This Annex describes that part of the procedure by which a notified body ascertains and attests that a specimen, representative of the production envisaged, meets the provisions of this Directive.
2. The application for an EC type-examination must be lodged by the manufacturer or his authorised representative established within the Community with a notified body of his choice.

This application must include:

- the name and address of the manufacturer and, if the application is lodged by the authorised representative, his name and address in addition,
- a written declaration that the same application has not been lodged with any other notified body,
- technical documentation conforming to the model shown in Annex III.

The applicant must place at the disposal of the notified body a specimen, representative of the production envisaged and hereinafter called 'type'. The notified body may request further specimens if needed for carrying out the test programme.

3. The notified body must:
  - examine whether the type has been manufactured in conformity with the technical documentation,
  - agree with the applicant the location where, in accordance with this Directive, the noise tests will be carried out,
  - in accordance with this Directive, carry out or have carried out the necessary noise tests.
4. Where the type meets the provisions of this Directive, the notified body must issue an EC type-examination certificate conforming to the model shown in Annex IV to the applicant.

A list of the relevant parts of the technical documentation shall be annexed to the certificate and a copy kept by the notified body.

If the manufacturer is denied a type certification, the notified body must provide detailed reasons for such denial.

5. EC type-examination certificates and the dossiers and correspondence relating to EC type-examination procedures must be drawn up in one of the official languages of the Member State where the notified body is established or in a language acceptable to it.
6. The applicant must inform the notified body that holds the technical documentation concerning the EC type-examination certificate of all modifications to the approved product which must receive additional approval where such changes may affect the conformity with the requirements of this Directive. The notified body must examine the alteration and inform the applicant whether the EC type-examination certificate remains valid.

If the notified body deems it necessary, it may either issue an addition to the original EC type-examination certificate or ask for a fresh application to be submitted.

7. Each notified body shall communicate to the other notified bodies the relevant information concerning the EC type-examination certificate and additions issued or withdrawn.

The other notified bodies may receive copies of the EC type-examination certificates and/or their additions. The annexes to the certificates shall be kept at the disposal of the other notified bodies.

Member States may, on request, obtain the same data.

8. The manufacturer or his authorised representative must keep with the technical documentation copies of the EC type-examination certificates and their additions for a period of 10 years after the last equipment has been manufactured.

Where neither the manufacturer nor his authorised representative is established within the Community, the obligation to keep the technical documentation available is the responsibility of the person who places the product on the Community market.

## ANNEX X

## CONFORMITY TO TYPE WITH RANDOM-CHECKING (module C(a))

1. This Annex describes that part of the procedure whereby the manufacturer or his authorised representative established within the Community, ensures and declares that the equipment concerned is in conformity with the type as described in the EC type-examination certificate and satisfies the requirements of this Directive. The manufacturer or his authorised representative established within the Community must affix the CE marking supplemented by the information as required in Article 8 to each product and draw up the written declaration of conformity referred to in Article 6.
2. The manufacturer must take all measures necessary in order that the manufacturing process ensures compliance of the manufactured product with the type as described in the EC type-examination certificate and with the requirements of the Directives that apply to it.
3. The manufacturer or his authorised representative established within the Community must keep a copy of the declaration of conformity for a period of at least 10 years after the last equipment has been manufactured.

Where neither the manufacturer nor his authorised representative is established within the Community, the obligation to keep the technical documentation available is the responsibility of the person who places the product on the Community market.

4. A notified body chosen by the manufacturer shall carry out or have carried out product checks to check the conformity of the product with the relevant requirements of this Directive and with the EC type-examination certificate.
5. Conformity assessment concerns ensuring:
  - that, in accordance with Article 8, the CE marking accompanied by the indication of the guaranteed sound power level  $L_{WA}$  in dB(A) in relation to 1 pW is affixed,
  - that, in accordance with Article 8, the guaranteed sound power level  $L_{WA}$  in dB(A) in relation to 1 pW, accompanying the CE marking, is not exceeded,
  - that the permissible sound power levels of Article 9 are not exceeded,
  - that each machine is accompanied by the declaration of conformity.
6. Checking conformity the notified body shall — on its own responsibility — use all its experience concerning noise measurements and noise reduction. If possible they may use simplified tests to check conformity of equipment. However, if there is justified doubts whether the equipment meets the requirements, the following procedure shall be applied:

Checking shall be carried out using the measurement method laid down in Annex VI for this type of equipment and the statistical procedures of clause 6 of EN ISO 4871:1996 amended as follows:

If less than four machines of the same type of equipment are available, only one machine shall be checked using clause 6.2 of EN ISO 4871:1996.

If more than three machines of the same type of equipment are available, in general clause 6.3 of EN ISO 4871:1996 shall be used. If, however, either the total standard deviation  $s_t$  is given in the technical instruction or the reference standard deviation  $\sigma_M$  is given in the relevant noise test code, the following shall apply:

Formula in clause 6.3	is replaced by
$L_d - L_l \geq 3,0 \text{ dB}$	$L_d - L_l \geq 1,2 \sigma_M$ or $L_d - L_l \geq 1,2 s_t$
$L_d - L_l < 0,5 \text{ dB}$	$L_d - L_l < -0,2 \sigma_M$ or $L_d - L_l < -0,2 s_t$
$-0,5 \text{ dB} \leq L_d - L_l < 3,0 \text{ dB}$	$-0,2 \sigma_M \leq L_d - L_l < 1,2 \sigma_M$ or $-0,2 s_t \leq L_d - L_l < 1,2 s_t$
$L_d - \bar{L} \geq 1,5 \text{ dB}$	$L_d - \bar{L} \geq 0,56 \sigma_M$ or $L_d - \bar{L} \geq 0,56 s_t$



If measurements are carried out under repeatability conditions (same place, same instrumentation, same observers),  $s_r$  may be estimated from the standard deviation of repeatability of noise measurements  $s_r$  and the standard deviation of production  $S_p(S_r^2=S_r^2+S_p^2)$ .

The time interval between these checks depends on the difference DL between permissible sound level and the value measured during the type-examination (module B): If DL is  $\leq 1$  dB(A), the interval is 1 year; if DL is between 1 dB(A) and 2 dB(A) the interval is 2 years; if DL is more than 2 dB(A), the interval is 3 years.

The dossiers and correspondence relating to the EC checking procedure must be drawn up in one of the official languages of the Member State where the notified body is established or in a language acceptable to it.

7. In cases where equipment checked does not conform, the notified body must take appropriate measures.

## ANNEX XI

## PRODUCTION QUALITY ASSURANCE (module D)

1. This Annex describes the procedure whereby the manufacturer who satisfies the obligations of point 2 ensures and declares that the equipment concerned is in conformity with the type as described in the EC type-examination certificate and satisfies the requirements of the Directives that apply to it. The manufacturer or his authorised representative established within the Community must affix the CE marking supplemented by the information as required in Article 8 to each product and draw up the written declaration of conformity referred to in Article 6.
2. The manufacturer must operate an approved quality assurance system for production, final product inspection and testing as specified in point 3 and is subject to monitoring as specified in point 4.
3. **Quality assurance system**
  - 3.1. The manufacturer must lodge an application for assessment of his quality assurance system for the equipment concerned with a notified body of his choice.

The application must include:

- all relevant information for the equipment,
  - the documentation concerning the quality assurance system,
  - the technical documentation of the approved type and a copy of the EC type-examination certificate.
- 3.2. The quality assurance system must ensure compliance of the product with the type as described in the EC type-examination certificate and with the requirements of the Directives that apply to it.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic and orderly manner in the form of written policies, procedures and instructions. The quality assurance system documentation must permit a consistent interpretation of the quality programmes, plans, manuals and records.

It must contain in particular an adequate description of:

- the quality objectives and the organisational structure, responsibilities and powers of the management with regard to the quality of equipment,
  - the manufacturing, quality control and quality assurance techniques, processes and systematic actions that will be used,
  - the examinations and tests that will be carried out before, during and after manufacture, and the frequency with which they will be carried out,
  - the quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned etc.,
  - the means to monitor the achievement of the required product quality and the effective operation of the quality assurance system.
- 3.3. The notified body must assess the quality assurance system to determine whether it satisfies the requirements referred to in point 3.2. It presumes conformity with these requirements in respect of quality assurance systems that implement EN ISO 9002.

The auditing team must have at least one member with experience of assessment in the equipment technology concerned. The assessment procedure must include an inspection visit to the manufacturer's premises.

The decision must be notified to the manufacturer. The notification must contain the conclusion of the examination and the reasoned assessment decision.

- 3.4. The manufacturer must undertake to fulfil the obligations arising out of the quality assurance system as approved and to maintain it in an adequate and efficient manner.

The manufacturer or his authorised representative established within the Community shall keep the notified body that has approved the quality assurance system informed of any intended updating of the quality assurance system.

The notified body must evaluate the modifications proposed and decide whether the modified quality assurance system will still satisfy the requirements referred to in point 3.2 or whether a re-assessment is required.

It must notify its decision to the manufacturer. The notification must contain the conclusions of the examination and the reasoned assessment decision.

#### 4. Surveillance under the responsibility of the notified body

- 4.1. The purpose of surveillance is to make sure that the manufacturer duly fulfils the obligations arising out of the approved quality assurance system.

- 4.2. The manufacturer must allow the notified body entrance for inspection purposes to the locations of manufacture, inspection and testing, and storage and must provide it with all necessary information, in particular:

- the quality assurance system documentation,
- the technical documentation,
- the quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, etc.

- 4.3. The notified body shall periodically carry out audits to make sure that the manufacturer maintains and applies the quality assurance system and must provide an audit report to the manufacturer.

- 4.4. In addition, the notified body may pay unexpected visits to the manufacturer. During such visits the notified body may carry out, or cause to be carried out, tests to verify that the quality assurance system is functioning correctly if necessary. The notified body must provide the manufacturer with a visit report and, if a test has taken place, with a test report.

5. The manufacturer must, for a period ending at least 10 years after the last equipment has been manufactured, keep at the disposal of the national authorities:

- the documentation referred to in the second indent of point 3.1,
- the updating referred to in the second para of point 3.4,
- the decisions and reports from the notified body which are referred to in the final para of point 3.4, points 4.3 and 4.4.

6. Each notified body must give the other notified bodies the relevant information concerning the quality assurance system approvals issued and withdrawn.

7. Documentation and correspondence relating to the production quality assurance system must be drawn up in one of the official languages of the Member State where the notified body is established or in a language acceptable to it.

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## ANNEX XII

## PRODUCT QUALITY ASSURANCE (module E)

1. This Annex describes the procedure whereby the manufacturer who satisfies the obligations of point 2 ensures and declares that the equipment concerned is in conformity with the type as described in the EC type-examination certificate and satisfies the requirements of this Directive that apply to it. The manufacturer or his authorised representative established within the Community must affix the CE marking supplemented by the information as required in Article 8 to each product and draw up the declaration of conformity referred to in Article 6.
2. The manufacturer must operate an approved quality assurance system for final product inspection and testing as specified in point 3 and must be subject to surveillance as specified in point 4.
3. **Quality assurance system**
- 3.1. The manufacturer must lodge an application for assessment of his quality assurance system for the equipment concerned with a notified body of his choice.

The application must include:

- all relevant information for the equipment envisaged,
- the documentation concerning the quality assurance system,
- the technical documentation of the approved type and a copy of the EC type-examination certificate.

- 3.2. Under the quality assurance system, each product must be examined and appropriate tests as set out in the Directives that apply to it shall be carried out in order to ensure its conformity with the requirements of these Directives. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic and orderly manner in the form of written policies, procedures and instructions. The quality assurance system documentation must ensure a common understanding of the quality programmes, plans, manuals and records.

It must contain in particular an adequate description of:

- the quality objectives and the organisational structure, responsibilities and powers of the management with regard to the quality of equipment,
- the examinations and tests that will be carried out after manufacture,
- the quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned etc.,
- the means to monitor the achievement of the required product quality and the effective operation of the quality assurance system.

- 3.3. The notified body must assess the quality assurance system to determine whether it satisfies the requirements referred to in point 3.2. It presumes conformity with these requirements in respect of quality assurance systems that implement EN ISO 9003.

The auditing team must have at least one member with experience of assessment in the equipment technology concerned. The assessment procedure must include an inspection visit to the manufacturer's premises.

The decision must be notified to the manufacturer. The notification must contain the conclusion of the examination and the reasoned assessment decision.

- 3.4. The manufacturer must undertake to fulfil the obligations arising out of the quality assurance system as approved and to maintain it in an adequate and efficient manner.

The manufacturer or his authorised representative established within the Community shall keep the notified body that has approved the quality assurance system informed of any intended updating of the quality assurance system.

The notified body must evaluate the modifications proposed and decide whether the modified quality assurance system will still satisfy the requirements referred to in point 3.2 or whether a re-assessment is required.

It must notify its decision to the manufacturer. The notification must contain the conclusions of the examination and the reasoned assessment decision.

#### 4. Surveillance under the responsibility of the notified body

- 4.1. The purpose of surveillance is to make sure that the manufacturer duly fulfils the obligations arising out of the approved quality assurance system.
  - 4.2. The manufacturer must allow the notified body entrance for inspection purposes to the locations of inspection, testing, and storage and must provide it with all necessary information, in particular:
    - the quality assurance system documentation,
    - the technical documentation,
    - the quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, etc.
  - 4.3. The notified body shall periodically carry out audits to make sure that the manufacturer maintains and applies the quality assurance system and must provide an audit report to the manufacturer.
  - 4.4. Additionally, the notified body may pay unexpected visits to the manufacturer. During such visits the notified body may carry out, or cause to be carried out, tests to verify that the quality assurance system is functioning correctly, if necessary. The notified body must provide the manufacturer with a visit report and, if a test has taken place, with a test report.
  5. The manufacturer must, for a period ending at least 10 years after the last equipment has been manufactured, keep at the disposal of the national authorities:
    - the documentation referred to in the second indent of point 3.1,
    - the updating referred to in the second paragraph of point 3.4,
    - the decisions and reports from the notified body which are referred to in the final paragraph of point 3.4, points 4.3 and 4.4.
  6. Each notified body must give the other notified bodies the relevant information concerning the quality assurance system approvals issued and withdrawn.
  7. Documentation and correspondence relating to the quality assurance system must be drawn up in one of the official languages of the Member State where the notified body is established or in a language acceptable to it.
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## ANNEX XIII

## UNIT VERIFICATION (module G)

1. This Annex describes the procedure whereby the manufacturer ensures and declares that the equipment which has been issued with the certificate referred to in point 4 conforms to the requirements of the Directives that apply to it. The manufacturer or his authorised representative established within the Community must affix the CE marking supplemented by the information as required in Article 8 to the equipment and draw up the declaration of conformity referred to in Article 6.
2. The application for a unit verification must be lodged by the manufacturer or his authorised representative established within the Community with a notified body chosen by him.

This application must include:

- the name and address of the manufacturer and, if the application is lodged by the authorised representative, his name and address in addition
- written declaration that the same application has not been lodged with any other notified body,
- a technical document conforming to the model shown in Annex III.

3. The notified body must:
  - examine whether the equipment has been manufactured in conformity with the technical documentation,
  - agree with the applicant the location where, in accordance with this Directive, the noise tests will be carried out,
  - in accordance with this Directive, carry out or have carried out the necessary noise tests.
4. Where the equipment meets the provisions of this Directive, the notified body must issue the certificate of conformity referred to in Annex IV to the applicant.

If the notified body refuses to issue a certificate of conformity, it must state the detailed grounds for the refusal. Member States shall take the necessary steps to ensure that the applicant is able to appeal against decisions by the notified bodies.

5. Certificates of conformity and the dossiers and correspondence relating to the examination procedure must be drawn up in one of the official languages of the Member State where the notified body is established or in a language acceptable to it.
6. The manufacturer or his authorised representative must keep with the technical documentation copies of the certificate of conformity for a period of 10 years from the date on which the equipment is placed on the market.

Where neither the manufacturer nor his authorised representative is established within the Community, the obligation to keep the technical documentation available is the responsibility of the person who places the product on the Community market.

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## ANNEX XIV

## FULL QUALITY ASSURANCE (module H)

1. This Annex describes the procedure whereby the manufacturer who satisfies the obligations of point 2 ensures and declares that the equipment concerned satisfies the requirements of the Directives that apply to it. The manufacturer or his authorised representative established within the Community must affix the CE marking supplemented by the information as required in Article 8 to each product and draw up the written declaration of conformity referred to in Article 6.
2. The manufacturer must operate an approved quality assurance system for design, manufacture and final product inspection and testing as specified in point 3 and is subject to monitoring as specified in point 4.
3. **Quality assurance system**
- 3.1. The manufacturer must lodge an application for assessment of his quality assurance system with a notified body of his choice.

The application must include:

- all relevant information for the equipment,
- the documentation concerning the quality assurance system.

- 3.2. The quality assurance system must ensure compliance of the product with the requirements of the Directives that apply to it.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic and orderly manner in the form of written policies, procedures and instructions. The quality assurance system documentation must permit a common understanding of the quality policies and procedures such as quality programmes, plans, manuals and records.

- 3.3. It must contain in particular an adequate description of:
  - the quality objectives and the organisational structure, responsibilities and powers of the management with regard to design and product quality,
  - the design control and design verification techniques, processes and systematic actions that will be used when designing the products pertaining to the equipment category covered,
  - the corresponding manufacturing, quality control and quality assurance techniques, processes and systematic actions that will be used,
  - the examinations and test that will be carried out before, during and after manufacture, and the frequency with which they will be carried out,
  - the quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned etc.,
  - the means to monitor the achievement of the required design and product quality and the effective operation of the quality assurance system.

The notified body must assess the quality assurance system to determine whether it satisfies the requirements referred to in point 3.2. It shall presume conformity with these requirements in respect of quality assurance systems that implement EN ISO 9001.

The auditing team must have at least one member with experience as an assessor in the equipment technology concerned. The assessment procedure must include an assessment visit to the manufacturer's premises.

The decision must be notified to the manufacturer. The notification must contain the conclusion of the examination and the reasoned assessment decision.

- 3.4. The manufacturer must undertake to fulfil the obligations arising out of the quality assurance system as approved and to maintain it in an adequate and efficient manner.

The manufacturer or his authorised representative established within the Community shall keep the notified body that has approved the quality assurance system informed of any intended updating of the quality assurance system.

The notified body must evaluate the modifications proposed and decide whether the modified quality assurance system will still satisfy the requirements referred to in point 3.2 or whether a re-assessment is required.

It must notify its decision to the manufacturer. The notification must contain the conclusions of the examination and the reasoned assessment decision.

#### 4. Surveillance under the responsibility of the notified body

- 4.1. The purpose of surveillance is to make sure that the manufacturer duly fulfils the obligations arising out of the approved quality assurance system.

- 4.2. The manufacturer must allow the notified body entrance for inspection purposes to the locations of design, manufacture, inspection and testing, and storage and must provide it with all necessary information, in particular:

- the quality assurance system documentation,
- the quality records as foreseen by the design part of the quality assurance system, such as results of analyses, calculations, tests, etc.,
- the quality records as foreseen by the manufacturing part of the quality assurance system, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned etc.

- 4.3. The notified body shall periodically carry out audits to make sure that the manufacturer maintains and applies the quality assurance system and must provide an audit report to the manufacturer.

- 4.4. Additionally, the notified body may pay unexpected visits to the manufacturer. During such visits the notified body may carry out, or cause to be carried out, tests to verify that the quality assurance system is functioning correctly, if necessary. The notified body must provide the manufacturer with a visit report and, if a test has taken place, with a test report.

5. The manufacturer must, for a period ending at least 10 years after the last equipment has been manufactured, keep at the disposal of the national authorities:

- the documentation referred to in the second indent of point 3.1 of this,
- the updating referred to in the second paragraph of point 3.4,
- the decisions and reports from the notified body which are referred to in the final paragraph of point 3.4, points 4.3 and 4.4.

6. Each notified body must give the other notified bodies the relevant information concerning the quality assurance system approvals issued and withdrawn.

7. Documentation and correspondence relating to the production quality assurance system must be drawn up in one of the official languages of the Member State where the notified body is established or in a language acceptable to it.
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