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(JEMA)

**Household and similar electrical
appliances—Safety—
Part 2-7 : Particular requirements
for washing machine**

ICS 13.120; 97.060

Reference number : JIS C 9335-2-7 : 2004 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard 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 Electrical Manufacturer's Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 9335-2-7 : 1999** is replaced with this Standard.

This revision has been made based on **IEC 60335-2-7 : 2002** *Household and similar electrical appliances—Safety—Part 2-7 : Particular requirements for washing machine* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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Household and similar electrical appliances—Safety—Part 2-7 : Particular requirements for washing machine

Introduction This Japanese Industrial Standard has been prepared based on IEC 60335-2-7 *Household and similar electrical appliances—Safety—Part 2-7 : Particular requirements for washing machine* published in 2002 as the sixth edition with some modifications in the technical contents. This is to be read in conjunction with JIS C 9335-1 : 2003 *Household and similar electrical appliances—Safety—Part 1 : General requirements*.

In this Standard, the portions underlined with dots are the matters modified from the original International Standard. The list of modifications is given in annex 1 (informative) with the explanation being attached.

1 Scope This Standard deals with the safety of electric washing machines for household and similar use, that are intended for washing clothes and textiles, their rated voltage being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 101 Washing machines also supplied with other forms of energy are within the scope of this Standard.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this Standard.

NOTE 102 Examples of such appliances are washing machines for communal use in blocks of flats or in launderettes.

As far as is practicable, this Standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 103 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

NOTE 104 This Standard does not apply to

- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

NOTE 105 The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent according to **ISO/IEC Guide 21**).

IEC 60335-2-7 : 2002 *Household and similar electrical appliances—Safety—Part 2-7 : Particular requirements for washing machine* (MOD)

2 Normative references Normative references shall be as stated in clause 2 of **JIS C 9335-1** except as follows.

Addition:

JIS C 9811 *Electric cloths washing machines for household use—Methods for measuring the performance*

ISO 1817 : 1999 *Rubber, vulcanized—Determination of the effect of liquids*

3 Definitions The principal definitions for this Standard shall be as stated in clause 3 of **JIS C 9335-1** except as follows.

3.1.9 Replacement:

normal operation operation of the appliance under the following conditions

The appliance is filled with textile material having a mass in the dry condition equal to the maximum mass stated in the instructions, and with the maximum quantity of water for which it is constructed. However, if the power input or current is higher when only 50 % of the textile material is used, the appliance is operated with this load instead.

The temperature of the water is

— $65\text{ °C} \pm 5\text{ °C}$ for appliances without heating elements;

However, appliances intended for washing by cool water may be tested by using water at ordinary temperature.

— $15\text{ °C} \pm 5\text{ °C}$ for other appliances.

If the appliance does not incorporate a programmer, the water is heated to $90\text{ °C} \pm 5\text{ °C}$ or as high as the construction will allow if lower, before starting the first washing period.

The textile material consists of pre-washed double-hemmed cotton sheets having dimensions approximately $70\text{ cm} \times 70\text{ cm}$ and a specific mass between 140 g/m^2 and 175 g/m^2 in the dry condition.

NOTE 101 In washing machines of the continuously rotating impeller type, if the textile material does not move properly during operation, its quantity is reduced until the maximum power input of the motor is attained.

NOTE 201 Textile material with a size of approximately $91\text{ cm} \times 91\text{ cm}$ and a specific mass of $100\text{ g/m}^2 \pm 10\text{ g/m}^2$ in dry condition, specified in **JIS C 9811**, may be used.

4 General requirement General requirement shall be as stated in clause 4 of JIS C 9335-1.

5 General conditions for the tests General conditions for the tests shall be as stated in clause 5 of JIS C 9335-1 except as follows.

5.3 Addition to 5.3 of JIS C 9335-1:

The test of 15.101 is carried out before the test of 15.3.

5.7 Addition to 5.7 of JIS C 9335-1:

NOTE 101 Doubt is considered to exist if the temperature of the water is within 6 K of the boiling point and the difference between the temperature rise of the relevant part and the limit specified does not exceed 25 K minus the room temperature.

6 Classification Classification shall be as stated in clause 6 of JIS C 9335-1 except as follows.

6.1 Modification:

Appliances shall be of class 0I, class I, class II or class III relating with protection against electric shock.

Compliance is checked visually and by associated tests.

6.2 Addition to 6.2 of JIS C 9335-1.

Appliances shall be at least IPX4.

7 Marking and instructions Marking and instructions shall be as stated in clause 7 of JIS C 9335-1 except as follows.

7.1 Addition to 7.1 of JIS C 9335-1:

Appliances without automatic water level control shall be marked with the maximum water level.

The safety release mechanism of power-driven wringers shall be marked to indicate its method of operation, unless its operating means has to be continuously actuated by the user.

NOTE 101 This marking may be near the mechanism.

7.6 Addition to 7.6 of JIS C 9335-1:

 [symbol 5036 of IEC 60417-1] dangerous voltage

7.10 Addition 7.10 of JIS C 9335-1:

If the off position is only indicated by letters, the word "off" or the Japanese Kanji character denoting "off" shall be used.

7.12 Addition to 7.12 of JIS C 9335-1:

The instructions shall specify the maximum mass of dry cloth in kilograms to be used in the appliance.

The instructions for washing machines incorporating a power-driven wringer shall draw attention to the potential hazards involved when operating the wringer and shall state that

- the wringer must be disengaged or switched off when not in use;
- the appliance must not be operated by children.

If symbol 5036 of **IEC 60417-1** is used, its meaning shall be explained.

7.12.1 Addition to 7.12.1 of JIS C 9335-1:

The installation instructions shall state

- that the appliance is to be connected to the water mains using new hose-sets and that old hose-sets should not be reused;

NOTE 101 This instruction is not required if the hoses are permanently attached to the appliance.

- the maximum permissible inlet water pressure, in megapascals, for appliances intended to be connected to the water mains;
- the minimum permissible inlet water pressure, in megapascals, if this is necessary for the correct operation of the appliance;
- for washing machines with ventilation openings in the base, that a carpet must not obstruct the openings.

7.14 Addition to 7.14 of JIS C 9335-1:

The height of symbol 5036 of **IEC 60417-1** shall be at least 5 mm.

Compliance is checked by measurement.

7.101 The enclosure of magnetic valves, and similar components incorporated in external hoses for direct connection to the water mains, shall be marked with symbol 5036 of **IEC 60417** if their working voltage exceeds extra-low voltage.

NOTE : This symbol is a warning sign and the rules of **ISO 3864** apply.

Compliance is checked by inspection.

8 Protection against access to live parts Protection against access to live parts shall be as stated in clause 8 of **JIS C 9335-1** except as follows.

8.1.1 Addition to 8.1.1 of JIS C 9335-1:

NOTE 201 Stationary washing machine which exceeds 40 kg when the maximum designed water is filled shall be subjected to the test without tilt.

9 Starting of motor-operated appliances Clause 9 of **JIS C 9335-1** is not applicable.

10 Power input and current Power input and current shall be as stated in clause 10 of **JIS C 9335-1** except as follows.

10.1 Addition to 10.1 of JIS C 9335-1:

NOTE 101 The selected representative period is the period during which the power input is the highest.

10.2 Addition to 10.2 of JIS C 9335-1:

NOTE 101 The selected representative period is the period during which the current is the highest.

11 Heating Heating shall be as stated in clause 11 of JIS C 9335-1 except as follows.

11.7 Replacement of 11.7 of JIS C 9335-1:

Appliances incorporating a programmer are operated for three cycles with the programme that results in highest temperature rises, with a rest period of 4 min between cycles.

Other appliances are operated for three cycles, with a rest period of 4 min between cycles. Each cycle consists of the following operations:

- | | |
|---|--|
| — for appliances without means for water extraction, | washing; |
| — for appliances having a single drum for washing and water extraction, | washing followed by water extraction; |
| — for appliances having separate drums for washing and water extraction that cannot be used simultaneously, | washing and water extraction separated by an additional 4 min rest period; |
| — for appliances having separate drums for washing and water extraction that can be used simultaneously, | washing together with water extraction so that the operations terminate simultaneously; |
| — for appliances incorporating a power-driven wringer, | washing followed by wringing; |
| — for appliances having a single drum for washing, water extraction and drying | |
| • that allow the same quantity of textile material to be washed and dried in the drum, | washing followed by water extraction, followed by drying; |
| • that, according to the instructions, only allow a portion of the washed textile material to be dried in the drum, | washing followed by water extraction followed by two drying periods, with an additional rest period of 4 min before each drying period. In this case only two cycles of operation are carried out. |

For appliances incorporating a timer, the washing period, the water extraction period and the drying period are equal to the maximum period allowed by the timer.

For appliances without a timer,

- the washing period has a duration of
 - 6 min, for washing machines of the continuously rotating impeller type,
 - 18 min, for washing machines of the agitator type,
 - 25 min for washing machines of the drum type, unless a longer period is stated in the instructions;
- the water extraction period has a duration of 5 min.

For power-driven wringers, the duration of each wringing period is 8 min. The wringer is loaded by passing a board through the rollers once a minute, the roller pressure being adjusted to the maximum value. The board is approximately 20 mm thick and 80 cm long, its width being at least equal to three-quarters of the effective length of the rollers. The board is uniformly tapered at each end down to a thickness of approximately 3 mm, over a distance of 20 cm.

The rest period, including any braking time, has a duration of 4 min.

After the specified sequence of operation, discharge pumps that are driven by a separate motor and switched on and off manually, are subjected to three operating periods separated by rest periods of 4 min. Each operating period is equal to 1.5 times the period necessary to empty the appliance when filled to the maximum normal water level. The outlet of the water discharge pipe is 90 cm above the floor.

NOTE 101 Washing machines with a hand-operated wringer are tested as appliances without means for water extraction.

12 Void

13 Leakage current and electric strength at operating temperature Leakage current and electric strength at operating temperature shall be as stated in clause 13 of JIS C 9335-1 except as follows.

13.2 Modification of 13.2 of JIS C 9335-1:

For stationary class I appliances, the leakage current shall not exceed 3.5 mA, or 1 mA/kW of rated power input with a limit of 5 mA, whichever is greater.

14 Transient overvoltages Transient overvoltages shall be as stated in clause 14 of JIS C 9335-1.

15 Moisture resistance Moisture resistance shall be as stated in clause 15 of JIS C 9335-1 except as follows.

15.1 Addition to 15.1 of JIS C 9335-1:

Magnetic valves and similar components incorporated in external hoses for connection to the water mains are subjected to the test specified for IPX7 appliances.

15.2 Replacement:

Appliances shall be constructed so that spillage of liquid in normal use does not affect their electrical insulation even if an inlet valve fails to close.

Compliance is checked by the following test.