SLOVENSKI STANDARD
SIST EN 15020:2022

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Nadomešča:
SIST EN 15020:2007+A1:2010

Železniške naprave - Vlečna spenjača - Zahteve za izdelavo, geometrija vmesnika in preskusne metode

Railway applications - Rescue coupler - Performance requirements, specific interface geometry and test methods

Bahnanwendungen - Abschleppkupplung - Leistungsanforderungen, spezifische Schnittstellengeometrie und Prüfverfahren

Applications ferroviaires - Attelage de secours - Exigences concernant la performance, la géometrie des interfaces et les methodes d'essai

Ta slovenski standard je istoveten z: **EN 15020:2022**

ICS:

45.060.10 Vlečna vozila Tractive stock

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English Version

Railway applications - Rescue coupler - Performance requirements, specific interface geometry and test methods

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

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Ref. No. EN 15020:2022 E

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European foreword

This document (EN 15020:2022) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, 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of an identical text or by endorsement, at the latest by February 2023, and conflicting national standards shall be withdrawn at the latest by February 2023.

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 15020:2006+A1:2010.

The main modifications to EN 15020:2006+A1:2010 are:

a) Modifications on Scope;

b) Verifying of Clause 2 “Normative references”;

c) Modification in Clause 3 “Terms and definitions”, in particular 3.1 “rescue coupler”;

d) Clause 4 completely revised;

e) Change of all Figures;

f) Annex A “Automatic coupler” is deleted and referred to in EN 16019:2014;

g) Annex C “Characteristics of the rescue vehicle” is deleted and reffered to in EN 16839:2022;

h) Annex D “Air pipe coupling heads” is deleted and referred to in EN 15807:2021;

i) Extension of the components to be dimensionally checked – New Figures A.5 to A.10;

j) Adaptation of Annex ZA to Directive 2016/797;

k) editorially revised.

This document has been prepared under a standardization request addressed to CEN by the European Commission, and it aims to support essential or other requirements of EU Directive(s) or Regulation(s).

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

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the requirements for the rescue coupler for train sets compliant with the Technical Specification for Interoperability Locomotives and Passenger rolling stock (TSI Loc and Pas).

This document defines the rescue coupler foreseen to connect a rescue vehicle equipped with a draw hook, according to EN 15566:2022 and a headstock layout according to EN 16839:2022 together with the train to be rescued equipped with a Type 10 automatic coupler according to EN 16019:2014.

Provisions going beyond the scope of this document are defined in the Technical Specification. The Technical Specification is not a mandatory document.

This document deals with requirements and tests on rescue coupler.

The requirements on coupling interfaces of end couplers are defined in EN 16019:2014.

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 10204:2004, *Metallic products - Types of inspection documents*

EN 12663-1:2010+A1:2014, *Railway applications - Structural requirements of railway vehicle bodies - Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)*

EN 15085 (all parts):—,[1] *Railway applications — Welding of railway vehicles and components*

EN 15566:2022, *Railway applications — Railway rolling stock — Draw gear and screw coupling*

EN 15807:2021, *Railway applications - Pneumatic half couplings*

EN 16019:2014, *Railway applications - Automatic coupler - Performance requirements, specific interface geometry and test method*

EN 16839:2022, *Railway applications — Rolling stock — Head stock layout*

[1] Under preparation. Stage at time of publication: Consists of the following parts: prEN 15085-1:2021, *Railway applications — Welding of railway vehicles and components — Part 1: General*; EN 15085-2:2020, *Railway applications — Welding of railway vehicles and components — Part 2: Requirements for welding manufacturer*; prEN 15085-3:2021, *Railway applications — Welding of railway vehicles and components — Part 3: Design requirements*; prEN 15085-4:2020, *Railway applications — Welding of railway vehicles and components — Part 4: Production requirements*; prEN 15085-5:2020, *Railway applications — Welding of railway vehicles and components — Part 5: Inspection, testing and documentation*; EN 15085-6:2022, *Railway applications — Welding of railway vehicles and components — Part 6: Maintenance welding requirements.(Part 6 not relevant)*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 16019:2014, EN 15807:2021 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp.

3.1
rescue coupler
special device that enables hauling and towing of a failed train unit or train set by another vehicle that is equipped with different coupling systems

3.2
rescue vehicle
vehicle able to rescue a failed train unit or train set

3.3
draw hook
part of a conventional and mechanical manual coupling system

Note 1 to entry: See also EN 15566:2022.

3.4
air pipe
main reservoir pipe or brake pipe

Note 1 to entry: See also EN 14478:2017.

3.5
Technical Specification
document describing specific parameters and/or product requirements as an addition to the requirements of this document

4 Product requirements

4.1 General

4.1.1 Metallic products

For the materials used for the manufacture of the rescue coupler the inspection documents type 3.1 or type 3.2 according to EN 10204:2004 shall be available. This shall contain the actual chemical composition as well as the test results of tensile, resilience and hardness.

Welded parts shall be in accordance with the EN 15085 series:—[1].

Additional requirements to these specified product requirements may be given in the Technical Specification.

4.1.2 Non-metallic products

Additional requirements to those in 4.2 to 4.7 may be given in the Technical Specification.

4.2 Rescue coupler characteristics

4.2.1 Mechanical requirements

The main dimensions and characteristics of the rescue coupler shall be as given in Annex A (Figure A.1 to Figure A.3).

The mass of the complete rescue coupler in its operational condition shall not exceed 50 kg.

The rescue coupler shall be able to withstand the following static loads (see 5.1.2) at least:

— tensile load 300 kN;

— compressive load 250 kN.

The designed breaking loads of the rescue coupler shall fulfil the rules given in EN 12663-1:2010+A1:2014 for the safety coefficient relative to the tensile load (300 kN) and the compressive load (250 kN) defined in this document.

If higher tensile and compressive loads are required in the case of rescue of a vehicle, the higher loads shall be specified in the Technical Specification.

The tensile and compressive loads shall not produce uncoupling of the rescue coupler.

For lifting and carrying the rescue coupler shall be equipped with handles or components that can be used as handles.

4.2.2 Pneumatic requirements

The rescue coupler shall be connected to the rescue vehicle by pneumatic half couplings.

The air pipes connected to the rescue coupler shall be free to rotate around their axes.

If pneumatic hoses can be removed from the rescue coupler, it shall be impossible to refit the hoses incorrectly (e.g. to connect main reservoir pipe with brake pipe).

The air pipes connected to the rescue coupler shall be designed in order to ensure safe connection between the rescue coupler and the rescue vehicle.

The whole air connection system of the rescue coupler shall be suitable for a 10 bar pressure.

4.3 Interface of rescue coupler to rescue vehicle

The rescue coupler defined in this document shall be compatible with a rescue vehicle equipped with:

— connections for air pipes in accordance with EN 16839:2022;

— the interfaces as described in EN 16839:2022 for locomotives, more particularly concerning the clearances around the draw hook.

NOTE 1 The rescue vehicle is equipped with moveable draw hook and draw gear capable of tensile loading and compressive loading.

NOTE 2 The rescue vehicle is able to accept at least the same loads as defined for the rescue coupler.

4.4 Requirements linked to the fitting procedure

Mounting of the rescue coupler shall not require any special tools. The location where the rescue coupler is mounted is just behind the beak of the draw hook

It shall be possible for the rescue coupler to be lifted and mounted by no more than two persons. The rescue coupler shall be secured to the draw hook with a fixing device in such a way that it cannot freely move or come off the draw hook during rescue operation (running).

Once the rescue coupler is mounted on the draw hook of the rescue vehicle:

— the rescue coupler shall be able to be adjusted vertically on the draw hook without the need of special tools;

— the installed rescue coupler shall be able to have at least ± 6° vertical movement during rescue operation.

4.5 Requirements linked to the coupling and uncoupling conditions

4.5.1 Mechanical coupling

The mechanical coupling between the automatic coupler on the failed train set and the rescue coupler on the rescue vehicle shall be automatic.

The rescue coupler shall be able to couple with the automatic coupler under the following conditions:

— The vertical difference between the centre lines of the automatic coupler and the draw hook is not more than 75 mm.

NOTE This requirement can be achieved for example by use of a guide horn or by the vertical adjustability of the rescue coupler.

— In a 150 m radius curve, if necessary, with manual adjustments of the automatic coupler, e.g using a grab rod.

— The coupling speed shall not exceed 2 km/h.

No person shall be present between the rescue vehicle and the failed train unit or train set.

Uncoupling can be performed automatically, when possible, or manually at coupler lever in case of failure /absence of automatic uncoupling function.

4.5.2 Pneumatic coupling

Connection of the air pipes of the rescue coupler to the Type 10 automatic coupler shall be made automatically.

The connection to the rescue vehicle by the half couplings and the opening of the end cocks are made manually (see Figure 1 to Figure 4).

4.6 Requirements linked to the operating conditions

In rescue operation, the rescue coupler shall not restrict the route of the rescued train set.

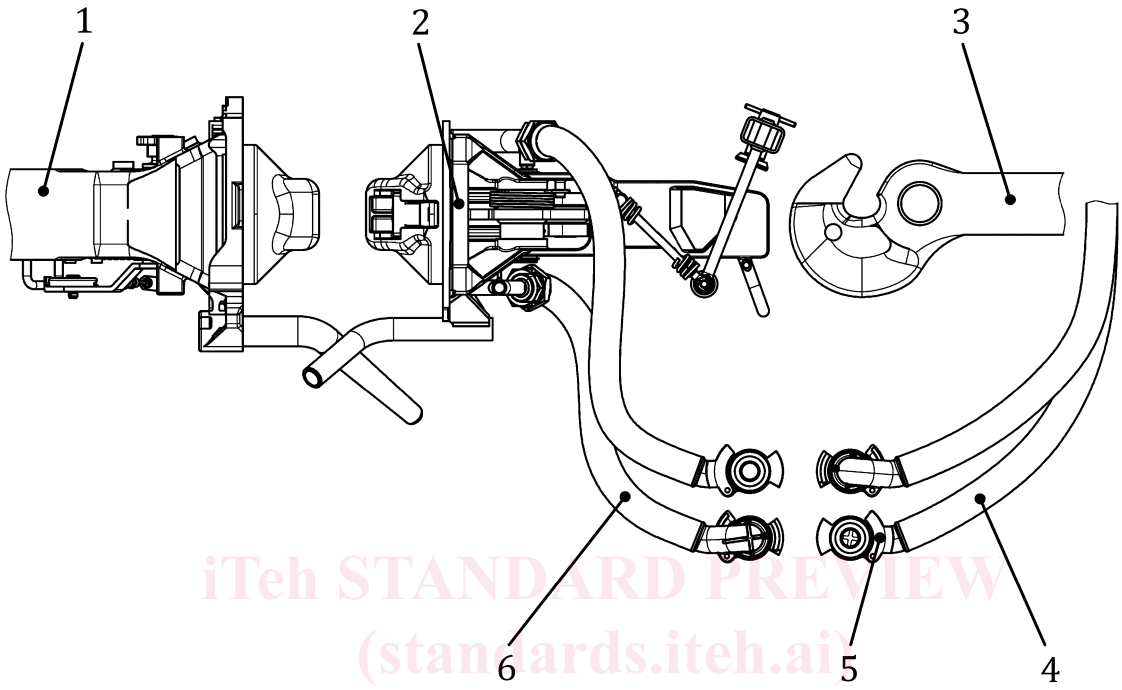
The rescue coupler, and specifically its pneumatic hoses, shall not limit the maximum lateral movement of the draw hook during rescue operation.

The rescue vehicle shall be able to control the braking system of the rescued train set.

4.7 Uncoupling conditions

Before uncoupling, the end cocks of the main reservoir pipe (air pipe) and automatic air brake pipe (brake pipe) of the rescue vehicle shall be closed.

The uncoupling process shall be conducted in accordance with EN 16019:2014.



Key

1 train set to be rescued

2 rescue coupler

3 draw hook on rescue vehicle

4 air pipes on rescue vehicle

5 coupling head

6 air pipes of the rescue coupler

Figure 1 — Example of an exploded view of the pneumatic connection between the rescue vehicle and rescue coupler — uncoupled condition, (lateral view)

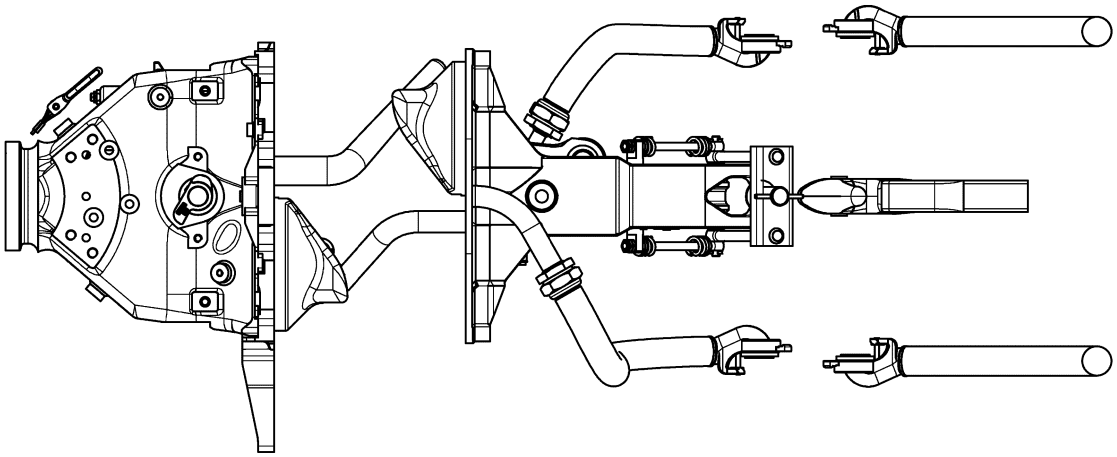


Figure 2 — Example of an exploded view of the pneumatic connection between the rescue vehicle and rescue coupler — uncoupled condition, (top view)

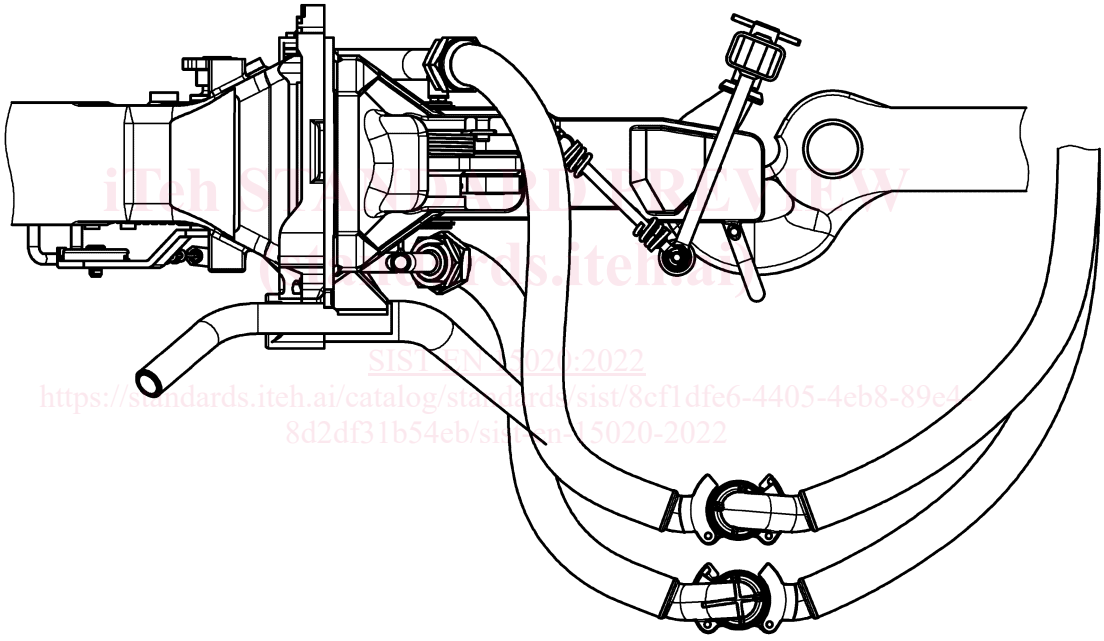


Figure 3 — Example of the pneumatic connection between the rescue vehicle and rescue coupler — coupled condition, lateral view