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Electrically operated spray seats

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Sanitary Equipment Industry Association (JSEIA)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS A 4422 : 2011**), which has been technically revised.

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Electrically operated spray seats

1 Scope

This Japanese Industrial Standard specifies requirements for electrically operated spray seats with a spray device and a heated seat mainly intended for household use, which electrically heat potable water or water equivalent in quality thereto for use in spraying (hereafter referred to as spray seats).

A list of technically significant revisions from the previous edition with reasons is given in Annex A.

2 Normative references

Part or all of the provisions of the following standards, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS A 4424 *Electrically operated spray seats for household and similar use — Methods for measuring the performance — General test methods of spray seats*

JIS A 5207 *Sanitary wares*

JIS B 0100 *Glossary of terms for valves*

JIS C 9335-2-84 *Household and similar electrical appliances — Safety — Part 2-84 : Particular requirements for toilet appliances*

JIS S 0103 *Graphical symbols for consumers*

JIS S 3200-1 *Equipment for water supply service — Test methods of hydrostatic pressure*

JIS S 3200-3 *Equipment for water supply service — Test method of water hammer*

JIS S 3200-4 *Equipment for water supply service — Test method of prevention from back current*

JIS S 3200-5 *Equipment for water supply service — Test methods of destruction by vacuum pressure*

JIS T 0921 *Accessible design — Application of braille on signage, equipment and appliances*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions, and those given in **JIS B 0100** apply.

3.1

spray device

device that jets water heated by the water heater through the nozzle to perform rear spray and/or front spray

3.2**heated seat**

toilet seat incorporating a heater

3.3**warm air blower**

device that blows, by an electrical heating element and fan, warm air around the wet area of the body

3.4**front spray**

warm water spray emitted to the female private parts for washing

3.5**water saving type**

generic term for appliance types that can reduce water consumption as well as energy consumption for heated water supply

4 Classification

Spray seats are classified according to the configuration, water supply method, spray water heating method and seat heating method as shown in Tables 1 to 4.

Table 1 Classification by configuration

Classification	Classification details
Separate type	Installed on general toilet bowls.
Integral type	Structurally integral and used exclusively with compatible toilet bowls.

Table 2 Classification by water supply method

Classification	Classification details
Direct connect water supply type	Directly connected to the potable water supply.
Indirect water supply type	Not connected to the potable water supply.

Table 3 Classification by spray water heating method

Classification	Classification details	
Warm spray water tank-type	Designed to heat the spray water and store it, while keeping it warm, in the built-in storage tank of the water heater.	
Warm spray water instantaneous-type	Type I	Designed to heat the spray water instantaneously for each use by means of the water heater, and not equipped with the performance conforming to 6.1.9.
	Type II	Designed to heat the spray water instantaneously for each use by means of the water heater, and equipped with the performance conforming to 6.1.9.

Table 4 Classification by seat heating method

Classification	Classification details
Heated seat type	Designed to heat the seat surface prior to use and maintain it at the heated temperature.
Instantaneously heated seat type	Designed to stand by at a temperature at least 8 °C lower than the maximum set temperature when not being used and heat up instantaneously upon detection of human use.

5 Rated voltage and rated frequency

The rated voltage of the spray seats shall be a single-phase AC 100 V or 200 V, and the rated frequency, both 50 Hz and 60 Hz.

6 Performance

6.1 Spray performance

6.1.1 Spray temperature

The average water temperature for rear and front sprays shall be 35 °C to 42 °C when tested in accordance with 9.3.1, and the difference between the maximum and minimum water temperatures, within 5 °C.

6.1.2 Spray temperature stability under spray pressure change

The average water temperature difference between before and after changing the water pressure setting of the warm spray water instantaneous-type shall be within 3 °C when tested in accordance with 9.3.2, and the difference between the maximum and minimum water temperatures, within 7 °C.

6.1.3 Spray flow rate

The flow rate of rear and front sprays shall not be less than 200 ml/min when tested in accordance with 9.3.3.

6.1.4 Rear spray force

The rear spray force shall not be less than 0.06 N when tested at the maximum rear spray pressure in accordance with 9.3.4.

6.1.5 Warm water duration

The warm water duration shall not be less than 25 s when tested in accordance with 9.3.5.

6.1.6 Spray area

The spray area shall not be less than 16 mm² when tested at the maximum rear spray pressure in accordance with 9.3.6.

6.1.7 Wet area

The diameter of the maximum circle of the wet area shall not be more than 70 mm when tested at the maximum rear spray pressure in accordance with 9.3.7.

6.1.8 Nozzle self-cleaning

The length of ink remaining on the longitudinal line on the nozzle shall be 0 mm when measured in accordance with 9.3.8.

6.1.9 Water saving performance

The rear spray force shall not be less than 0.06 N, and the flow rate of rear and front sprays, not more than 600 ml/min, when tested in accordance with 9.3.9.

6.2 Warm air blower performance

6.2.1 Warm air temperature

The warm air temperature of the warm air blower shall be such that the temperature rise with respect to the ambient temperature shall be 15 °C to 40 °C when tested in accordance with 9.4.1.

6.2.2 Warm air flow rate

The warm air flow rate of the warm air blower shall not be less than 0.2 m³/min when tested in accordance with 9.4.2.

6.3 Heated seat performance

For heated seat type, the seat surface temperature shall be 30 °C to 43 °C, and the unevenness expressed as the standard deviation, not greater than 5 °C, when measured with the seat set to the maximum temperature setting in accordance with 9.5. For instantaneously heated seat type, the seat surface temperature shall be 26 °C to 43 °C, the unevenness expressed as the standard deviation, not greater than 5 °C, and the reaction time, not longer than 20 s, when measured with the seat set to the maximum temperature setting in accordance with 9.5.

6.4 Hydrostatic pressure

There shall be no water leakage, deformation, fracture, ooze or any other abnormalities when the hydrostatic pressure is tested in accordance with 9.6.

6.5 Water hammer

The pressure rise caused by water hammer shall not be greater than 0.45 MPa when tested in accordance with 9.7.