

STN	Výbušniny na civilné použitie Rozbušky a bleskovicové oneskorovače Časť 16: Overenie presnosti oneskorenia elektrických a neelektrických rozbušiek, povrchových spojok a bleskovicových oneskorovačov	STN EN 13763-16 66 8083
------------	--	---

Explosives for civil uses - Detonators and detonating cord relays - Part 16: Verification of delay time accuracy of electric and non-electric detonators, surface connectors and detonating cord relays

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/26

Obsahuje: EN 13763-16:2025

Oznámením tejto normy sa ruší
STN EN 13763-16 (66 8083) z mája 2005

141736

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2026
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii
v znení neskorších predpisov.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13763-16

October 2025

ICS 71.100.30

Supersedes EN 13763-16:2003

English Version

**Explosives for civil uses - Detonators and detonating cord
relays - Part 16: Verification of delay time accuracy of
electric and non-electric detonators, surface connectors
and detonating cord relays**

Explosifs à usage civil - Détonateurs et relais pour
cordeau détonant - Partie 16: Vérification de la
précision du temps de retard des détonateurs
électriques et non électriques, des connecteurs de
surface et des relais pour cordeau détonant

Explosivstoffe für zivile Zwecke - Zünder und
Sprengverzögerer - Teil 16: Überprüfung der
Verzögerungsgenauigkeit von elektrischen und
nichtelektrischen Zündern, Oberflächenverbindern
und Sprengschnurverzögerern

This European Standard was approved by CEN on 29 September 2025.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Türkiye and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 13763-16:2025 (E)

Contents	Page
European foreword	3
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Principle	5
5 Apparatus	5
6 Preparation of test sample¹⁾	6
7 Procedure	6
7.1 Electric detonators, non-electric detonators and surface connectors	6
7.2 Detonating cord relays.....	7
8 Expression of results	8
8.1 Electric and non-electric detonators	8
8.2 Surface connectors and detonating cord relays	8
9 Test report.....	8
Annex A (normative) Calculation procedures.....	10
A.1 Calculation of mean delay time and standard deviation	10
A.2 Calculation of the adjusted nominal delay time and the adjusted nominal time difference	10
A.3 Test for outliers according to Grubbs test ²⁾	11
A.3.1 Outlier criteria for electric detonators and non-electric detonators	11
A.3.2 Outlier criteria for surface connectors and detonating cord relays	12
A.4 Calculation of c-factor for electric detonators and non-electric detonators.....	12
A.5 Calculation of the mean deviation from nominal delay time.....	13
A.6 Graphical representation using acceptance triangles.....	13
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2014/28/EU relating to the making available on the market and supervision of explosives for civil uses aimed to be covered	15
Bibliography	16

European foreword

This document (EN 13763-16:2025) has been prepared by Technical Committee CEN/TC 321 “Explosives for civil uses”, the secretariat of which is held by UNE.

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 April 2026, and conflicting national standards shall be withdrawn at the latest by April 2026.

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 13763-16:2003.

EN 13763-16:2025 includes the following significant technical changes with respect to EN 13763-16:2003:

- a) the document title has been changed from “Detonators and relays — Part 16: Determination of delay accuracy” to “Detonators and detonating cord relays — Part 16: Verification of delay time accuracy of electric and non-electric detonators, surface connectors and detonating cord relays”;
- b) the Introduction has been removed;
- c) the Scope has been revised to clarify the covered and not covered explosives;
- d) the normative references have been updated;
- e) the terminology entries 3.1 and 3.2 have been removed;
- f) Clause 4 “Principle” has been added;
- g) the clause “Apparatus” has been updated;
- h) the clause “Test pieces” is now called “Preparation of test sample”, the number of test pieces per nominal delay time has been reduced and the conditioning step has been moved there from the Clause “Procedure”;
- i) the clause “Procedure” has been revised and the specifications on the values to be calculated have been moved from here;
- j) Clause 8 “Expression of results” has been completely revised;
- k) the clause “Test report” does no longer require conformity with EN ISO/IEC 17025 and the information to be provided has been revised;
- l) former Annex A “Range of applicability of the test method” has been removed;
- m) former Annex B “Calculation procedure” is now Annex A;
- n) former Annex C “Guidance for theoretical verification” has been removed;
- o) Annex ZA has been updated;
- p) the Bibliography has been added and lists, e.g. EN ISO/IEC 17025:2017.

EN 13763-16:2025 (E)

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

A list of all parts in the EN 13763 series, published under the general title *Explosives for civil uses — Detonators and detonating cord relays*, can be found on the CEN website.

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, Türkiye and the United Kingdom.

1 Scope

This document specifies a test method for the verification of the delay time accuracy of electric detonators, non-electric detonators, surface connectors and detonating cord relays.

This document applies only to electric detonators, non-electric detonators, surface connectors and detonating cord relays that are part of a delay series.

This document does not apply to electronic detonators, shock tubes and electronic initiation systems.

NOTE For a test method for the verification of the delay time accuracy of electronic initiation systems with electronic detonators, see EN 13763-27:2025.

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 13630-1:2025, *Explosives for civil uses — Detonating cords and safety fuses — Part 1: Requirements*

EN 13763-1:2025, *Explosives for civil uses — Detonators and detonating cord relays — Part 1: Requirements*

EN 13857-1:2025, *Explosives for civil uses — Part 1: Vocabulary*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN