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Järnvägar – Pneumatiska slangkopplingar

Railway applications – Pneumatic half couplings

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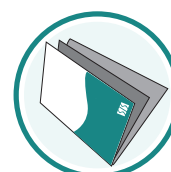
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EUROPEAN STANDARD

EN 15807

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2011

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English Version

Railway applications - Pneumatic half couplings

Applications ferroviaires - Demi-accouplements

Bahnanwendungen - Bremskupplungen

This European Standard was approved by CEN on 3 December 2010.

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Foreword

This document (EN 15807:2011) 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of an identical text or by endorsement, at the latest by July 2011 and conflicting national standards shall be withdrawn at the latest by July 2011.

This document has been prepared under a mandate given to CEN/CENELEC/ETSI by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 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 applies to pneumatic half couplings designed to couple either the brake pipes or main reservoir pipes of railway vehicles, without taking the type of vehicles and track-gauge into consideration.

This European Standard gives the requirements for the design, dimensions, testing and quality assurance of pneumatic half couplings.

2 Normative references

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.

EN 14478:2005, *Railway applications — Braking — Generic vocabulary*

EN 50125-1:1999, *Railway applications — Environmental conditions for equipment — Part 1: Equipment on board rolling stock*

EN ISO 8033:2006, *Rubber and plastics hoses — Determination of adhesion between components (ISO 8033:2006)*

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227:2006)*

ISO 37:2005, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 48:2007, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 815, *Rubber, vulcanized or thermoplastic — Determination of compression set at ambient, elevated or low temperatures*

ISO 1431-1, *Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static and dynamic strain testing*

ISO 1431-3, *Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 3: Reference and alternative methods for determining the ozone concentration in laboratory test chambers*

ISO 2285, *Rubber, vulcanized or thermoplastic — Determination of tension set under constant elongation, and of tension set, elongation and creep under constant tensile load*

ISO 8573-1:2010, *Compressed air — Part 1: Contaminants and purity classes*

ISO 23529:2004, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14478:2005 and the following apply.

3.1.1

pneumatic half coupling

assembly of components to connect the BP or MRP of a rail vehicle to the BP or MRP, respectively, of another rail vehicle

3.1.2

components

3.1.2.1

brake coupling head

components that when mechanically coupled together allow a flow of pressurised air between them

3.1.2.2

nipple

component at one end of the pneumatic half coupling that connects it to the end cock, or pipe, located on the vehicle

3.1.2.3

hose clip

component that mechanically fixes the hose to the coupling head or the nipple in order to assembly the pneumatic half coupling

3.1.2.4

sealing washer

component that is installed in the coupling head to prevent unacceptable loss of air when two coupling heads are connected to one another

3.1.2.5

flexible hose and constituents

3.1.2.5.1

flexible hose

component that is connected between the brake coupling head and the nipple to convey the pressurised air and give the required flexibility between vehicles, and that is generally made up of a elastomeric tube, textile reinforcement and a elastomeric covering bonded together

3.1.2.5.2

tube

interior layer of the flexible hose

3.1.2.5.3

reinforcement

intermediate layer that provides the strength to maintain the general shape of the hose whilst giving the flexibility

3.1.2.5.4

covering

external layer of the flexible hose which protects the interior constituents from mechanical and environmental damage

3.1.3

bar

1 bar = $10^5 \text{ N/m}^2 = 10^5 \text{ Pa} = 10^{-1} \text{ MPa}$

3.2 Abbreviations

BP Brake Pipe

MRP Main Reservoir Pipe

" inch

LO a length of 20 mm marked on the calibrated part of the test piece

IRHD International Rubber Hardness Degree

4 Design and manufacture

4.1 Requirements

4.1.1 Brake pipe

The pneumatic half couplings for the automatic air brake pipe shall conform to Figures 1 and 2 and either 3 or 4. The length of the assembled pneumatic half coupling, dimension X-X in Figure 1, is specified to suit the application, but the recommended length is 730 mm. The nipple to connect to the end cock shall be as shown in Figure 1 and have a truncated internal ISO 228 - G 1 1/4" pipe thread.

4.1.2 Main reservoir pipe

The pneumatic half couplings for the main reservoir pipe shall conform to Figures 5, 6 and either Figures 3 or 4 for interoperable traffic and either Figures 5 and 6 or Figures 7 and 8 plus either Figures 3 or 4 for internal traffic within a Member State. The length of the assembled pneumatic half coupling, dimension X-X in Figure 5 or 7, is specified to suit the application, but the recommended length is 730 mm. The nipple to connect to the end cock shall be as shown in Figure 1 (and is the same as for the air brake pipe) and have a truncated internal ISO 228 - G 1 1/4" pipe thread.

4.1.3 Flexible hose

4.1.3.1 General

The internal diameter of the coupling hoses for both pipes shall be between 25 mm and 30 mm. The recommended diameter is 28 mm. The length of the flexible hose is varied to suit the application, but should be the standard 620 mm to give the recommended length of 730 mm for dimension X-X as shown in Figures 1, 5 and 7. The recommended length of these hoses when used with a swing head autocoupler should be increased to give an assembled length of the pneumatic half coupling of 1 080 mm for the automatic air brake pipe and 930 mm for the main reservoir pipe. Elastomeric composite hoses having a textile reinforcing inlay sealed (vulcanised) at each end shall generally be used for these couplings, Figure 9, but hoses of other materials, e.g. metallic, may be used if they are flexible enough. The flexible hose shall conform to the dimensions defined in Figure 9. The choice of elastomers for elastomeric composite hoses is the choice of a manufacturer to meet the requirements of this specification. The elastomer used during a serial production shall conform with regard to the formulation of materials and characteristics to those products tested in the qualification procedure.

The tolerances for the overall length of the pneumatic half couplings shall be:

< 1 000 mm ± 5 mm

1 000 mm to 2 499 mm ± 10 mm

2 500 mm to 6 000 mm ± 30 mm

> 6 000 mm ± 0,8 %

The requirements 4.1.3.2 to 4.1.3.14 concern the elastomeric composite hoses.

NOTE In the case of use of another material, the tests to be conducted shall be defined in agreement between the customer and the supplier.