SLOVENSKI STANDARD
SIST EN 1679-1:2000+A1:2011

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Batni stroji z notranjim zgorevanjem - Varnost - 1. del: Dizelski motorji

Reciprocating internal combustion engines - Safety - Part 1: Compression ignition engines

Hubkolben-Verbrennungsmotoren - Sicherheit - Teil 1: Dieselmotoren

Moteurs alternatifs à combustion interne - Sécurité - Partie 1: Moteurs à allumage par compression

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Reciprocating internal combustion engines - Safety - Part 1: Compression ignition engines

Moteurs alternatifs à combustion interne - Sécurité - Partie 1: Moteurs à allumage par compression

Hubkolben-Verbrennungsmotoren - Sicherheit - Teil 1: Dieselmotoren

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 1679-1:1998+A1:2011) has been prepared by Technical Committee CEN/TC 270 “Internal combustion engines”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2011, and conflicting national standards shall be withdrawn at the latest by July 2011.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

[A1] For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document. [A1]

This document includes Amendment 1, approved by CEN on 2010-11-28.

This document supersedes EN 1679-1:1998.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [A1].

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According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

〚A1〛 This document is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard. 〚A1〛

1 Scope

This standard specifies the safety requirements for compression ignition engines and their essential auxiliaries used in all applications on land, underground and water, except engines used to propel road vehicles and aircraft. The special requirements needed to cover operation in potentially explosive atmospheres are not covered in this standard.

The engine in terms of this standard is understood as the prime mover up to its driving extremitie(s) for power take off(s).

The hazards relevant to compression ignition engines are identified in annex A.

〚A1〛 *deleted text* 〚A1〛

This standard should be referred to in other standards wherever compression ignition engines are used.

〚A1〛 This European Standard is not applicable to compression ignition engines which are manufactured before the date of its publication as EN. 〚A1〛

2 Normative references

〚A1〛 The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. 〚A1〛

EN Standards

〚A1〛 EN 286-1:1998, *Simple unfired pressure vessels designed to contain air or nitrogen — Part 1: Pressure vessels for general purposes* 〚A1〛

〚A1〛 *deleted text* 〚A1〛

〚A1〛 EN 547-2:1996, *Safety of machinery — Human body measurements — Part 2: Principles for determining the dimensions required for access openings* 〚A1〛

〚A1〛 *deleted text* 〚A1〛

EN 953:1997, *Safety of machinery — General requirements for the design and construction of guards (fixed, movable)*

EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and components — Pneumatics*

[A1] EN 1175-1:1998, *Safety of industrial trucks — Electrical requirements — Part 1: General requirements for battery powered trucks* [A1]

[A1] EN 1175-2:1998, *Safety of industrial trucks — Electrical requirements — Part 2: General requirements of internal combustion engine powered trucks* [A1]

[A1] EN 1175-3:1998, *Safety of industrial trucks — Electrical requirements — Part 3: Specific requirements for the electric power transmission systems of internal combustion engine powered trucks* [A1]

[A1] EN 1834-1:2000, *Reciprocating internal combustion engines — Safety requirements for design and construction of engines for use in potentially explosive atmospheres — Part 1: Group II engines for use in flammable gas and vapour atmospheres* [A1]

[A1] EN 1834-2:2000, *Reciprocating internal combustion engines — Safety requirements for design and construction of engines for use in potentially explosive atmospheres — Part 2: Group I engines for use in underground workings susceptible to firedamp and/or combustible dust* [A1]

[A1] EN 1834-3:2000, *Reciprocating internal combustion engines — Safety requirements for design and construction of engines for use in potentially explosive atmospheres — Part 3: Group II engines for use in flammable dust atmospheres* [A1]

[A1] EN ISO 3411:2007, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope (ISO 3411:2007)* [A1]

[A1] *deleted text* [A1]

[A1] EN ISO 11102-1:2009, *Reciprocating internal combustion engines — Handle starting equipment — Part 1: Safety requirements and tests (ISO 11102-1:1997)* [A1]

[A1] EN ISO 11102-2:2009, *Reciprocating internal combustion engines — Handle starting equipment — Part 2: Method of testing the angle of disengagement (ISO 11102-2:1997)* [A1]

[A1] EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)* [A1]

[A1] EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)* [A1]

[A1] EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)* [A1]

[A1] EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)* [A1]

[A1] EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent danger zones being reached by upper and lower limbs (ISO 13857:2008)* [A1]

[A1] EN ISO 14314:2004, *Reciprocal internal combustion engines — Recoil starting equipment — General safety requirements* [A1]

[A1] *deleted text* [A1]

[A1] EN 60034-5:2006, *Rotating electrical machines — Part 5: Degrees of protection provided by integral design of rotating electrical machines (IP code) — Classification (IEC 60034-5:2000)* [A1]

EN 60073:2002, *Basic and safety principles for man-machine interface, marking and identification — Coding principles for indicators and actuators (IEC 60073:2002)*

EN 61310-1:2008, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1:2007)*

EN 61310-2:2008, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2:2007)*

EN 60332-2-1:2004, *Tests on electric and optical fibre cables under fire conditions — Part 2-1: Test for vertical flame propagation for a single small insulated wire or cable — Apparatus (IEC 60332-2- 1:2004)*

EN 60332-2-2:2004, *Tests on electric and optical fibre cables under fire conditions — Part 2-2: Test for vertical flame propagation for a single small insulated wire or cable — Procedure for diffusion flame (IEC 60332-2-2:2004)*

ISO Standards

ISO 2261:1994, *Reciprocating internal combustion engines — Hand operated control devices — Standard direction of motion*

ISO 2710-1:2000, *Reciprocating internal combustion engines — Vocabulary — Part 1: Terms for engine design and operation*

ISO 2710-2:1999, *Reciprocating internal combustion engines — Vocabulary — Part 2: Terms for engine maintenance*

ISO 2867:2006, *Earth-moving machinery — Access systems*

ISO 3046-1:2002, *Reciprocating internal combustion engines — Performance — Part 1: Declarations of power, fuel and lubricating oil consumptions, and test methods — Additional requirements for engines for general use*

ISO 6798:1995, *Reciprocating internal combustion engines — Measurement of emitted airborne noise — Engineering method and survey method*

ISO 6826:1997, *Reciprocating internal combustion engines — Fire protection*

ISO 7967-1:2005, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 1: Structure and external covers*

ISO 7967-2:1987, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 2: Main running gear*

ISO 7967-3:1987, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 3: Valves, camshaft drive and actuating mechanisms*

ISO 7967-4:2005, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 4: Pressure charging and air/exhaust gas ducting systems*

ISO 7967-8:2005, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 8: Starting systems*

ISO 7967-9:1996, *Reciprocating internal combustion engines — Vocabulary of components and systems — Part 9: Control and monitoring systems*

A1⟩ ISO 8178-1:2006, *Reciprocating internal combustion engines — Exhaust emission measurement — Part 1: Test-bed measurement of gaseous and particulate exhaust emissions* ⟨A1

A1⟩ ISO 8178-2:2008, *Reciprocating internal combustion engines — Exhaust emission measurement — Part 2: Measurement of gaseous and particulate exhaust emissions at site* ⟨A1

A1⟩ ISO 8178-4:2007, *Reciprocating internal combustion engines — Exhaust emission measurement — Part 4: Steady-state test cycles for different engine applications* ⟨A1

A1⟩ ISO 8178-5:2008, *Reciprocating internal combustion engines — Exhaust emission measurement — Part 5: Test fuels* ⟨A1

A1⟩ ISO 8178-6:2000, *Reciprocating internal combustion engines — Exhaust emission measurement — Part 6: Report of measuring results and test* ⟨A1

ISO 8178-7:1996, *Reciprocating internal combustion engines — Exhaust emission measurement — Part 7: Engine family determination*

ISO 8178-8:1996, *Reciprocating internal combustion engines — Exhaust emission measurement — Part 8: Engine group determination*

A1⟩ ISO 8999:2001, *Reciprocating internal combustion engines — Graphic symbols* ⟨A1

A1⟩ *deleted text* ⟨A1

IEC Standards

A1⟩ *deleted text* ⟨A1

A1⟩ IEC 60331-11:2009, *Tests for electric cables under fire conditions — Circuit integrity — Part 11: Apparatus — Fire alone at a flame temperature of at least 750 °C* ⟨A1

A1⟩ IEC 60331-21:1999, *Tests for electric cables under fire conditions — Circuit integrity — Part 21: Procedures and requirements — Cables of rated voltage up to and including 0, 6/1, 0 kV* ⟨A1

A1⟩ *deleted text* ⟨A1

3 Definitions

A1⟩ For the purposes of this document, the terms and definitions given in ISO 2710-1:2000, ISO 2710-2:1999, ISO 3046-1:2002, ISO 7967-1:2005, ISO 7967-2:1987, ISO 7967-2 AMD 1:1999, ISO 7967-3:1987, ISO 7967-4:2005, ISO 7967-8:2005, ISO 7967-9:1996, EN ISO 12100-1:2003 and the following apply. ⟨A1

3.1
essential auxiliary
item of equipment which is essential for the continued or repeated operation of the engine (e.g. engine driven fuel-feed pump, engine driven water pump)

4 General

Since engines are only power sources and always part of a specific application, the desired degree of compliance with these safety requirements depends on the application and shall be subject to agreement between the engine manufacturer and the engine installer. In particular when it is possible to deal with specific

hazards either on the engine itself or on the complete application the installer shall be responsible for choosing the most appropriate solution.

The engine manufacturer shall ensure that the equipment he is supplying meets the requirements laid down in this standard. The extent of these requirements depends on the engine installation.

The safety requirements given in clause 6 apply to both, the engine manufacturer and the engine installer depending on the application.

5 List of hazards

The hazards relevant to compression ignition engines that have to be considered in order to prevent personal injury are listed in Annex A.

6 Safety requirements and/or measures

6.1 General

〚A1〛 Machinery shall comply with the safety requirements and/or protective measures of this clause. In addition, the machine shall be designed according to the principles of EN ISO 12100 for relevant but not significant hazards, which are not dealt with by this document. 〚A1〛

6.2 Starting systems

Starting systems can be triggered manually or automatically.

Electrical starting systems normally operate at voltages of 24 V or below and therefore do not present a hazard. Electrical starting systems above 24 V are not dealt with in this standard and the installer of the engine has to ensure safe operation after connecting *the* engine to the driven machinery.

For engines with compressed air starting, the starting pneumatic system shall comply with the requirements of EN 983:1996.

Crank handle starting systems shall meet the requirements specified in 〚A1〛 EN ISO 11102-1:2009 〚A1〛 and EN ISO 11102-2:1997. Additionally the following requirements apply:

— Starting handles shall have sufficient clearance from the mounting surface to ensure safe turning;

— Diesel engines with a manual starter shall have a decompression facility which does not require to be hand-held during cranking.

The only permissible hand starting systems are crank handle (as defined above) and recoil starting devices as described in 〚A1〛 EN ISO 14314:2004 〚A1〛.

6.3 Normal stopping

All engines shall have a normal stopping device which can be manually or automatically controlled. This shall operate by cutting off the fuel supply.