

Specification for

**Safety devices and water
supply connections for
washing machines,
dishwashers and tumbler
dryers connected to the water
supply mains**

(Implementation of CENELEC HD 274 S2)

Dispositifs de sécurité et raccords
d'alimentation en eau des machines à laver le
linge, des lave-vaisselle et des séchoirs à
tambour branchées sur le réseau de
distribution d'eau — Spécifications

Sicherheitsvorrichtungen und
Wasserversorgungsanschlüsse für
Waschmaschinen, Geschirrspülmaschinen und
Trommel Trocknern die an den
Hauptversorgungsleitungen angeschlossen
werden

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Light Electrical Engineering Standards Policy Committee (LEL/-) to Technical Committee LEL/161, upon which the following bodies were represented:

- Association for Consumer Research (ACRE)
- Association of Consulting Scientists
- Association of Control Manufacturers (TACMA (BEAMA Ltd.))
- Association of Manufacturers of Domestic Electrical Appliances
- British Cable Makers' Confederation
- British Electrotechnical Approvals Board
- British Gas plc
- British Lawnmower Manufacturers' Federation
- British Retailers' Association
- Catering Equipment Manufacturers' Association
- Consumer Policy Committee of BSI
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd.)
- Electricity Industry in United Kingdom
- Home Office
- Institute of Trading Standards Administration
- Institution of Electrical Engineers
- Lighting Industry Federation Ltd.
- Loss Prevention Council
- Portable Electric Tool Manufacturers' Association
- Rotating Electrical Machines Association (BEAMA Ltd.)
- Royal Society for the Prevention of Accidents
- Small Electrical Appliances Marketing Association

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Institution of Water and Environmental Management
- Water Services Association of England and Wales

This British Standard, having been prepared under the direction of the Light Electrical Engineering Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 January 1992

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Foreword

This British Standard has been prepared under the direction of the Light Electrical Engineering Standards Policy Committee. It is technically equivalent to, and it implements, the English language version of HD 274 S2 'Safety of household and similar electrical appliances, Requirements for the connection of washing machines, dishwashers and tumbler dryers to the water supply mains', which is published by the European Committee for Electrotechnical Standardization (CENELEC).

Some editorial changes have been made to the CENELEC text, and as a result of using the CENELEC text, some terminology and certain conventions are not identical with those used in British Standards.

The United Kingdom national deviations from CENELEC HD 274 S2 have been incorporated in the text, and they are indicated by vertical lines in the margin. These deviations have resulted from the United Kingdom Water Byelaws. The full list of national deviations is given in an informative appendix.

This British Standard supersedes BS 6614 : 1985, which is withdrawn.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Specification

1 Scope

This British Standard specifies requirements for the connection of washing machines, dishwashers and tumble dryers to the water supply mains having a water pressure not exceeding 1 MPa (10 bar), for household and similar purposes. The connection may be temporary or permanent.

Similar purposes includes the installation of appliances in shops and communal flats, for the use by staff or residents; it does not include dry cleaning, laundrettes, medical, industrial, catering and transport use.

The purpose of these requirements is to prevent:

- backsiphonage of non-potable water into the potable water supply mains, even under fault conditions;
- a failure in the connection of the appliance to the water supply mains, which may result in flooding.

The requirements also take into account:

- the prevention of contamination of potable water as a result of contact with unsuitable materials upstream of a safety device;
- the limitation on the maximum amount of water used by the appliance.

NOTE. The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1 potable water

Water which is obtained directly from the potable water supply mains and remains in a closed system up to the safety device.

2.2 non-potable water

Water which leaves the closed system after having passed the safety device.

NOTE. Non-potable water may have one or more characteristics giving rise to complaints by consumers with regard to taste, smell, colour or turbidity or may contain substances which are detrimental to health.

2.3 safety device

A device which is intended to prevent contamination of potable water by backflow of non-potable water.

NOTE. Examples of safety devices are air gaps and atmospheric pressure pipe interruptors.

2.4 air gap

An unobstructed free distance between the end of the water inlet or feeding pipe and the critical water level; it is intended to prevent water downstream of it being drawn into the potable water feeding pipe.

NOTE. An unobstructed free distance means that the airflow into the feeding pipe under vacuum conditions is not restricted by constructional parts of the appliance.

2.5 atmospheric pressure pipe interruptor

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

NOTE. In this document it is called 'pipe interruptor'.

2.6 special safety device

A safety device having movable parts which prevent backsiphonage.

2.7 overflow

A means for discharging excess water from the appliance to the open air when the normal outlet is partially or fully blocked.

2.8 maximum water level

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

2.9 critical water level

The level of the non-potable water reached in any part of the appliance, 2 s after closing water inlets, starting from maximum water level.

NOTE. For appliances with more than one inlet hose, each water inlet is closed in turn, other inlets being left open if the programme permits simultaneous filling.

2.10 hose set

An assembly consisting of a flexible hose and couplings necessary for its connection to the appliance upstream of the safety device and to the water supply mains.

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

2.11 upstream

Indicates, for a given point in a hydraulic system, the side from which the water flows.

2.12 downstream

Indicates, for a given point in a hydraulic system, the side to which the water flows.

2.13 water softener

A device for reducing the hardness of the water and which is regenerated by means of common salt or a similar but not more corrosive substance.

2.14 detachable part

A part which can be removed without the aid of a tool.

3 General requirements

3.1 Appliances shall be provided with an air gap or pipe interruptor situated downstream of each of the inlet valves. For appliances provided with an integral water softener connected upstream of an air gap or pipe interruptor, there shall be in addition a special safety device located upstream of the water softener. Dispensers intended for adding softening, rinsing, cleaning, disinfecting or similar agents to the water, shall not be located upstream of the safety device. No part of the pipework of the potable water system upstream of a safety device shall pass through non-potable water in the container.

Compliance is checked by inspection.

Constructional materials of the washing machine, dishwasher or tumbler dryer shall not adversely affect the quality of the water with which they may come into contact upstream of the valves or other safety devices.

Compliance is checked by the tests specified in BS 6920.

3.2 Safety devices shall be incorporated in 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 the tests of clauses 5 to 7, as applicable.

3.3 The connection of the appliance to the water supply mains shall be such that the risk of flooding is obviated as far as possible.

Compliance is checked by the tests of clauses 8 and 9.

3.4 Metallic parts of the water connection system of the appliance, the deterioration of which may cause the appliance to fail to comply with this British Standard, shall be resistant to erosion, dezincification, oxidation or corrosion under the most unfavourable conditions occurring in normal use.

The resistance to dezincification is checked by the method specified in BS 2872 or BS 2874.

The resistance to bimetallic corrosion is checked by ensuring that the materials used satisfy the

recommendations of PD 6484 and that the surface of any protective coating or plating is continuous and free from visible defects.

Otherwise, compliance is checked by inspection.

3.5 The following additional requirements for water consumption shall apply.

The consumption of water for one full cycle of its maximum water use programme shall not exceed:

- for washing machines 3.6 L/L of drum volume;
- for washing machines incorporating a tumbler dryer function and having a water supply for condensing vapour 6.4 L/L of drum volume;
- for dishwashers 7 L per number of place settings as claimed for the appliance by the manufacturer; place settings are defined in BS 3999 : Part 11;
- for tumbler dryers incorporating water cooled condensing units 20 L/kg of rated capacity of textile material in the dry condition.

4 General notes on tests

4.1 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 manufacturer's instructions;
- the water supply has a static pressure not exceeding 1 MPa (10 bar) and a dynamic pressure not less than 0.6 MPa (6 bar);
- the appliance is supplied at rated voltage;
- the appliance is tested without textile material or dishes, detergent, rinsing agents and the like, doors and lids being closed.

NOTE. Appliances designed for special purposes are tested at the pressure indicated in the manufacturer's instructions if:

- the maximum permissible water pressure indicated is less than 0.6 MPa (6 bar);
- the appliance is clearly marked with a warning against connecting it to the water supply mains.

4.2 When reference is made to fault conditions, the appliance is inclined at an angle of 2° to the horizontal in the most unfavourable position, and the following applies, as far as is reasonable, in addition to the normal conditions:

- the connection between the dispenser, if any, intended for adding softening, rinsing, cleaning, disinfecting or similar agents to the water, and other parts of the appliance is