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Järnvägar – Automatkoppel – Prestandakrav, specifik gränssnittsgeometri och provningsmetod

Railway applications – Automatic coupler – Performance requirements, specific interface geometry and test method



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EUROPEAN STANDARD

EN 16019

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2014

ICS 45.040

English Version

Railway applications - Automatic coupler - Performance requirements, specific interface geometry and test method

Applications ferroviaires - Attelage automatique - Exigences concernant la performance, la géométrie des interfaces et les méthodes d'essai

Bahnanwendungen - Automatische Kupplung - Leistungsanforderungen, spezifische Schnittstellengeometrie und Prüfverfahren

This European Standard was approved by CEN on 17 November 2013.

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

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Foreword

This document (EN 16019:2014) 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of an identical text or by endorsement, at the latest by September 2014, and conflicting national standards shall be withdrawn at the latest by September 2014.

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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 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

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1 Scope

This European Standard specifies the requirements for Type 10 automatic couplers for railway applications.

It defines the minimum interface requirements in order to allow automatic coupling (mechanical and pneumatic) of two Type 10 automatic couplers.

The interfaces of the end coupler specified in this European Standard:

- enable the rescue of a train set in an event of a breakdown by another trainset of different type, without the need to use an intermediate coupler adapter, accessories or component;
- are the reference interfaces to which the rescue coupler defined by EN 15020 will comply.

It does not define:

- interface requirements concerning electrical connections;
- clearance requirements around the coupler head;
- the height above top of rail for the coupler;
- the position of the pivot point of the coupler.

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 edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15020, *Railway applications - Rescue coupler - Performance requirements, specific interface geometry and test methods*

EN ISO 6892-1, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1)*

ISO 2768 (all parts), *General tolerances*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

Type 10 automatic coupler

latch-type automatic coupler allowing the mechanical, pneumatic and in some cases electrical connection between two train units or train sets without manual assistance, also known as “Scharfenberg® system Type 10” automatic coupler¹⁾

3.2

coupler head

part of couplers, consisting of coupler head housing with gathering elements, coupler lock, uncoupling device, air pipe connections and an appropriate interface towards the rear part of the coupler

¹⁾ Scharfenberg® is a registered trademark of Voith Turbo Scharfenberg, Salzgitter, Germany. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of the product bearing this trademark. Equivalent products may be used if they can be shown to lead to the same results.

SS-EN 16019:2014 (E)**3.3****main reservoir pipe**

pipe containing air pressure at a value which is sufficient to supply subsystems, including the brake system

[SOURCE: EN 14478:2005, 4.9.6.10]

3.4**brake pipe**

pipe containing and conveying air, enabling train brake control

[SOURCE: EN 14478:2005, 4.9.6.7, modified]

3.5**uncoupling pipe**

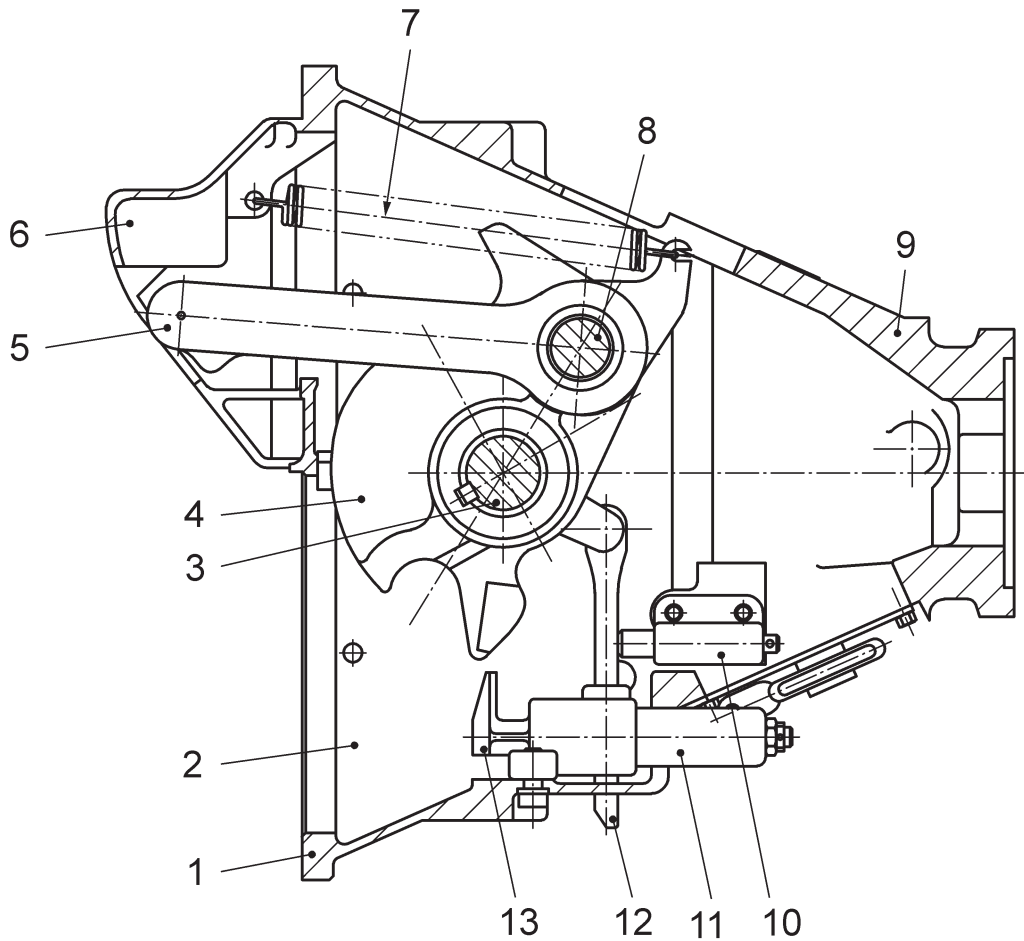
pipe containing and conveying air, enabling uncoupling of the coupler locks

4 Product requirements**4.1 Automatic coupler head characteristics**

The coupler head of the automatic coupler shall be equipped with a pivoting coupler lock, enabling the mechanical connection of two vehicles. The coupler lock consists of the following parts: hook plate, coupling link, central pin, tension springs, release bar holder, and release bar with trigger device. In order to ensure a maximum gathering range, both vertically and horizontally, the coupler head shall be provided with male cone, female cone and gathering horn, such that the couplers can be aligned and centred also in curves and in case of vertical mismatch. The coupler head dimensions shall be according to Annex A.

Tolerances for dimensions shall be according to ISO 2768, tolerance class mK, unless otherwise specified in this standard.

The principle arrangement of a coupler head is shown in Figure 1. Alternatives to this principle arrangement are allowed as long as functional and interface compatibility are maintained and the clauses of this standard remain applicable.



Key

1 coupler face	6 male cone	11 trigger device
2 female cone	7 tension spring	12 release bar
3 main pin	8 coupling link pin	13 trigger
4 hook plate	9 coupler head housing	
5 coupling link	10 release bar holder	

Figure 1 — Principle arrangement of coupler head

When coupled, the coupler lock elements are subjected to tensile load and form a parallelogram ensuring equilibrium of forces and an equal load distribution onto both coupling links. The equilibrium of forces prevents involuntary unlocking of the coupler locks and reduces wear.

Compressive loads are transmitted through the flat coupler faces of the coupler heads.

The automatic coupler head shall be designed to withstand the following forces without permanent deformation:

- tensile load = 1 000 kN;
- compressive load = 1 500 kN.

These values are for normal operating conditions. If the coupler is used only for rescue conditions, lower values are allowed; these loads are defined in EN 15020.