

**BUREAU OF INDIAN STANDARDS**

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*भारतीय मानक मसौदा*

**औद्योगिक थैले की सिलाई मशीन – विशिष्टि**

*( आई एस 11737 का दूसरा पुनरीक्षण )*

**DRAFT Indian Standard**

**INDUSTRIAL BAG STITCHING MACHINE —  
SPECIFICATION**

*( Second Revision of IS 11737 )*

ICS 61.080

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**Sewing Machines Sectional  
Committee, MED 29**

**Last date for receipt of  
comments is 29 May 2022**

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**FOREWORD**

*(Formal clauses to be added later)*

This standard was first published in 1986 and subsequently revised in 1996.

Major changes in this revision are as follows:

- a) Motor requirement has been revised;
- b) Stitching speed has been modified;
- c) Sound and vibration limit has been incorporated; and
- d) Safety requirements have been added.

The composition of the Committee, responsible for the formulation of this standard is given at Annex A *(To be added later)*.

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, 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**  
**INDUSTRIAL BAG STITCHING MACHINE —**  
**SPECIFICATION**  
( *Second Revision* )

## **1 SCOPE**

This standard covers the general requirements for stitching machines designed for operation by an electric motor for industrial purposes for closing small, medium, and large size bags of jute, cotton, burlap, multiwall paper, and synthetic materials.

**1.1** This standard covers the requirement of bag closing machines consisting of stitching head, drive motor, supporting structure, and controls for continuous heavy duty industrial application.

## **2 REFERENCES**

The standards listed below 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 below. In case the standards are to be referred in this clause they are to be listed as follows:

<i>IS No.</i>	<i>Title</i>
1068 : 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium - Specification ( <i>third revision</i> )
9152 : 1979	Glossary of terms and identification symbols relating to classification of industrial sewing machines
12615: 2018	Line operated three phase a.c. motors ( IE CODE ) “Efficiency classes and performance specification” ( <i>third revision</i> )
IS/IEC 60529:2001	Degrees of protection provided by enclosures (IP Code)

## **3 TERMINOLOGY**

For the purpose of this standard, the definitions given in IS 9152 shall apply.

## **4 DRIVING ARRANGEMENT**

**4.1** The machine shall be supplied with a motor, starting switch and controller. Interconnecting wiring between starter, controller and motor shall be installed in a suitable conduit or in flexible metallic conduit. Electric light fixture may also be provided, if required.

**4.2** The motor shall be suitable for operating on a 415 V, three phase, 50 Hz alternating current. The starting characteristics of the motor shall suit the driven machine. The rating of the motor shall be such as to ensure that its full load current is not exceeded under normal operating conditions. The design of the motor shall take into account up to 1 200 start-stops per hour when run continuously for 24 h. The motor shall conform to IS 12615.

**4.2.1** If required by the purchaser, motor of any other suitable type may be supplied with the machine.

**4.2.2** All electricals and controls shall be suitable for use in the classification of the area as specified by the purchaser.

### **4.3 Switch**

Unless otherwise specified, each machine shall have an integrally operated switch for starting and stopping the motor by the pressure of the bag or any other suitable arrangement when the bag is inserted into the machine. Alternatively, a foot switch for non-integrated or semi-automatic function may be provided if so specified.

**4.3.1** A reversing switch for the filled bag conveyor reversing shall also be provided along with all other controls.

### **4.4 Drive Transmission**

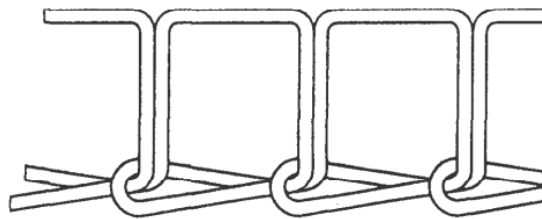
Drive transmission from the motor to the stitching mechanism shall be either by gears or by V-belts. When V-belts are provided, provision shall be made for adjusting the belt tension without disturbing the belt alignment. Pulleys and belts shall be suitably guarded and so arranged as not to interfere with the operation of the machine.

## **5 SEWING MECHANISM**

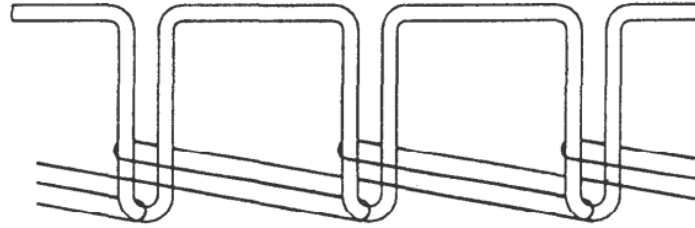
### **5.1 Design**

Machine shall be of single needle design, equipped with a sewing mechanism for producing C11 or D12 stitch formation [C11 for single threaded chain stitch and D12 for double threaded double lock stitch (*see Fig. 1*)] in accordance with IS 9152 . If so specified by the purchaser, two needle design may be provided.

**5.1.1** The stitching machine shall be single headed type or double headed type as specified by the purchaser. Normally these shall be identical for similar duty conditions.



1A SINGLE THREAD CHAIN STITCH (C11)



**1B DOUBLE THREAD DOUBLE LOCK STITCH (D12)**

**FIG. 1 TYPES OF STITCHES**

### **5.2 Stitch Regulator**

The stitch regulator shall be conveniently located in the machine. It shall preferably be capable of adjusting the pitch of the stitch within a range of 6 mm to 12 mm as specified by the purchaser.

**5.3** Automatic thread cutting arrangement shall be provided on the machine to cut off the thread when stitching is completed.

**5.4** Normal stitching speed of the machine shall be as agreed to between the purchaser and the manufacturer but shall not be less than 5 m/min or exceed 30 m/min.

**5.5** A thread tension arrangement shall be provided with each machine for both lower and upper threads. It shall be adjustable to the amount of tension required to sew satisfactory stitches. Each machine shall be equipped with an automatic thread tension mechanism.

### **5.6 Thread Stand**

A thread stand shall be provided for the stitching machine to hold the thread cone at a convenient location on the machine.

## **6 COMPONENTS**

Components shall conform to relevant Indian Standards to the extent applicable.

## **7 LUBRICATION**

Means shall be provided to readily and properly apply lubricant to all bearings and frictional surfaces on machines. Lubricating orifices may be identified by using the word 'oil'. Gears that are required to be packed with grease shall be suitably covered to retain grease and exclude dust and dirt.

## **8 SUSPENSION/MOUNTING UNIT**

**8.1** The stitching machine shall be suitable for mounting on portable trolley or pedestal with suitable provision for height adjustment.

**8.2** Portable mounting trolleys shall be rigidly built to avoid undue vibration and flexure during operation and at the same time shall be easily portable.

**8.2.1** Portable mounting trolleys shall be provided with rubber castor wheels. Size of the wheel shall be determined on the basis for its easy mobility without affecting the stability of the unit.

**8.2.2** Sharp projections and ends shall be avoided on the trolleys. A handle at operatable height shall be provided for pushing the trolley.

**8.3** It is recommended that a tool box for spare needles and tools for minor adjustments and normal maintenance of the machine may be provided.

## **9 CONSTRUCTION**

**9.1** Stitching machine and accessories shall be of rigid construction.

**9.2** The mass of the stitching head shall be kept to a minimum for the purpose of convenience in handling the unit.

**9.3** Main body of the stitching machine shall be made of aluminium/aluminium alloy or other metals without impairing the strength and rigidity.

**9.4** Handles shall not be spoked, shall have no projections and be smooth.

## **10 WORKMANSHIP AND FINISH**

**10.1** Stitching machine and accessories shall be neat in appearance. They shall be free from objectionable vibrations and shall be quiet in operation.

**10.2** Painted surfaces shall be hard and smooth, free from irregularities, flaws and cracks, dust specks and other defects. The paint shall be unaffected by lubricating oils and not liable to soften at temperatures up to 80 °C.

### **10.3 Plating**

Nickel and chromium plated surfaces shall satisfy the following conditions:

- a) Colour and lustre shall be good;
- b) Surface shall be smooth and free from plating defects, such as blisters, pits, cloudy patches, cracks and stains;
- c) Coating shall not peel off easily; and
- d) Thickness of plating shall not be less than 0.015 mm (*see* IS 1068).

## **11 TESTS**

### **11.1 No Load Test**

The stitching machine shall be run continuously for eight hours at its rated speed on no load. The machine shall not show any signs of overheating, breakage, or any other manufacturing defect. This test shall be carried out at the manufacturer's premises.

### **11.2 Run Test**

The stitching machine shall be run for half an hour for stitching the bags. The machine shall not show any signs of overheating, breakage, or any other manufacturing defect. This test shall be carried out at the manufacturer's premises.

### **11.3 Performance Test**

#### **11.3.1 *Test at Manufacturer's Works***

The machine shall be subjected to working test at the manufacturer's premises. For this purpose, three rows of stitches shall be made on 25 bags or as agreed between the purchaser and the manufacturer on the specified quality of the bag for complete width of the bag, consecutively and following shall be verified:

- a) Tightness of the stitch — All stitches shall be tight to provide a leak-free sealing;
- b) Pitch of all the stitches shall be uniform. There shall not be a variation of more than 1mm from the specified pitch;
- c) There shall be no skip stitching; and
- d) There shall be no unusual thread breaking;
- e) Form of stitch shall be verified in accordance with 5.1 and Fig. 1.

#### **11.3.2 *Test at Site***

To check the performance of the stitching machine and of the components used, the machine shall be run continuously for eight hours at its rated speed on load. After this run, the machine shall not show any overheating, breakage or any other manufacturing defect. This test shall be carried out at site.

### **11.4 General Requirement**

#### **11.4.1 *Sound Limit***

The noise level of the machinery when run on full capacity shall not exceed 80 dBA per day when tested with relevant Indian Standard.

#### **11.4.2 *Vibration Limit***

The maximum hand arm vibration encountered in portable bag stitching machines shall not exceed is 5 m/s<sup>2</sup>A when tested with relevant Indian Standard.

### **11.5 Safety Requirements**

#### **11.5.1 *Guards***

Moving parts shall be safeguarded by fixed or interlocking movable guards.

#### **11.5.2 *Measures to Minimize Slip Hazards***

The design of the machine shall minimize the risk of liquids or solids spilling onto traffic routes, work stations or means of access around the machine. Where spills cannot be prevented the manufacturer shall supply a means of containment for the spill e.g. drip trays and describe the most appropriate method for removing the spillage in the instructions.

### **11.5.3 Stability of machines**

#### **11.5.3.1 Stability during operation**

The manufacturer shall provide information in the instructions on how to move the machine as well as moveable parts and special equipment delivered with the machine safely.

On machines fitted with wheels, at least two wheels shall be fitted with locking devices to ensure that the machine does not move unexpectedly when it is in use.

#### **11.5.3.2 Stability while being moved**

The manufacturer shall provide information in the instructions on how to move the machine safely.

Machines fitted with wheels shall be designed so that they do not move or tilt in a static test while they are placed on a 10° slope independent of its orientation.

#### **11.5.4 Supply Disconnecting (Isolating) Device**

The machine shall be equipped with a readily identifiable and accessible supply disconnection device for each type of energy. Isolation switches shall be clearly labelled to indicate the method of operation of the switch and shall have the facility to be locked in the off position.

#### **11.5.5 Protection Against Electric Shock**

Electric shock by direct contact shall be prevented.

#### **11.5.6 Degree of Protection**

The protection level for electrical enclosures shall be selected on the basis of the environment in which the machine will be used. The required degree of protection shall be as given in Table 1.

**Table 1 Degree of Protection for Dusty Environments**

*(Clause 11.5.6)*

<b>Sl No.</b>	<b>Dusty Environment (see IS/IEC 60529)</b>	<b>Required Degree of Protection</b>
(1)	(2)	(3)
i)	Non conducting dusts	IP 5X
ii)	Conducting dusts for example, carbon powder, aluminium powder, etc.	IP 6X

#### **11.5.7 Safety Signals and Warning Signs**

Safety/warning signs shall be fitted to the machine permanently and in such a way that the related hazard is clearly identifiable. The signs given in Fig. 2 and Fig. 3 shall be specially marked on the machine.



FIG. 2 SIGN FOR NO ACCESS TO UNAUTHORIZED PERSONS



FIG. 3 SIGN FOR HOT SURFACE

## 12 ACCESSORIES

12.1 Following accessories shall be supplied with each machine:

- a) One spanner;
- b) One oil can/grease gun (to suit the lubrication requirement of the machine);
- c) Two screw drivers;
- d) Four thread cone;
- e) Four needles; and
- f) A booklet containing the manufacturer's operating and maintenance instruction, exploded view of the machine, and parts list with identification numbers.

12.1.1 Spare parts, attachments, or accessories shall fit the machine with which they are provided and shall be interchangeable with machines of the same make and model.

## 13 MARKING

13.1 The machine shall be marked with the following:

- a) Manufacturer's name and/or his trade-mark;
- b) Type and serial number; and
- c) Purchaser's equipment number, if specified.

The machines shall also be marked with letters in accordance with IS 9152.

### 13.2 BIS Certification Marking

13.2.1 Each stitching machine may also be marked with the BIS Certification Mark.



**13.2.2** The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 2006* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

#### **14 PACKING**

**14.1** All parts of the machine and the suspension unit shall be packed in suitable packing boxes and shall be securely fastened in fixed position to prevent movement or vibration during transit.

Tools and accessories shall be placed in an accessories box placed in the wooden packing box in such a way that it does not directly come into contact with the machine parts.

**14.2** The stitching unit shall be given a damp proof flexible covering before packing it in the wooden box to protect it from getting damped during transit and storage.

**14.3** The box shall be securely fastened in a closed position to prevent opening while in transit. Top side of the packing shall be indicated using the word 'TOP' with a standard symbol, such as an umbrella, cup, arrow, etc.