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Oprema cest - 9. del: Merila za preskušanje ob naletu in preskusne metode za odstranljive elemente varnostnih ograj

Road restraint systems - Part 9: Impact tests and test methods for removable barrier sections

Rückhaltesysteme an Straßen - Leistungsklassen, Abnahmekriterien für Anprallprüfungen und Prüfverfahren für leicht entfernbare Schutzeinrichtungsabschnitte

Dispositifs de retenue routiers Essais de choc et méthodes de essai pour les sections amovibles de barrière de sécurité

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ICS

Will supersede ENV 1317-4:2001

English Version

**Road restraint systems - Part 9: Impact tests and test
methods for removable barrier sections**

Dispositifs de retenue routiers ; Essais de choc et
méthodes d'essai pour les sections amovibles de
barrière de sécurité

Rückhaltesysteme an Straßen - Leistungsklassen,
Abnahmekriterien für Anprallprüfungen und
Prüfverfahren für leicht entfernbare
Schutzeinrichtungsabschnitte

This draft Technical Specification is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 226.

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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
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European foreword

This document (FprCEN/TS 1317-9:2023) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

This document is currently submitted to the Vote on TS.

This document will supersede EN 1317-4:2001.

This document, fully dedicated to removable barrier sections (RBS) will partly supersede ENV 1317-4:2001 in which RBS are addressed only in subclause 6.2, in which they are treated as special transitions for lengths up to 40 m, and safety barriers for higher lengths.

In comparison with ENV 1317-4, the following technical modifications have been made:

- emergency passage: considered in 3.7,
- deformation of the RBS (5.4): specification of Dynamic Deflection, Working Width and System intrusion. Reporting of completely detached parts,
- connection force (5.5): reporting of the longitudinal forces acting under impact on the connections with the two barriers,
- impact points (6.2): different definition of the location and of the number of impact points,
- length of test installation (8): minimum length of the connected barriers,
- modular RBS of different length (9): reduced test matrix for products derived from a parent RBS, by assembling a different number of the same modules.

This document is read in conjunction with EN 1317-1:2010 and EN 1317-2:2010 and EN 1317-5:2007+A2:2012 and FprCEN/TR 1317-10.

WD CEN/TS RBS:2022 (E)

Introduction

In order to improve safety, the design of roads might require the installation of road safety barriers. Provisions are sometimes necessary for sections of barrier that can be temporarily opened whilst maintaining the capacity to contain errant vehicles in the closed configuration.

This document partially replaces the ENV 1317-4:2001 regarding the assessment of performance and test methods for Removable Barrier Sections. In the afore-mentioned document, these Removable Barrier Sections were considered to be special transitions and were assessed as such.

The performance of any required transition elements or assemblies that connect the removable barrier section to a standard road safety barrier may be assessed according to FprCEN/TR 1317-10.

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1 Scope

This document specifies performance, categories and test methods for the assessment of removable barrier sections.

The transitions between the Removable Barrier Section and the two connected safety barriers are outside the scope of this document and are assessed using FprCEN/TR 1317-10

The transitions between the Removable Barrier Section and the two connected safety barriers are outside the scope of this document.

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 1317-1:2010, *Road restraint systems - Part 1: Terminology and general criteria for test methods*

EN 1317-2:2010, *Road restraint systems - Part 2: Performance classes, impact test acceptance criteria and test methods for safety barriers including vehicle parapets*

FprCEN/TR 1317-10, *Road restraint system — Assessment methods and design guidelines for transitions and terminal connections - transitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1317-1:2010, EN1317-2:2010 and the following apply.

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

removable barrier section

section of barrier, connected at both ends to sections of standard safety barrier, which allows for removal and reinstallation for temporary openings, mainly used during maintenance of the road or for the passage of emergency vehicles, and which, in the closed position, offers containment performances

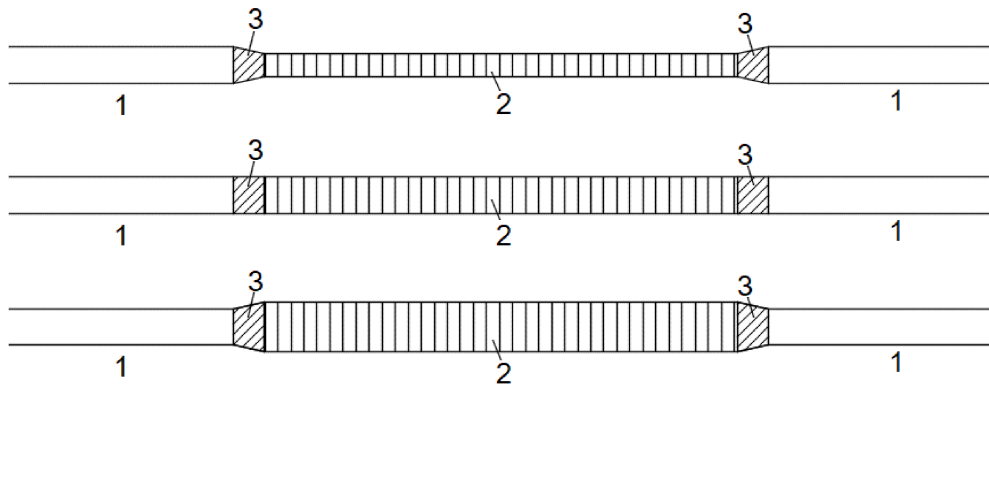
Note 1 to entry: The width of the RBS may be different from the width of the barriers.

Note 2 to entry: Although these products are called “removable” they are nevertheless permanent products. “Removable” indicates only that they can be opened.

Note 3 to entry: RBS shorter than or equal to 4,0 m should be considered as barriers interruptions.

Note 4 to entry: Figure 1 shows schematically the location of an RBS between two barriers.

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**Key**

- 1 Barrier
- 2 RBS
- 3 Transitions

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Figure 1 — Removable barrier sections

3.2**severity test**

initial type test carried out with a passenger car, which focuses on measuring the severity of the impact

Note 1 to entry: These are the tests listed in the column labelled "impact severity level ASI-THIV" in EN 1317-2:2010, Table 6.

3.3**containment test**

initial type test carried out to verify the ability of an RBS to contain an errant vehicle in accordance with tests labelled "safety barrier" including vehicle parapet deformation

Note 1 to entry: The containment test for each containment category is the test with the heaviest vehicle required for the containment category in question.

Note 2 to entry: The term "containment category" used in this document has the same meaning as the term "containment level" used in the series of EN 1317.

3.4**critical impact point (CIP)**

impact point identified to reasonably represent the worst case for testing the RBS

Note 1 to entry: Critical Impact Points should be used to perform acceptance tests. They may be different from test to test

Note 2 to entry An impact point can be critical from several points of view, e. g. containment, deflection or severity. Hence, critical impact points may be different from test to test

3.5**RBS length**

distance between the RBS transitions

3.6**RBS opening length**

length of the passage left open to the traffic when the RBS is opened or removed

3.7**emergency passage**

section of the RBS designed to be removed or opened as a gate more quickly and / or easily than the main RBS to facilitate the passage of emergency or maintenance vehicles

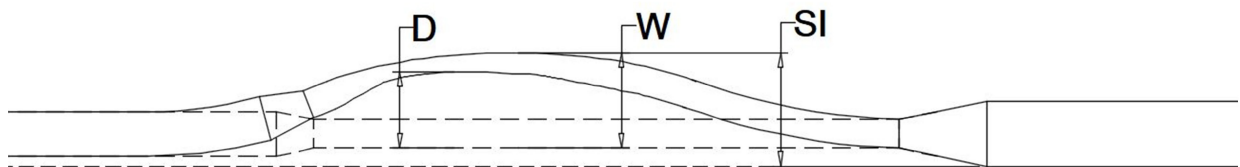
3.8**emergency passage opening length**

length of the passage left open to the traffic when the emergency passage is opened or removed

3.9**dynamic deflection**

maximum dynamic lateral displacement during the test of any point on the traffic face of the RBS

Note 1 to entry: (see Figure 2)

**Key**

- D Dynamic Deflection
- W Working Width
- SI System Intrusion

Figure 2 — Deformation of the RBS

WD CEN/TS RBS:2022 (E)**3.10****working width**

maximum lateral distance from the traffic face of the undeformed RBS to the maximum lateral dynamic position of any part of the RBS

Note 1 to entry: (see Figure 2)

3.11**system intrusion**

lateral distance of the maximum lateral dynamic position of any part of the RBS and of the barrier from the traffic face of one of the two undeformed barriers, whichever is larger

Note 1 to entry: (see Figure 2)

4 Abbreviations

For the purposes of this document, the abbreviations given in EN 1317-1:2010 and the following apply.

ASI Acceleration Severity Index

THIV Theoretical Head Impact Velocity

D Dynamic Deflection

SI System Intrusion

VI Vehicle Intrusion

W Working Width

RBS Removable Barrier Section

CIP Critical Impact Point

5 Performance under impact**5.1 General**

The performances under impact of RBS are those defined in EN 1317-2:2010 for safety barriers. The deformation of a RBS during impact tests is characterized by:

- the normalized dynamic deflection,
- the normalized working width
- and the normalized vehicle intrusion.

When test results are expressed by a class, the normalized values resulting from the measurements performed during the test should also be given.

Normalized vehicle intrusion is applicable only to RBS if the attached safety barrier with the lowest containment category is a safety barrier of class L or H.

5.2 Containment categories

The containment categories for RBS are defined in EN 1317-2:2010, Table 2 for safety barriers, with the relevant containment tests and severity tests.