SLOVENSKI STANDARD
SIST EN 13204:2016

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Nadomešča:

SIST EN 13204:2005+A1:2012

Dvojno delujoče hidravlične reševalne naprave za gasilske in reševalne enote - Varnostne zahteve za delovanje

Double acting hydraulic rescue tools for fire and rescue service use - Safety and performance requirements

Doppelt wirkende hydraulische Rettungsgeräte für die Feuerwehr und Rettungsdienste - Sicherheits- und Leistungsanforderungen

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Matériels hydrauliques de désincarcération à double effet à usage des services d'incendie et de secours - Prescriptions de sécurité et de performance

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Ta slovenski standard je istoveten z: **EN 13204:2016**

ICS:

11.160	Prva pomoč	First aid
13.220.10	Gašenje požara	Fire-fighting

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2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13204

September 2016

ICS 13.220.10

Supersedes EN 13204:2004+A1:2012

English Version

Double acting hydraulic rescue tools for fire and rescue service use - Safety and performance requirements

Matériels hydrauliques de désincarcération à double effet à usage des services d'incendie et de secours - Prescriptions de sécurité et de performance

Doppelt wirkende hydraulische Rettungsgeräte für die Feuerwehr und Rettungsdienste - Sicherheits- und Leistungsanforderungen

This European Standard was approved by CEN on 8 July 2016.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 13204:2016) has been prepared by Technical Committee CEN/TC 192 “Fire service equipment”, the secretariat of which is held by BSI.

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 March 2017, and conflicting national standards shall be withdrawn at the latest by March 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13204:2004+A1:2012.

This document 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).

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

The significant technical changes between this standard and the previous edition are the following:

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- Major editorial changes:
- Clause 2: Normative references, updated
- Clause 4: Requirements and Verification:

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  - Was Section Hazards, which is referenced to Annex A in 4.1.1.
  - Requirements are now followed directly by verification, these used to be separate Clause 5 Requirements and Clause 6 Verification.
  - Table 3. Cutting Capacity: Expanded classification to K (was H), square tube 35 × 3 (was 35 × 4)
  - Cutting table has been expanded to be able to rate larger cutters.
  - Powerpack and smart systems added
- Clause 5 Information for use, was chapter 7
- Clause 6 Marking, was chapter 8
- Annex A List of Hazards, updated references
- Annex C Product Performance Data Sheet = New, Annex C used to be Additional recommendations, which is now no longer included.
- Annex D General Verification Requirements, added. This is text moved from 6.1.
- Bibliography, updated version of standards

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

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Introduction

This document is a type-C standard as stated in EN ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in the case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

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

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

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When compiling this document, it was assumed that:

a) the manufacturer shall design and/or use components without specific requirements in accordance with the usual engineering practice and calculation codes, including all failure modes;

b) only trained and competent persons will use and operate the machinery;

c) the machinery is kept in good repair and working order, by a trained and competent person, so that the required characteristics remain despite wear;

d) the working place is adequately lit;

e) negotiations occur between the manufacturer and the purchaser concerning particular conditions for the use and places of use for the machinery related to health and safety;

f) The manufacturer shall consider and minimize the impact to the environment during all stages of the product life cycle.

Battery tools and other powered rescue tools outside of the scope of this document are not covered in this revision of the document. However in future revision these tools will be integrated.

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1 Scope

This European Standard specifies safety and performance requirements for double acting hydraulic rescue tools manufactured after the date of publication.

It is applicable to double acting hydraulic rescue tool systems which are intended for use by the firefighting and rescue services, principally for cutting through, spreading or pushing apart the structural parts of road vehicles, ships, trains, aircraft and building structures involved in accidents. They consist of a separate power pack, the tool[s] and the necessary interconnections and intended accessories, as defined in Clause 3 – Terms and definitions.

This document deals with all significant hazards, hazardous situations or hazardous events relevant to the machinery, when it is used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer.

NOTE 1 The aim is to assist while extracting the casualties or to create a working space for paramedical services taking the local conditions into account.

It is **not** applicable to additional requirements for:

a) operation in severe conditions (e.g. extreme environmental conditions such as: temperatures outside the range –20 °C up to +55 °C, corrosive environment, tropical environment, contaminating environments, strong magnetic fields, potentially explosive atmospheres);

b) the risk directly arising from the means provided for the portability, transportability and mobility of double-acting hydraulic rescue tools during periods of their operation.

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NOTE 2 For the EU/EEA other Directives can be applicable to the equipment in the scope, for example the Electro Magnetic Compatibility Directive.

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2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50565-2:2014, *Electric cables - Guide to use for cables with a rated voltage not exceeding 450/750 V (U0/U) - Part 2: Specific guidance related to EN 50525 cable types*

EN 659, *Protective gloves for firefighters*

EN 837-1, *Pressure gauges - Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing*

EN 853, *Rubber hoses and hose assemblies - Wire braid reinforced hydraulic type - Specification*

EN 854, *Rubber hoses and hose assemblies - Textile reinforced hydraulic type - Specification"*

EN 856, *Rubber hoses and hose assemblies - Rubber-covered spiral wire reinforced hydraulic type - Specification*

EN 857, *Rubber hoses and hose assemblies - Wire braid reinforced compact type for hydraulic applications - Specification*

EN 10025-1:2004, *Hot rolled products of structural steels - Part 1: General technical delivery conditions*

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EN 10025-2:2004, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10210-2, *Hot finished structural hollow sections of non-alloy and fine grain steels - Part 2: Tolerances, dimensions and sectional properties*

EN 60204-1, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements*

EN 60529, *Degrees of protection provided by enclosures (IP Code)(IEC 60529)*

EN ISO 3949, *Plastics hoses and hose assemblies - Textile-reinforced types for hydraulic applications - Specification (ISO 3949)*

EN ISO 4413, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413)*

EN ISO 12100, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100)*

EN ISO 1402, *Rubber and plastics hoses and hose assemblies - Hydrostatic testing (ISO 1402)*

EN ISO 10619-1, *Rubber and plastics hoses and tubing - Measurement of flexibility and stiffness - Part 1: Bending tests at ambient temperature (ISO 10619-1)*

EN ISO 3744:2010, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 4871, *Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871)*

EN ISO 7751:1997[1], *Rubber and plastics hoses and hose assemblies — Ratios of proof and burst pressure to maximum working pressure - Amendment 1 — Replacement of "design working pressure" by "maximum working pressure" throughout text (ISO 7751:1991)*

EN ISO 11201, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201)*

EN ISO 11688-1, *Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1)*

EN ISO 13732-1, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces*

EN ISO 14120, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120)*

ISO/TR 14121-2, *Safety of machinery — Risk assessment — Part 2: Practical guidance and examples of methods*

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[1] As impacted by EN ISO 7751:1997/A1:2011.

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100 and the following apply.

3.1
accessories
additional attachable parts that are used to adapt a tool enabling it to perform a certain special task

Note 1 to entry: examples are pulling attachments, pulling chains, puling straps, manifolds, saddles, extension tubes, etc.

3.2
detachable parts
parts or components that can be removed by hand (without tools) under no load conditions

3.3
control device
device connected to the hydraulic control circuit and used for controlling the operation of the hydraulic rescue tool

Note 1 to entry: examples are hydraulic valves, relay, magnetically operated valve

3.4
manual control actuator
component of the control device which, when operated, activates the control device, and is designed to be operated by one person

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3.5
operator
only person operating the manual control actuator of the tool

3.6
combi tool
hydraulic rescue tool able to perform a minimum of at least three functions namely: spreading, squeezing and cutting without exchange of removable parts

3.7
spreading
outward movement of the jaw(s) or arm(s) to force apart structural parts or elements

3.8
pulling
inward movement of the jaw(s) or arm(s) when fitted with pulling attachments to draw structural parts or elements together

Note 1 to entry: Hoisting or lifting actions do not fall under the definition of pulling.

3.9
squeezing
inward movement of the jaw(s) or arm(s) to compress structural parts or elements

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3.10
cutting
inward movement of the cutting area of the jaw(s) or blade(s) to cut or shear structural parts or elements

3.11
spreading force
force at a position within the spreading distance

Note 1 to entry: Force is expressed in kN

3.12
spreading distance
distance of travel at the tips between the fully closed position and fully open position

Note 1 to entry: distance of travel is expressed in mm

3.13
pulling force
force at a position within the pulling distance

Note 1 to entry: Force is expressed in kN

3.14
pulling distance
distance of travel between the fully open position and the fully closed position

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Note 1 to entry: distance of travel is expressed in mm

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3.15
cutter
hydraulic rescue tool able to perform a cutting function with the aid of one or more blade(s)

3.16
cutter opening
distance between the blade tips when the blades are in an open position

Note 1 to entry: distance is expressed in mm

Note 2 to entry: see Table 2 and Figure 9

3.17
cutter reach
distance from the base of the cutting edge to the midpoint between the tips of the blades when opened

Note 1 to entry: distance is expressed in mm

Note 2 to entry: see Figure 9

3.18
hose assembly
one or more hydraulic hoses complete with hose fittings, one or more quick action couplings and hydraulic fluid

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3.19
hose
flexible tube designed for fluid power transfer

3.20
hose fitting
fitting attached at each end of the hose in order to mount the hose to a tool/pump or to equip it with quick action coupling

3.21
quick action coupling
replaceable connector, attached to the fittings of the hose assembly and/or equipment with the purpose of connecting and releasing this hose assembly to/from other matching connector within the system, with the aim to transfer the hydraulic fluid from one item in the system to another

3.22
hose reel
reel fitted with length[s] of hose assemblies

3.23
hydraulic fluid
fluid medium for power transfer

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3.24
manual pump
hydraulic pump activated by hand or foot force to power double acting hydraulic rescue tool(s)

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3.25
mass of a hydraulic rescue tool
weight of a hydraulic rescue tool measured in the fully closed position, including hydraulic fluid, integrated hose assembly or quick action couplings and detachable parts (where fitted)

Note 1 to entry: mass expressed in kg to one decimal point.

3.26
mass of a power pack
weight of a power pack including all permanently attached components, hydraulic fluid reservoir filled to the maximum fluid level and a full fuel tank

Note 1 to entry: mass expressed in kg to one decimal point.

Note 2 to entry: attached components like i.e. hose reels, integrated hose assemblies or quick action couplings

3.27
mass of hose assembly or hose reel
weight of a hose assembly or hose reel including all permanently attached components, hydraulic fluid

Note 1 to entry: mass expressed in kg to one decimal point.

3.28
power pack
pump comprising a prime mover, a hydraulic pump with a fluid reservoir, valves and tool connections, designed to power double acting hydraulic rescue tool(s)

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3.29
prime mover
drive motor and its power source

Note 1 to entry: drive motor can be an electric motor, internal combustion engine, pneumatic motor hydraulic motor, etc.

3.30
smart system
device for automatic energy management

3.31
ram
hydraulic rescue tool able to perform a pushing function with the aid of removable or integral feet at both ends of the tool operated by a single, double or telescopic piston(s)

3.32
pushing
outward movement of the piston(s) to push structural parts or elements apart

3.33
stroke
distance of travel of the hydraulically operated piston(s) from a fully closed to an open position

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Note 1 to entry: distance of travel expressed in mm

3.34
pushing force
force at a position within the range of the stroke

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Note 1 to entry: force expressed in kN

3.35
spreader
hydraulic rescue tool able to perform a minimum of three functions namely: Spreading – Pulling – Squeezing, without exchange of removable parts, pulling attachments excluded

3.36
tool integrity
capability of a hydraulic rescue tool to maintain the position it has reached and to withstand the effects of internal pressure intensification

3.37
nominal
manufacturers claimed characteristics used for classification

3.38
allowable pressure
maximum operating pressure for each component of the system

Note 1 to entry: pressure expressed in bar or MPa.

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3.39
hold-to-run control device
control device which initiates and maintains machine functions only as long as the manual control actuator is actuated

[SOURCE: EN ISO 12100:2010, definition 3.28.3]

4 Requirements and verification

4.1 Safety Requirements and/or protective/risk reduction measures and verification

4.1.1 General

4.1.1.1 Introduction

General Verification requirements shall be as specified in Annex E.

Rescue tools and their accessories shall comply with the safety requirements and/or protective/risk reduction measures of this clause.

In addition, they shall be designed according to the principles of ISO 12100 for relevant but not significant hazards which are not dealt with by this document (see Annex A).

The safe operation of rescue tools and their accessories also depends on the safe environment associated with the use of personal protective equipment (PPE), such as gloves, footwear, eye and head protective equipment, as well as safe working procedures (see Clause 5).

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For the application of type B standards such as EN ISO 4413 and EN 60204-1, the manufacturer shall carry out an adequate risk assessment.

NOTE This specific risk assessment is part of the general risk assessment relating to the hazards not covered by this type C standard.

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Particular attention should be given to protection against parts and/or materials ejected during use of the tool(s).

Hydraulic rescue tool systems shall comply with all safety requirements specified in EN ISO 4413.

All electric power supply cables on the equipment covered by this standard shall comply to standard EN 50565-2:2014, 4.3, type H07RN-F.

All electric components in the equipment covered by this standard shall comply to EN 60529 and provide a minimum protection level of IP44.

All electric components in the equipment covered by this standard shall have sufficient immunity to electromagnetic disturbances to enable them to operate safely as intended and not fail to danger when exposed to the levels and types of disturbances as specified in EN 60204-1.

Verification:

Perform a documentary check on all items above

4.1.1.2 Speed

The opening or closing times of any hydraulic rescue tools shall not be less than 2 s.

Verification:

Connect the tool to the power pack designated by the manufacturer for use with that tool. Conduct a functional test by operating the manual control actuator for maximum speed. Measure and record the