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**Respiratory equipment - Open-circuit umbilical supplied compressed gas diving apparatus - Part 1: Demand apparatus**

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**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

<p>Käesolev Eesti standard EVS-EN 15333-1:2008 sisaldab Euroopa standardi EN 15333-1:2008 ingliskeelset teksti.</p>	<p>This Estonian standard EVS-EN 15333-1:2008 consists of the English text of the European standard EN 15333-1:2008.</p>
<p>Standard on kinnitatud Eesti Standardikeskuse 25.03.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p>	<p>This standard is ratified with the order of Estonian Centre for Standardisation dated 25.03.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p>
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**ICS** 11.040.10

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ICS 11.040.10

English Version

## Respiratory equipment - Open-circuit umbilical supplied compressed gas diving apparatus - Part 1: Demand apparatus

Equipements respiratoires - Appareil de plongée en narguilé à gaz comprimé et à circuit ouvert - Partie 1: Appareil à la demande

Atemgeräte - Schlauchversorgte Leichttauchgeräte mit Druckgas - Teil 1: Lungenautomatisch gesteuerte Geräte

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## Foreword

This document (EN 15333-1:2008) has been prepared by Technical Committee CEN/TC 79 "Respiratory protective devices", 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of an identical text or by endorsement, at the latest by July 2008, and conflicting national standards shall be withdrawn at the latest by July 2008.

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.

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.

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

## **Introduction**

A given open-circuit umbilical supplied compressed gas diving apparatus can only be approved when the apparatus or apparatus sub-assemblies satisfy the requirements of the tests specified in this European Standard, and practical performance tests have been carried out successfully on complete apparatus where specified in this European Standard.

The production of this European Standard has identified varying methods of surface supply and has separated them into two parts; equipment that supplies demand type facepieces and equipment that supplies free flow type facepieces.



## 1 Scope

This European Standard specifies minimum requirements for demand surface supplied and demand surface oriented diving apparatus to ensure a minimum level of safe operation of the apparatus. It applies to the following:

- depths between 0 m and 50 m for apparatus using air, oxygen or oxygen in nitrogen mixtures;
- depths between 0 m and 60 m for apparatus using oxygen, oxygen and helium or oxygen, nitrogen and helium gas mixtures;
- water temperatures between 4 °C and 34 °C or outside these temperatures as specified by the manufacturer.

The requirements of this European Standard are intended to take account of the interaction between the wearer, the apparatus, and where possible the environment in which the apparatus is likely to be used.

This European Standard does not cover saturation diving systems, mini bell systems or apparatus used for oxygen decompression only.

## 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 132:1998, *Respiratory protective devices — Definitions of terms and pictograms*

EN 134:1998, *Respiratory protective devices — Nomenclature of components*

EN 144-1, *Respiratory protective devices - Gas cylinder valves — Part 1: Thread connections for insert connector*

EN 144-3, *Respiratory protective devices — Gas cylinder valves — Part 3: Outlet connections for diving gases Nitrox and oxygen*

EN 397, *Industrial safety helmets*

EN 812 *Industrial bump caps*

EN 12021, *Respiratory protective devices — Compressed air for breathing apparatus*

EN 14593-1:2005, *Respiratory protective devices — Compressed air line breathing apparatus with demand valve — Part 1: Apparatus with a full face mask — Requirements, testing marking*

EN ISO 12209-1, *Gas cylinders - Outlet connections for gas cylinder valves for compressed breathable air - Part 1: Yoke type connections (ISO 12209-1:2000)*

EN ISO 12209-2, *Gas cylinders - Outlet connections for gas cylinder valves for compressed breathable air - Part 2: Threaded connections (ISO 12209-2:2000)*

EN ISO 12209-3, *Gas cylinders - Outlet connections for gas cylinder valves for compressed breathable air - Part 3: Adaptor for 230 bar valves (ISO 12209-3:2000)*

EN 61508-1, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements (IEC 61508-1:1998 + Corrigendum 1999)*

EN 61508-2, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2:2000)*

EN 61508-3, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements (IEC 61508-3:1998 + Corrigendum 1999)*

EN 61508-4, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 4: Definitions and abbreviations (IEC 61508-4:1998 + Corrigendum 1999)*

EN 61508-5, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 5: Examples of methods for the determination of safety integrity levels (IEC 61508-5:1998 + Corrigendum 1999)*

EN 61508-6, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3 (IEC 61508-6:2000)*

EN 61508-7, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 7: Overview of techniques and measures (IEC 61508-7:2000)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 132:1998 and the nomenclature given in EN 134:1998 apply together with the following:

**3.1 auxiliary gas supply system (bail out)**  
auxiliary and independent gas supply or breathing apparatus for use in case of a failure of the umbilical supply

**3.2 body harness**  
component of the system to attach the breathing apparatus, umbilical and any pressure vessels to the body of the diver

**3.3 breathing frequency**  
number of breathing cycles per minute

**3.4 displaced (tidal) volume**  
volume of respirable gas displaced by a breathing simulator during one half cycle (inhalation or exhalation) measured in litres

**3.5 full face mask**  
facepiece covering mouth, nose, eyes and chin which may be fitted with either a mouthpiece or an inner mask

**3.6 helmet**  
facepiece covering the whole head, which may be fitted with either a mouthpiece or an inner mask

**3.7 high pressure**  
any pressure greater than medium pressure