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Railway applications – Closing and locking devices for payload protecting devices against environmental influences – Requirements for durability, operation, indication, maintenance, recycling

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15723

January 2010

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English Version

**Railway applications - Closing and locking devices for payload
protecting devices against environmental influences -
Requirements for durability, operation, indication, maintenance,
recycling**

Applications ferroviaires - Dispositifs de fermeture et de
verrouillage des équipements de protection du chargement
contre les influences environnantes - Exigences de
résistance mécanique, exploitation, marquage,
maintenance et recyclage

Bahnanwendungen - Verschluss- und Sicherungsteile von
Ladegutschutzeinrichtungen gegen Umwelteinflüsse -
Anforderungen an Festigkeit, Bedienbarkeit,
Kennzeichnung, Instandhaltung, Entsorgung

This European Standard was approved by CEN on 7 November 2009.

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Foreword

This document (EN 15723:2010) 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of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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

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Introduction

To achieve an undisturbed, reliable and safe operation of freight trains it is essential to define common requirements for closing and locking devices of protecting devices of interoperable trains with respect to e.g. structural requirements, operating characteristics, way of operation, maintenance as well as their handling.

1 Scope

This European Standard applies to new and upgraded freight wagons where an approval is required. These protecting devices are classified into two types of load and this standard defines the requirements for the durability of the closing and locking devices, their status indication, maintenance and recycling. This standard also defines pass-fail criteria for the dimensioning tests.

NOTE Provisions going beyond the scope of these requirements should be agreed by the contracting parties involved.

This standard is not applicable to closing and locking devices which are used to ensure a pressure difference or to retain liquids /liquid payloads. It is not applicable to vehicles which are emptied by pressure, nor is it applicable to loose tarpaulins.

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 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

prEN 12663-2, *Railway applications — Structural requirements of railway vehicle bodies — Part 2: Freight wagons*

prEN 15877-1, *Railway applications — Marking on railway vehicles — Part 1: Freight wagons*

3 Terms and definitions

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

3.1

aerodynamic forces

forces affecting the vehicle and component assemblies by an air stream

3.2

forces from selfmass

inertia forces resulting from dynamic forces applied to the protecting (locking) devices

3.3

unloading door

type of door which is subject to the force of the payload (or a proportion of it)

NOTE The door should be able to be secured against un-planned opening (Category 2).

3.4

movable device to protect

device to protect payload against environmental influences and exterior forces

NOTE 1 Loose tarpaulins are not considered as a movable protecting device.

EXAMPLES Sliding walls, flaps, rigid sliding hoods and covers, hinged doors, bottom doors.

3.5

closing and locking device

device for fixing a movable protecting device in a defined position

3.6

operating module

freight wagon load securing or locking unit activated by operating elements

NOTE An operating module can also be an operating element.

3.7

operating element

element which is operated during loading/unloading

EXAMPLES Removable stanchions, hand wheels, sliding walls, levers or movable tie-downs.

3.8

applied force or moment

body force or moment which acts outwardly from the body

NOTE 1 Applied forces or moments are operating forces.

NOTE 2 In order to activate an operating element, both static and dynamic forces are applied.

3.9

percentile

statement on how many participants of the test group (in percent) are able to summon up the applied force or applied moment

NOTE 1 The applied forces or moments stated in the standards always refer to certain percentiles of the test group.

NOTE 2 Typical values of percentiles are 1, 5, 15, 50 or 95. Here the difference between 100 and the percentile value describes the percentage of the test group, which is able to summon up more than the respective applied force or moment. When stating the 85th percentile this means for instance that 85 % of the test persons are able to carry out the described activity – and 15 % will be able to carry out more than the described activity. When stating the 15th percentile this means for instance that 15 % of the test persons are not able to carry out the described activity – and 85 % will be able to carry out the described activity.

3.10

types of load

classification in two types of loads which are considered for the design of closing and locking devices

NOTE 1 These loads are either internal forces from the load itself or external forces during travelling.

NOTE 2 Examples for when these loads are considered for different door types are shown in Table 1.

3.11

automatic safety device

automatic device that prevents danger from wrong operation to and by the user

3.12

safeguard device

device that safely locks the movable items in their defined (open, close intermediate) position preventing unintentional movements

Table 1 — Types of load

Type of door	Load types		Examples of types
	Category 1 Planned/accepted forces by payload (even unloading by gravity), dynamic forces from payload (including unloading)	Category 2 No forces from payload, dynamic forces from exterior forces only	
Doors, discharge	X	X	Tanoos, Fals HAA, HHA CDA
Sliding walls	X	X	Hbi... wagons VGA
Sliding covers/hoods		X	Shimms Rils
Hinged side doors/ end doors	X	X	E-wagons
Curtain sides		X	
Hoppers with opening roof		X	Tamns
Siding roof "spread eagles"	X	X	

4 Requirements

4.1 General

Doors and hatches of freight vehicles shall be designed to be closed and locked. This remains valid while the vehicles are in a moving train (unless this is part of the procedure for discharging the payload). Wagons fitted with special equipment (automatic discharging, opening roof, etc.) shall have instructions concerning operation of this equipment and the safety precautions to be taken, placed in a prominent position and if possible in several languages; these instructions may be accompanied by appropriate pictograms.

The closing and locking devices shall be designed to withstand the loads which are caused by the payload under normal, regular conditions and when the payload has been displaced in a foreseeable manner (see Table 1, Category 1).

The closing and locking devices shall be designed to withstand the loads which could effect to vehicles during operation.

The side doors and the shutters of the ventilation apertures of covered wagons shall be designed to prevent wear and in service stresses causing deformation and resulting in these elements being ripped or falling off during the shunting process or while the train is moving (particularly during passing of two trains).

For all types of covered wagon with sliding side doors, they shall be equipped with suitably dimensioned devices to prevent any unintended disengagement. The devices shall limit the vertical play and shall take effect in any operating condition.

The forces, which are needed to actuate the closing and locking devices, shall be of a magnitude that can be applied by an operator without additional tools. Exceptions are allowable when additional tools are specifically made available or when motor driven systems are used.