

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Dispositifs de commande électrique automatiques à usage domestique et
analogue –**

**Partie 2-8: Règles particulières pour les électrovannes hydrauliques, y compris
les prescriptions mécaniques**



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REDLINE VERSION

VERSION REDLINE



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**AUTOMATIC ELECTRICAL CONTROLS FOR HOUSEHOLD
AND SIMILAR USE –**

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

FOREWORD

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This consolidated version of the official IEC Standard and its amendments has been prepared for user convenience.

IEC 60730-2-8 edition 2.2 contains the second edition (2000-02) [documents 72/428/FDIS and 72/439/RVD], its amendment 1 (2002-11) [documents 72/553/FDIS and 72/557/RVD] and its amendment 2 (2015-11) [documents 72/1011A/FDIS and 72/1025/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60730-2-8 has been prepared by IEC technical committee 72: Automatic controls for household use.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

This part 2-8 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the ~~second~~ ~~fourth~~ edition (1993 2010) of that publication ~~and its amendments 1 (1994) and 2 (1997)~~. Consideration may be given to future editions of, or amendments to, IEC 60730-1.

This part 2-8 supplements or modifies the corresponding clauses in IEC 60730-1 so as to convert that publication into the IEC standard: *Safety requirements for electrically operated water valves, including mechanical requirements*.

Where this part 2-8 states "addition", "modification", or "replacement", the relevant requirement, test specification or explanatory matter in part 1 should be adapted accordingly.

Where no change is necessary, part 2-8 indicates that the relevant clause or subclause applies.

In the development of a fully international standard, it has been necessary to take into consideration the differing requirements resulting from practical experience in various parts of the world and to recognize the variation in national electrical systems and wiring rules.

In this part 2-8, The "in some countries" notes regarding differing national practices are contained in the following subclauses elements:

- Table 1, items 113 and 114
- 14.7.4, note 101
- 16.2.1
- ~~27.2.101~~ 27.2.3.1
- annex CC
- table DD 1.2.1, note 1
- table DD.6, note 1
- ~~H.26.9~~

In this publication:

- 1) The following print types are used:
 - Requirements proper: in roman type.
 - *Test specifications: in italic type.*
 - Notes: in smaller roman type.
- 2) Subclauses, notes, tables or figures which are additional to those in part 1 are numbered starting from 101, additional annexes are lettered AA, BB, etc.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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- replaced by a revised edition, or
- amended.

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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~~ applicable 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. ~~The equipment may use electricity, gas, oil, solid fuel, solar thermal energy, etc., or a combination thereof.~~

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

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

This part 2-8 is also applicable to electrically operated water valves for appliances within the scope of IEC 60335.

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 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;
- electrically operated water valves designed exclusively for industrial applications.

1.1.2 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.

NOTE Attention is drawn to the fact that, in many countries, additional test requirements and by-laws have been established by the water authorities or companies.

1.5 Normative references

This clause of part 1 is applicable except as follows:

Addition:

IEC 60335 (all parts), *Household and similar electrical appliances – Safety*

IEC 60730-1:2010, *Automatic electrical controls – Part 1: General requirements*

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 1179-1, *Connections for general use and fluid power – Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing – Part 1: Threaded ports*

ISO 4144:1979, *Pipework – Stainless steel fittings threaded in accordance with 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