



SLOVENSKI STANDARD
oSIST prEN 15091:2022
01-maj-2022

Sanitarne armature - Elektronsko odpiranje in zapiranje sanitarnih armatur

Sanitary tapware - Electronic opening and closing sanitary tapware

Sanitärarmaturen - Sanitärarmaturen mit elektronischer Öffnungs- und Schließfunktion

Robinetterie sanitaire - Robinet sanitaire à ouverture et fermeture électroniques

Ta slovenski standard je istoveten z: **prEN 15091**

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ICS:

91.140.70

Sanitarne naprave - Sanitary installations

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Sanitary tapware - Electronic opening and closing sanitary tapware

Robinetterie sanitaire - Robinet sanitaire à ouverture et fermeture électroniques

Sanitärarmaturen - Sanitärarmaturen mit elektronischer Öffnungs- und Schließfunktion

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 164.

If this draft becomes a European Standard, CEN 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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European foreword

This document (prEN 15091:2022) has been prepared by Technical Committee CEN/TC 164 “Water Supply”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15091:2013.

In comparison with the previous edition, the following technical modifications have been made:

- XXXX;
- XXXX;
- XXXX.

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Introduction

This document is relevant for electrically operated (opening and closing) sanitary tapware used with sanitary appliances, with a maximum voltage of 42 V AC / 72 V DC, in the enclosure of the tap.

Such tapware can be operated by any electrical source e.g. mains with a transformer, battery, etc.

Flow and temperature regulation devices installed either upstream or downstream of the tapware are not covered by this specification.

The purpose of this document is to define requirements for the:

- a) marking, identification, leak-tightness, electrical and operational safety, mechanical performance and limitation of water hammer for electrical opening and closing tapware;
- b) dimensional, hydraulic, endurance and acoustic characteristics;
- c) procedure of tests in order to verify these characteristics.

As for possible unfavourable effects of the product to which this document applies, on the quality of water intended for human consumption:

- d) no information is provided by this document on possible use restrictions of the product in any of the member states of the EU or EFTA;
- e) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or characteristics of this product remain in force.

Requirements for different products (are defined in different clauses of this document as illustrated in Table 1.

Table 1 — Identification of the clauses of this document

	MARKING	DIMENSIONAL CHARACTERISTICS	ENDURANCE	ACOUSTIC	ELECTRICAL SAFETY	OPERATIONAL SAFETY	LEAKTIGHTNESS	MECHANICAL RESISTANCE	HYDRAULIC CHARACTERISTICS	WATER HAMMER	WATER HAMMER FOLLOWING PRODUCT
Clause 4. General requirements and testing	X				X	X	X	X			
Clause 5. Requirements and testing for tapware		X	X	X					X	X	
Clause 6. Requirements and testing for flushing valves for urinals		X	X						X	X	
Clause 7. Requirements and testing for flushing valves for WCs		X	X	X					X		X

1 Scope

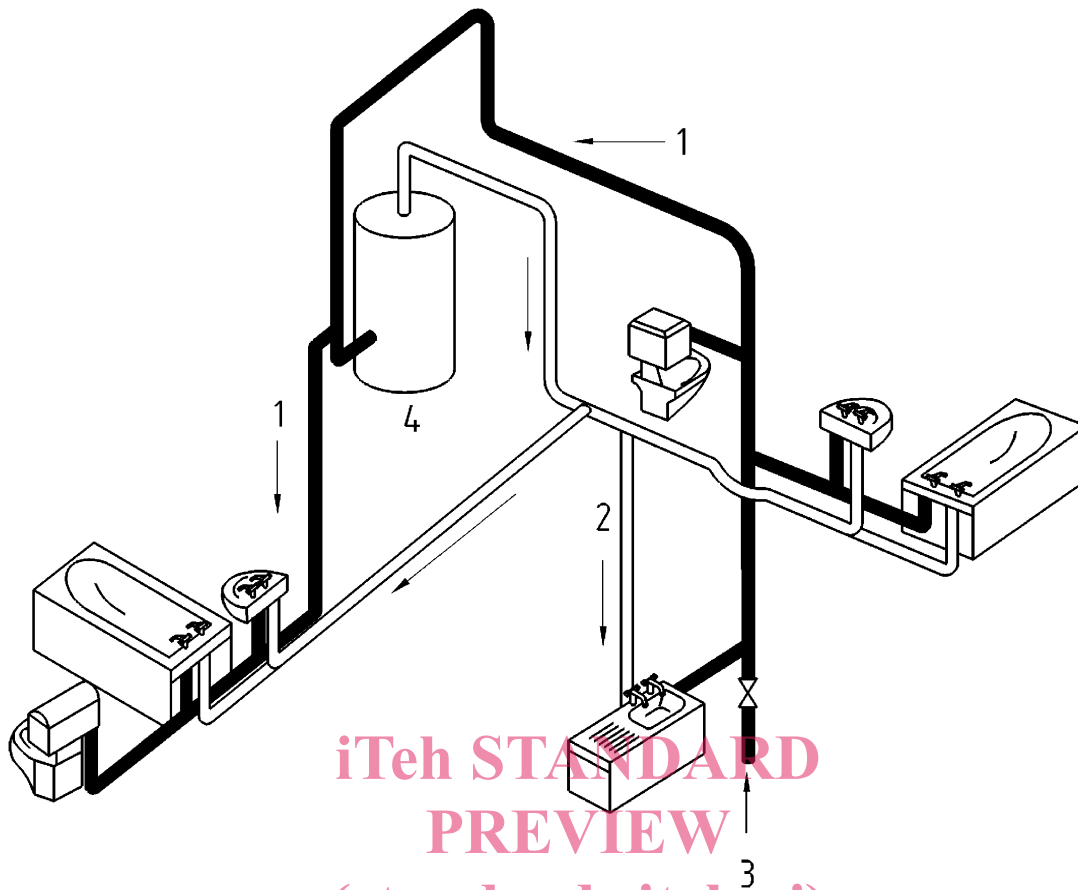
The purpose of this document is to define requirements for marking, identification, leaktightness, electrical and operational safety and mechanical resistance for sanitary tapware with opening and closing controlled electronically.

The conditions of use for the supply system type are specified in Table 2:

Table 2 — Conditions of use

Water supply system		Limits of use		Recommended limits of operation	
		Tapware with normally open or normally closed (monostable) solenoid valves	Tapware with latching (bistable) solenoid valves	Tapware with normally open or normally closed (monostable) solenoid valves	Tapware with latching (bistable) solenoid valves
Type 1 (see Figure 1)	Minimum dynamic pressure	0,05 MPa (0,5 bar)	0,05 MPa (0,5 bar)	(0,1 to 0,5) MPa [(1 to 5) bar]	(0,1 to 0,5) MPa [(1 to 5) bar]
	Maximum static pressure	1 MPa (10 bar)	1 MPa (10 bar)	1 MPa (10 bar)	0,8 MPa (8 bar)
Type 2 ^a (see Figure 2)	Minimum dynamic pressure	0,01 MPa (0,1 bar)	0,01 MPa (0,1 bar)	(0,01 to 0,2) MPa [(0,1 to 2) bar]	(0,01 to 0,2) MPa [(0,1 to 2) bar]
	Maximum static pressure	1 MPa (10 bar)	1 MPa (10 bar)	1 MPa (1 bar)	0,8 MPa (0,8 bar)
Temperature of the water		≤ 75 °C	≤ 75 °C	≤ 65 °C	≤ 65 °C
<p>^a For Type 2, the manufacturer is expected to declare the minimum operating pressure at which opening, closing and the specified flow rate can be obtained.</p> <p>There is usually no acoustic classification for tapware used in supply systems of Type 2 and no specifications governing the level of noise emissions from these water installations. If supply pressures are such that excessive noise is generated it is advised that pressure or flow regulators are fitted in the system. Or where practicable, tapware conforming to the appropriate acoustic classification are used.</p>					

Annex B lists possible consequences of using a product outside its recommended operating range.



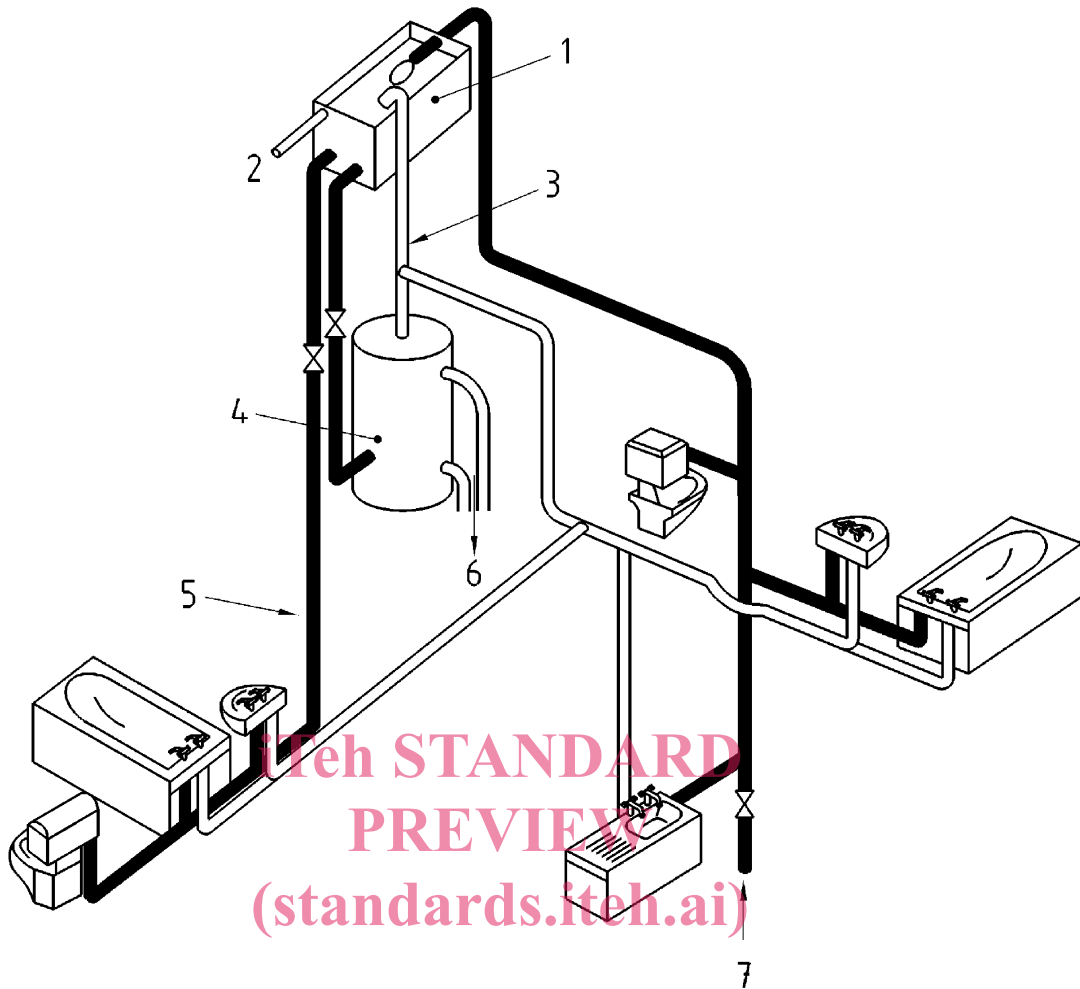
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Key

- | | |
|--------------|---|
| 1 cold water | 3 mains supply pipe (Supply pressures from (0,05 to 1,0) MPa [(0,5 to 10) bar]) |
| 2 hot water | 4 water heater |

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Figure 1 — Type 1 — Supply system with a pressure range of (0,05 to 1,0) MPa [(0,5 to 10) bar]

**Key**

- 1 cold water storage cistern (cover omitted for clarity)
- 2 warning pipe
- 3 vent pipe
- 4 hot water cylinder
- 5 alternative cistern fed cold supply to sanitary appliances
- 6 to boiler
- 7 mains supply pipe (Supply pressures up to 8 bar)

Figure 2 — Type 2 — Supply system with a pressure range of (0,01 to 0,8) MPa [(0,1 to 8) bar]

A vented domestic hot water and cold water supply system incorporating gravity hot water, mains cold water and alternative gravity cold water supply to sanitary appliances.

2 Normative references

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.

EN 31, *Wash basins — Connecting dimensions*

EN 35, *Pedestal and wall-hung bidets with over-rim supply - Connecting dimensions*

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EN 246, *Sanitary tapware - General specifications for aerators*

EN 248, *Sanitary tapware - General specification for electrodeposited coatings of Ni-Cr*

EN 695, *Kitchen sinks - Connecting dimensions*

EN 1717, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

EN 997, *WC pans and WC suites with integral trap*

EN 12541:2002, *Sanitary tapware — Pressure flushing valves and automatic closing urinal valves PN 10*

EN 13407, *Wall-hung urinals — Functional requirements and test methods*

EN 13618, *Flexible hose assemblies in drinking water installations - Functional requirements and test methods*

EN 13959, *Anti-pollution check valves - DN 6 to DN 250 inclusive family E, type A, B, C and D*

EN 60335-1, *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1)*

EN 60529, *Degrees of protection provided by enclosures (IP Code)*

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

EN 61000-6-1, *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1)*

EN 61000-6-3, *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3)*

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

EN ISO 3822 (all parts), *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations (ISO 3822 series)*

EN ISO 5167-1, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full - Part 1: General principles and requirements (ISO 5167-1)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1**cold water**

water with a temperature less than 25 °C

3.2**hot water**

water with a temperature between 52 °C and 75 °C

3.3**valve**

electrically operated obturator for controlling the flow of water

3.4**normally open or normally closed (monostable) valve**

obturation system continuously fed electrically while operated

3.5**latching (bistable) valve**

obturation system electrically fed only for operating opening and closing

4 General requirements and testing**4.1 General**

Tapware complying with this document shall be permanently and indelibly marked on the body with the manufacturer's name or identification mark, volume class for urinals (e.g. class 4 or class 6) and if applicable, the acoustic group and flow rate class.

4.2 Identification

- a) The temperature control device for mixing taps shall be identified either by means of a scale and/or symbols and/or by colours (Cold water – blue and Hot water – red).
- b) The direction of operation of the temperature control device of mixers shall be identified.
- c) For taps with separate control devices, the cold water shall be on the right and the hot water on the left.

For water saving tapware, appropriate information to installers and users shall be provided.

The manufacturer shall explain letters, symbols, etc. in case they decide to use.

4.3 Materials**4.3.1 Chemical and hygienic requirements**

All materials coming into contact with water intended for human consumption shall present no health risk nor cause any change of the drinking water in terms of quality, appearances, smell or taste.

4.3.2 Exposed surface conditions

Visible chromium plated surfaces and Ni-Cr coatings shall comply with the requirements of EN 248.

4.4 Functions

Tapware shall be actuated as intended by the manufacturer i.e. as described in the manufacturer's instructions.

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Tapware shall be tested so that all functions declared in the manufacturer's instructions are verified. The tests shall be conducted twice. The requirements of this document are satisfied if all functions are completed satisfactorily.

4.5 Backflow protection

Backflow protection shall be provided using appropriate devices referenced in EN 1717. Check valves shall comply with EN 13959.

4.6 Electric characteristics and requirements**4.6.1 General**

The tests described are type tests (laboratory tests), not quality control tests carried out during manufacture.

The Clauses 4.6.2, 4.6.3 and 4.6.4 shall be considered as fulfilled if valid test reports in accordance with harmonized standards under 2014/35/EU and 2014/30/EU and issued by accredited testing laboratories (ISO/IEC 17025) are available.

4.6.2 Electrical safety

Testing for electrical safety is to be conducted as described in the relevant standard(s). A list of relevant standards is listed below but is not necessarily exhaustive.

a) Low voltage specifications:

- 1) EN 60335-1.

b) EMC:

- 1) EN 61000-6-1;

- 2) EN 61000-6-3. <https://standards.iteh.ai/catalog/standards/sist/9a0aa1b8-c2ea-4a5b-953f-73aabc5bd1ea/osist-pren-15091-2022>

Tapware using radars shall comply with electromagnetic immunity and emission to relevant national standards waiting for European standards.

NOTE Equipment designed to emit and receive signals within the frequency range covered in the EN 61000 series is subject to additional requirements while appropriate European Standard do not exist.

c) Protection of the enclosure against ingress of water and dust:

The manufacturer shall declare the degree of protection of the product in accordance with EN 60529.

4.6.3 Electrical operation of solenoid valves**4.6.3.1 Marking**

For the valves, marking shall include:

a) AC valves:

- 1) voltage;
- 2) power consumption (VA/W);
- 3) frequency (Hz).

b) DC valves:

- 1) voltage;
- 2) power consumption (W);
- 3) monostable or bistable.

4.6.3.2 Voltage

Solenoid valves shall be operated at less than 42 V and shall comply with the safety extra low voltage (SELV) requirements of EN 60730-2-8.

4.6.4 Electric strength and insulation resistance of the solenoid valve

Solenoid valves shall comply with EN 60730-2-8, where applicable.

4.6.5 Operational safety**4.6.5.1 Test procedure for mains operated tapware**

The test is conducted with cold water.

Tapware intended for Type 1 water supply systems are operated at a dynamic pressure of $(0,3 \pm 0,02)$ MPa [$(3 \pm 0,2)$ bar].

Tapware intended for Type 2 water supply systems are operated at a dynamic pressure of $(0,02 \pm 0,005)$ MPa [$(0,2 \pm 0,05)$ bar].

Actuate the tap.

Cut off the electrical supply.

4.6.5.2 Requirements for mains operated tapware

The tapware shall always close.

4.6.5.3 Test procedure for battery operated tapware

The test is conducted with cold water.

The principle of the test consists of verifying that when the battery loses its charge, the tapware closes.

Tapware intended for Type 1 water supply systems is operated at a dynamic pressure of $(0,3 \pm 0,02)$ MPa [$(3 \text{ bar} \pm 0,2)$ bar].

Tapware intended for Type 2 water supply systems is operated at a dynamic pressure of $(0,02 \pm 0,005)$ MPa [$(0,2 \pm 0,05)$ bar].

During testing the battery is replaced by an adapted power supply with adjustable voltage.

Beginning at $0,9 \times U_n$ (battery nominal voltage).

- a) Actuate the tap.
- b) While the water is running, reduce the voltage by 0,1 V.
- c) Wait until the tap closes or actuate the closure of the tap.
- d) Repeat a), b), c) until the tap does not operate anymore.

Alternatively, the test can be carried out according to 4.6.5.1