

**Tsiviilkäibes olevad lõhkeained.
Detonaatorid ja releed. Osa 18:
Elektridetonaatorite jadaühenduse
lõhkamisvoolu määramine**

Explosives for civil uses - Detonators and relays -
Part 18: Determination of series firing current of
electric detonators

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13763-18:2004 sisaldab Euroopa standardi EN 13763-18:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.05.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13763-18:2004 consists of the English text of the European standard EN 13763-18:2003.</p> <p>This document is endorsed on 18.05.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This European Standard specifies a method to determine the reliability of electric detonators connected in series, when the manufacturer's stated series firing current is applied. The test method does not apply to magnetic coupled detonators and electronic detonators.</p>	<p>Scope:</p> <p>This European Standard specifies a method to determine the reliability of electric detonators connected in series, when the manufacturer's stated series firing current is applied. The test method does not apply to magnetic coupled detonators and electronic detonators.</p>
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ICS 71.100.30

Võtmesõnad: electromagnetic radia, explosion pro, explosions, explosives, explosives storage, firing techniques, igniters, ignition current, impact strength, magazines, materials testing, mining, resistance, retardants, series switches, shock resistance, testing, testing devices

ICS 71.100.30

English version

Explosives for civil uses - Detonators and relays - Part 18: Determination of series firing current of electric detonators

Explosifs à usage civil - Détonateurs et relais - Partie 18:
Détermination du courant d'allumage de détonateurs
électriques en série

Explosivstoffe für zivile Zwecke - Zünder und
Verzögerungselemente - Teil 18: Bestimmung des
Serienzündstromes elektrischer Zünder

This European Standard was approved by CEN on 10 November 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 13763-18:2003) has been prepared by Technical Committee CEN/TC 321 "Explosives for civil uses", the secretariat of which is held by AENOR.

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 June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

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 EU Directive(s).

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

Annex A is informative.

This European Standard is one of a series of standards with the generic title *Explosives for civil uses – Detonators and relays*. The other parts of this series are listed below:

prEN 13763-1	Part 1: Requirements
EN 13763-2	Part 2: Determination of thermal stability
EN 13763-3	Part 3: Determination of sensitiveness to impact
EN 13763-4	Part 4: Determination of resistance to abrasion of leading wires and shock tubes
EN 13763-5	Part 5: Determination of resistance to cutting damage of leading wires and shock tubes
EN 13763-6	Part 6: Determination of resistance to cracking in low temperatures of leading wires
EN 13763-7	Part 7: Determination of the mechanical strength of leading wires, shock tubes, connections, crimps and closures
EN 13763-8	Part 8: Determination of the resistance to vibration of plain detonators
EN 13763-9	Part 9: Determination of resistance to bending of detonators
EN 13763-11	Part 11: Determination of resistance to damage by dropping of detonators and relays
EN 13763-12	Part 12: Determination of resistance to hydrostatic pressure
prEN 13763-13	Part 13: Determination of resistance of electric detonators against electrostatic discharge
prEN 13763-15	Part 15: Determination of equivalent initiating capability
EN 13763-16	Part 16: Determination of delay accuracy
EN 13763-17	Part 17: Determination of no-fire current of electric detonators
EN 13763-19	Part 19: Determination of firing impulse of electric detonators
EN 13763-20	Part 20: Determination of total electrical resistance of electric detonators
EN 13763-21	Part 21: Determination of flash-over voltage of electric detonators

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EN 13763-22	Part 22: Determination of capacitance, insulation resistance and insulation breakdown of leading wires
EN 13763-23	Part 23: Determination of the shock-wave velocity of shock tube
EN 13763-24	Part 24: Determination of the electrical non-conductivity of shock tube
prEN 13763-25	Part 25: Determination of transfer capability of surface connectors, relays and coupling accessories
prEN 13763-26	Part 26: Definitions, methods and requirements for devices and accessories for reliable and safe function of detonators and relays
CEN/TS 13763-27	Part 27: Definitions, methods and requirements for electronic initiation systems

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

During blasting using electric detonators, the detonators are usually connected in series. To avoid misfire, the electrical characteristics of the detonators need to be within narrow tolerances.

1 Scope

This European Standard specifies a method to determine the reliability of electric detonators connected in series, when the manufacturer's stated series firing current is applied.

The test method does not apply to magnetic coupled detonators and electronic detonators.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13857-1, *Explosives for civil uses — Part 1: Terminology*.

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:1999)*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13857-1 apply.

4 Test pieces

4.1 For instantaneous detonators, select 80 detonators of each specific type, having the same composition, fusehead electrical characteristics, material and geometry. Use 30 detonators to determine the current breakage time (see 6.2) and use 50 detonators in the series firing test (see 6.3).

4.2 For detonators that are part of a delay series that includes instantaneous detonators, select 80 of the instantaneous detonators in accordance with 4.1 unless the design of the fusehead of the delay detonators is different from that of the instantaneous detonators. If the design of the fusehead differs, select 80 of the instantaneous detonators in accordance with 4.1 and 100 detonators of the shortest delay time (other than instantaneous) in accordance with 4.3.

4.3 If the detonators are part of a delay series that does not include instantaneous detonators, select 100 detonators of the shortest delay time. Use 50 detonators to determine the current breakage time (see 6.2) and use 50 detonators in the series firing test (see 6.3).

5 Apparatus

5.1 Regulated current source capable of producing square current pulses with adjustable amplitude and time period. The rise and fall times shall be not greater than 50 μ s, the accuracy of the amplitude shall be $\pm 1,0\%$.

5.2 Time measuring device to determine the time interval from the commencement of the current pulse to current breakage and / or detonation (current breakage time t_b) with a resolution of 10 μ s.

6 Procedure

6.1 Test temperature