



BSI Standards Publication

Automatic electrical controls

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

National foreword

This British Standard is the UK implementation of EN IEC 60730-2-8:2025. It is identical to IEC 60730-2-8:2025. It supersedes BS EN IEC 60730-2-8:2020+A1:2021, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CPL/72, Electrical control devices for household equipment and appliances.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2025
Published by BSI Standards Limited 2025

ISBN 978 0 539 30160 1

ICS 97.120

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2025.

Amendments/corrigenda issued since publication

Date	Text affected
<hr/>	

English Version

Automatic electrical controls - Part 2-8: Particular requirements
for electrically operated water valves, including mechanical
requirements
(IEC 60730-2-8:2025)

Dispositifs de commande électrique automatiques - Partie
2-8: Exigences particulières pour les électrovannes
hydrauliques, y compris les exigences mécaniques
(IEC 60730-2-8:2025)

Automatische elektrische Regel- und Steuergeräte - Teil 2-
8: Besondere Anforderungen an elektrisch betriebene
Wasserventile, einschließlich mechanischer Anforderungen
(IEC 60730-2-8:2025)

This European Standard was approved by CENELEC on 2025-06-19. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 72/1478/FDIS, future edition 4 of IEC 60730-2-8, prepared by TC 72 "Automatic electrical controls" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60730-2-8:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-07-31 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-07-31 document have to be withdrawn

This document supersedes EN IEC 60730-2-8:2020 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document is read in conjunction with EN IEC 60730-1.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60730-2-8:2025 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Annex ZA of Part 1 is applicable except as follows.

Addition:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60730-1	2022	Automatic electrical controls - Part 1: General requirements	EN IEC 60730-1	2024
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	2000	Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation	EN ISO 228-1	2003
ISO 630-2	2011	Structural steels - Part 2: Technical delivery conditions for structural steels for general purposes	-	-
ISO 1179-1	2013	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	EN ISO 1179-1	2013
ISO 4144	2003	Pipework - Stainless steel fittings threaded in accordance with ISO 7-1	-	-

CONTENTS

FOREWORD	4
1 Scope	7
2 Normative references	9
3 Terms and definitions	9
4 General	12
5 Required technical information	13
6 Protection against electric shock	15
7 Provision for protective earthing	16
8 Terminals and terminations.....	16
9 Constructional requirements	16
10 Threaded parts and connections.....	17
11 Creepage distances, clearances and distances through solid insulation.....	17
12 Components	18
13 Fault assessment on electronic circuits.....	18
14 Moisture and dust resistance	18
15 Electric strength and insulation resistance	18
16 Heating.....	18
17 Manufacturing deviation and drift.....	19
18 Environmental stress	20
19 Endurance	20
20 Mechanical strength	21
21 Resistance to heat, fire and tracking.....	24
22 Resistance to corrosion	24
23 Electromagnetic compatibility (EMC) requirements – Emission	24
24 Normal operation	25
25 Electromagnetic compatibility (EMC) requirements – Immunity	25
26 Abnormal operation tests.....	25
Annex H (normative) Requirements related to functional safety	29
Annex R (informative) National differences relevant in the United States of America.....	34
Annex S (informative) National differences relevant in Japan	35
Annex T (informative) National differences relevant in Canada	36
Annex AA (informative) Relation between different flow coefficients.....	37
Annex BB (informative) Arrangement for the measurement of transient pressures caused by water valves.....	38
Annex CC (normative) Long term pressure test for thermoplastic bodied valves.....	41
Annex DD (normative) Torque test.....	43
Annex EE (informative) Arrangement for the measurement of transient pressures caused by water valves with a declared pressure of up to and including 1,0 MPa (10 bar).....	47
Bibliography.....	49
Figure BB.1 – Transient pressure measurement test rig schematic diagram.....	39
Figure DD.1 – Arrangements for carrying out the torque test.....	43

Figure EE.1 – Transient pressure measurement test rig for valves with a declared pressure of up to and including 1,0 MPa (10 bar) schematic diagram	47
Table 1 – Required technical information and methods of providing these information	13
Table 101 – Nominal size and thread size of end-connections	17
Table 17 – Maximum heating temperatures	19
Table 102 – Torque test requirements for metal valves with internal threaded end-connections	23
Table 103 – Torque test requirements for metal valves with external threaded end-connections	24
Table CC.1 – Test requirements for valves intended for uses other than the control of water for tap and shower outlets	41
Table CC.2 – Test requirements for valves intended for the control of water for tap and shower outlets	42
Table DD.1 – Required torque for the test	44
Table DD.2 – Tightening torque in newton metres (Nm) for bolts and screws for adaptors	46

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60730-2-8 has been prepared by IEC technical committee 72: Automatic electrical controls. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2018 and Amendment 1:2021. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) adoption of IEC 60730-1:2022 with all of its significant changes to IEC 60730-1:2013, IEC 60730-1:2013/AMD1:2015 and IEC 60730-1:2013/AMD2:2020.

The text of this International Standard is based on the following documents:

Draft	Report on voting
72/1478/FDIS	72/1482/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 60730 series, under the general title: *Automatic electrical controls*, can be found on the IEC website.

This part 2-8 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the sixth edition of that standard (2022). 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: Particular 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.

The reader's attention is drawn to the fact that Annex R to Annex T list all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this document.

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.
 - Defined terms: **bold type**.
- 2) Subclauses, notes or items 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 this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

AUTOMATIC ELECTRICAL CONTROLS –

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

1 Scope

Replacement:

This document applies to **electrically operated water valves**

- for use in, on, or in association with equipment for household appliance and similar use;

NOTE 1 Throughout this document, the word "equipment" means "appliance and equipment" and "control" means "**electrically operated water valve**".

EXAMPLE 1 **Electrically operated water valves** for appliances within the scope of IEC 60335.

- for building automation within the scope of ISO 16484 series and IEC 63044 series (HBES/BACS);

EXAMPLE 2 Independently mounted **water valves**, controls in smart grid systems and controls for building automation systems within the scope of ISO 16484-2.

- for equipment that is used by the public, such as equipment intended to be used in shops, offices, hospitals, farms and commercial and industrial applications;

EXAMPLE 3 **Electrically operated water valves** for commercial catering, heating and air-conditioning equipment.

- that are **smart enabled electrically operated water valves**;

EXAMPLE 4 Smart grid control, remote interfaces and controls of energy-consuming equipment including computer or smart phone.

- that are AC or DC powered **electrically operated water valves** with a **rated voltage** not exceeding 690 V AC or 600 V DC;
- used in, on, or in association with equipment that uses electricity, gas, oil, solid fuel, solar thermal energy, etc., or a combination thereof;
- utilized as part of a **control system** or **controls** which are mechanically integral with **multifunctional controls** having non-electrical outputs;
- using NTC or **PTC thermistors** and to discrete **thermistors**, requirements for which are contained in Annex J of Part 1;
- responsive to or controlling such characteristics as temperature, pressure, passage of time, humidity, light, electrostatic effects, flow, or liquid level, current, voltage, acceleration, or combinations thereof;
- in which **actuators** and **valve** bodies are designed to be fitted to each other.
- as well as manual controls when such are electrically or mechanically integral with automatic controls.

NOTE 2 Requirements for manually actuated mechanical switches not forming part of an automatic control are contained in IEC 61058-1-1.

This document applies to

- the inherent safety of **electrically operated water valves**, and
- functional safety of **electrically operated water valves** and safety related systems,
- controls where the performance (for example the effect of EMC phenomena) of the product can impair the overall safety and performance of the controlled system,
- the operating values, operating times, and operating sequences where such are associated with equipment safety.

This document specifies the requirements for construction, operation and testing of **electrically operated water valves** used in, on, or in association with an equipment.

This document contains requirements for electrical features of **water valves** and requirements for mechanical features of **valves** that affect their intended operation.

This document does not

- apply to **electrically operated water valves** intended exclusively for industrial process applications unless explicitly mentioned in the relevant Part 2 or the equipment standard. However, this document can be applied to evaluate automatic electrical controls intended specifically for industrial applications in cases where no relevant safety standard exists.
- 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**;
- take into account the **response value** of an **automatic action** of a **electrically operated water valve**, if such a **response value** is dependent upon the method of mounting the control in the equipment. Where a **response value** is of significant purpose for the protection of the **user**, or surroundings, the value defined in the appropriate equipment standard or as determined by the manufacturer will apply.
- address the integrity of the output signal to the network devices, such as interoperability with other devices unless it has been evaluated as part of the control system.
- cover the prevention of contamination of drinking water as a result of contact with materials.

Throughout this document, 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".

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60730-1:2022, *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*¹

ISO 228-1:2000, *Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation*

ISO 630-2:2011, *Structural steels – Part 2: Technical delivery conditions for structural steels for general purposes*²

ISO 1179-1:2013, *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 4144:2003, *Pipework – Stainless steel fittings threaded in accordance with ISO 7-1*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.2 Definitions of types of control according to purpose

3.2.13 electrically operated valve

Additional Note to entry:

Note 1 to entry: A semi-automatic valve that is opened manually and closes automatically or vice versa is also covered by this definition.

Additional definitions:

3.2.13.101 valve

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

3.2.13.102 water valve

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

3.2.13.103 heating-water valve

valve intended to control the water circulation in heating systems

¹ Withdrawn.

² Withdrawn. A newer edition was published in 2021, but the listed edition applies.

3.2.13.104

actuator

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

Note 1 to entry: An **actuator** can be integral with the **valve**, fixed to the **valve body assembly** or delivered as a separate component.

Note 2 to entry: An **actuator** can also include the **valve** and **closure member**.

3.2.13.105

valve body assembly

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

Note 1 to entry: In some cases, the **stem** and **closure member** can be part of the **actuator**.

3.2.13.106

valve body

part of the **valve body assembly** which is the main pressure boundary

Note 1 to entry: It provides the water flow passage-ways with **end connections**.

3.2.13.107

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 to entry: It can be designated by "DN" followed by a convenient round number, for reference purposes only.

Note 2 to entry: Some older international standards refer to **nominal size** as nominal diameter but, for the purpose of this document, the two terms are synonymous.

3.2.13.108

nominal pressure rating

numerical designation of pressure rating

Note 1 to entry: It can be designated by the letters "PN" (also referred to as the pressure number) followed by a convenient round number, for reference purposes only.

3.2.13.109

end-connection

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

3.2.13.110

valve seat

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

3.2.13.111

closure member

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

Note 1 to entry: A **closure member** can be a plug, ball, disc, vane, gate, etc.

3.2.13.112

stem

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

Note 1 to entry: For rotary **valves**, the word "shaft" should be used in place of "**stem**".

Note 2 to entry: In some controls, the **stem** can be part of the **actuator**.

3.2.13.113**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**

3.3 Definitions relating to the function of controls

Additional definitions:

3.3.101**on-off valve**

valve which is open or closed, without any intermediate positions

3.3.102**normally closed valve**

valve which is closed when not electrically energized

3.3.103**normally open valve**

valve which is open when not electrically energized

3.3.104**modulating valve**

valve which has a variable **flow rate** between predetermined flow limits

3.3.105**diverting valve**

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

3.3.106**closed position**

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

3.3.107**travel**

displacement of the **closure member** from the **closed position**

3.3.108**rated travel**

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

3.3.109**open position**

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

3.3.110**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**

3.3.111**flow rate**

volume of water flowing through the **valve** in unit time

3.3.112

rated flow rate

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

3.3.113

flow factor

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

Note 1 to entry: The **flow factor** can be referred to as flow coefficient.

Note 2 to entry: The relationship between the different **flow factors** in use is indicated in Annex AA.

3.3.114

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**

3.3.115

minimum operating pressure differential

declared minimum pressure difference at which the **valve** opens or closes

3.3.116

water hammer

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

3.3.117

transient pressure

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

3.3.118

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 can occur

3.13 Miscellaneous definitions

Additional definitions:

3.13.101

water for tap and shower outlets

water intended to supply a bath, shower, bidet, wash basin, kitchen sink, or other such taps that discharge into a drainage system

4 General

This clause of Part 1 is applicable except as follows.

4.3 General notes on tests

4.3.2 Conditions of test

4.3.2.2 Addition:

Unless otherwise specified in this document, water temperature for the tests shall be maintained at a temperature of $(20 \pm 5) ^\circ\text{C}$.

5 Required technical information

This clause of Part 1 is applicable except as follows.

5.2 Methods of providing technical information

This clause of Part 1 is applicable except as follows.

Table 1 – Required technical information and methods of providing these information

	Information	Clause or subclause	Method
<i>Modifications:</i>			
6	Purpose of control NOTE 1 Electrically operated water valves can be declared as water valve, heating-water valve, on-off valve, normally closed valve, normally open valve, modulating valve, diverting valve, valve with anti-water hammer characteristics .	3.2, 3.3.101, 3.3.102, 3.3.103, 3.3.104, 3.3.105, 3.3.118, 4.3.4.2, 4.3.4.5, 19.15	D or E
8	The type of load controlled by each circuit (for valves with switching devices) ^b such as substantially resistive, resistive or inductive, declared specific load, 20 mA load, declared motor load and pilot duty load	Clause 16, Clause 19, Table 18, Table 19, Table 20, 23.2.2, 26.2.3,	C
15	Temperature limits of the electrically operated water valve , if the minimum value ($T_{\min}$) lower than $0 ^\circ\text{C}$ or the maximum value ($T_{\max}$) other than $55 ^\circ\text{C}$ Preferred values of $T_{\max}$ are $30 ^\circ\text{C}$, $55 ^\circ\text{C}$, $70 ^\circ\text{C}$, $85 ^\circ\text{C}$, $105 ^\circ\text{C}$, $125 ^\circ\text{C}$, $150 ^\circ\text{C}$. Preferred values of $T_{\min}$ are $0 ^\circ\text{C}$, $-10 ^\circ\text{C}$, $-20 ^\circ\text{C}$, $-30 ^\circ\text{C}$, and $-40 ^\circ\text{C}$	16.5, 16.7, 19.3	D
19	Not applicable		
20	Number of automatic cycles (A) for each automatic action. ¹⁰⁴ Preferred values are: 300 000 cycles; 200 000 cycles; 100 000 cycles; 30 000 cycles; 20 000 cycles; 10 000 cycles; 6 000 cycles. NOTE 2 For electrically operated water valves having more than one automatic action, a different value can be declared for each.	13.1.3.3, Table 14, 19.7.5, 19.8.4,	X
21	Not applicable		
22	Type of disconnection or interruption provided by each circuit (for electrically operated water valves with switching devices)	3.4.1, 3.4.2, 3.4.3, 3.4.4	X
30	Not applicable		
31	Not applicable		
32	Not applicable		
33	Type 1 action or type 2 action (for valves with switching devices) ¹⁰¹	3.6	D or E
34	Additional features of type 1 action or type 2 actions (for valves with switching devices) ¹⁰¹	9.4	D or E
35	Manufacturing deviation and condition of test (electrical, mechanical and thermal) appropriate to deviation (for valves with switching devices).	3.11.1, 9.4.3, H.17, 10.11	X