

BUREAU OF INDIAN STANDARDS

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भारतीय मानक मसौदा

घरेलू प्रयोजनों के लिए जिग-जैग सिलाई मशीन/हैड

भाग 1 सामान्य अपेक्षाएँ

[आई एस 15549 भाग (1) का पहला पुनरीक्षण]

Draft Indian Standard

HOUSEHOLD ZIG-ZAG SEWING MACHINE/HEAD

PART 1 GENERAL REQUIREMENTS

[First Revision of IS 15549 (Part 1)]

ICS 61.080

Sewing Machines Sectional
Committee, MED 29

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FOREWORD

(Formal clause will be added later)

This standard (Part 1) was first published in 2004. This standard is being revised to keep pace with the latest technological developments and international practices. Also, in this revision, the standard has been brought into the latest style and format of Indian Standards, and references of Indian Standards, wherever applicable have been updated. BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act, 2016*. The following major modifications have been incorporated in this revision of the standard:

- a) Title has been changed;
- b) Scope has been amended to include electronically controlled zig-zag operation;
- c) Stitch length range has been updated in **3.2.1**;
- d) Stop motion mechanism has been updated in **3.5**;
- e) Bobbin winder has been updated in **3.6**;
- f) Stitch width selector has been updated in **3.8**;

- g) Sewing mechanism of needle position selector has been updated in **3.9**;
- h) Requirement for lubrication has been updated in **5**;
- j) Raw materials for construction of sewing machine updated in **6.1**;
- k) Painting and powder coating has been updated in **6.2**;
- m) Plating requirement has been updated in **6.4**;
- n) **7.1.1** has been deleted;
- p) Safety requirements has been added in **8.4**;
- q) Plug and socket requirements added in **8.5**;
- r) Power cord requirements added in **8.6**;
- s) Accessories in service box has been updated in **9.1**; and
- t) Marking has been updated in **10.1** and **10.2**.

This standard has been formulated to facilitate standardization and with a view to establish quality and general requirements of household zig-zag sewing machine/head, which includes machines with mechanical/electronically operated zig-zag operations.

In the preparation of this standard, assistance has been derived from IS 1610 : 2018 ‘Household sewing machine — General requirements (*fourth revision*)’, IS 1573 : 1986 ‘Specification for electroplated coatings of zinc on iron and steel (*second revision*)’, IS 1068 : 1993 ‘Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium — Specification (*third revision*)’. Powder coated from IS 13871 : 2021 ‘Powder coating — Specification (*first revision*)’. Painting from IS 13607 : 1992 ‘Heady mixed paint, finishing, general purposes, synthetic — Specification’. IS 1293 : 2019 ‘Plugs and socket-outlets for household and similar purposes of rated Voltage up to and including 250 Volts and rated current up to and including 16 A — Specification (*fourth revision*)’ for the plug and socket of the machine and IS 694 : 2010 ‘Polyvinyl chloride insulated unsheathed and sheathed cables/cords with rigid and flexible conductor for rated voltages up to and including 450/750 V (*fourth revision*)’ or IS 9968 (Part 1) : 1988 ‘Specification for elastomer insulated cables: Part 1 For working voltages up to and including 1100 volts (*first revision*)’ and or IS 9968 (Part 2) : 2002 ‘Specification for elastomer insulated cables: Part 2 For working voltages from 3.3 kV up to and including 33 kV (*first revision*)’ for the power cord (as applicable).

The standard on household zig-zag sewing machine, which includes machines with mechanical/electronically operated zig-zag operations, is being brought in four parts, the other parts in the series are:

- Part 2 Accuracy requirements
- Part 3 Sewing requirements
- Part 4 Durability requirements

The standard (Part 1) covers the general requirements of household zig zag sewing machine/head, which includes machines with mechanical/electronically operated zig zag operations.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

DRAFT *Indian Standard*

HOUSEHOLD ZIG-ZAG SEWING MACHINE/HEAD

PART 1 GENERAL REQUIREMENTS

1 SCOPE

This standard (Part 1) covers the general requirements for household zig-zag sewing machine/head which includes mechanical or electronically controlled zig-zag operations.

NOTE — Computerised controlled/operated household zig-zag sewing machine/head shall be considered as electronically operated household zig-zag sewing machine/head.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in Annex A.

3 SEWING MECHANISM

3.1 Design

Sewing machine/head shall be of single or twin or both needle design, equipped with a sewing mechanism for producing two thread lock stitch.

3.2 Reverse Stitch Mechanism

Sewing machine/head shall be provided with a suitable mechanism to reverse the feeding action of the feed dog for back-tack stitching. Reverse stitching mechanism shall be capable of changing the feed direction while the machine is in operation.

3.2.1 Stitch Length Regulator/Controller

The stitch length regulator/controller shall be conveniently located in the machine. It shall be capable of adjusting and locking the stitch length range of at least 0 mm to 4 mm (minimum 6 numbers of stitches per 25 mm length). There shall be an indication for the increase/decrease of the length of stitch on the regulator/controller.

3.3 Thread Tension and Releasing

A thread tension arrangement shall be provided in each machine for both upper and lower threads and it shall be adjustable to the amount of tension required to achieve satisfactory stitches. Each machine shall be equipped with an automatic thread tension release for the upper thread, effective

when the pressure foot is raised to the maximum height. The upper thread tension assembly shall be capable of guiding two threads for twin needle sewing operation.

3.4 Timing

The timing of the needle in relation to the movement of the shuttle and clearance between the side of the needle (nearer to the shuttle) and the shuttle point shall be such as to ensure that stitches are not skipped.

3.5 Stop Motion Mechanism

The sewing machine/head shall be designed in such a manner that the sewing operation can be disengaged from the running machine, as and when required.

3.6 Bobbin Winder

A device shall be provided to wind the bobbin, which can be actuated with or without separate power.

The bobbin winder shall have a suitable tension arrangement for controlling the thread to wind it evenly and with proper tension on the bobbin which shall be automatically released or stopped when bobbin is filled to nearly 80 percent of its capacity.

3.7 Spool Pin

Threaded/taper or collapsible type pins shall be provided with each machine to hold spools/tubes of thread.

3.8 Stitch Width Selector

The sewing machine/head shall be provided with a suitable mechanism or control to adjust the zig-zag width from 0.00 mm (straight stitch) to at least up to 5.0 mm (stitch width may be more than 5.0 mm depending upon the design of sewing machine/head). Stitch width shall be capable of being changed while the machine is in operation.

3.9 Needle Position Selector

The sewing machine/head may be (optional) provided with a suitable mechanism or control for changing the needle positions at two or three different locations (left, center, and right or a combination thereof) while the machine is in operation.

4 OTHER COMPONENTS

The other components of the zig-zag sewing machine/head may contain parts conforming to existing Indian Standards on sewing machine components.

5 LUBRICATION

Lubrication may not be required in zig-zag machine/head, unless mentioned by the manufacturer in the instruction manual. Provision shall be made for ready and proper application of lubricant to the locations as mentioned in the instruction manual to be supplied along with the sewing machine/head.

6 CONSTRUCTION, WORKMANSHIP AND FINISH

6.1 The raw materials used for various parts shall be decided by the manufacturer considering its availability, suitability for the purpose of part and durability. The sewing machine/head with mechanically controlled zig-zag operations shall have main frame/body made of metal/metal alloy. However, the sewing machines/heads with electronically controlled zig-zag operations may be exempted from metal frame. Adequate plastic cladding needs to be used to cover the metal frames wherever required based on the machine design. The material of sewing machine/head and its accessories shall be neat in appearance, rigid and ready for use. They shall be free from objectionable vibrations, burrs and sharp edges.

6.2 Painting and Powder Coating

Parts painted or powder coated shall conform to IS 13607.

6.3 Silk screening/pad printing/stickering wherever applied on the sewing machine/head, shall be examined for the following:

- a) Correctness and uniformity;
- b) Alignment and straightness;
- c) Voids or gaps;
- d) Noticeable touch up;
- e) Shade of color; and
- f) Scratches, misprinting or other damage.

6.4 Plating

Nickel and chromium plated parts shall conform to IS 1068 and parts with zinc electroplating shall conform to IS 1573.

6.5 All exposed parts shall have smooth and clean appearance.

6.6 All exposed parts, including visible under bed parts shall be free from any signs of rust.

6.7 Plastic Parts

Plastic parts shall be examined for the following:

- a) Smoothness of finish, including sink marks;
- b) Uniformity of colour and shade; and
- c) Blemishes, stains, Flow marks and scratches.

6.8 All the parts shall be properly aligned and positioned as per the product design.

6.9 Screws visible to the customer shall be checked for burrs, tool marks or other unsightly damage.

7 SAMPLING

Unless otherwise agreed to between the supplier and the purchaser, the sampling plan as given in as given in IS 2500 (Part 1) shall be followed.

8 TESTS

8.1 Accuracy Requirements

Zig-zag sewing machine/head shall conform to accuracy requirements prescribed in IS 15449 (Part 2).

8.2 Sewing Requirements

Zig-zag sewing machine/head shall conform to sewing requirements prescribed in IS 15449 (Part 3).

8.3 Durability Requirements

Zig-zag sewing machine/head and shall conform to durability requirements prescribed in IS 15449 (Part 4).

8.4 Safety Requirements

The sewing machines shall comply with the safety requirements as per following clauses of IEC 60335 Part 2 Sec 28:

- a) Clause **7**: Marking;
- b) Clause **8**: Protection against access to live parts;
- c) Clause **10**: Power Input and Current;
- d) Clause **11**: Heating;
- e) Clause **13**: Leakage Current and Electric Strength at Operating Temperature;
- f) Clause **15**: Moisture Resistance;
- g) Clause **16**: Leakage Current and Electric Strength;
- h) Clause **20**: Stability and Mechanical Hazards;

- j) Clause **21**: Mechanical Strength;
- k) Clause **22**: Construction; and
- m) Clause **27**: Provision for Earthing.

8.5 Plug and Socket Requirements

The Sewing Machines should comply with the requirements as per IS 1293 for the plug and socket of the machine.

8.6 Power Cord Requirements

The Sewing machine should comply with the requirements as per IS 694 or IS 9968 (Part 1 and Part 2) (as applicable) for the power cord.

9 ACCESSORIES IN SERVICE BOX

9.1 The following items or more shall be supplied with each machine.

- a) Two screw drivers (engineering), one large (machine) and one small (tension) or any other tools to tighten or loosen the screws may be provided;
- b) Three bobbins: plastic or metallic;
- c) Minimum one needle, twin needles and embroidery needle (DBK5) may be included as optional;
- d) Instruction manual; and
- e) Lubricating oil to be provided wherever it is recommended in the instruction manual, (depending on the model) else it may be optional,

10 MARKING

10.1 In addition to marking requirements specified in **7** of IEC 60335-2-28, each sewing machine/head shall be identified by a name plate or a screen print or sticker giving the name of model, manufacturer's name or trademark. The serial number of the sewing machine/head shall either be engraved/punched/printed or a suitable sticker may be pasted on the machine.

10.2 BIS Certification Marking

The zig-zag machine/head may also be marked with the Standard Mark.

10.2.1 The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

11 PACKING

Packing of zig-zag machine/head shall be such that the surface finishes of machine and components are not affected by mishandling, moisture and environment, etc.

ANNEX A

(Clause 2)

LIST OF REFERRED STANDARDS

<i>IS No./Other Standards</i>	<i>Title</i>
IS 694 : 2010	Polyvinyl chloride insulated unsheathed and sheathed cables/cords with rigid and flexible conductor for rated voltages up to and including 450/750 V (<i>fourth revision</i>)
IS 1293 : 2019	Plugs and socket-outlets for household and similar purposes of rated voltage up to and including 250 V and rated current up to and including 16 A — Specification (<i>fourth revision</i>)
IS 1068 : 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium – Specification (<i>third revision</i>)
IS 1573 : 1986	Specification for electroplated coatings of zinc on iron and steel
IS 2500 (Part 1) : 2000/ ISO 2859-1 : 1999	Sampling procedures for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection (<i>third revision</i>)
IS 9968	Specification for elastomer — Insulated cables
(Part 1) : 1988	For working voltages up to and including 1 100 volts
(Part 2) : 2002	For working voltages from 3.3 kV up to and including 33 kV (<i>first revision</i>)
IS 13607: 1992	Ready mixed paint, finishing, general purposes, synthetic – Specification
IS 15449	Household zig-zag machine head
(Part 2) : 2004	Accuracy requirements
(Part 3) : 2004	Sewing requirements
(Part 3) : 2004	Durability requirements
IEC 60335 Part 2 Sec 28 : 2021	Household and similar electrical appliances - Safety - Part 2-28: Particular requirements for sewing machines