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Safety of hand-held electric motor operated tools -- Part 2-16: Particular requirements for tackers

Sicherheit handgeführter motorbetriebener Elektrowerkzeuge -- Teil 2-16: Besondere Anforderungen für Eintreibgeräte

Sécurité des outils électroportatifs à moteur -- Partie 2-16: Règles particulières pour les agrafeuses

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Safety of hand-held electric motor operated tools
Part 2-16: Particular requirements for tackers

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CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard has been prepared by the Technical Committee CENELEC TC 61F, Safety of hand-held and transportable motor-operated electric tools. The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50144-2-16 on 2003-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2004-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2006-02-01

This standard is divided into two parts

Part 1 General requirements which are common to most hand-held electric motor-operated tools (for the purpose of this standard referred to simply as tools)

Part 2 Requirements for particular types of tools which either supplement or modify the requirements given in Part 1 to account for the particular hazards and characteristics of these specific tools.

This European Standard has been prepared under a mandate given to CEN/CENELEC by the European Commission and the European Free Trade Association and supports the essential health and safety requirements of the Machinery Directive.

Compliance with the relevant clauses of Part 1 together with this Part 2 provides one means of conforming with the specified essential health and safety requirements of the Directive.

For noise and vibration, this standard covers the requirements for their measurement, the provision of information arising from these measurements and the provisions of information about the personal protective equipment required.
Specific requirements for the reduction of the risk arising from noise and vibration through the design of the tool are not given as this reflects the current state of the art.

CEN/TC 255 has produced standards for non electric tackers (EN 792-13).

Warning: Other requirements arising from other EC Directives can be applicable to the products falling within the scope of this standard.

This standard follows the overall requirements of EN 292-1 and EN 292-2.

Subclauses, tables and figures which are additional to those in Part 1 are numbered starting from 101.

NOTE In this standard the following print types are used:
- requirements proper;
- *test specifications;*
- explanatory matter.

Contents

1 Scope

This clause of Part 1 is applicable except as follows:

Addition:

This standard applies to tackers.

2 Definitions

This clause of Part 1 is applicable except as follows:

2.2.18 *Replacement:*

2.2.18
normal load
load applied to the tool when it is operated at rated voltage or at the upper limit of the rated voltage against wood or a similar material, at the rate corresponding to the number of operations per minute or per second marked on the nameplate and with fasteners (such as pins, nails or staples) specified by the manufacturer

Additional subclause:

2.2.101
tacker
tool in which the supply energy is applied in a linear movement to a loaded fastener like metal pins, nails or staples for the purpose of driving them into defined materials. During the driving operation the fastener leaves the tool partially or completely

3 General requirements

This clause of Part 1 is applicable.

4 General conditions for the tests

This clause of Part 1 is applicable.

5 Rating

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable.

7 Marking and information for use

This clause of Part 1 is applicable except as follows:

7.1 *Modification*:

Rated input or rated current need not be marked.

Addition:

- maximum number of operations per minute or per second.

7.6 *Addition:*

The maximum number of operations per minute or operations per second shall be marked with the following "...min^{-1}", "…/min", "…s^{-1}" or "…/s".

7.13.1 *Addition:*

- the type and dimensions, or manufacturer reference number, of the recommended fasteners;
- information on how to operate the tool safely in order to minimize the risk of personal injury to the operator or any other person who may be in the vicinity;
- for the maintenance of the tacker only spare parts provided by the manufacturer shall be used.

8 Protection against electric shock

This clause of Part 1 is applicable.

9 Starting

This clause of Part 1 is applicable.

10 Input and current

This clause of Part 1 is not applicable.

11 Heating

This clause of Part 1 is applicable except as follows:

11.5 *Modification:*

The tool is operated for a period equal to the rated operating time or in absence of the relevant marking, for 30 min as specified for normal load. The temperature rises are measured at the end of the operating period.

12 Leakage current

This clause of Part 1 is applicable.

13 Environmental requirements

This clause of Part 1 is applicable except as follows:

13.1 This subclause is not applicable.

13.2 *Replacement*

13.2 Noise test code

13.2.1 Sound power level determination

13.2.1.1 General

The sound power level of tackers shall be determined by applying EN ISO 3744.

The sound power level shall be given as A-weighted single event sound power level in dB.

The reference sound power is 1 pW (1 pW = 10^{-12} W).

13.2.1.2 Measurement procedure

The measurement surface is a hypothetical cube on which the measurement positions 1 to 9 are located and which envelops the tacker (see Figure 101).

The measurement surface ends at floor level, which is to be regarded as a sound reflecting surface. The height of the centre point of the tacker above the ground shall be (1,00 ± 0,10) m. The centre point is located on the driving axis at half of the height of the tacker.

NOTE Because a tacker is of small size the centre point of a tacker is used instead of the surface.

The measurement distance shall be 1,00 m from the centre point of the tacker (see Figure 101).

The location of the nine measurement positions *i* = 1, 2, ..., 9 shall be that of Figure 101.

The A-weighted single-event sound pressure level of one driving process $L'_{pA,1s}$ shall be measured five times at each measurement position *i*. The arithmetic mean of the five values shall be determined for each measurement position and is denoted $L'_{pA,1s,i}$ (with *i* = 1, 2,…,9).

13.2.1.3 Calculation of the A-weighted single-event sound power level

The area of the enveloping measurement surface *S* according to the dimensions given in Figure 101 is 20 m².

The value of the measure L_S is

$$L_S = 10 \lg \frac{S}{S_0} \text{ dB} = 13 \text{ dB} \qquad (1)$$

where S_0 = 1 m².

The A-weighted single-event surface sound pressure level on the measurement surface $\overline{L}_{pA,1s,1m}$ is calculated from the sound pressure levels measured at the nine (1 to 9) measuring positions on the enveloping measurement surface in accordance with 13.2.1.2

$$\overline{L}_{pA,1s,1m} = 10 \lg \left[\frac{1}{9} \sum_{i=1}^{9} 10^{0,1L'_{pA,1s,i}} \right] \text{dB} - K_{1A} - K_{2A} \qquad (2)$$

NOTE It is recommended to carry out measurements in an anechoic test room over a reflecting plane with an environmental correction K_{2A} less than 0,5 dB. In this case the background noise correction K_{1A} and the environmental correction K_{2A} are negligible.

The A-weighted single-event sound power level, which is regarded as the emission sound power level as required by A.1.7.4 f) of EN 292-2, is calculated from the A-weighted single-event surface sound pressure level and the measure L_S of the measurement surface

$$L_{WA,1s} = \overline{L}_{pA,1s,1m} + L_S \qquad (3)$$

13.2.2 Emission sound pressure level determination

13.2.2.1 General

The single event emission sound pressure level, which is regarded as the emission sound pressure level as required by A.1.7.4 f) of EN 292-2, shall be determined by applying EN ISO 11201.

13.2.2.2 Determination of the work station

The measurement position, 0, for the determination of the A-weighted single-event emission sound pressure level at work station is located at the distances a = 0,3 m and h = 0,5 m from the centre point of the tacker on the handle side (see 13.2.1.2).

NOTE The value measured at position 0 is not taken into account for calculating the A-weighted single-event sound pressure level on the surface (see Figure 101 and 13.2.1.3).

13.2.2.3 Measurement procedure

At position 0 (operator's position) five consecutive measurements of an A-weighted single-event emission sound pressure level of in each case one driving process per measurement time of 1 s are to be taken and the arithmetic mean is to be calculated. The resulting sound pressure level is taken as the A-weighted emission sound pressure level at the work station $L_{pA,1s}$.

In case that the C-weighted peak emission sound pressure level at the work station is required according to A.1.7.4 f) of EN 292-2 ten measurements of single driving processes shall be taken at position 0 and the arithmetic mean shall be calculated. The resulting sound pressure level at the work station is denoted $L_{pC,peak}$.

13.2.3 Installation and mounting conditions

The installation and mounting conditions shall be the same for the determination of both A-weighted single-event sound power level and emission sound pressure level at the work station.

A sound level meter of class 1, according to EN 60651, or an integrating sound level meter, according to EN 60804, shall be used.

In addition to the requirements of EN 60651, the dynamic range of the microphone shall extend to a sound pressure level of at least 140 dB with a distortion factor of ≤ 10 %.