



# SLOVENSKI STANDARD

## oSIST prEN 13204:2022

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### Reševalne naprave za gasilske in reševalne enote - Varnostne zahteve za delovanje

Powered rescue tools for fire and rescue service use - safety and performance requirements

Angetriebene Rettungsgeräte für Feuerwehr- und Rettungsdienste - Sicherheits- und Leistungsanforderungen

Outils de désincarcération à usage des services d'incendie et de secours - Prescriptions de sécurité et de performance

Ta slovenski standard je istoveten z: **prEN 13204**

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11.160	Prva pomoč	First aid
13.220.10	Gašenje požara	Fire-fighting

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## Powered rescue tools for fire and rescue service use - safety and performance requirements

Angetriebene Rettungsgeräte für die Feuerwehr und  
Rettungsdienste - Sicherheits- und  
Leistungsanforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 192.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (prEN 13204:2022) has been prepared by Technical Committee CEN/TC 192 “Fire service equipment”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13204:2016.

In comparison with the previous edition, the following significant technical modifications (among others) have been made:

- Powered rescue tools: not exclusive to hydraulic remotely powered tools
- Included self-contained tools (battery powered, hand powered tools)
- Included wedge and crusher type tool
- Added Annex D with data from performance requirements for mass ready for use, runtime energy sources

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

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

[oSIST prEN 13204:2022](https://standards.iteh.ai/catalog/standards/sist/91128586-e21f-4c63-a802-c836f4e7b228/osist-pren-13204-2022)

<https://standards.iteh.ai/catalog/standards/sist/91128586-e21f-4c63-a802-c836f4e7b228/osist-pren-13204-2022>

## Introduction

This document is a type C standard as stated in EN ISO 12100:2010.

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.

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 provisions of this type-C standard are different from those which are stated in type-A or type-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.

When compiling this document, it was assumed that:

- a) the manufacturer designs and/or uses components without specific requirements in accordance with the good engineering practice and calculation codes, taking into account all foreseeable 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 performance and health and safety.
- f) the manufacturer considers and minimizes the impact to the environment during all stages of the product life cycle.

## 1 Scope

This document specifies safety and performance requirements for powered rescue tools manufactured after the date of publication.

It is applicable to powered rescue tools which are intended for use by the firefighting and rescue services, principally for cutting, crushing, spreading, squeezing, pushing or pulling the structural parts of road vehicles, ships, trains, aircraft and building structures involved in accidents.

They consist of tool(s) and the necessary system components (e.g. energy source, drive system and prime mover) and intended accessories, as defined in Clause 3.

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 or 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.

This document does **not** include:

- tools with pneumatic drive systems or pneumatic energy sources;
- tools which are single acting (for example spring /gravity return jacks, powered struts, etc.).

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

- a) operation in severe conditions (e.g. extreme environmental conditions such as temperatures outside the range  $-20\text{ °C}$  and  $+55\text{ °C}$ , corrosive environment, tropical environment, contaminating environments, strong magnetic fields, potentially explosive atmospheres, underwater use);
- b) the risk directly arising from the means provided for the portability, transportability, mobility and decommissioning of powered rescue tools during periods of their operation;
- c) generic tools such as, but not limited to, powered drills, angle grinders, saws, not solely intended for extrication purposes;
- d) tools intended to lift and/or hoist, not solely intended for extrication purposes.

NOTE 2 EN 13731:2007 deals with lifting bag systems for fire and rescue services.

NOTE 3 For the EU/EEA other Directives can be applicable to the equipment in the scope, for example the Electro Magnetic Compatibility Directive.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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 659:2003+A1:2008<sup>1</sup>, *Protective gloves for firefighters*

<sup>1</sup> As impacted by EN 659:2003+A1:2008/AC:2009.

**prEN 13204:2022 (E)**

EN 837-1:1996<sup>2</sup>, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

EN 853:2015, *Rubber hoses and hose assemblies - Wire braid reinforced hydraulic type - Specification*

EN 854:2015, *Rubber hoses and hose assemblies - Textile reinforced hydraulic type - Specification*

EN 856:2015+AC:2019, *Rubber hoses and hose assemblies — Rubber-covered spiral wire reinforced hydraulic type — Specification*

EN 857:2015, *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*

EN 10025-2:2019, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10210-2:2019, *Hot finished steel structural hollow sections - Part 2: Tolerances, dimensions and sectional properties*

EN 10219-2:2019, *Cold formed welded steel structural hollow sections - Part 2: Tolerances, dimensions and sectional properties*

EN 60529:1991<sup>3</sup>, *Degrees of protection provided by enclosures (IP codes)*

EN 62841-1:2015<sup>4</sup>, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements (IEC 62841-1:2014)*

EN ISO 3949:2020, *Plastics hoses and hose assemblies - Textile-reinforced types for hydraulic applications - Specification (ISO 3949:2020, Corrected version 2020-12)*

EN ISO 4413:2010, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 1402:2021, *Rubber and plastics hoses and hose assemblies - Hydrostatic testing (ISO 1402:2021)*

EN ISO 10619-1:2018, *Rubber and plastics hoses and tubing - Measurement of flexibility and stiffness - Part 1: Bending tests at ambient temperature (ISO 10619-1:2017)*

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 4871:2009, *Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

<sup>2</sup> As impacted by EN 837-1:1996/AC:1998.

<sup>3</sup> As impacted by EN 60529:1991/corrigendum May 1993, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/A2:2013/AC:2019-02 and EN 60529:1991/AC:2016-12.

<sup>4</sup> As impacted by EN 62841-1:2015/AC:2015 and EN 62841-1:2015/A11:2022.



EN ISO 7751:2016, *Rubber and plastics hoses and hose assemblies - Ratios of proof and burst pressure to maximum working pressure (ISO 7751:2016)*

EN ISO 11201:2010, *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 11201:2010)*

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)*

EN ISO 14120:2015, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

All figures in this document only give an example of the principle not limiting other shapes or designs.

#### 3.1

#### powered rescue tool

#### PRT

tool and components required to perform its function(s)

Note 1 to entry: See Figure 1 and Figure 2.

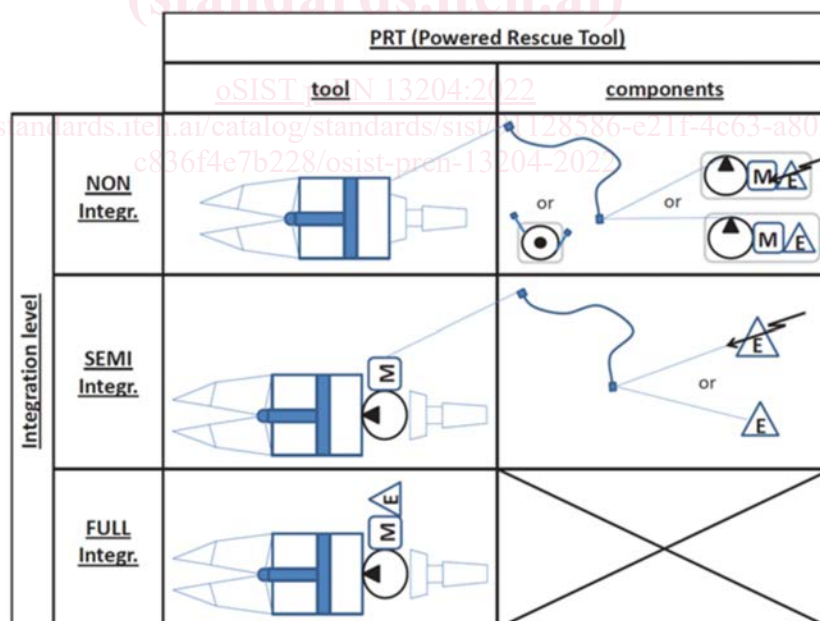


Figure 1 — PRT overview

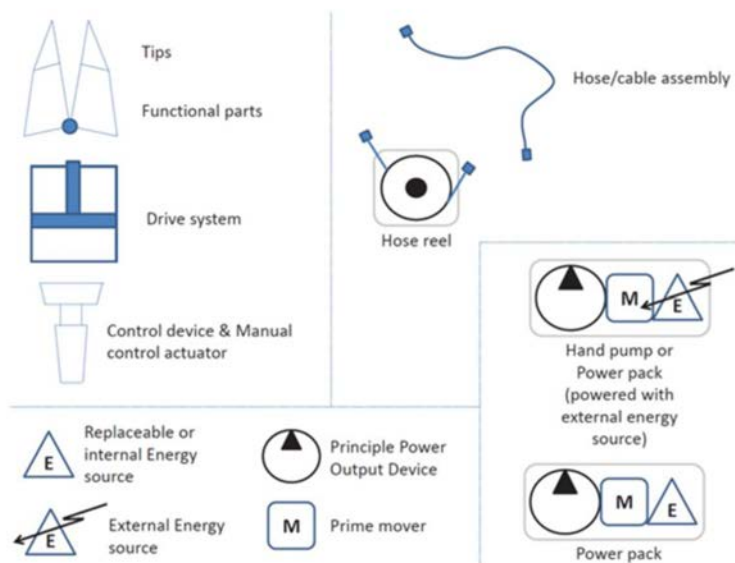


Figure 2 — components of the system

Table 1 — Functions of a PRT

	Combistool	Crusher	Cutter	Ram	Spreader	Wedge
Crushing		✓				
Cutting	✓		✓			
Pulling					✓	
Pushing				✓		
Spreading	✓				✓	✓
Squeezing	✓				✓	
✓ = required function for classification/designation of tool.						
NOTE Optional functions not indicated but will require additional safety testing.						

### 3.2 PRT integration level

#### 3.2.1

##### non-integrated PRT

PRT where the energy source (replaceable and/or integrated and/or external) and prime mover are not integrated as part of the tool

#### 3.2.2

##### semi integrated PRT

PRT where the prime mover is integrated as part of the tool, and the energy source (replaceable and/or external) is not integrated as part of the tool

### 3.2.3

#### **fully integrated PRT**

PRT where the energy source (replaceable and/or integrated) and prime mover are integrated as part of the tool

Note 1 to entry: No cables or hose assemblies shall be attached during use.

Note 2 to entry: Tools with human powered prime mover are considered as fully integrated system.

## 3.3 Tools

### 3.3.1

#### **combi tool**

PRT able to perform a minimum of at least three functions, i.e. spreading, squeezing and cutting, without exchange of detachable parts

Note 1 to entry: Where a combi tool is capable for pulling it shall meet relevant requirements.

### 3.3.2

#### **crusher**

PRT able to perform a crushing function on materials such as concrete, brick structure(s)

### 3.3.3

#### **cutter**

PRT able to perform a cutting function

### 3.3.4

#### **ram**

PRT able to perform pushing functions with the aid of detachable parts or integral feet at both ends of the tool operated by a single, double or telescopic piston(s)

Note 1 to entry: Where a ram is capable for pulling it shall meet relevant requirements.

### 3.3.5

#### **spreader**

PRT able to perform a minimum of three functions, i.e. spreading, pulling and squeezing, without exchange of detachable parts, pulling attachments excluded

### 3.3.6

#### **wedge**

PRT able to perform a spreading function only and having a tapering to a thin edge that is designed to be positioned between two objects to separate them

### 3.3.7

#### **power pack**

non-integrated PRT component consisting of a prime mover, the hydraulic principal power output device and the energy source used to power the tool

### 3.3.8

#### **smart system**

device for automatic energy management

**prEN 13204:2022 (E)****3.3.9****manual PRT**

PRT powered by hand pump or foot pump, which may be fully integrated with the tool or connected handpump to the tool

**3.3.10****hose assembly**

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

**3.3.11****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

**3.3.12****quick action coupling**

manually operated connector with the purpose of connecting and releasing a hose assembly to/from other matching connector(s)

**3.3.13****hose reel**

reel fitted with length(s) of hose assemblies

**3.3.14****cable assembly**

PRT component consisting of the power cable with all permanently attached connectors that connect the tool or the power pack to the energy source

**3.4 PRT components****3.4.1****functional part**

part(s) of the tool that is (/are) designed to cut, spread, squeeze, pull, crush or push

**3.4.2****drive system**

part(s) of the PRT that transfer(s) power from the prime mover to the functional part of the tool

**3.4.3****prime mover**

motor used to power the drive system

EXAMPLES electric motor, internal combustion engine, hydraulic motor, etc

**3.4.4****external energy source**

energy available through external sources such as mains power, portable or truck mounted generators and manual power

**3.4.5****replaceable energy source**

replaceable container with electric energy (battery) that can be changed by hand without the use of any tools

### 3.4.6

#### **integrated energy source**

container with energy that is a permanent part of the tool

### 3.4.7

#### **level indicator**

visual representation displaying the remaining amount of the total content

### 3.4.8

#### **accessories**

additional detachable parts that are used to adapt a tool enabling it to perform a certain function

EXAMPLES pulling attachments, pulling chains, pulling straps, saddles, extension tubes, etc

### 3.4.9

#### **detachable parts**

parts or components which can be removed by hand (without tools) under no load conditions and without which the PRT cannot perform its function

EXAMPLES spreader tips, ram heads, batteries

### 3.4.10

#### **manual control actuator**

component, located on the tool, which controls the operation of the tool, and is designed to be operated by one person

### 3.4.11

#### **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]

## 3.5 Functions of a rescue tool

### 3.5.1

#### **crushing**

inward movement of the jaw(s) or arm(s) to disintegrate structural parts or elements

### 3.5.2

#### **cutting**

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

### 3.5.3

#### **pulling**

inward movement of the jaw(s), arm(s) or piston(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.

### 3.5.4

#### **pushing**

outward movement of the piston(s) to force / move apart structural parts or elements

**prEN 13204:2022 (E)****3.5.5****spreading**

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

**3.5.6****squeezing**

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

**3.6 Tool specification****3.6.1****spreading force**

force at a position within the spreading distance

Note 1 to entry: Force is expressed in kN.

**3.6.2****spreading distance**

distance of travel at the tips between the fully closed position and fully open position, measured under no load conditions

Note 1 to entry: Distance of travel is expressed in mm.

**3.6.3****pulling force**

force at a position within the pulling distance

Note 1 to entry: Force is expressed in kN.

**3.6.4****pulling distance**

distance of travel between the fully open position and the fully closed position, measured under no load conditions

Note 1 to entry: Distance of travel is expressed in mm.

**3.6.5****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 4 and Figure 19.

**3.6.6****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 19.

**3.6.7****pushing force**

force at a position within the range of the stroke

Note 1 to entry: Force expressed in kN.

**3.6.8****operator**

only person operating the manual control actuator of the tool

**3.6.9****hydraulic fluid**

fluid medium for power transfer

**3.6.10****tool integrity**

capability of a PRT: a) to maintain the position it has reached; b) to withstand the effects of internal or external load intensification

**3.6.11****competent person**

designated person, suitably trained (see EN ISO 9001:2000, 4.18) qualified by knowledge and practical experience, and provided with the necessary instructions to enable the required (operation, test and/or examination) to be carried out safely

**3.6.12****system input**

operating pressure (MPa) or voltage (V) for each component of the PRT designated by the manufacturer

**3.6.13****nominal**

manufacturers claimed characteristics used for classification

**3.6.14****nominal pressure**

operating pressure for each component of the PRT, designated by the manufacturer

Note 1 to entry: Pressure is expressed in MPa.

**3.6.15****nominal voltage**

operating voltage for each component of the PRT, stated in V, designated by the manufacturer

**3.6.16****mass**

weight expressed in kg to one decimal point

**3.6.17****stroke**

distance of travel of the piston(s)

Note 1 to entry: Distance of travel is expressed in mm.