

Automatic electrical controls for household and similar use —

Part 2-8: Particular requirements for electrically operated water valves, including mechanical requirements

The European Standard EN 60730-2-8:2002, with the incorporation of amendment A1:2003, has the status of a British Standard

ICS 97.120

National foreword

This British Standard is the official English language version of EN 60730-2-8:2002, including amendment A1:2003. It was derived by CENELEC from IEC 60730-2-8:2000, including amendment 1:2002. It supersedes BS EN 60730-2-8:1995 which will be withdrawn on 2008-12-01.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] <A1>. Tags indicating changes to CENELEC text carry the number of the CEN amendment. For example, text altered by CENELEC amendment A1 is indicated by [A1] <A1>.

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by common modification tags [C] <C>. The common modifications introduced by CENELEC amendment A1 are indicated by [C1] <C1>.

The UK participation in its preparation was entrusted to Technical Committee CPL/72, Electrical control devices for household equipment and appliances, which has the responsibility to:

- aid enquirers to understand the text;
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English version

Automatic electrical controls for household and similar use
Part 2-8: Particular requirements for electrically operated water valves,
including mechanical requirements
(including Amendment A1:2003)
(IEC 60730-2-8:2000 + A1:2002, modified)

Dispositifs de commande électrique automatiques
à usage domestique et analogue
Partie 2-8: Règles particulières pour
les électrovannes hydrauliques,
y compris les prescriptions mécaniques
(inclut l'amendement A1:2003)
(CEI 60730-2-8:2000 + A1:2002, modifiée)

Automatische elektrische Regel- und Steuergeräte
für den Hausgebrauch und ähnliche Anwendungen
Teil 2-8: Besondere Anforderungen
an elektrisch betriebene Wasserventile,
einschließlich mechanischer Anforderungen
(enthält Änderung A1:2003)
(IEC 60730-2-8:2000 + A1:2002, modifiziert)

This European Standard was approved by CENELEC on 2001-12-04. Amendment A1 was approved by CENELEC on 2003-07-01. 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.

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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

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Foreword

The text of the International Standard IEC 60730-2-8:2000, prepared by IEC TC 72, Automatic controls for household use, together with the common modifications prepared by the Technical Committee CENELEC TC 72, Automatic controls for household use, was submitted to the formal vote and was approved by CENELEC as EN 60730-2-8 on 2001-12-04.

This European Standard supersedes EN 60730-2-8:1995 + corrigendum March 2001 + A1:1997 + A1:1997/corrigendum March 2001 + A2:1997 + A2:1997/corrigendum March 2001.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement dop 2002-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn dow 2008-12-01

This Part 2-8 is to be used in conjunction with EN 60730-1:1995, Automatic electrical controls for household and similar use - Part 1: General requirements, and its amendments. Consideration may be given to future editions of EN 60730-1.

This Part 2-8 supplements or modifies the corresponding clauses of EN 60730-1 so as to convert it into the European Standard: Particular requirements for electrically operated water valves, including mechanical requirements.

Where a particular clause or subclause of Part 1 is not mentioned in this Part 2-8, that clause or subclause applies as far as is reasonable. Where this Part 2-8 states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

Where reference is made to other international or harmonized standards, the edition of that standard quoted in annex ZA (normative) is applicable.

There are no special national conditions (snc) causing a deviation from this European Standard other than those listed in annex ZB of EN 60730-1.

There are no national deviations from this European Standard other than those listed in Annex ZC of EN 60730-1.

In this standard:

- 1) The following print types are used:
 - Requirements proper: in roman type;
 - *Test specifications: in italic type;*
 - Explanatory matter: in small roman type.
- 2) Subclauses, notes, tables and figures which are additional to those in Part 1 are numbered starting from 101, additional annexes are lettered AA, BB, etc.

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes H, BB, CC, DD, EE and ZA are normative and annex AA is informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60730-2-8:2000 was approved by CENELEC as a European Standard with agreed common modifications.

Foreword to amendment A1

The text of amendment 1:2002 to the International Standard IEC 60730-2-8:2000, prepared by IEC TC 72, Automatic controls for household use, together with the common modifications prepared by the Technical Committee CENELEC TC 72, Automatic controls for household use, was submitted to the formal vote and was approved by CENELEC as amendment A1 to EN 60730-2-8:2002 on 2003-07-01.

The following dates are proposed:

- latest date by which the amendment has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2004-07-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 2008-12-01

NOTE EN 60730-2-8 originally referred to EN 60730-1:1995 and its amendments. This amendment enables EN 60730-2-8 to be used with EN 60730-1:2000. Consideration may be given to future editions of EN 60730-1.

Endorsement notice

The text of amendment 1:2002 to the International Standard IEC 60730-2-8:2000 was approved by CENELEC as an amendment to the European standard with agreed common modifications. These common modifications also modify the common modifications in EN 60730-2-8:2002.

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AUTOMATIC ELECTRICAL CONTROLS FOR HOUSEHOLD AND SIMILAR USE –

Part 2-8: Particular requirements for electrically operated water valves, including mechanical requirements

1 Scope and normative references

This clause of part 1 is replaced as follows:

Replacement:

1.1 This part 2-8 applies to electrically operated water valves for use in, on or in association with equipment for household and similar use that may use electricity, gas, oil, solid fuel, solar thermal energy, etc. or a combination thereof, including heating, air-conditioning and similar applications.

EN 60730-2-1 does not apply to water valves. EN

1.1.1 This part 2-8 contains requirements for electrical features of water valves and requirements for mechanical features of valves that affect their intended operation.

1.1.2 This part 2-8 applies to the inherent safety, to the operating values, operating sequences where such are associated with equipment protection, and to the testing of automatic electrical controls used in, on or in association with household and similar equipment.

Electrically operated valves for equipment not intended for normal household use but which may nevertheless be used by the public, such as equipment intended to be used by laymen in shops, in light industry and on farms, are within the scope of this part 2-8.

This part 2-8 does not apply to electrically operated water valves designed exclusively for industrial applications.

This part 2-8 does not apply to:

- electrically operated water valves of nominal connection size above DN 50;
- electrically operated water valves for admissible nominal pressure rating above 1,6 MPa;
- food dispensers;
- detergent dispensers;
- steam valves.

Throughout this part 2-8, where it can be used unambiguously, the term:

- "valve" is used to denote an electrically operated water valve (including actuator and valve body assembly);
- "actuator" means "electrically operated mechanism or prime mover";
- "valve body" means "valve body assembly";
- "equipment" includes "appliance" and "control system".

1.1.3 This part 2-8 also applies to actuators and to valve bodies which are designed to be fitted to each other.

1.1.4 This part 2-8 applies to individual valves, valves utilized as part of a system and valves mechanically integral with multi-functional controls having non-electrical outputs.

☐ text deleted ☐

1.5 Normative references

This clause of part 1 is applicable except as follows:

Addition:

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads – Part 1: Dimensions, tolerances and designation*

ISO 65:1981, *Carbon steel tubes suitable for screwing in accordance with ISO 7-1*

ISO 228-1:1994, *Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation*

ISO 630:1995, *Structural steels – Plates, wide flats, bars sections and profiles*

ISO 1179:1981, *Pipe connections threaded to ISO 228-1 for plain end steel and other metal tubes in industrial applications*

ISO 4144:1979, *Stainless steel fittings threaded to ISO 7-1*

ISO 4400:1994, *Fluid power systems and components – Three-pin electrical plug connectors with earth contact – Characteristics and requirements*

ISO 6952:1994, *Fluid power systems and components – Two-pin electrical plug connectors with earth contact – Characteristics and requirements*

2 Definitions

This clause of part 1 is applicable, except as follows:

2.2 Definitions of types of control according to purpose

2.2.17 electrically operated valve

Addition:

NOTE A semi-automatic valve that is opened manually and closes automatically or vice versa is also covered by this definition.

Additional definitions:

2.2.17.101

valve

device consisting of an actuator connected to a valve body assembly and used to stop or regulate flow of fluid by the closure or partial closure of an orifice

2.2.17.102

water valve

valve intended to be connected to a water supply and to control water flow

NOTE A water valve is a type 1 action. Switching devices incorporated in water valves are type 1 or 2 actions.

2.2.17.103

heating-water valve

valve intended to control the water circulation in heating systems

2.2.17.104

actuator

electrically operated mechanism or prime mover used to effect the opening or closing action of a valve

NOTE 1 An actuator may be integral with the valve, fixed to the valve body assembly or delivered as a separate component.

NOTE 2 An actuator may also include the valve and closure member.

2.2.17.105

valve body assembly

assembly comprising the valve body, inlet and outlet end connections, the valve seat, closure member and stem or shaft

NOTE In some cases, the stem and closure member may be part of the actuator.

2.2.17.106

valve body

part of the valve body assembly which is the main pressure boundary. It provides the water flow passage-ways with end connections

2.2.17.107

nominal size

numerical designation of size which is common to all components in a fluid-conducting system other than components designated by outside diameter or by thread size

NOTE 1 It may be designated by "DN" followed by a convenient round number, for reference purposes only.

NOTE 2 Some older international standards refer to nominal size as nominal diameter but, for the purpose of this standard, the two terms are synonymous.

2.2.17.108

nominal pressure rating

numerical designation of pressure rating

NOTE It may be designated by the letters "PN" (also referred to as the pressure number) followed by a convenient round number, for reference purposes only.

2.2.17.109

end connection

valve body configuration provided to make a pressure-tight joint to the fluid-conducting system

2.2.17.110

valve seat

surface of the orifice within the valve which makes full contact with the closure member

2.2.17.111

closure member

movable part of the valve which is positioned in the flow path to modify the rate of flow through the valve

NOTE A closure member may be a plug, ball, disc, vane, gate, etc.

2.2.17.112

stem

component which connects the actuator to, and positions, the closure member

NOTE 1 For rotary valves the word "shaft" should be used in place of "stem".

NOTE 2 In some controls the stem may be part of the actuator.

2.2.17.113

fitting

any device such as a reducer, expander, elbow, or T-piece which is attached directly to an end-connection of the valve body assembly

2.3 Definitions relating to the function of controls

2.3.29

Amend the existing definition as follows:

Delete "(maximum rated pressure)".

Additional definitions:

2.3.101

on-off valve

valve which is open or closed, without any intermediate positions

2.3.102

normally closed valve

valve which is closed when not electrically energized

2.3.103

normally open valve

valve which is open when not electrically energized

2.3.104

modulating valve

valve which has a variable flow rate between predetermined flow limits

2.3.105

diverting valve

valve with one or more inputs and outputs which may permit flow from any combination of inputs to outputs

2.3.106

closed position

position of the closure member when there is no water flow from the outlet side of the valve

2.3.107

travel

displacement of the closure member from the closed position

2.3.108

rated travel

displacement of the closure member from the closed position to the full open position

2.3.109

open position

position of the closure member when there is a flow of water from the outlet side of the valve

2.3.110

fully open position

position of the closure member so that the amount of water flowing through the valve is in accordance with the rated flow rate

2.3.111

flow rate

volume of water flowing through the valve in unit time

2.3.112

rated flow rate

flow rate at the rated travel under standard reference conditions of temperature and pressure declared at a given pressure difference

2.3.113

flow factor

factor specifying the amount of water which can pass through the valve at a specified pressure difference

NOTE 1 The flow factor may be referred to as flow coefficient.

NOTE 2 The relationship between the different flow factors in use is indicated in annex AA.

2.3.114

maximum operating pressure differential

declared maximum difference in pressure between inlet and outlet ports of the valve against which the actuator can operate the closure member

2.3.115

minimum operating pressure differential

declared minimum pressure difference at which the valve opens or closes

2.3.116

Void

2.3.117

water hammer

excessive transient pressure which can occur in some water supply systems as a result of closing a valve as intended

2.3.118

transient pressure

short-time pressure surge exceeding the normal stable supply pressure in the closed condition of the valve

2.3.119

valve with anti-water-hammer characteristics

valve that does not cause an excessive pressure drop when opening and no excessive transient pressure when closing if connected directly, without special precautions to water supply mains applications where water-hammer may occur

2.13 Miscellaneous definitions

Additional definitions:

2.13.101

drinking-water

water supply which is intended to be suitable for human consumption

NOTE In some standards, "drinking-water" is referred to as "potable water".

2.13.102

non-drinking-water

water supply which is not intended for human consumption

3 General requirements

This clause of part 1 is applicable.

4 General notes on tests

This clause of part 1 is applicable, except as follows:

4.1 Conditions of test

4.1.2 Addition:

Unless otherwise specified in this standard, water temperature for the tests shall be maintained at a temperature of (20 ± 5) °C.

4.2 Samples required

4.2.1 Addition:

One sample is required for each test of clause 27.

NOTE By agreement between manufacturer and testing authority, one sample may be submitted to more than one test.

5 Rating

This clause of part 1 is applicable.

6 Classification

This clause of part 1 is applicable, except as follows:

6.3.12 – electrically operated valve

Addition:

6.3.12.101 – water valve

6.5.2 According to degree of protection provided by enclosures against harmful ingress of water (see IEC 60529)

Replacement of the second explanatory paragraph as follows:

NOTE Preferred degrees of protection provided by enclosures are:
IP20, IP30, IP40, IP54, IP65.

Values differing from these preferred values are allowed.

6.7 According to ambient temperature limits of the switch head:

Modification:

Read "valve" for "control" and "actuator" for "switch head".

6.8 According to protection against electric shock:

6.8.3 Replacement:

For an independently mounted valve or a valve integrated or incorporated in an assembly utilizing a non-electrical source:

Additional subclauses:

6.8.101 For a single actuator:

6.8.101.1 – of class 0;

6.8.101.2 – of class 0I;

6.8.101.3 – of class I;

6.8.101.4 – of class II;

6.8.101.5 – of class III.

6.10 Not applicable.

6.11 *Addition:*

Water valves shall be subjected to a minimum of 6 000 automatic cycles.

Additional subclauses:

6.101 According to type of end-connections

6.101.1 Valves provided with internally threaded end-connections with either:

ISO 7-1 or NPT thread when pressure-tight joints are made on the thread, or

ISO 228-1 thread when pressure-tight joints are not made on the thread, but via an additional sealing washer.

6.101.2 Valves provided with externally threaded end-connections for:

- a) compression fittings, or
- b) washered union connection, or
- c) cone seated union connection, or
- d) threaded pipe connections either according to ISO 7-1, ISO 228-1 or NPT thread.

6.101.3 Valves provided with flanged end-connections suitable for connection to flanges with or without adaptors.

6.101.4 Valves provided with end-connections with neck-end for soldered or welded connections.

6.101.5 Valves provided with end-connections with hose tails for use with flexible tubing.

6.102 According to features of electrically operated water valves

6.102.1 *According to the size and capacity:*

Size and capacity to be specified in dimension of inlet and outlet connections and flow factor.

6.102.2 *According to the type of operation:*

Direct or pilot controlled with or without minimum pressure differential limit.

6.102.3 *According to function:*

Description of function regarding the number of water connections and the valve position when de-energized.