

L.N. 64 of 2002

**PRODUCT SAFETY ACT
 (ACT NO. V OF 2001)**

**Noise Emission in the Environment by Equipment for Use
 Outdoors Regulations, 2002**

IN exercise of the powers conferred by articles 38 to 40 of the Product Safety Act, 2001, the Minister for Economic Services, on the advice of the Malta Standards Authority, has made the following regulations:-

1.1. The title of these regulations is the Noise Emission in the Environment by Equipment for Use Outdoors Regulations, 2002. Citation and commencement.

1.2. These regulations shall become operative on the 1st January, 2003, which date shall be notified by the Authority in the Gazette:

Provided that the manufacturer, or his authorised representative, may avail himself of the provisions of these regulations as from 1st July, 2002:

Provided further that the provisions regarding the reduced permissible sound power levels of Stage II referred to in Article 12 of the Directive, which is set out in Schedule XI hereto, shall apply with effect from 3rd January 2006:

Provided further that type-examination certificates issued and measurements of equipment carried out under 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 may be used in drawing up the technical documentation provided for in Annex V point 3, Annex VI point 3, Annex VII point 2, Annex VIII points 3.1 and 3.3 of the Directive, which are set out in Schedules V, VI, VII and VIII hereto:

Provided further that the requirements to provide information to the European Commission referred to in regulation 10.8 of these regulations, shall come into force on such date as the Minister responsible for Consumer Affairs, after consultation with the Malta Standards Authority, may prescribe.

2.1. These regulations apply to equipment for use outdoors listed in Articles 12 and 13 of the Directive, which are set out in Schedules XI Scope.

and XII hereto, and defined in Annex I of the Directive, which is set out in Schedule I hereto.

2.1.1. These regulations only cover equipment for use outdoors 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 shall be excluded, except for hand-held concrete-breakers and picks and for hydraulic hammers.

2.2. The following shall be excluded from the scope of these regulations:

2.2.1. All equipment for use outdoors primarily intended for the transport of goods or persons by road or rail or by air or on waterways,

2.2.2. Equipment for use outdoors specially designed and constructed for military and police purposes and for emergency services.

Definitions

3.1. For the purposes of these regulations, the following definitions shall apply:

3.1.1. "The Directive" means Council Directive 2000/14/EC¹ of the European Parliament and of the Council on the approximation of the laws of the Member States concerning the noise emission in the environment by equipment for use outdoors.

3.1.2. "Equipment for use outdoors" means all machinery defined in Article 1(2) of Directive 98/37/EC of the European Parliament and of the Council of 22 June 1998 on the approximation of the laws of the Member States relating to machinery² 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 types of equipment are hereinafter referred to as 'equipment';

¹ OJ No. L 162, 03.07.2000, P.11.

² OJ No. L 207, 23.07.98, P.01. Directive as amended by Directive 98/79/EC (OJ No. L 331, 07.12.98, P. 01), as transposed by L.N. 250 of 2001 Machinery Regulations, 2001 and published in the Government Gazette No: 17,154 of 26th October, 2001.

3.1.3. "Conformity assessment procedures" means the procedures laid down in Annexes V to VIII of the Directive, which are set out in Schedules V to VIII hereto, based on Decision 93/465/EEC³;

3.1.4. "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;

3.1.5. "Sound power level LWA" means the A-weighted sound power in dB in relation to 1 pW as defined in MSA EN ISO 3744:1995 and MSA EN ISO 3746:1995;

3.1.6. "Measured sound power level" means a sound power level as determined from measurements as laid down in Annex III of the Directive, which is set out in Schedule III hereto; measured values may be determined either from a single machine representative for the type of equipment or from the average of a number of machines;

3.1.7. "Guaranteed sound power level" means a sound power level determined in accordance with the requirements laid down in Annex III of the Directive, which is set out in Schedule III hereto, which includes the uncertainties due to production variation and measurement procedures and where the manufacturer, or his authorised representative, confirms that according to the technical instruments applied and referred to in the technical documentation it is not exceeded.

3.1.8. "Harmonised Standard" means a technical specification adopted by the European Committee for Standardisation (CEN) or the European Committee for Electrotechnical Standardisation (CENELEC) or the European Telecommunications Standards Institute (ETSI), upon a remit from the European Commission in accordance with Directive 98/34/EC⁴ of the European Parliament and of the Council laying down a procedure for the provision of information in the field of technical standards and regulations as amended by Directive 98/48/EC⁵ of the European Parliament and of the Council.

3.1.9. "National Standard transposing the Harmonised Standard" means a Standard issued by one of the members of CEN/CENELEC/ETSI which is declared and noted to be technically equivalent to the Harmonised Standard originally issued by CEN/CENELEC/ETSI.

³ OJ No L 220, 30.08.93, P.23-39

⁴ OJ No. L 204, 21.07.98, P.37.

⁵ OJ No. L 217, 05.08.98, P.18.

3.1.10. "OJ" means the Official Journal of the European Communities.

3.1.11. "Community" means the European Community.

3.1.12. "Commission" means the Commission of the European Communities.

3.1.13. "Notified body" means a body responsible for carrying out functions relating to the conformity assessment procedures set out in Article 14 of the Directive and described in regulation 9 of these regulations which has been notified by the member State concerned to the Commission and the other member States pursuant to Article 15 of the Directive;

3.1.14. "CE marking" means the CE conformity marking consisting of the symbol "CE" as set out in Schedule IV to these regulations;

3.1.15. "Manufacturer" means the person:

3.1.15.1. who is primarily responsible for the design and construction of the equipment so that it complies with the requirements of these regulations;

3.1.15.2. who is responsible for "re-building" or modifying an existing equipment, and who in so doing is creating an "as-new" equipment;

3.1.15.3. who takes responsibility for the appraisal of the design, construction and any necessary modification of used imported equipment.

3.1.16. "Local authorised representative" means any person (or organisation) established in Malta who has been appointed by the manufacturer to act on his behalf in carrying out certain tasks required by these regulations;

3.1.17. "Importer" means any person who places equipment from a foreign country on to the Maltese market so that he supplies such equipment on the first occasion that it is supplied in Malta;

3.1.18. "Person who supplies equipment" means wholesalers, distributors, retailers etc.

3.1.19. "Responsible person" in relation to equipment means:

3.1.19.1. the manufacturer thereof;

3.1.19.2. the manufacturer's local authorised representative; or

3.1.19.3. where the manufacturer is not established in Malta and he has not appointed a local authorised representative, the person who places the equipment on the local market.

3.1.20. "Placing on the market" means importation, wholesale, retail, sale and distribution free of charge.

4.1. The provisions of these regulations are:

Applicability

4.1.1. intended to cover noise emission standards, conformity assessment procedures, marking, technical documentation and collection of data concerning the noise emission in the environment of equipment for use outdoors;

4.1.2. applicable to all imported equipment as well as to those manufactured for the local market.

4.2. No person may construct, import, place on the market or put into service any equipment, which does not comply with the provisions of these regulations.

5.1. Equipment referred to in regulation 2.1 of these regulations shall not be placed on the market or put into service until the manufacturer, or his authorised representative ensures that:

General
requirement.

5.1.1. The equipment satisfies the requirements concerning the noise emission in the environment of these regulations.

5.1.2. The conformity assessment procedures referred to in regulation 9 of these regulations have been completed,

5.1.3. The equipment bears the CE marking and the indication of the guaranteed sound power level and is accompanied by an EC declaration of conformity.

5.2. Where neither the manufacturer nor his authorised representative is established in Malta, the obligations of these regulations shall apply to any person placing the equipment on the market or putting into service in Malta.

6.1. The placing on the market or putting into service of equipment referred to in regulation 2.1 of these regulations which complies with the provisions of these regulations, bears the CE marking

Free movement

and the indication of the guaranteed sound power level and is accompanied by an EC declaration of conformity, shall not be prohibited, restricted or impeded.

6.2. At trade fairs, exhibitions, demonstrations and similar events, the showing of equipment referred to in regulation 2.1 of these regulations which does not conform to the provisions of these regulations, provided that a visible sign clearly indicates that such equipment does not conform and that it is not placed on the market or put into service until it has been brought into conformity by the manufacturer or his authorised representative shall not be prevented. During demonstrations adequate safety measures shall be taken to ensure the protection of persons.

Presumption of conformity.

7.1. Equipment referred to in regulation 2.1 of these regulations bearing the CE marking provided for in regulation 8 of these regulations and the indication of the guaranteed sound power level and which is accompanied by the EC declaration of conformity provided for in Annex II of the Directive, which is set out in Schedule II hereto, shall be regarded as conforming to all the provisions of these regulations.

EC Declaration of conformity.

8.1. The manufacturer, or his authorised representative, of equipment referred to in regulation 2.1 of these regulations shall, in order to certify that an item of equipment is in conformity with the provisions of these regulations, draw up an EC declaration of conformity for each type of equipment manufactured; the minimum content of this declaration of conformity is laid down in Annex II of the Directive, which is set out in Schedule II hereto.

8.2. The declaration of conformity must be drawn up in Maltese and/or English when equipment is placed on the market or put into service.

8.3. The manufacturer, or his authorised representative, of equipment referred to in regulation 2.1 of these regulations shall keep a specimen of the EC declaration of conformity for 10 years from the date on which the equipment was last manufactured, together with the technical documentation as provided for in Annex V point 3, Annex VI point 3, Annex VII point 2, Annex VIII points 3.1 and 3.3 of the Directive, which are set out in Schedules V, VI, VII and VIII hereto.

Conformity assessment procedures.

9.1. Before placing on the market or putting into service any equipment referred to in Article 12 of the Directive, which is set out in Schedule XI hereto, the manufacturer, or his authorised representative, shall subject each type of equipment to one of the following conformity assessment procedures:

9.1.1. The internal control of production with assessment of technical documentation and periodical checking procedure referred to in Annex VI of the Directive, which is set out in Schedule VI hereto or

9.1.2. The unit verification procedure referred to in Annex VII of the Directive, which is set out in Schedule VII hereto, or

9.1.3. The full quality assurance procedure referred to in Annex VIII of the Directive, which is set out in Schedule VIII hereto.

9.2. Before placing on the market or putting into service any equipment referred to in Article 13 of the Directive, which is set out in Schedule XII hereto, the manufacturer, or his authorised representative, shall subject each type of equipment to the internal control of production procedure referred to in Annex V of the Directive, which is set out in Schedule V hereto.

10.1. The Director of Consumer Affairs shall take all appropriate measures to ensure that equipment referred to in regulation 2.1 of these regulations, may be placed on the market or put into service only if it conforms to the provisions of these regulations, bears the CE marking and the indication of the guaranteed sound power level and is accompanied by an EC declaration of conformity.

Withdrawal and
prohibition from
market

10.2. All appropriate measures shall be taken to encourage the local authorities responsible for implementing these regulations to cooperate with each other and provide each other with information in order to assist the functioning of these regulations.

10.3. Where it is ascertained that equipment referred to in regulation 2.1 of these regulations which is placed on the market or put into service does not comply with the requirements of these regulations, the Director of Consumer Affairs shall take all appropriate measures so that the manufacturer or his authorized representative shall bring the equipment into conformity with the provisions of these regulations, and shall so inform the Consumer and Industrial Goods Directorate³ of the Malta Standards Authority.

10.4. Where

- the limit values referred to in Article 12 of the Directive, which is set out in Schedule XI hereto, are exceeded; or

³ L.N. 213 of 2000 - Malta Standards Authority (Establishment of Directorates) Order, 2000, published in the Government Gazette No. 17,002 of 20th October, 2001

- non-compliance with other provisions of these regulations continues despite measures taken under regulation 10.3 of these regulations.

the Director of Consumer Affairs shall take all appropriate measures to restrict or prohibit the placing on the market or putting into service of the equipment in question or to ensure that it is withdrawn from the market, and shall so inform the Consumer and Industrial Goods Directorate of the Malta Standards Authority.

10.5. Where a non-complying equipment or assembly, referred to in regulation 3 of these regulations bears the CE marking, the Director of Consumer Affairs shall take appropriate action against whom so ever has affixed the marking or drawn up the declaration and shall so inform the Consumer and Industrial Goods Directorate of the Malta Standards Authority.

10.6. Any decision taken pursuant to these regulations which restricts the placing on the market and putting into service of equipment shall state the exact grounds on which it is based.

10.6.1. Such a decision shall be notified as soon as possible to the party concerned, who shall at the same time be informed of the legal remedies available to him under the laws in force in Malta and of the time limits to which such remedies are subject.

10.7. Necessary measures shall be taken to ensure that the manufacturer, or his authorised representative, shall send to the responsible authority of the Member State where he resides or where he places on the market or puts into service the equipment referred to in regulation 2.1 of these regulations and to the Commission a copy of the EC declaration of conformity for each type of equipment referred to in regulation 2.1 of these regulations.

10.8. The Consumer and Industrial Goods Directorate of the Malta Standards Authority shall immediately inform the Commission of any measures taken in pursuance of regulations 10.3, 10.4 and 10.5 of these regulations.

CE Marking.

11.1. Equipment referred to in regulation 2.1 of these regulations placed on the market or put into service which complies with the provisions of these regulations shall bear the CE marking of conformity. The marking shall consist of the initials "CE".

11.1.1. The form of the marking to be used is shown in Schedule IV to these regulations.

11.2 The CE marking shall be accompanied by the indication of the guaranteed sound power level. A model of this indication is given in Annex IV of the Directive, which is set out in Schedule IV hereto.

11.3 The CE marking of conformity and the indication of the guaranteed sound power level shall be affixed in a visible, legible and indelible form to each item of equipment.

11.4 The affixing of markings or inscriptions on the equipment which are likely to be misleading with regard to the meaning of the CE marking or to the indication of the guaranteed sound power level shall be prohibited. Any other marking may be affixed to the equipment, provided that the visibility and legibility of the CE marking and the indication of the guaranteed sound power level is not thereby reduced.

11.5 Where the equipment referred to in regulation 2.1 of these regulations, 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.

11.6 Where one or more of the directives referred to in regulation 11.5 above, allow the manufacturer, during a transitional period, to choose which 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.

12.1 The provision of these regulations shall not prevent any competent authority's entitlement to lay down, in due observance of the Treaty:

Regulation of use

12.1.1. Measures to regulate the use of equipment referred to in regulation 2.1 of these regulations in areas which they consider sensitive, including the possibility of restricting the working hours of the equipment,

12.1.2. Such requirements as they may deem necessary to ensure that persons are protected when using the equipment in question, provided that this does not mean that the equipment is modified in a way not specified in these regulations.

Schedule I

Based on Annex I of the Directive

DEFINITIONS OF EQUIPMENT

1. Aerial access platforms with combustion engines

Equipment consisting of a minimum of a work platform, an extending structure and a chassis. The work platform is a fenced platform or a cage, which can be moved under load to the required working position. The extending structure is connected to the chassis and supports the work platform; it allows movement of the work platform to its required position.

2. Brush cutter

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.

3. Builders' hoist for the transport of goods

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° max. 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
- (iii) either one upper landing or a work area extending to the end of the guide (e.g. 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 1 m/s
 - and where the guides require support from separate structures

4. **Building site band saw machine**

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.

5. **Building site circular saw bench**

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)

6. Chain saw, portable

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

7. Combined high pressure flusher and suction vehicle

A vehicle which may work either as a high pressure flusher or as a suction vehicle. See high pressure flusher and suction vehicle.

8. Compaction machine

A machine which compacts materials, e.g. 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 operation facilities for travelling, steering, braking and vibrating are disposed 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 carrier 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.

9. Compressor

Any machine for use with interchangeable equipment 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 categories of device:

- fans, i.e. devices producing air circulation at a positive pressure of not more than 110 000 pascals
- vacuum pumps, i.e. devices or appliances for extracting air from an enclosed space at a pressure not exceeding atmospheric pressure
- gas turbine engines.

10. Concrete-breakers and picks, hand held

Powered (by any method) concrete-breakers and picks used to perform work on civil engineering and building sites.

11. Concrete or mortar mixer

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 definition 55).

12. Construction winch

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

13. Conveying and spraying machine for concrete and mortar

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:

B 646

- 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

14. Conveyor belt

A temporarily installed machine suitable for transporting material by means of a power-driven belt.

15. Cooling equipment on vehicles

A cargo space refrigeration unit on vehicle categories N2, N3, O3 and O4 as defined by Directive 70/156/EEC⁹.

The refrigeration unit may be powered by means of an integral part of the refrigeration unit, a separate part attached to the vehicle body, a driving engine of the vehicle, or by an independent or standby power source.

16. Dozer

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

17. Drill rig

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

⁹ OJ No L 042, 23.02.70, P. 01-15.

lorries, wheeled chassis, tractors, crawlers, skid bases (pulled by winch). When drill rigs are mounted on lorries, tractors and trailers, or a wheel-based, transportation may be carried out at higher speeds and on public roads.

18. Dumper

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

19. Equipment for loading and unloading of silos or tanks on trucks

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

20. Excavator, hydraulic or rope-operated

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 undercarriage during any one cycle of the machine.

21. Excavator-loader

A self-propelled wheeled or crawler machine having a main structural support designed to carry both a frontmounted 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.

22. Glass recycling container

A 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.

23. Grader

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.

24. Grass trimmer:grass edge trimmer

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.

25. Hedge trimmer

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.

26. High pressure flusher

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.

27. High pressure water jet machine

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 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:

- 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
- 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. Generally skid or frame-mounted with supply line capable of being disconnected.

28. Hydraulic hammer

Equipment which uses the hydraulic power source of the carrier machine to accelerate a piston (sometimes gas-assisted), which then hits a tool. The stress

wave generated by kinetic action flows through the tool into the material, which causes the material to break. Hydraulic hammers need a supply of pressurised oil to function. The complete carrier hammer unit is controlled by an operator, usually seated in the cabin of the carrier.

29. Hydraulic power pack

Any machine for use with interchangeable equipment which compresses liquids to a pressure higher than the inlet pressure. It means an assembly of a prime mover, pump, with or without reservoir and accessories (e.g. controls, pressure relief valve).

30. Joint cutter

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.

31. Landfill compactor, loader-type with bucket

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

32. Lawnmower

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 MSA EN 786:2000, Annex B.

- Also 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)

33. Lawn trimmer/lawn edge trimmer

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 786:2000, Annex B.

34. Leaf blower

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.

35. Leaf collector

A powered machine suitable for collecting leaves and other debris using a suction device consisting of a power source 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.

36. Lift truck, combustion-engine driven, counterbalanced

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, e.g., construction sites)
- other counterbalanced lift trucks, excluded are those counterbalanced lift trucks that are specifically constructed for container handling.

37. Loader

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.

38. Mobile crane

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.

39. Mobile waste container

An appropriate designed container fitted with wheels intended to store waste temporarily, and which is equipped with a cover.

40. Motor hoe

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)).

41. Paver-finisher

A mobile road construction machine used for the purpose of applying layers of construction material, such as bituminous mix, concrete and gravel on surfaces. Paver-finishers may be equipped with a high-compaction screed.

42. Piling equipment

Pile installation and extraction equipment, e.g. impact hammers, extractors, vibrators or static pile pushing/pulling devices of an assembly of machines and components used for installation or extraction of piles, which also includes:

- piling rig consisting of carrier machine (crawler, wheel or rail mounted, floating leader attachment, leader or guiding system)
- accessories, e.g. pile caps, helmets, plates, followers, clamping devices, pile handling devices, pile guides, acoustic shrouds and shock/vibration

- absorbing devices, power packs, generators and personal lifting devices on platforms.

43. Pipelayer

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.

44. Pistle caterpillar

Any device comprising an internal combustion engine driving a rotary electrical generator producing a continuous supply of electrical power.

45. Power generator

Any device comprising an internal combustion engine driving a rotary electrical generator producing a continuous supply of electrical power.

46. Power sweeper

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.

47. Refuse collection vehicle

A vehicle designed 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. It may be equipped with a container lifting device.

48. Road-milling machine

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.

49. Scarifier

A walk-behind or ride-on 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.

50. Shredder/chipper

A powered machine designed for use in a stationary position having one or more cutting devices 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, a device 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.

51. Snow-removing machine with rotating tools

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

52. Suction vehicle

A vehicle equipped with a device to collect water, mud, sludge, refuse 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.

53. Tower crane

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.

54. Trencher

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 trenches in a continuous operation, through a motion of the machine.

55. Truck mixer

A vehicle which is equipped with a drum to transport ready-mixed concrete from the concrete mixing plant to the job site; the drum may rotate when the vehicle is driving or stand still. The drum is emptied on the job site by rotating the drum. The drum is driven either by the driving engine of the vehicle or by a supplementary engine.

56. Waterpump unit

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.

57. Welding generator

Any rotary device which produces a welding current.

Schedule II

Based on Annex II of the Directive

EC DECLARATION OF CONFORMITY

The EC declaration of conformity must contain the following particulars:

- name and address of the manufacturer or his authorised representative
 - name and address of the person who keeps the technical documentation
 - description of the equipment
 - conformity assessment procedure followed, and, where appropriate, name and address of the notified body involved
 - measured sound power level on an equipment representative for this type
 - guaranteed sound power level for this equipment
 - a reference to these regulations
 - the declaration that the equipment conforms to the requirements of these regulations
 - where appropriate, the declaration(s) of conformity and references of the other Community Directives applied
 - the place and date of the declaration
 - particulars of the signatory authorised to sign the legally binding declaration for the manufacturer or his authorised representative.
-

Schedule III

Based on Annex III of the Directive

METHOD OF MEASUREMENT OF AIRBORNE NOISE EMITTED BY EQUIPMENT FOR USE OUTDOORS

Scope

This Schedule 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 these regulations with a view to the conformity assessment procedures of these regulations.

Part A of this Schedule for each type of equipment referred to in regulation 2.1 of these regulations 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 Schedule for each type of equipment referred to in regulation 2.1 of these regulations 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_{2A}
- 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 his authorised representative may in general choose one of the basic noise emission standards of Part A and apply the operating conditions of Part B for this 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 for use outdoors as defined by regulation 2.1 of these regulations the basic noise emission standards

MSA EN ISO 3744:2000

MSA EN ISO 3746:2000

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 (e.g. 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 be carried out either

- at its maximum working speed, or
- in a first test with the fan set at zero speed and 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:

$$L_{PA} = 10 \lg \{ 0,5 \times 10^{0,1(L_{PA,0} - 100)} + 0,5 \times 10^{0,1(L_{PA,100} - 100)} \}$$

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

2.1 Fan drive with continuous variable speed

If the fan can work at continuous variable speed, the test shall 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 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*

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 ± 1 Hz if the machine is equipped with an induction motor, and the supply voltage at ± 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.

* Net power means the power in 'EC 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

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

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

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 the lower number, greater than or equal to 0,5 use the 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 (MSA EN ISO 3744:2000)

In addition to clauses 7.2.1 and 7.2.2 of MSA EN ISO 3744:2000 a set of 12 microphones on the hemispherical measurement surface may be used. The location of 12 microphone positions distributed on the surface of a hemisphere of radius r are listed in the form of Cartesian coordinates in the following table. The radius r of the hemisphere shall be equal to or greater than twice the largest dimension of the reference parallelepiped. The reference parallelepiped is defined as the smallest possible rectangular parallelepiped just enclosing the equipment (without attachments) and terminating on the reflecting plane. The radius of the hemisphere shall be rounded to the nearest higher of the following values: 4, 10, 16 m.

The number (12) of microphones may be reduced to six, but the microphone positions 2, 4, 6, 8, 10 and 12 following the requirements of clause 7.4.2 of MSA EN ISO 3744:2000 have to be used in any case.

Generally the arrangement with six microphone positions on a hemispherical measurement surface has to be used. If there are other specifications laid down in a noise test code in these regulations for a specific equipment, these specifications shall be used.

TABLE
Coordinates of the 12 microphone positions

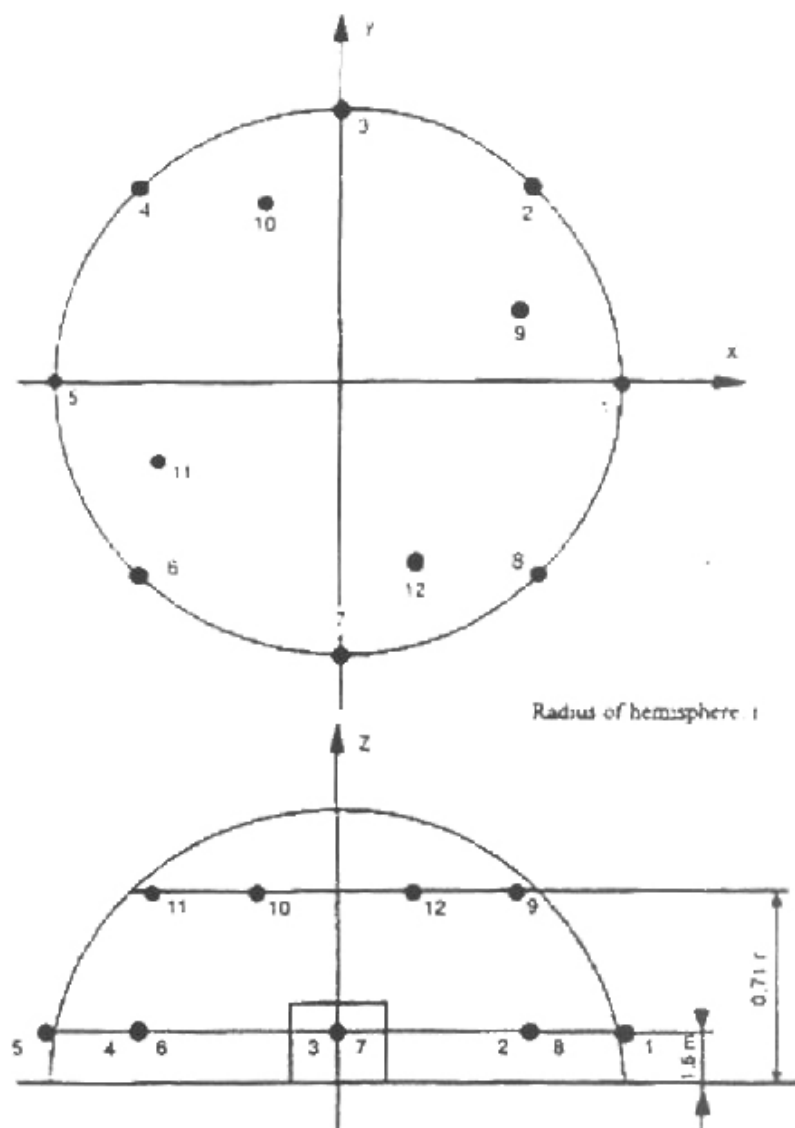
Number of microphone	X/r	Y/r	Z
1	1	0	1,5 m
2	0,7	0,7	1,5 m
3	0	1	1,5 m
4	-0,7	0,7	1,5 m
5	-1	0	1,5 m
6	-0,7	-0,7	1,5 m
7	0	-1	1,5 m
8	0,7	-0,7	1,5 m
9	0,65	0,27	0,71 m
10	-0,27	0,65	0,71 m
11	-0,65	-0,27	0,71 m
12	0,27	-0,65	0,71 m

6. Environmental correction K_{2A}

Equipment shall be measured on a reflecting surface of concrete or non-porous asphalt, then the environmental correction K_{2A} is set to $K_{2A} = 0$. If there are other specifications laid down in a noise test code of these regulations for a specific equipment, these specifications shall be used.

Figure

Additional microphone array on the hemisphere (12 microphone positions)



PART B
NOISE TEST CODES FOR SPECIFIC EQUIPMENT

0. EQUIPMENT THAT IS TESTED FREE OF LOAD

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

Reflecting surface of concrete or non-porous asphalt

Environmental correction K_{env}

$K_{env} = 0$

Measurement surface/number of microphone positions/measuring distance

- (i) If the largest dimension of the reference parallelepiped does not exceed 8 m:
hemisphere six microphone positions according to Part A item 5/according to Part A item 5
- (ii) If the largest dimension of the reference parallelepiped exceeds 8 m:
parallelepiped according to MSA ISO 3744:2000 with measurement distance $d = 1$ m

Operating conditions during test

Test free of load:

The noise tests shall be carried out according to Part A item 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 at least be 15 seconds

1. AERIAL ACCESS PLATFORMS WITH COMBUSTION ENGINE

See No 0

2. BRUSH CUTTERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 10884:2002

Measurement surface/number of microphone positions/measuring distance

MSA ISO 10884:2002

Operating conditions during test

Test under load

MSA ISO 10884:2002, point 5.3

Period(s) of observation

MSA ISO 10884:2002

3. BUILDERS' HOISTS FOR THE TRANSPORT OF GOODS

See No 0

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

MSA EN ISO 3744:2000

Measurement surface/number of microphone positions/measuring distance

MSA ISO 7960:2002, Annex J with $d = 1$ m

Operating conditions during test

Test under load

Corresponding to MSA ISO 7960:2002, Annex J (point J2(b) only)

Period of observation

Corresponding to MSA ISO 7960:2002, Annex J

5. BUILDING SITE CIRCULAR SAW BENCHES

Basic noise emission standard

MSA EN ISO 3744:2000

Measurement surface/number of microphone positions/measuring distance

MSA ISO 7960:2002, Annex A, measurement distance $d = 1\text{ m}$

Operating conditions during test

Test under load

MSA ISO 7960:2002, Annex A (point A2(b) only)

Period of observation

MSA ISO 7960:2002, Annex A

6. CHAIN SAWS, PORTABLE

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 9207:2002

Measurement surface/number of microphone positions/measuring distance

MSA ISO 9207:2002

Operating conditions during test

Test under load/Test free of load

Full load sawing wood/engine at maximum revolution without load

- (a) combustion-engine driven: MSA ISO 9207:2002 points 6.3 and 6.4
- (b) electric-motor operated: a test corresponding to MSA ISO 9207:2002 point 6.3 and a test with the motor at maximum revolution without load

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

MSA ISO 9207:2002 points 6.3 and 6.4

The resulting sound power level L_{WA} is calculated by:

$$L_{WA} = 10 \lg \frac{1}{2} [10^{0.1 L_{W1}} + 10^{0.1 L_{W2}}]$$

where L_{W1} and L_{W2} are the average sound power levels of the two different modes of operation defined above

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 Nos 26 and 52. If not, they shall be measured separately and the higher values are to be stated

8. COMPACTION MACHINES

(i) NON-VIBRATING ROLLERS

See No (i)

(ii) VIBRATING ROLLERS FOR RIDE-ON OPERATORS

Basic noise emission standard

MSA EN ISO 3744:2000

Operating conditions during test

Mounting of equipment

The vibrating roller shall be installed on one or more appropriate elastic material(s) such as 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

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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 the maximum compaction power corresponding to the combination of the highest frequency and the highest possible amplitude for that frequency as declared by the manufacturer.

Period of observation

The period of observation shall be at least 15 seconds.

(iii) **VIBRATORY PLATES, VIBRATORY RAMMERS, EXPLOSIVE RAMMERS AND WALK-BEHIND VIBRATING**

ROLLERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA EN 500-4 rev. 1:2000, Annex C

Operating conditions during test

Test under load

MSA EN 500-4 rev. 1:2000, Annex C

Period of observation

MSA EN 500-4 rev. 1:2000, Annex C

9. COMPRESSORS

Basic noise emission standard

MSA EN ISO 3744:2000

Measurement surface/number of microphone positions/measuring distance

hemisphere/six microphone positions according to Part A item 5/according to Part A item

or

parallelepiped according to MSA ISO 3744:2000 with measurement distance $d = 1$ m

Operating conditions during test

Mounting of equipment

The compressors shall be installed on the reflecting plane; skid-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

The compressor under test shall have been warmed up and be operating in stable conditions as for continuous operation. It shall be properly serviced and lubricated as specified by the manufacturer. The determination of the sound power level shall be made at full-load or in an operating condition that is reproducible and is representative of the noisiest operation of typical usage of the machine under test, whichever is the noisier.

Should the layout of the complete plant be such that certain components, e.g. inter-coolers are mounted away from the compressor, endeavours shall be made to separate the noise generated from such parts when performing the noise test. Separation of the various noise sources may require special equipment for the attenuation of the noise from these sources during the measurement. The noise characteristics and description of the operating conditions of such parts shall be given separately in the test report.

During the test the gas exhausted from the compressor shall be piped clear of the test area. Care shall be taken to ensure the noise generated by the gas being exhausted is at least 10 dB lower than the noise to be measured at all measurement locations (e.g. by the fitting of a silencer).

Care shall be taken that air discharge does not introduce any extra noise due to turbulence at the compressor discharge valve.

Period of observation

The period of observation shall be at least 15 seconds.

10. CONCRETE-BREAKERS AND PICKS, HAND-HELD

Basic noise emission standard

MSA EN ISO 3744:2000

Measurement surface number of microphone positions measuring distance

Hemisphere/six microphone positions according to Part A item 5 and the following table according to mass of equipment as given in the following table:

Mass of equipment in m kg	Radius of hemisphere	<i>z</i> for microphone positions 3, 4, 6 and 8
<i>m</i> = 10	2m	0.75m
<i>m</i> = 10	4m	1.50m

Operating conditions during test

Mounting of equipment

All appliances 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 cube-shaped 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 10.1 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 MSA EN 206-1:2002

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 10.2

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 MSA ISO 1180:2002, 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 10.2).

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 kg/m^2 , as indicated in Figure 10.3, 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 in the instructions supplied to the purchaser.

Period of observation

The period of observation shall at least be 15 seconds.

Figure 10.1

Schematic diagram of intermediate piece

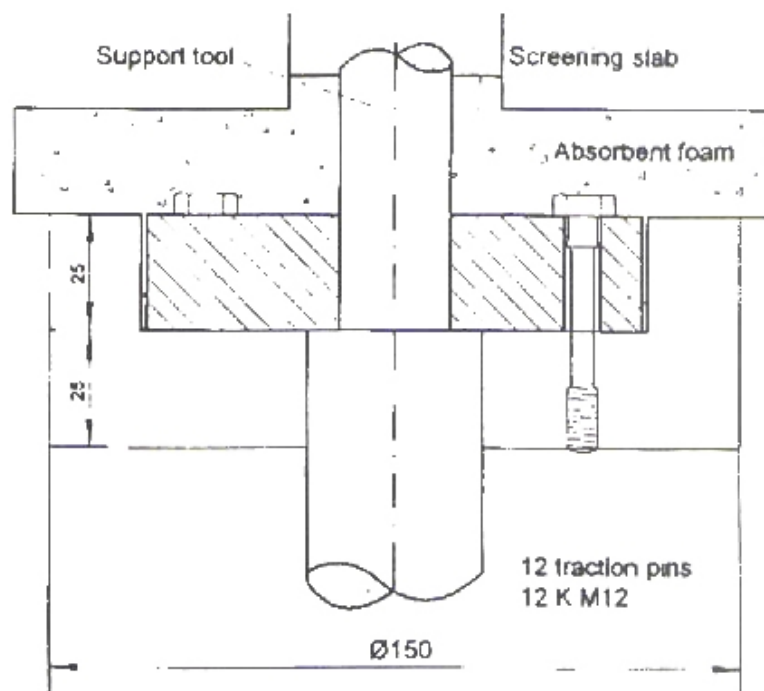


Figure 19.2

Test block

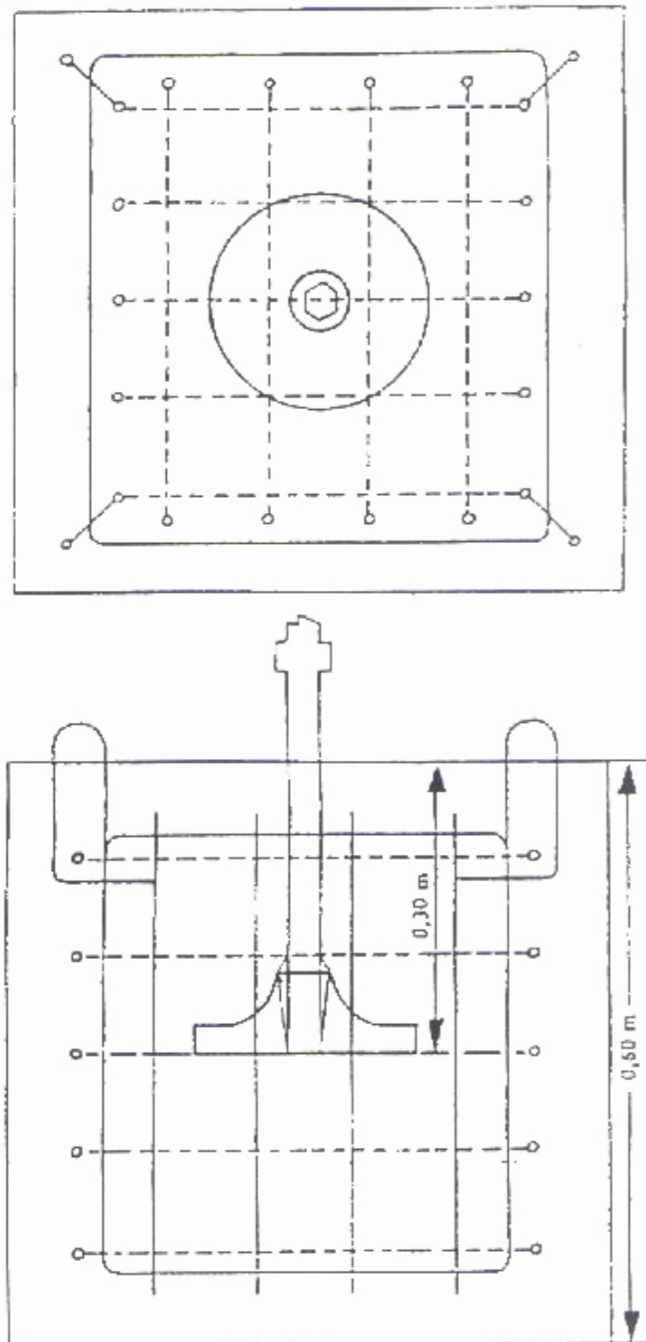
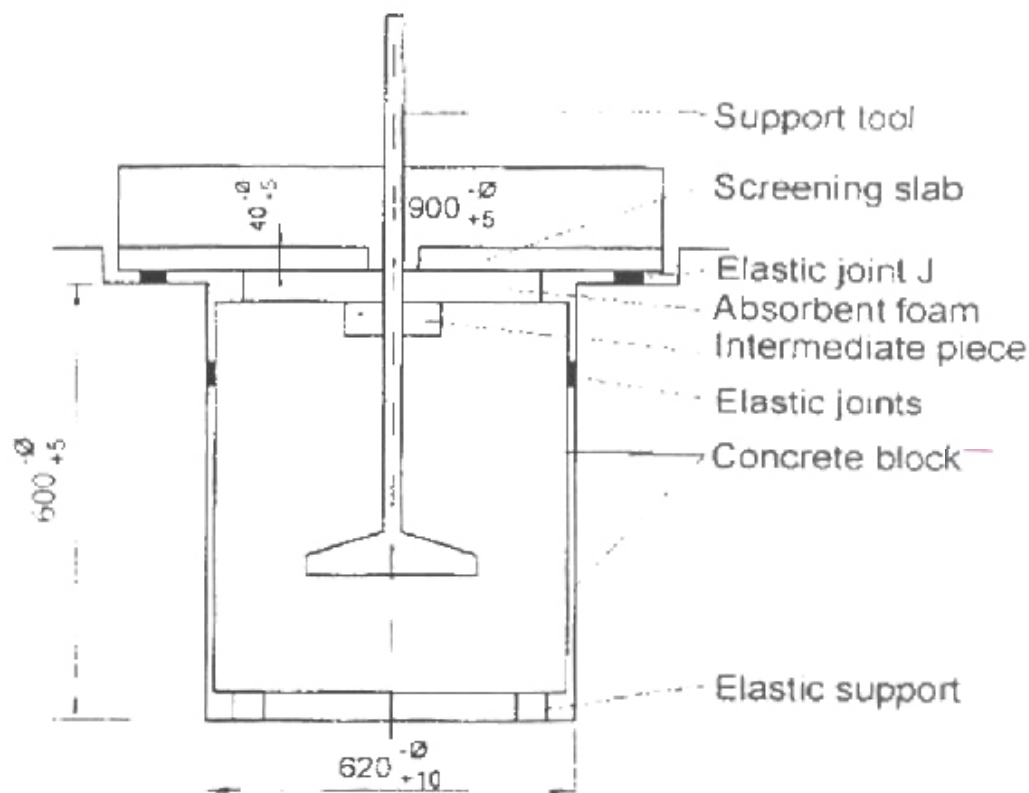


Figure 10.3

Testing device



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

11. CONCRETE OR MORTAR MIXERS

Basic noise emission standard

MSA EN ISO 3744:2000

Operating conditions during test

Test under load

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

12. CONSTRUCTION WINCHES

See No 0

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**

MSA EN ISO 3744 2000

Operating conditions during test

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

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, e.g. finest ash. The machine shall operate at its maximum output, the period of one working cycle being not more than 5 seconds (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, e.g. methyl cellulose. The machine shall operate at its maximum output, the period of one working cycle being not more than 5 seconds (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 at least be 15 seconds

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14. CONVEYOR BELTS

See No 11

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 the direction of point 1

15. COOLING EQUIPMENT ON VEHICLES

Basic noise emission standard

MSA EN ISO 3744:2000

Operating conditions during test

Test under load

The cooling equipment shall be installed in a real or simulated cargo space and be tested in a stationary position where the height of the cooling equipment shall be representative of the intended installation requirements according to the instructions supplied to the purchaser. The power source of the cooling equipment shall operate at the rate that causes the maximum speed of the cooling compressor and the fan specified in the instructions. If the cooling equipment is intended to be powered by the driving engine of the vehicle the engine shall not be used during the test and the cooling equipment shall be connected to a suitable electrical power source. Removable tractor units shall be removed during the test

Cooling equipment installed in cargo-space refrigeration units which have a choice of different power sources shall be tested separately for each power source. The test result reported shall as a minimum reflect the mode of operation which leads to the maximum noise output

Period of observation

The period of observation shall at least be 15 seconds

16. DOZERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 6395:2002

Measurement surface number of microphone positions measuring distance

MSA ISO 6395:2002.

Operating conditions during test

Mounting of equipment

Crawler dozers shall be tested on the test site corresponding to point 6.3.3 of MSA ISO 6395:2002.

Test under load

MSA ISO 6395:2002, Annex B

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

MSA ISO 6395:2002, Annex B

17. DRILL RIGS

Basic noise emission standard

MSA EN ISO 3744:2000

Operating conditions during test

Test under load

MSA EN 791:2000, Annex A

Period of observation

The period of observation shall at least be 15 seconds

18. DUMPERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 6395:2002

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Measurement surface: number of microphone positions measuring distance

MSA ISO 6395:2002

Operating conditions during test

Test under load

Equivalent MSA ISO 6395:2002, 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 seconds.’

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

MSA ISO 6395:2002, Annex C

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

Basic noise emission standard

MSA EN ISO 3744:2000

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 specified in the instructions supplied to the purchaser

Period of observation

The period of observation shall at least be 15 seconds

20. EXCAVATORS**Basic noise emission standard**

MSA EN ISO 3744:2000

Test area

MSA ISO 6395:2002

Measurement surface/number of microphone positions/measuring distance

MSA ISO 6395:2002.

Operating conditions during test

Test under load

MSA ISO 6395:2002, Annex A

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

MSA ISO 6395:2002, Annex A

21. EXCAVATORS-LOADERS**Basic noise emission standard**

MSA EN ISO 3744:2000

Test area

MSA ISO 6395:2002

Measurement surface/number of microphone positions/measuring distance

MSA ISO 6395:2002

Operating conditions during test

Test under load

MSA ISO 6395:2002, Annex D

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

MSA ISO 6395:2002, Annex D

22. GLASS RECYCLING CONTAINERS

Basic noise emission standard

MSA EN ISO 3744:2000

For the purpose of this noise test code the single-event sound pressure level L_{pk} as defined in MSA EN ISO 3744:2000 point 3.2.2 is used in measuring the sound pressure level at the microphone positions

Environmental correction K_{2A}

Measurement in the open air

$$K_{2A} = 0$$

Measurements in doors

The value of the constant K_{2A} , determined in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB in which case K_{2A} shall be disregarded

Operating conditions during test

The noise measurement shall be carried out during a complete cycle beginning with the empty container and completed when 120 bottles have been thrown into the container

The glass bottles are defined as follows:

- capacity: 75 cl
- mass: 370 ± 30 g.

The testing operator holds each bottle by its neck and with its bottom towards the filling aperture and then he pushes it gently inside through the filling aperture in the direction of the centre of the container, avoiding if possible the bottle hitting against the walls. Only one filling aperture is used for throwing the bottles and it is the one nearest to microphone position 12

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

The A-weighted single-event sound pressure level is preferably simultaneously measured at the six microphone positions for each bottle thrown into the container.

The A-weighted single-event sound power level averaged over the measurement surface is calculated according to MSA EN ISO 3744:2000, point 8.1.

The A-weighted single-event sound pressure level averaged over all 120 throwings of bottles is calculated as the logarithmic mean of the A-weighted single-event sound pressure levels averaged over the measurement surface.

23. GRADERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 6395:2002

Measurement surface/number of microphone positions/measuring distance

MSA ISO 6395:2002

Operating conditions during test

Test under load

Corresponding to MSA ISO 6395:2002, Annex B

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

MSA ISO 6395:2002, 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. For grass trimmers, the centre of the cutting device shall be held at a distance of about 50 mm above the surface. In order to accommodate

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the cutting blades, grass edge trimmers should be positioned as close as possible to the test surface

25. HEDGE TRIMMERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 11094:2002

In case of dispute, measurements shall be carried out in the open air on the artificial surface (point 4.1.2 of MSA ISO 11094:2002)

Environmental correction K_{2A}

Measurement in the open air

$K_{2A} = 0$

Measurements indoors

The value of the constant K_{2A} , determined without the artificial surface and in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB, in which case K_{2A} shall be disregarded

Measurement surface/number of microphone positions/measuring distance

MSA ISO 11094:2002

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 seconds

26. HIGH PRESSURE FLUSHERS**Basic noise emission standard**

MSA EN ISO 3744:2000

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 seconds

27. HIGH PRESSURE WATER JET MACHINES**Basic noise emission standard**

MSA EN ISO 3744:2000

Measurement surface/number of microphone positions/measuring distance

Parallelepiped/according to MSA EN ISO 3744:2000 with measurement distance $d = 1$ m

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 seconds.

28. HYDRAULIC HAMMERS

Basic noise emission standard

MSA EN ISO 3744:2000

Measurement surface/number of microphone positions/measuring distance

Hemisphere/six microphone positions according to Part A, item 5/ $r = 10\text{m}$

Operating conditions during tests

Mounting of the equipment

For the test the hammer is attached to a carrier and a special test block structure shall be used. Figure 28.1 gives the characteristics of this structure and Figure 28.2 shows the position of the carrier.

Carrier

The carrier for the test hammer shall meet the requirements of the test hammer's technical specifications especially in weight range, hydraulic output power, supply oil flow and return line back pressure.

Mounting

Mechanical mounting as well as connections (hoses, pipes ...) must correspond to specifications given in the hammer's technical data. All significant noise caused by pipes and various mechanical components needed for installation, ought to be eliminated. All component connections have to be well tightened.

Hammer stability and static holdforce

The hammer shall be firmly held down by the carrier in order to give the same stability as that existing under normal operating conditions. The hammer must be operated in an upright position.

Tool

A blunt tool shall be used in the measurements. The length of the tool must meet the requirements given in Figure 28.1 (test block).

Test under load

Hydraulic input power and oil flow

Operating conditions of the hydraulic hammer shall be appropriately adjusted, measured and reported along with the corresponding technical specification values. The hammer under test must be used in such way that 90 % or more of the maximum hydraulic input power and oil flow of the hammer can be reached.

Care shall be taken that the total uncertainty of the measurement chains of p_s and Q is kept within $\pm 5\%$. This assures the hydraulic input power determination within $\pm 10\%$ accuracy. Assuming linear correlation between hydraulic input power and emitted sound power this would mean variation of less than ± 0.4 dB in the determination of the sound power level.

Adjustable components having effect on the hammer power

Pre-settings of all accumulators, pressure control valves and other possible adjustable components must meet the values given in technical data. If more than one fixed impact rate is optional, measurements have to be made using all settings. Minimum and maximum values are presented.

Quantities to be measured

- | | |
|-------|--|
| P_s | The mean value of the hydraulic supply line pressure during the hammer's operation including at least 10 blows |
| Q | The mean value of the breaker inlet oil flow measured simultaneously with p_s |
| T | The oil temperature must lie between $+40/ +60$ °C during measurements. The temperature of the hydraulic breaker body must have been stabilised to normal operating temperature before starting the measurements |

- P_{a} The prefill gas pressures of all accumulators must be measured in static situation (breaker not operating) at stable ambient temperature of $+15^{\circ}\text{C}$ to $+25^{\circ}\text{C}$. The measured ambient temperature shall be recorded with the measured accumulator prefill gas pressure

Parameters to be evaluated from the measured operating parameters:

P_{IS} Hydraulic input power of the breaker $P_{\text{IS}} = p_{\text{S}} \cdot Q$

Hydraulic supply line pressure measurement, p_{S}

- p_{S} must be measured as close to the breaker IN-port as possible
- p_{S} shall be measured with a pressure gauge (minimum diameter: 100 mm; accuracy class ± 1.0 % ISO)

Breaker inlet oil flow, Q

- Q must be measured from the supply pressure line as close to the breaker IN-port as possible
- Q must be measured with an electric flowmeter (accuracy class ± 2.5 % of the flow reading)

Measuring point of the oil temperature, T

- T must be measured from the oil tank of the carrier or from the hydraulic line connected to hammer.

Measuring point shall be specified in the report

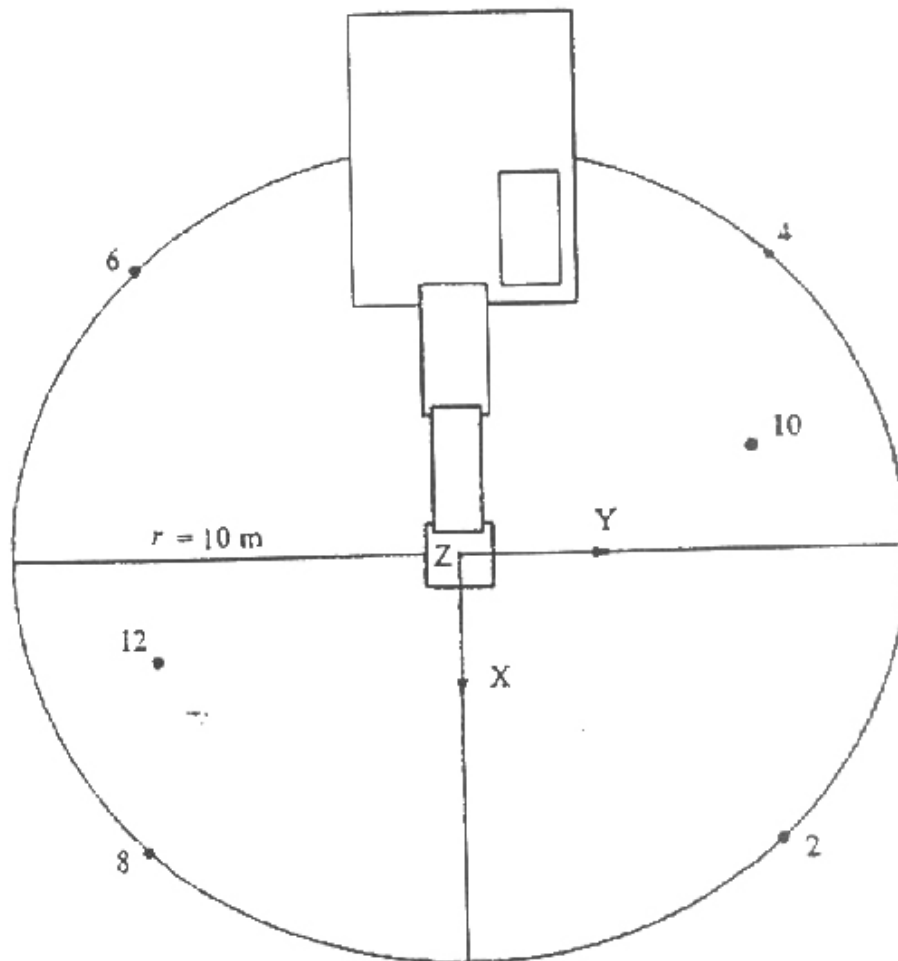
- accuracy of the temperature reading must lie within $\pm 2^{\circ}\text{C}$ of the actual value

Period determination/determination of resulting sound power level

The period of observation shall be at least 15 seconds

The measurements are repeated three times, or more if necessary. The final result is calculated as the arithmetic mean of the two highest values that do not differ by more than 1dB

Figure 28-1





surface

h_1 Tool seat thickness above the deck, ≤ 20 mm (if the tool seal is located below the deck, its thickness is not limited; it may be made of foam rubber)

h_2 Distance between deck upper surface and anvil upper surface, 250 ± 50 mm

h_3 Isolating foam rubber deck seal thickness, ≤ 30 mm

h_4 Anvil thickness, 350 ± 50 mm

h_5 Tool penetration, ≤ 50 mm

If the quadratic shape of the test block structure is used, the maximum length dimension equals 0.89 x corresponding diameter

The empty space between the deck and the anvil can be filled with elastic foam rubber or other absorption material, density $< 220 \text{ kg.m}^3$

29. HYDRAULIC POWER PACKS

Basic noise emission standard

MSA EN ISO 3744:2000

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 seconds

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30. JOINT CUTTERS

Basic noise emission standard

MSA EN ISO 3744:2000

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 15 seconds

31. LANDFILL COMPACTORS

See No 37

32. LAWNMOWERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 11094:2002

In case of dispute, measurements shall be carried out in the open air on the artificial surface (point 4.1.2 of MSA ISO 11094:2002)

Environmental correction K_{2A}

Measurement in the open air

$K_{2A} = 0$

Measurements in doors

The value of the constant K_{2V} , determined without the artificial surface and in accordance with Annex A to MSA EN ISO 3744:2000 shall be ≤ 2.0 dB, in which case K_{2V} shall be disregarded.

Measurement surface/number of microphone positions/measuring distance

MSA ISO 11094:2002

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

MSA ISO 11094:2002

Period of observation

MSA ISO 11094:2002

33. LAWN TRIMMERS/LAWN EDGE TRIMMERS

See No 32

The trimmer shall be positioned by a suitable device in such a way that its cutting device is above the centre of the hemisphere. For lawn trimmers, the centre of the cutting device shall be held at a distance of about 50 mm above the surface. In order to accommodate the cutting blades, lawn edge trimmers should be positioned as close as possible to the test surface.

34. LEAF BLOWERS

Basic noise emission standard

MSA EN ISO 3744:2000

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Test area

MSA ISO 11094:2002

In case of dispute, measurements shall be carried out in the open air on the artificial surface (point 4.1.2 of MSA ISO 11094:2002)

Environmental correction K_{2A}

Measurement in the open air

$K_{2A} = 0$

Measurements indoors

The value of the constant K_{2A} , determined without artificial surface and in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB in which case K_{2A} shall be disregarded

Measurement surface/number of microphone positions/measuring distance

MSA ISO 11094:2002

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 $(50 \pm 25 \text{ mm})$ 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 seconds

Note: If a leaf blower can be also used as a leaf collector it shall be tested in both configurations, in which case the higher value shall be used

35. LEAF COLLECTORS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 11094:2002

In case of dispute, measurements shall be carried out in the open air on the artificial surface (point 4.1.2 of MSA ISO 11094:2002)

Environmental correction K_{2A}

Measurement in the open air

$K_{2A} = 0$

Measurements indoors

The value of the constant K_{2A} , determined without artificial surface and in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB in which case K_{2A} shall be disregarded

Measurement surface/number of microphone positions/measuring distance

MSA ISO 11094:2002

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 (50 ± 25) mm 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 collection device stated by the manufacturer

Period of observation

The period of observation shall be at least 15 seconds

Note: If a leaf collector can be also used as a leaf blower it shall be tested in both configurations, in which case the higher value shall be used

36. LIFT TRUCKS

Basic noise emission standard

MSA EN ISO 3744:2000

Operating conditions during test

Safety requirements and the manufacturer's information shall be observed

Lifting condition

With the truck stationary the load (non-sound absorbent material, e.g. steel or concrete; at least 70 % of the actual capacity stated in the manufacturer's instruction) shall be lifted, from the lowered position, at maximum speed to the standardised lift height applicable to that type of industrial truck in accordance with the relevant European Standard in the series 'Safety of Industrial Trucks'. If the actual maximum lift height is less, it may be used in individual measurements. The lift height shall be listed in the test report

Drive condition

Drive the truck, without load, at full acceleration from standstill over a distance of three times its length to reach line A-A (line connecting microphone positions 4 and 6), continue driving the truck at maximum acceleration to line B-B (line connecting microphone positions 2 and 8). When the rear of the truck has crossed line B-B, the accelerator may be released

If the truck has a multi-gear transmission, select the gear that ensures the highest possible speed over the measurement distance

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

The periods of observation are:

- for lifting condition: the whole lift cycle;
- for drive condition: the time period starting when the truck's centre crosses the line A-A and ends when its centre reaches the line B-B

The resulting sound power level for all types of lift trucks, however, is calculated by

$$L_{WA} = 10 \log (0.7 \times 10^{0.1 L_{WA}} + 0.3 \times 10^{0.1 L_{WA}})$$

where subscript 'a' indicates 'lifting mode' and subscript 'c' indicates 'driving mode'

37. LOADERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 6395:2002

Measurement surface/number of microphone positions/measuring distance

MSA ISO 6395:2002

Operating conditions during test

Mounting of equipment

Crawler loaders shall be tested on the test site corresponding to point 6.3.3 of MSA ISO 6395:2002

Test under load

MSA ISO 6395:2002, Annex C

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

MSA ISO 6395:2002, Annex C

38. MOBILE CRANES

Basic noise emission standard

MSA EN ISO 3744:2000

Operating conditions during test

Mounting of equipment

If the crane is equipped with outriggers, they shall be fully extended and the crane shall be levelled on its pads in mid position of possible support height

Test under load

The mobile crane to be tested shall be presented in its standard version as described by the manufacturer. The engine power considered for determination noise limit is the nominal power of the engine used for crane motion. The crane shall be equipped with its maximum permitted counterweight mounted on the slewing structure

Before carrying out any measurement, the engine and the hydraulic system of the mobile crane shall be brought to their normal working temperature following the instruction of the manufacturer and all relevant safety-related procedures given in the instruction handbook shall be carried out

If the mobile crane is equipped with several engines, the engine used for the crane's function shall be run. The carrier engine shall be turned off

If the engine of the mobile crane is fitted with a ventilator, it shall run during the test. If the ventilator can be operated at several speeds, the test shall be carried out with the ventilator running at the highest speed

The mobile crane shall be measured under the following three ((a) to (c)) or four ((a) to (d)) conditions:

For all working conditions the following shall apply:

- engine speed at 3/4 of maximum speed specified for crane operation mode with a tolerance of $\pm 2 \%$
- acceleration and deceleration at the maximum value without dangerous movements of the load or the hook block
- motions at maximum possible speed as given in the instruction manual under the conditions given

(a) Hoisting

The mobile crane shall be loaded with a load which creates 50 % of the maximum rope force. The test consists of hoisting of the load and the immediately following lowering to the starting position. The length of the boom shall be chosen so that the full test lasts 15 to 20 seconds

(b) Slewing

With the boom adjusted to an angle of 40° to 50° to the horizontal and without load the upper carriage shall be slewed 90° to the left immediately followed by slewing back to the starting position. The jib shall be at its minimum length. The observation period shall be the time needed to carry out the working cycle

(c) Derricking

The test starts with raising the short jib from the lowest working position immediately followed by the lowering of the jib to its original position. The movement shall be executed without load. The duration of the test shall be at least 20 seconds

(d) Telescoping (if applicable)

With the jib adjusted to an angle of 40° to 50° to the horizontal without load and the jib fully retracted, the telescoping cylinder for the first section only shall be extended together with the first section to its full length and immediately retracted together with the first section

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

The resulting sound power level is calculated by:

i) if telescoping is applicable

$$L_{WA} = 10 \log (0.4 \times 10^{0.1L_{WAa}} + 0.25 \times 10^{0.1L_{WAb}} + 0.25 \times 10^{0.1L_{WAc}} + 0.1 \times 10^{0.1L_{WAd}})$$

ii) if telescoping is not applicable

$$L_{WA} = 10 \log (0.4 \times 10^{0.1L_{WAa}} + 0.3 \times 10^{0.1L_{WAb}} + 0.3 \times 10^{0.1L_{WAc}})$$

where

L_{WAa} is the sound power level for the hoisting cycle

L_{WAb} is the sound power level for the slewing cycle

L_{WAc} is the sound power level for the derricking cycle

L_{WAd} is the sound power level for the telescoping cycle (if applicable)

39. MOBILE WASTE CONTAINERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

- Reflecting surface of concrete or non-porous asphalt
- Laboratory room which provides a free field over a reflecting plane

Environmental correction K_{2A}

Measurement in the open air

$K_{2A} = 0$

Measurement indoors

The value of the constant K_{2A} , determined in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB, in which case K_{2A} shall be disregarded.

Measurement surface/number of microphone positions/measuring distance

Hemisphere/six microphone positions according to Part A item 5/r = 3m

Operating conditions during test

All the measurements shall be carried out with an empty container

Test No 1: Free shutting down of the lid along the container body

To minimise his influence on the measurements, the operator shall stand at the back side of the container (hinge side). The lid shall be released by its middle, to prevent warping during its fall

The measurement is carried out during the following cycle, repeated 20 times:

- initially, the lid is raised vertically
- the lid is released forward, if possible without giving an impulse, with the operator at the back of the container, unmoving until the lid is shut
- after complete shutting, the lid is raised to its initial position

Note: If necessary the operator can move temporarily to raise the lid.

Test No 2: Complete opening of the lid

To minimise his influence on the measurements, the operator shall stand at the back side of the container (hinge side) for the four-wheel containers, or on the right side of the container (between microphone position 10 and microphone position 12) for the two-wheel containers. The lid shall be released by its middle or as near as possible to its middle

To prevent any moving of the container, wheels shall be locked during the test. For the two-wheel containers, and to prevent any bounce of the container, the operator can maintain it by placing his hand on the top rim

The measurement is carried out during the following cycle:

- initially, the lid is opened horizontally
- the lid is released without giving an impulse
- after complete opening, and before a possible rebound, the lid is raised to its initial position

Test No 3: Rolling of the container over an artificial irregular track

For this test, an artificial test track, simulating irregular ground is used. This test track consists of two parallel strips of steel mesh (6 m long and 400 mm wide), fastened in the reflecting plane approximately every 20 cm.

The distance between the two strips is adapted according to the type of container, in order to allow the wheels to roll all over the whole length of the track. The mounting conditions shall ensure a flat surface. If necessary, the track is fastened on the ground with resilient material to avoid emission of parasitic noise

Note: Every strip can be composed of several 400 mm wide elements fitted together

An example of adequate track is given in Figures 39.1 and 39.2

The operator is situated at the lid hinge side

The measurement is carried out while the operator draws the container along the artificial track, with a constant speed of approximately 1 m/s, between points A and B (4.24 m distance — see Figure 39.3) when the wheel axle, for a 2-wheel container, or the first wheel axle for a 4-wheel container, reaches point A or point B. This procedure is repeated three times in each direction

During the test, for a 2-wheel container, the angle between the container and the track shall be 45°. For a 4-wheel container, the operator shall ensure an appropriate contact of all the wheels with the track.

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

Test Nos 1 and 2: Free shutting down of the lid along the container body and complete opening of the lid

If possible, the measurements are carried out simultaneously at the six microphone positions. Otherwise, the sound levels measured at each microphone position will be classified in increasing order and the sound power levels are calculated by associating the values at each microphone position according to their row.

The A-weighted single-event sound pressure level is measured for each of the 20 shuttings and the 20 openings of the lid at each measurement point. The sound power levels L_{WA} shutting and L_{WA} opening are calculated from the quadratic mean of the five highest values among those obtained.

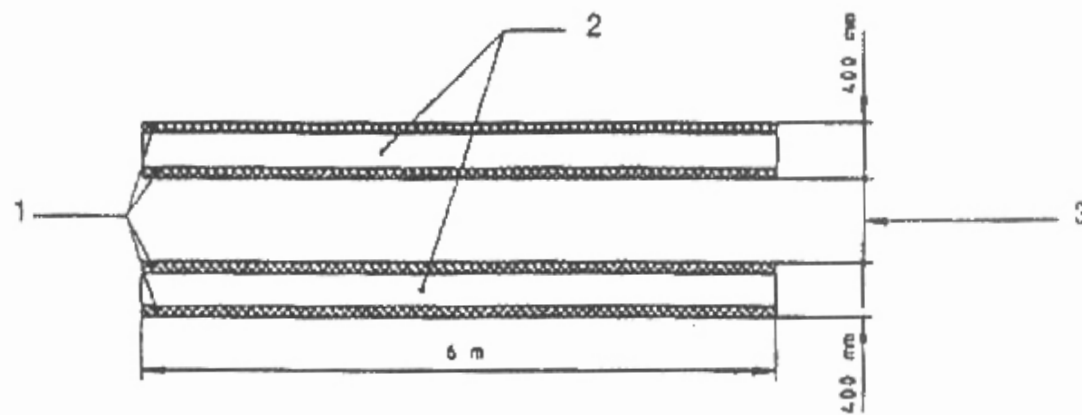
Test No 3: Rolling the container over an artificial irregular track

The period of observation T shall be equal to the duration necessary to cover the distance between point A and point B on the track.

The sound power level L_{WA} rolling is equal to the mean of six values differing by less than 2 dB. If this criterion is not fulfilled with six measurements, the cycle is repeated as far as necessary.

The resulting sound power level is calculated by

$$L_{WA} = 10 \log \frac{1}{3} (10^{0.1 L_{WA} \text{ shutting}} + 10^{0.1 L_{WA} \text{ opening}} + 10^{0.1 L_{WA} \text{ rolling}})$$

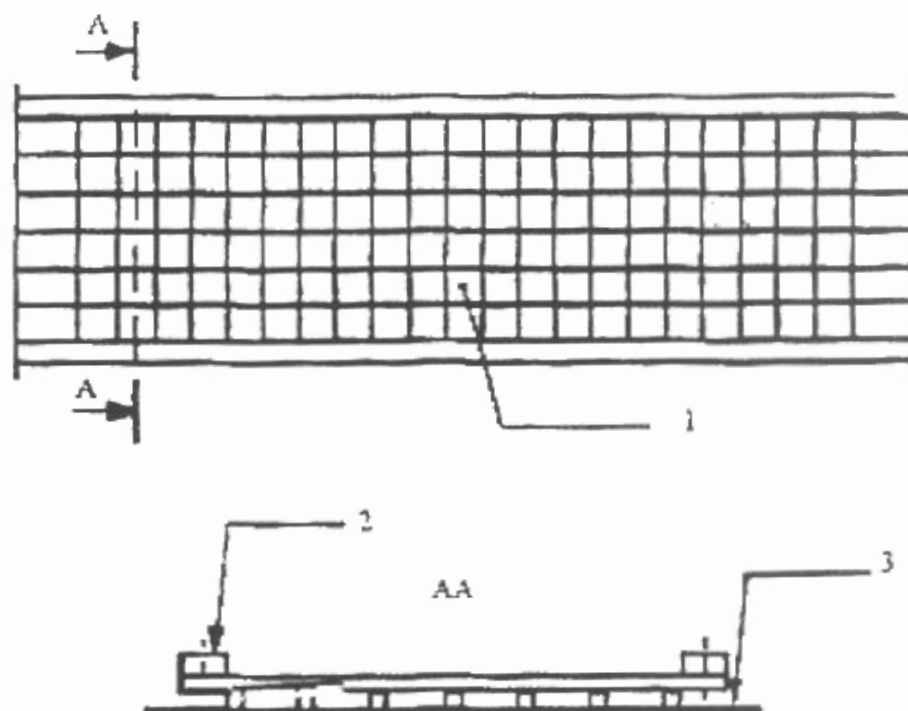
*Figure 39.1***Drawing of the rolling track**

- 1 Wooden wire mesh cleat
- 2 Rolling parts
- 3 Adapted to the container

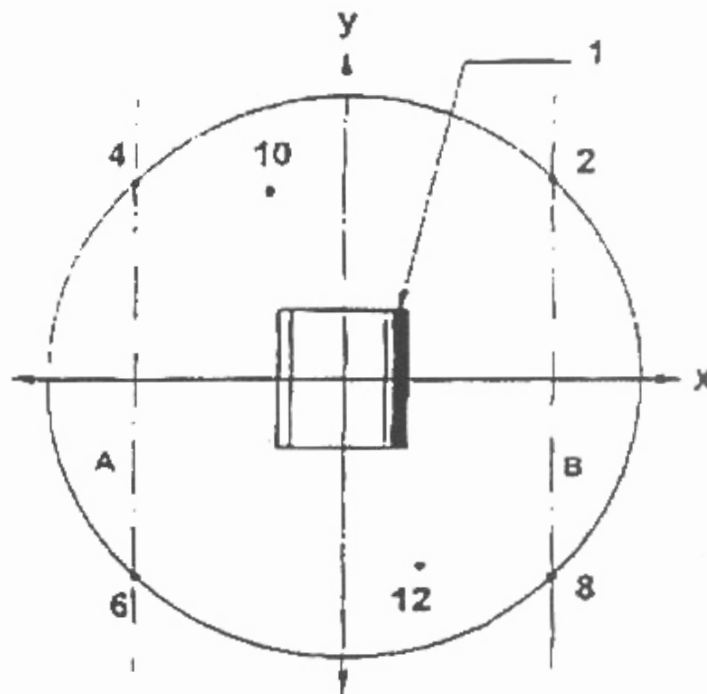
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Figure 39.2

Detail of construction and mounting of the rolling track



- | | |
|--------------------------------|---|
| 1. — Rigid steel thread (4 mm) | 2. Wooden wire mesh cleat (20 mm x 25 mm) |
| — Mesh of net (50 mm x 50 mm) | 3. Reflecting plane |



1 Hinge

40. MOTOR HOES

See No 32

The tool shall be disconnected during measurement

41. PAVER-FINISHERS**Basic noise emission standard**

MSA EN ISO 3744:2000

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

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spreading system	at least 40 % of maximum value
hammer (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 seconds

42. PILING EQUIPMENT

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 6395:2002

Operating conditions during test

Test under load

The piling equipment is installed at the top of a pile which has sufficient resistance in the ground to allow the equipment to work at a steady speed. In the case of impact hammers, the cap must be supplied with a new, wooden filling. The head of the pile is 0.50 m above the test area

Period of observation

The period of observation shall at least be 15 seconds

43. PIPELAYERS

See No 0

44. PISTE CATERPILLARS

See No 0

45. POWER GENERATORS

Basic noise emission standard

MSA EN ISO 3744:2000

Environmental correction K_{2A}

Measurement in the open air

$K_{2A} = 0$

Measurement in doors

The value of the constant K_{2A} , determined without artificial surface and in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB. in which case K_{2A} shall be — disregarded

Measurement surface/number of microphone positions/measuring distance

Hemisphere/6 microphone positions according to Part A item 5/according to Part A item 5. If $l > 2$ m a parallelepiped according to MSA EN ISO 3744:2000 may be used with measuring distance $d = 1$ m.

Operating conditions during test

Mounting of equipment

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

MSA ISO 8528-10:2002, point 9

Period of observation

The period of observation shall at least be 15 seconds

46. POWER SWEEPERS

Basic noise emission standard

MSA EN ISO 3744:2000

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 equipment: 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 seconds

47. REFUSE COLLECTION VEHICLES

Basic noise emission standard

MSA EN ISO 3744:2000

Operating conditions during test

Test under load

The refuse collection vehicle shall be tested in a stationary position for the following operating conditions.

1. The engine is running at maximum speed provided by the manufacturer. The equipment shall not be running. This test is not carried out for vehicles with electrical supply only
2. The compaction system is running

The refuse collection vehicle and the hopper receiving the waste are empty

If the engine speed is automatically accelerated when the compaction system is running, this value shall be measured. If the measured value is lower than the speed provided by the manufacturer by more than 5 % the test is carried out with the engine accelerated by the cab accelerator, to ensure the engine speed provided by the manufacturer

If the engine speed for the compaction system is not provided by the manufacturer or if the vehicle is not provided with an automatic accelerator, then the engine speed, issued by the cab accelerator shall be 1 200 rpm

3. The lifting device is running up and down, without load and without container.

^aThe engine speed is obtained and controlled as for the compaction system running (point 2)

4. Material is falling into the refuse collection vehicle

Materials are emptied in bulk with the lifting device into the hopper (initially empty). A two-wheeled container with a 240 l capacity, complying with MSA EN 840-1:2000 shall be used for this operation. If the lifting device is not able to pick up such a container, a container with a capacity close to 240 l shall be used. The material shall consist of 30 tubes of PVC, each with a 0,4 kg approximate mass and with the following dimensions:

- length: 150 mm $\pm$ 0,5 mm
- nominal external diameter: 90 mm $\pm$ 0,3/- 0 mm
- nominal depth: 6,7 mm $\pm$ 0,9/- 0 mm

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

The period of observation shall be:

1. at least 15 seconds. The resulting sound power level shall be L_{WA1}
2. at least three complete cycles, if the compaction system is running automatically.

If the compaction system is not running automatically, but cycle by cycle, measurements are carried out at least during three cycles.

The resulting sound power level (L_{WA2}) shall be the root mean square value of the three (or more) measurements

3. at least three continuous complete work-cycles, including the entirety of lifting device up and lifting device down. The resulting sound power level (L_{WA3}) shall be the root mean square value of the three (or more) measurements
4. at least three complete work-cycles, each including the falling of 30 tubes into the hopper. Each cycle shall not exceed 5 seconds. For these measurements $L_{pAeq,T}$ is replaced by $L_{pA,1s}$. The resulting sound power level (L_{WA4}) shall be the root mean square value of the three (or more) measurements.

The resulting sound power level is calculated by:

B 706

$$L_{WA} = 10 \log (0.06 \times 10^{0.1 L_{WA1}} + 0.53 \times 10^{0.1 L_{WA2}} + 0.4 \times 10^{0.1 L_{WA3}} + 0.01 \times 10^{0.1 L_{WA4}})$$

Note: In the case of a refuse collection vehicle only electrically supplied, the coefficient associated to L_{WA1} is assumed to be equal to 0.

48. ROAD MILLING MACHINES

Basic noise emission standard

MSA EN ISO 3744:2000

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 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 seconds

49. SCARIFIERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 11094:2002

In case of dispute, measurements shall be carried out in the open air on the asphalt surface (Point 4.1.2 of MSA ISO 11094:2002)

Environmental correction K_{2A}

Measurement in the open air

$$K_{2A} = 0$$

Measurements indoors

The value of the constant K_{2A} , determined without artificial surface and in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB, in which case K_{2A} shall be disregarded

Measurement surface/number of microphone positions/measuring distance

MSA ISO 11094:2002

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 seconds

50. SHREDDERS/CHIPPERS

Basic noise emission standard

MSA EN ISO 3744:2000

Test area

MSA ISO 11094:2002

Environmental correction K_{2A}

Measurement in the open air

$K_{2A} = 0$

Measurements indoors

The value of the constant K_{2A} , determined without artificial surface and in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB, in which case K_{2A} shall be disregarded

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Measurement surface: number of microphone positions-measuring distance

MSA ISO 11094:2002

Operating conditions during test

Test under load

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

The work-cycle 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 approximately equal to the maximum that the shredder/chipper is designed to accept specified in the instructions supplied to the purchaser

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 seconds. If both operation conditions are possible, the higher sound power level has to be given

51. SNOW REMOVING MACHINES WITH ROTATING TOOLS

Basic noise emission standard

MSA EN ISO 3744:2000

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 seconds

52. SUCTION VEHICLES

Basic noise emission standard

MSA EN ISO 3744:2000

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 seconds.

53. TOWER CRANES

Basic noise emission standard

MSA EN ISO 3744:2000

Measurement surface/number of microphone positions/measuring distance

Measurements at ground - level

Hemisphere/6 microphone positions according to Part A paragraph 5/according to Part A paragraph 5.

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 m².

The microphone positions shall be as follows (see figure 53.1):

Four microphone positions on a horizontal plane passing through the geometric centre of the mechanism ($H = h/2$) with $L = 2.80$ m and $d = 2.80 - l/2$

L = half-distance between two consecutive microphone positions

l = length of mechanism (along axis of jib)

b = width of mechanism

B 710

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 $(t_i + t_f)$ seconds:

t_i 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 $t_i = 3$ 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 standstill.

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

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

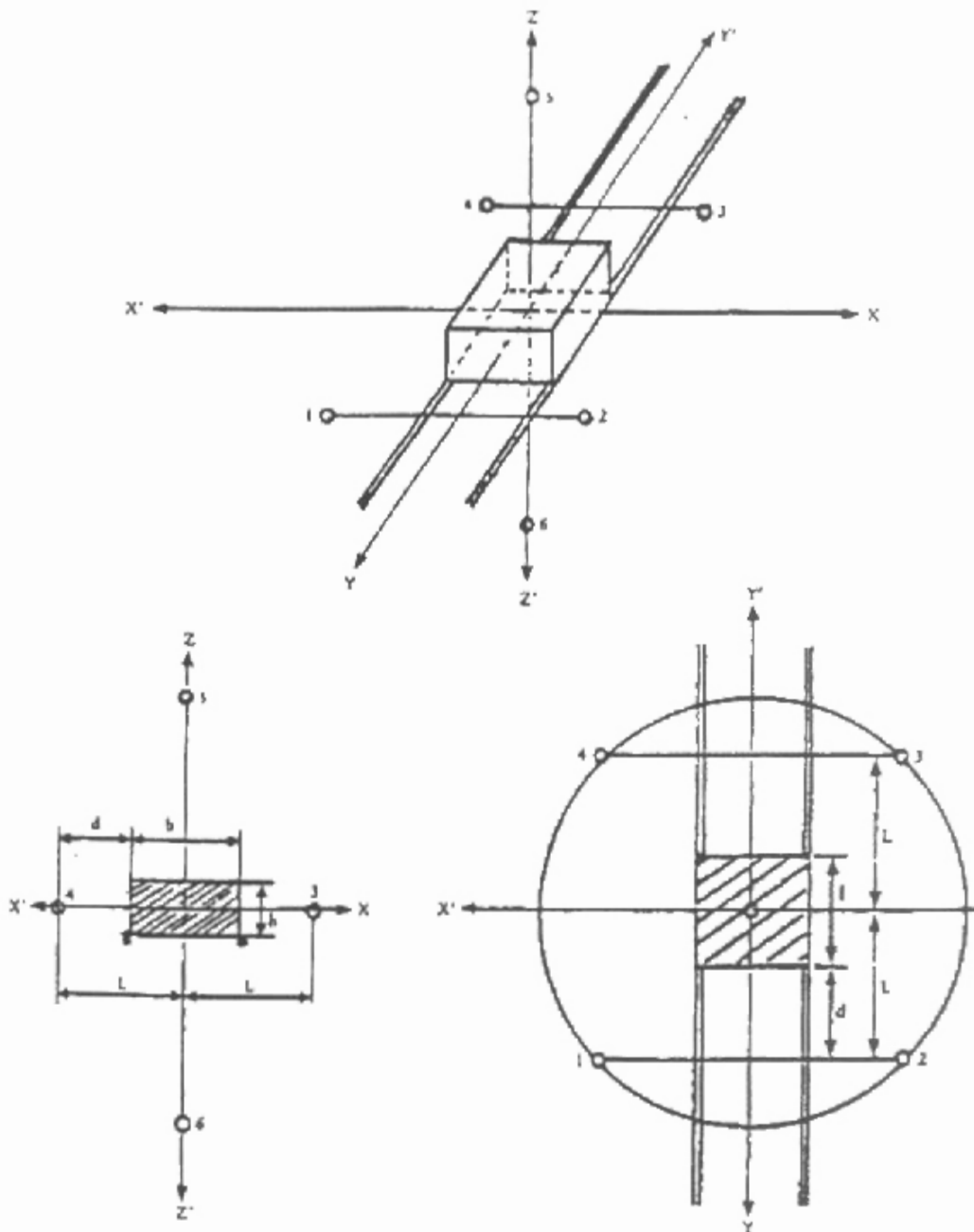
$$L_{pi} = 10 \lg [(t_i 10^{0.1L_{pi}} + t_f 10^{0.1L_{fi}})/(t_i + t_f)]$$

L_{pi} being the sound pressure level at microphone position i during period t_i ,

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

Figure 53.1

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



54. TRENCHERS

See Note 1

55. TRUCK MIXERS

Basic noise emission standard

MSA EN ISO 3744:2000

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 to 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 specified in the instructions supplied to the purchaser

Period of observation

The period of observation shall at least be 15 seconds

56. WATER PUMP UNITS

Basic noise emission standard

MSA EN ISO 3744:2000

Measurement surface/number of microphone positions/measuring distance

Parallelepiped/according to MSA EN ISO 3744:2000 with measurement distance $d = 1$ m

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

Period of observation

The period of observation shall at least be 15 seconds

57. WELDING GENERATORS

Basic noise emission standard

MSA EN ISO 3744:2000

Environmental correction K_{2A}

Measurement in the open air

$$K_{2A} = 0$$

Measurement indoors

The value of the constant K_{2A} , determined in accordance with Annex A to MSA EN ISO 3744:2000, shall be ≤ 2.0 dB, in which case K_{2A} shall be disregarded

Measurement surface/number of microphone positions/measuring distance

Hemisphere/6 microphone positions according to Part A item 5/according to Part A item 5

If $l > 2$ m: a parallelepiped according to MSA EN ISO 3744:2000 may be used with measuring distance $d = 1$ 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 conditions of installation

Test under load

MSA ISO 8528-10:2002, point 9

Period of observation

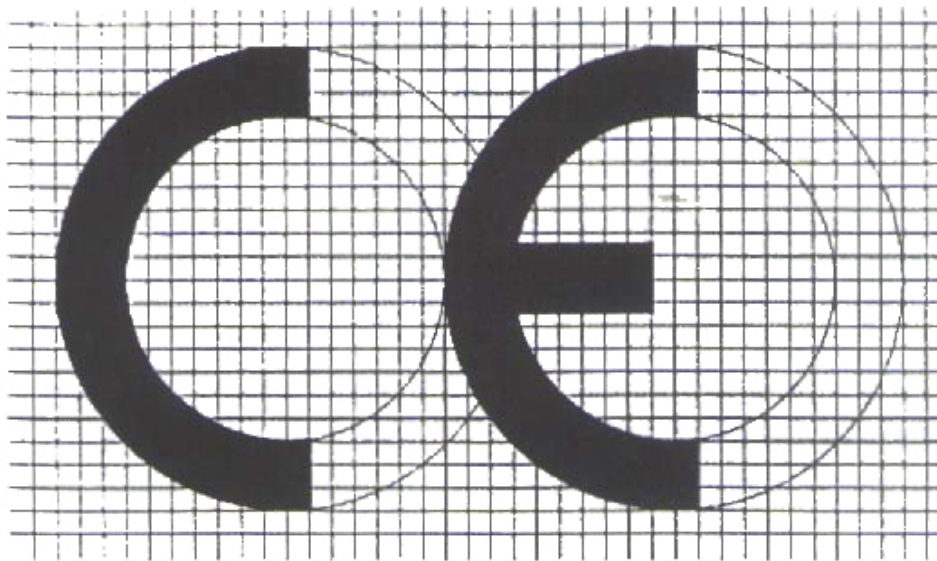
The period of observation shall at least be 15 seconds

Schedule IV

Based on Annex IV of the Directive

MODELS OF THE CE MARKING OF CONFORMITY AND OF THE INDICATION OF THE GUARANTEED SOUND POWER LEVEL

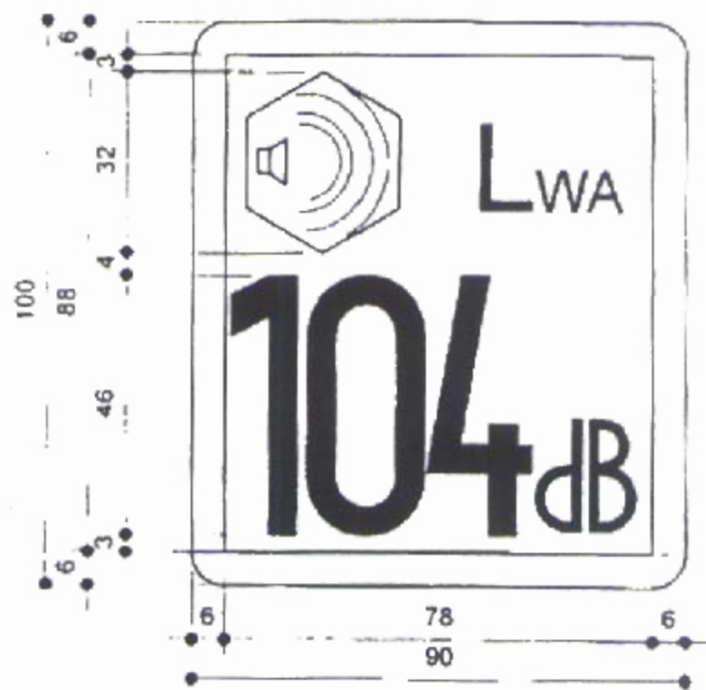
The CE conformity marking must consist of the initials "CE" taking the following form:



For the avoidance of doubt, it is hereby declared that the grid providing the background in the above graduated drawing is not part of the CE marking

- if the CE marking is reduced or enlarged according to the size of the equipment, the proportions given in the above drawing must be respected,
- the various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm,
- the CE marking is followed by the identification number of the notified body, if it intervenes in the control of production, as well as by the last two figures of the year that the CE marking is affixed.

The indication of the guaranteed sound power level must consist of the single-number of the guaranteed sound power in dB, the sign L_{WA} and a pictogram taking the following form:



If the indication is reduced or enlarged according to the size of the equipment the proportions given in the above drawing must be respected. However, the vertical dimension of the indication should, if possible, not be less than 40 mm.

Schedule V

Based on Annex V of the Directive

INTERNAL CONTROL OF PRODUCTION

1. This Schedule describes the procedure whereby the manufacturer, or his authorised representative, who carries out the obligations laid down in point 2, ensures and declares that the equipment concerned satisfies the requirements of these regulations. The manufacturer, or his authorized representative, must affix the CE marking of conformity and the indication of the guaranteed sound power level as required in regulation 11 of these regulations to each piece of equipment and draw up a written EC declaration of conformity as required in regulation 8 of these regulations.
2. The manufacturer, or his authorised representative, 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. The manufacturer, or his authorised representative, may entrust another person to keep the technical documentation. In this case he has to include the name and address of this person in the EC declaration of conformity.
3. The technical documentation must enable the conformity of the equipment with the requirements of these regulations to be assessed. It must contain at least the following information:
 - name and address of the manufacturer or his authorised representative
 - a description of the equipment
 - make
 - trade name
 - type, series and numbers
 - the technical data relevant for the identification of the equipment and the assessment of its noise emission, including, if appropriate, schematic drawings and any description and explanation necessary for their understanding

- the reference to these regulations
 - the technical report of noise measurements carried out in accordance with the provisions of these regulations
 - the technical instruments applied and the results of the evaluation of the uncertainties due to production variation and their relation to the guaranteed sound power level.
4. The manufacturer must take all measures necessary in order that the manufacturing process ensures continuing compliance of the manufactured equipment with the technical documentation referred to in points 2 and 3 and with the requirements of these regulations.
-

Schedule VI

Based on Annex VI of the Directive

INTERNAL CONTROL OF PRODUCTION WITH ASSESSMENT OF TECHNICAL DOCUMENTATION AND PERIODICAL CHECKING

1. This Schedule describes the procedure whereby the manufacturer, or his authorised representative, who carries out the obligations laid down in points 2, 5 and 6 ensures and declares that the equipment concerned satisfies the requirements of these regulations. The manufacturer, or his authorized representative, must affix the CE marking of conformity and the indication of the guaranteed sound power level as required in regulation 11 of these regulations to each piece of equipment and draw up a written EC declaration of conformity as required in regulation 8 of these regulations.
2. The manufacturer, or his authorised representative, 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. The manufacturer, or his authorised representative, may entrust another person to keep the technical documentation. In this case he has to include the name and address of this person in the EC declaration of conformity.
3. The technical documentation must enable the conformity of the equipment with the requirements of these regulations to be assessed. It must contain at least the following information:
 - name and address of the manufacturer or his authorised representative
 - a description of the equipment
 - make
 - trade name
 - type, series and numbers
 - the technical data relevant for the identification of the equipment and the assessment of its noise emission, including, if appropriate, schematic

drawings and any description and explanation necessary for their understanding

- the reference to these regulations
- the technical report of noise measurements carried out in accordance with the provisions of these regulations
- the technical instruments applied and the results of the evaluation of the uncertainties due to production variation and their relation to the guaranteed sound power level.

4. The manufacturer must take all measures necessary in order that the manufacturing process ensures compliance of the manufactured equipment with the technical documentation referred to in points 2 and 3 and with the requirements of these regulations.

5. *Evaluation by the notified body prior to placing on the market*

The manufacturer, or his authorised representative, shall present a copy of his technical documentation to a notified body of his choice before the first item of equipment is placed on the market or put into service.

If there are doubts about the plausibility of the technical documentation, the notified body shall inform accordingly the manufacturer or his authorised representative, and if need be, carry out, or have carried out modifications to the technical documentation, or possibly, tests deemed necessary.

After the notified body has issued a report confirming that the technical documentation satisfies the provisions of these regulations, the manufacturer or his authorised representative may affix the CE marking to the equipment and issue an EC declaration of conformity in accordance with regulations 11 and 8 of these regulations, for which he will bear complete responsibility.

6. *Evaluation by the notified body during production*

The manufacturer, or his authorised representative, shall further involve the notified body in the production phase according to one of the following procedures to be chosen by the manufacturer or his authorised representative:

- the notified body shall carry out periodical checks in order to verify continuing compliance of the manufactured equipment with the technical documentation and with the requirements of these regulations; in particular the notified body shall concentrate on:

- the correct and complete marking of the equipment according to regulation 11 of these regulations,
- issuing of the EC declaration of conformity according to regulation 8 of these regulations,
- the technical instruments applied and the results of the evaluation of the uncertainties due to production variation and their relation to the guaranteed sound power level,

The manufacturer, or his authorised representative, shall give the notified body free access to all the internal documentation supporting these procedures, the actual results of the internal audits and the corrective actions which have been taken, if any

Only if the above checks give unsatisfactory results shall the notified body carry out noise tests, which, on its own judgement and experience, may be simplified or completely carried out according to the provisions laid down in Annex III of the Directive, which is set out in Schedule III hereto, for the relevant type of equipment,

- the notified body shall carry out or have carried out product checks at random intervals.

An adequate sample of the final equipment, chosen by the notified body, must be examined and appropriate noise tests as set out in Annex III of the Directive, which is set out in Schedule III hereto, or equivalent tests, must be carried out to check the conformity of the product with the relevant requirements of the regulations. The product checking must include the following aspects:

- the correct and complete marking of the equipment according to regulation 11 of these regulations,
- issuing of the EC declaration of conformity according to regulation 8 of these regulations.

In both procedures, the frequency of the checks shall be defined by the notified body according to the results of previous evaluations, the need to monitor corrective actions and further guidance for the frequency of the checks that may be given by the yearly production and the general reliability of the manufacturer to maintain the guaranteed values; however a check shall be carried out at least once every three years.

Schedule VII

Based on Annex VII of the Directive

UNIT VERIFICATION

1. This Schedule describes the procedure whereby the manufacturer, or his authorised representative, ensures and declares that the equipment which has been issued with the certificate referred to in point 4 conforms to the requirements of these regulations. The manufacturer, or his authorised representative, must affix the CE marking supplemented by the information as required in regulation 11 of these regulations to the equipment and draw up the EC declaration of conformity referred to in regulation 8 of these regulations.
2. The application for a unit verification must be lodged by the manufacturer or his authorised representative 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
- a written declaration that the same application has not been lodged with any other notified body
- a technical documentation conforming to the requirements set below:
- a description of the equipment
- trade name
- type, series and numbers
- the technical data relevant for the identification of the equipment and the assessment of its noise emission, including, if appropriate, schematic drawings and any description and explanation necessary for their understanding
- the reference to these regulations.

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 these regulations, the noise tests will be carried out
- in accordance with these regulations, carry out or have carried out the necessary noise tests.

4. Where the equipment meets the provisions of these regulations, the notified body must issue a certificate of conformity to the applicant as described in Annex X of the Directive, which is set out in Schedule X hereto.

If the notified body refuses to issue a certificate of conformity, it must state the detailed grounds for the refusal.

5. 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.

Schedule VIII

Based on Annex VIII of the Directive

FULL QUALITY ASSURANCE

1. This Schedule describes the procedure whereby the manufacturer who satisfies the obligations of point 2 ensures and declares that the equipment concerned satisfies the requirements of these regulations. The manufacturer, or his authorised representative, must affix the CE marking supplemented by the information as required in regulation 11 of these regulations to each product and draw up the written EC declaration of conformity referred to in regulation 8 of these regulations.
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 shall 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 with a notified body of his choice.

The application must include:

- all relevant information for the product category envisaged, including technical documentation of all equipment already in phase of design or production that must contain at least the following information:
- name and address of the manufacturer or his authorised representative
- a description of the equipment
- make
- trade name
- type, series and numbers
- the technical data relevant for the identification of the equipment and the assessment of its noise emission, including, if appropriate, schematic

drawings and any description and explanation necessary for their understanding

- the reference to these regulations
- the technical report of noise measurements carried out in accordance with the provisions of these regulations
- the technical instruments applied and the results of the evaluation of the uncertainties due to production variation and their relation to the guaranteed sound power level
- a copy of the EC declaration of conformity
- the documentation concerning the quality assurance system.

- 3.2. The quality assurance system must ensure compliance of the product with the requirements of the regulations 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 technical documentation to be drawn up for each product, containing at least the information indicated in point 3.1 for the technical documentations mentioned there
- 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 MSA EN ISO 9001:2000.

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 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 reassessment 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 Schedule
 - 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.
-

Schedule IX

Based on Annex IX of the Directive

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 judgement 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 assessment of technical documentation
 - 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 these regulations or any provisions of national law giving effect to it.
-

Schedule X

Based on Annex X of the Directive

UNIT VERIFICATION MODEL OF CONFORMITY CERTIFICATE

EC CONFORMITY CERTIFICATE													
1. MANUFACTURER	2. EC CONFORMITY CERTIFICATE No.												
3. CERTIFICATE HOLDER	4. ISSUING DIRECTIVE APPLICABLE												
5. LABORATORY REPORT No. Date Measured sound power level: dB	6. EC DIRECTIVE APPLICABLE / / EC												
7. DESCRIPTION OF EQUIPMENT <table border="0"> <tr> <td>Type of equipment:</td> <td>Category</td> </tr> <tr> <td>Trade name</td> <td></td> </tr> <tr> <td>Type No.</td> <td>Identification No.</td> </tr> <tr> <td>Type of motor(s):</td> <td>Manufacturer</td> </tr> <tr> <td>Type of energy:</td> <td>Power (kW)</td> </tr> <tr> <td colspan="2">Other required technical characteristics:</td> </tr> </table>		Type of equipment:	Category	Trade name		Type No.	Identification No.	Type of motor(s):	Manufacturer	Type of energy:	Power (kW)	Other required technical characteristics:	
Type of equipment:	Category												
Trade name													
Type No.	Identification No.												
Type of motor(s):	Manufacturer												
Type of energy:	Power (kW)												
Other required technical characteristics:													
8. THE FOLLOWING DOCUMENTS BEARING THE NUMBER SHOWN IN BOX 2 ARE ANNEXED TO THIS CERTIFICATE.													
9. CERTIFICATE VALID <div style="text-align: center;">(Stamp)</div> Place <div style="text-align: center;">(Signature)</div> Date: / /													

Schedule XI

Based on Article 12 of the Directive

EQUIPMENT SUBJECT TO NOISE LIMITS

The guaranteed sound power level of equipment listed below shall not exceed the permissible sound power level as laid down in the following tables of limit values:

	DEFINITION	MEASUREMENT
Builders' hoists for the transport of goods (combustion-engine driven)	Schedule I, item 3	Schedule III, Part B, item 3
Compaction machines (only vibrating and non-vibrating rollers, vibratory plates and vibratory rammers)	Schedule I, item 8	Schedule III, Part B, item 8
Compressors (<350 kW)	Schedule I, item 9	Schedule III, Part B, item 9
Concrete-breakers and picks, hand-held	Schedule I, item 10	Schedule III, Part B, item 10
Construction winches (combustion-engine driven)	Schedule I, item 12	Schedule III, Part B, item 12
Dozers (<500 kW)	Schedule I, item 16	Schedule III, Part B, item 16
Dumpers (<500 kW)	Schedule I, item 18	Schedule III, Part B, item 18
Excavators, hydraulic or rope-operated (<500 kW)	Schedule I, item 20	Schedule III, Part B, item 20
Excavator-loaders (<500 kW)	Schedule I, item 21	Schedule III, Part B, item 21
Graders (<500 kW)	Schedule I, item 23	Schedule III, Part B, item

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Hydraulic power packs	Schedule I, item 29	Schedule III, Part B, item 29
Landfill compactors, loader-type with bucket (<500 kW)	Schedule I, item 31	Schedule III, Part B, item 31
Lawnmowers (excluding agricultural and forestry equipment, and multi-purpose devices, the main motorized component of which has an installed power of more than 20 kW)	Schedule I, item 32	Schedule III, Part B item 32
Lawn trimmers/lawn edge trimmers	Schedule I, item 33	Schedule III, Part B, item 33
Lift trucks, combustion-engine driven, counterbalanced (excluding 'other counterbalanced lift trucks' as defined in Schedule I, item 36, second indent with a rated capacity of not more than 10 tonnes)	Schedule I, item 36	Schedule III, Part B, item 36
Loaders (<500 kW)	Schedule I, item 37	Schedule III, Part B, item 37
Mobile cranes	Schedule I, item 38	Schedule III, Part B, item 38
Motor hoes (<3kW)	Schedule I, item 40	Schedule III, Part B, item 40
Paver-finishers (excluding paver-finishers equipped with a high-compaction screed)	Schedule I, item 41	Schedule III, Part B, item 41
Power generators (<400kW)	Schedule I, item 45	Schedule III, Part B, item

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Hydraulic power packs	Schedule I, item 29	Schedule III, Part B, item 29
Landfill compactors, loader-type with bucket (<500 kW)	Schedule I, item 31	Schedule III, Part B, item 31
Lawnmowers (excluding agricultural and forestry equipment, and multi-purpose devices, the main motorized component of which has an installed power of more than 20 kW)	Schedule I, item 32	Schedule III, Part B item 32
Lawn trimmers/lawn edge trimmers	Schedule I, item 33	Schedule III, Part B, item 33
Lift trucks, combustion-engine driven, counterbalanced (excluding 'other counterbalanced lift trucks' as defined in Schedule I, item 36, second indent with a rated capacity of not more than 10 tonnes)	Schedule I, item 36	Schedule III, Part B, item 36
Loaders (<500 kW)	Schedule I, item 37	Schedule III, Part B, item 37
Mobile cranes	Schedule I, item 38	Schedule III, Part B, item 38
Motor hoes (<3kW)	Schedule I, item 40	Schedule III, Part B, item 40
Paver-finishers (excluding paver-finishers equipped with a high-compaction screed)	Schedule I, item 41	Schedule III, Part B, item 41
Power generators (<400kW)	Schedule I, item 45	Schedule III, Part B, item

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Tower cranes	Schedule I, item 53	Schedule III, Part B, item 53
Welding generators	Schedule I, item 57	Schedule III, Part B, item 57

Type of equipment	Net installed power P (in kW) Electric power $P_d^{(1)}$ in kW Mass of appliance m in kg Cutting width L in cm	Permissible sound power level in dB/1 pW	
		Stage I as from 3 January 2002	Stage II as from 3 January 2006
Compaction machines (vibrating rollers, vibratory plates, vibratory rammers)	$P \leq 8$	108	105
	$8 < P \leq 70$	109	106
	$P > 70$	$89 + 11 \lg P$	$86 + 11 \lg P$
Tracked dozers, tracked loaders tracked excavator-loaders	$P \leq 55$	106	103
	$P > 55$	$87 + 11 \lg P$	$84 + 11 \lg P$
Wheeled dozers, wheeled loaders, wheeled excavator-loaders, dumpers, graders, loader-type landfill compactors, combustion-engine driven counterbalanced lift trucks, mobile cranes, compaction machines (non-vibrating rollers), paver-finishers, hydraulic power packs	$P \leq 55$	104	101
	$P > 55$	$85 + 11 \lg P$	$82 + 11 \lg P$
Excavators, builders' hoists for the transport of goods, construction winches, motor hoes	$P \leq 15$	96	93
	$P > 15$	$83 + 11 \lg P$	$80 + 11 \lg P$
Hand-held concrete-breakers and picks	$m \leq 15$	107	105
	$15 < m < 30$	$94 + 11 \lg m$	$92 + 11 \lg m$

(1) P_d for welding generators: conventional welding current multiplied by the conventional load voltage for the lowest value of the duty factor given by the manufacturer.

P_d for power generators: prime power according to MSA ISO 8528-1 2002, point 13.3.2

	$m \geq 30$	$96 + 11 \lg m$	$94 + 11 \lg m$
Tower cranes		$98 + \lg P^2$	$96 + \lg P^2$
Welding and power generators	$P_{01} \leq 2$	$97 + \lg P_{01}$	$95 + \lg P_{01}$
	$2 < P_{01} \leq 10$	$98 + \lg P_{01}$	$96 + \lg P_{01}$
	$P_{01} > 10$	$97 + \lg P_{01}$	$95 + \lg P_{01}$
Compressors	$P \leq 15$	99	97
	$P > 15$	$97 + 2 \lg P$	$95 + 2 \lg P$
Lawnmowers, lawn trimmers/lawn edge trimmers	$L \leq 50$	96	94 ⁽²⁾
	$50 < L \leq 70$	100	98
	$70 < L \leq 120$	100	98 ⁽²⁾
	$L > 120$	105	103 ⁽²⁾

⁽²⁾ Indicative figures only. Definitive figures will depend on amendment of the Directive following the report required in Article 20(3). In the absence of any such amendment, the figures for stage I will continue to apply for stage II.

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).

Schedule XII

Based on Article 13 of the Directive

EQUIPMENT SUBJECT TO NOISE MARKING ONLY

The guaranteed sound power level of equipment listed below shall be subject to noise marking only:

	DEFINITION	MEASUREMENT
Aerial access platforms with combustion engine	Schedule I, item 1	Schedule III, Part B, item 1
Brush cutters	Schedule I, item 2	Schedule III, Part B, item 2
Builders' hoists for the transport of goods (with electric motor)	Schedule I, item 3	Schedule III, part B, item 3
Building site hand saw machines	Schedule I, item 4	Schedule III, Part B, item 4
Building site circular saw benches	Schedule I, item 5	Schedule III, Part B, item 5
Chain saws, portable	Schedule I, item 6	Schedule III, Part B, item 6
Combined high pressure flushers and suction vehicles	Schedule I, item 7	Schedule III, Part B, item 7
Compaction machines (explosion rammers only)	Schedule I, item 8	Schedule III, Part B, item 8
Concrete or mortar mixers	Schedule I, item 11	Schedule III, Part B, item 11
Construction winches (with electric motor)	Schedule I, item 12	Schedule III, Part B, item 12

Conveying and spraying machines for concrete and mortar	Schedule I, item 13	Schedule III, Part B, item 13
Conveyor belts	Schedule I, item 14	Schedule III, Part B, item 14
Cooling equipment on vehicles	Schedule I, item 15	Schedule III, Part B, item 15
Drill rigs	Schedule I, item 17	Schedule III, Part B, item 17
Equipment for loading and unloading silos or tanks on trucks	Schedule I, item 19	Schedule III, Part B, item 19
Glass recycling containers	Schedule I, item 22	Schedule III, Part B, item 22
Grass trimmers/glass edge trimmers	Schedule I, item 24	Schedule III, Part B, item 24
Hedge trimmers	Schedule I, item 25	Schedule III, Part B, item 25
High pressure flushers	Schedule I, item 26	Schedule III, Part B, item 26
High pressure water jet machines	Schedule I, item 27	Schedule III, Part B, item 27
Hydraulic hammers	Schedule I, item 28	Schedule III, Part B, item 28
Joint cutters	Schedule I, item 30	Schedule III, Part B, item 30
Leaf blowers	Schedule I, item 34	Schedule III, Part B, item 34
Leaf collectors	Schedule I, item 35	Schedule III, Part B, item 35
Lift trucks, combustion-engine driven counterbalanced (only 'other counterbalanced lift trucks' as defined in Schedule I, item 36, second indent, with a rated capacity	Schedule I, item 36	Schedule III, Part B, item 36

of not more than 10 tonnes)		
Mobile waste containers	Schedule I, item 39	Schedule III, Part B, item 39
Paver-finishers (equipped with a high-compaction screed)	Schedule I, item 41	Schedule III, Part B, item 41
Piling equipment	Schedule I, item 42	Schedule III, Part B, item 42
Pipelayers	Schedule I, item 43	Schedule III, Part B, item 43
Piste caterpillars	Schedule I, item 44	Schedule III, Part B, item 44
Power generators (≥ 400 kW)	Schedule I, item 45	Schedule III, Part B, item 45
Power sweepers	Schedule I, item 46	Schedule III, Part B, item 46
Refuse collection vehicles	Schedule I, item 47	Schedule III, Part B, item 47
Road milling machines	Schedule I, item 48	Schedule III, Part B, item 48
Scarifiers	Schedule I, item 49	Schedule III, Part B, item 48
Shredders/chippers	Schedule I, item 50	Schedule III, Part B, item 50
Snow-removing machines with rotating tools (self-propelled, excluding attachments)	Schedule I, item 51	Schedule III, Part B, item 51
Suction vehicles	Schedule I, item 52	Schedule III, Part B, item 52
Trenchers	Schedule I, item 54	Schedule III, Part B, item 54
Truck mixers	Schedule I, item 55	Schedule III, Part B, item 55
Water pump units (not for use under water)	Schedule I, item 56	Schedule III, Part B, item 56