

# Electric appliances connected to the water mains — Avoidance of backsiphonage and failure of hose-sets

ICS 97.040.40; 97.060

## National foreword

This British Standard is the UK implementation of EN 61770:1999+A2:2006, incorporating corrigendum August 2007. It is identical with IEC 61770:1998, incorporating amendment 1:2004 and amendment 2:2006. It supersedes BS EN 61770:2000+A1:2004 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee CPL/61, Safety of household and similar electrical appliances, to Subcommittee CPL/61/14, Home laundry appliances and dishwashers.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard cannot confer immunity from legal obligations.**

### Amendments/corrigenda issued since publication

| Amd. No. | Date            | Comments                                                                                                                                                                                       |
|----------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15297    | 4 August 2004   | Changes to Clause 1 and subclauses 4.2, 5.1, 5.2, 5.4, 8.1 and 9.1.10                                                                                                                          |
| 16649    | 31 October 2006 | Changes to Note 2 of Scope, subclause 7.1 and incorporating Corrigendum December 2005 replacing the A-derivations for subclauses 9.1.6, 9.1.7 and 9.1.8 in Annex ZB                            |
|          | 30 April 2008   | Implementation of CENELEC corrigendum August 2007 (deleting the A-deviations for the United Kingdom for subclauses 9.1.6, 9.1.7, 9.1.8 and 9.3) and alignment of BSI and CEN publication dates |

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English version

## Electric appliances connected to the water mains Avoidance of backsiphonage and failure of hose-sets

(IEC 61770:1998)

Appareils électriques raccordés au  
réseau d'alimentation en eau  
Prescriptions pour éviter le retour d'eau  
par siphonnage et la défaillance des  
ensembles de raccordement

Elektrische Geräte zum Anschluß an die  
Wasserversorgungsanlage  
Vermeidung von Rücksaugung und  
Fehlern bei Schlauchsätzen

This European Standard was approved by CENELEC on 1998-10-01. CENELEC 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 Central Secretariat or to any CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## CENELEC

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B-1050 Brussels**

### **Foreword**

The text of document 61/1480/FDIS, future edition 1 of IEC 61770, prepared by IEC TC 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61770 on 1998-10-01.

This European Standard replaces EN 50084:1992 and its amendment A1:1998.

The following dates are applicable:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2000-04-01
- date on which national standards conflicting  
with the EN have to be withdrawn (dow) 2002-04-01

Normative references to International Standards with the reference of the corresponding European Standards are given in annex ZA.

National deviations from this European Standard are listed in annex ZB.

There are no special national conditions causing a deviation from this European Standard.

Annexes A and ZA are normative. Annex ZB is informative.

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### **Endorsement notice**

The text of the International Standard IEC 61770:1998 was approved by CENELEC as a European Standard without any modification.

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### **Foreword to amendment A1**

The text of document 61/2490/FDIS, future amendment 1 to IEC 61770:1998, prepared by the IEC Technical Committee 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 61770:1999 on 2004-03-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-12-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2007-03-01

This amendment supplements or modifies the corresponding clauses of EN 61770:1999.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

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### **Endorsement notice**

The text of amendment 1:2004 to the International Standard IEC 61770:1998 was approved by CENELEC as an amendment to the European Standard without any modification.

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### **Foreword to amendment A2**

The text of document 61/2983/FDIS, future amendment 2 to IEC 61770:1998, prepared by IEC Technical Committee 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 61770:1999 on 2006-04-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2007-01-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2009-04-01

This amendment supplements or modifies the corresponding clauses of EN 61770:1999.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

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### **Endorsement notice**

The text of amendment 2:2006 to the International Standard IEC 61770:1998 was approved by CENELEC as an amendment to the European Standard without any modification.

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## ELECTRIC APPLIANCES CONNECTED TO THE WATER MAINS – AVOIDANCE OF BACKSIPHONAGE AND FAILURE OF HOSE-SETS

### 1 Scope

This International Standard specifies requirements for appliances for household and similar purposes to prevent the backsiphonage of **non-potable water** into the water mains. It also specifies requirements for **hose-sets** used for connecting such appliances to the water mains that supply water at a pressure not exceeding 1 MPa.

NOTE 1 Examples of similar purposes are the installation of appliances in canteens, restaurants, launderettes and communal flats.

Note 2 This standard does not apply to

- appliances used for dry cleaning;
- appliances for medical purposes;
- appliances intended for industrial purposes;
- water heaters that are an integral part of the water supply system;
- water coolers that are an integral part of the water supply system.

NOTE 3 The connection of the appliance to the water mains may be temporary or permanent.

NOTE 4 When reference is made to the water mains, water supplied from a cistern or similar system is also included.

NOTE 5 Many countries have requirements concerning the prevention of contamination of potable water as a result of contact with unsuitable materials upstream of a safety device.

### 2 Normative reference

The following normative document contains provisions which, through reference in this text, constitutes provisions of this International Standard. At the time of publication, the edition indicated was valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative document indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60730-2-8:1992, *Automatic electrical controls for household and similar use – Part 2: Particular requirements for electrically operated water valves, including mechanical requirements*

### 3 Definitions

For the purpose of this standard, the following definitions apply.

#### 3.1

##### **potable water**

water which is obtained directly from the potable water mains and remains in a closed system up to the **backflow prevention device**

#### 3.2

##### **non-potable water**

water which leaves the closed system after having passed the **backflow prevention device**

### 3.3

#### **backflow prevention device**

means to prevent contamination of **potable water** by backflow of **non-potable water**

NOTE – Examples are **airgaps** and **pipe interrupters**.

### 3.4

#### **airgap**

unobstructed free distance between the water inlet or the end of the feed pipe and the **critical water level**

NOTE – A distance is considered to be unobstructed if the airflow into the feed pipe under vacuum conditions is not restricted by the construction of the appliance.

### 3.5

#### **pipe interrupter**

device without movable or elastomeric parts, into which air can enter while water is passing through it

### 3.6

#### **dynamic backflow preventer**

**backflow prevention device** which prevents backsiphonage by the use of moving parts

### 3.7

#### **overflow**

means for discharging excess water from the appliance when the normal outlet is obstructed

### 3.8

#### **maximum water level**

highest level of the **non-potable water** in any part of the appliance when it operates continuously under fault conditions

### 3.9

#### **critical water level**

level to which the **non-potable water** is reduced from the **maximum water level** 2 s after water inlets have been closed

### 3.10

#### **hose-set**

assembly consisting of a flexible hose and couplings

NOTE 1 – The **hose-set** is for connecting the appliance upstream of the **backflow prevention device** to the water mains.

NOTE 2 – Couplings may be removable with or without the aid of a tool.

### 3.11

#### **detachable part**

part which can be removed without the aid of a tool

## 4 General requirements

**4.1** Appliances shall have a **backflow prevention device** located downstream of each water inlet valve.

For appliances incorporating a water softener located upstream of an **airgap** or **pipe interrupter**, a **dynamic backflow preventer** shall be incorporated upstream of the water softener.

Dispensers for adding cleaning, rinsing, softening or similar agents to the water, shall not be located upstream of the **backflow prevention device**.

Pipework containing **potable water** located upstream of a **backflow prevention device** shall not pass through **non-potable water** in the appliance.

*Compliance is checked by inspection.*

NOTE – For a given point in a hydraulic system, "upstream" indicates the side from which the water flows and "downstream" indicates the side to which the water flows.

**4.2 Backflow prevention devices** shall be incorporated in, or fixed to, the appliance and constructed so that

- their functional characteristics cannot be changed, even intentionally,
- they can only be removed with the aid of a tool,
- if omitted, the appliance is rendered inoperable or manifestly incomplete.

*Compliance is checked by inspection and by manual tests.*

**4.3 Hose-sets** for the connection of appliances to the water mains shall be constructed so that the risk of flooding is obviated as far as possible.

*Compliance is checked by the tests of clause 9.*

**4.4** Metallic parts of the water connection system of the appliance, the deterioration of which may cause the appliance to fail to comply with the requirements of this standard, shall be resistant to erosion, dezincification, oxidation or corrosion.

*Compliance is checked by inspection.*

NOTE – Resistance to dezincification of brass can be checked in accordance with ISO 6509 <sup>1)</sup>.

## 5 General conditions for the tests

**5.1** When reference is made to normal conditions, the following applies:

- the appliance is placed on a horizontal support;
- the appliance is connected to a water supply in accordance with the instructions for installation;
- the water supply has a static pressure not exceeding 1 MPa and a dynamic pressure not less than 0,6 MPa;
- the appliance is supplied at rated voltage;

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<sup>1)</sup> ISO 6509: Corrosion of metals and alloys – Determination of dezincification resistance of brass