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IS 2209 (1976): mortice locks (vertical type) [MED 33: Utensils, Cutlery and Domestic Hardware]



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IS : 2209 - 1976

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2006

*Indian Standard*  
SPECIFICATION FOR  
MORTICE LOCKS ( VERTICAL TYPE )  
( *Third Revision* )

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BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## SPECIFICATION FOR MORTICE LOCKS ( VERTICAL TYPE )

### ( *Third Revision* )

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( *Continued on page 2* )

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# *Indian Standard*

## SPECIFICATION FOR MORTICE LOCKS ( VERTICAL TYPE )

### ( *Third Revision* )

#### 0. FOREWORD

**0.1** This Indian Standard ( Third Revision ) was adopted by the Indian Standards Institution on 29 November 1976, after the draft finalized by the Builder's Hardware Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** This standard was first published in 1962 and revised in 1966 and the second revision was issued in 1970. In the third revision the committee decided to bring the requirement of non-interchangeability of keys ( 6.1 and 6.2 ) in line with those specified in IS : 6607-1972\*. The number of operations for testing the working of locking bolt have been increased to 50 000 and similar requirements for testing the working of the latch bolt have also been incorporated in this revision. This standard also makes reference to the latest Indian Standards for various types of materials.

**0.3** This standard contains clauses 2.3, 5.1.1, 7.1.2, 8.1 and 10.1 which permit the purchaser to use his option for selection to suit his requirements and clauses 6.1 and 6.2 and Appendix A which require the purchaser to supply certain technical information at the time of placing orders.

**0.4** In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating to the practices in the field in this country.

**0.5** This standard is one of a series of Indian Standards on builder's hardware.

**0.6** 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 : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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\*Specification for rebated mortice locks ( vertical type ).

†Rules for rounding off numerical values ( revised ).

## **1. SCOPE**

**1.1** This standard lays down the requirements for mortice locks ( vertical type ).

## **2. SIZES**

**2.1** The sizes of mortice locks shall be 65, 75 and 100 mm.

**2.1.1** The size of the lock shall be denoted by the overall length of the body measured from the outside face of the forend to the rear end ( *see* Fig. 1 ). The measured length shall not vary by more than 3 mm from the length specified for the size.

**2.2** The minimum thickness of various parts of a mortice lock ( vertical type ) shall be as in Table 1.

**2.3** Mortice locks of sizes other than those specified in 2.1 may be supplied by mutual agreement between the purchaser and the supplier.

## **3. MATERIAL**

**3.1** Material used for different component parts of the locks shall comply with the requirements given in Tables 2 and 3.

## **4. SHAPE**

**4.1** The shape, design and mechanism of mortice locks and its component parts indicated in Fig. 1 are illustrative only. The manufacturer may make mortice locks of any shape to suit his design.

## **5. DIMENSIONS**

**5.1** The leading dimensions of the mortice locks shall be normally as given in Fig. 1.

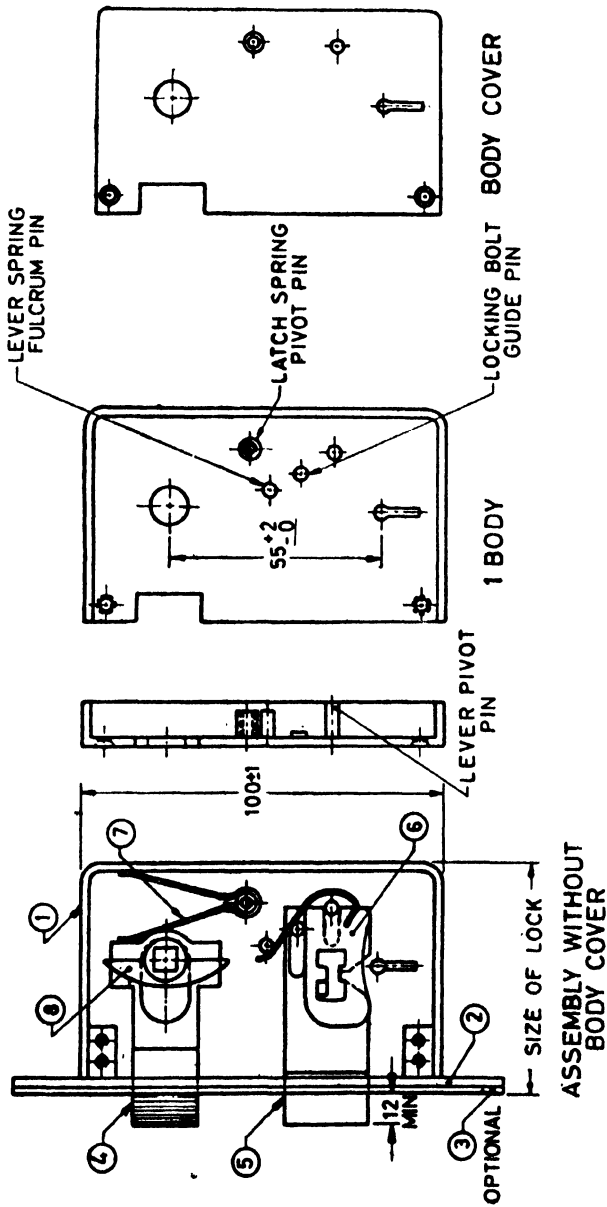
**5.1.1** It may be manufactured in other dimensions where so agreed to between the manufacturer and the purchaser.

## **6. NON-INTERCHANGEABILITY**

**6.1 Two Lever Locks** — The mortice locks shall be manufactured to have non-interchangeable keys in a batch consisting of a minimum of 24 locks. In case non-interchangeability in a higher number is required, it shall be so specified by the purchaser at the time of placing the order. A master-key may be supplied if required by the purchaser.

**6.1.1** For the purpose of testing non-interchangeability, 6 locks from each batch of 24 locks shall be so selected that the wards of the keys differ from each other slightly. These locks shall then be tested for non-interchangeability. If key of any of the locks opens any other lock, amongst the 6 locks, the whole lot shall be rejected.





All dimensions in millimetres.

Fig. 1 TYPICAL DESIGN OF MORTICE LOCK ( VERTICAL TYPE ) — Contd

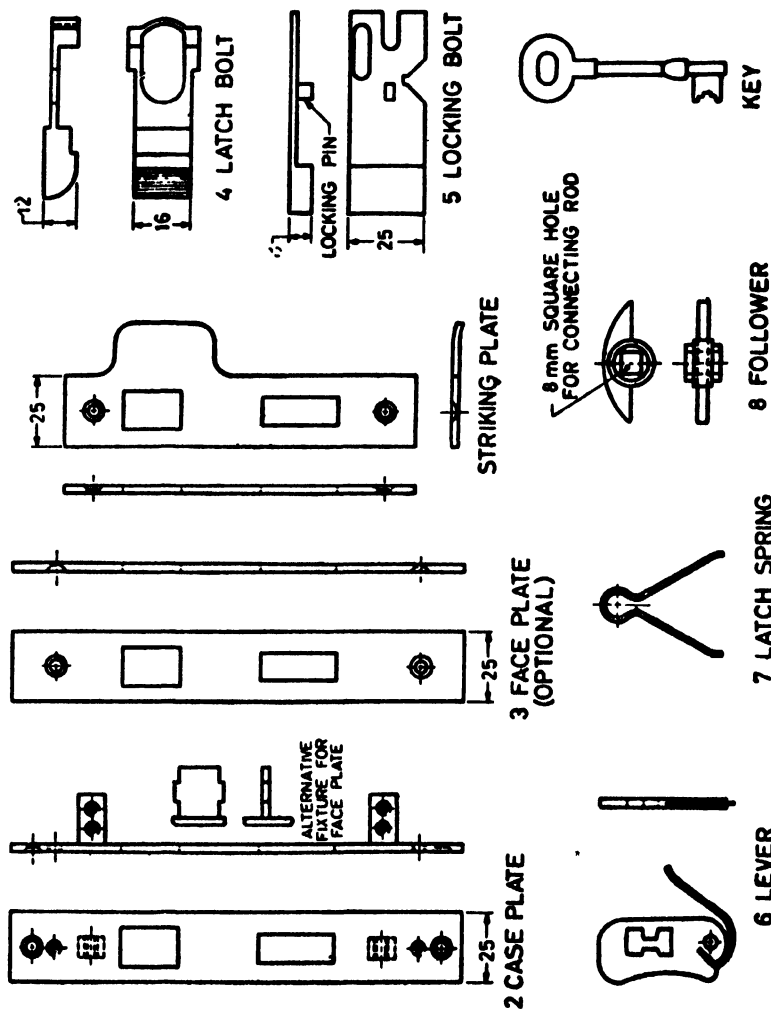


FIG. 1 TYPICAL DESIGN OF MORTICE LOCK (VERTICAL TYPE)

All dimensions in millimetres.

**TABLE 1 THICKNESS OF PARTS OF MORTICE LOCKS  
(VERTICAL TYPE)**

( Clause 2.2 )

Sl No.	COMPONENT	MATERIAL	MINIMUM THICKNESS ( mm )
(1)	(2)	(3)	(4)
i)	Body and body cover plate	Cast brass	2.5
		Aluminium alloy (pressure die casting)	2.5
		Aluminium alloy sheet	1.5
		Zinc base alloy (pressure die casting)	2.5
		Steel sheet	1.25
ii)	Case plate	Cast brass	2.5
		Steel sheet	1.25
iii)	Face plate and striking plate	Aluminium alloy sheet	2.5
		Steel sheet	1.25

**6.2 Locks With More Than Two Levers** — The mortice locks shall be manufactured so as to have non-interchangeability in a batch consisting of a minimum of 100 locks. In case, non-interchangeability in a larger number is required, it shall be so specified by the purchaser at the time of placing the order. A master-key may be supplied if required by the purchaser.

**6.2.1** For the purpose of testing non-interchangeability, 12 locks from each batch of 100 locks shall be so selected that the wards of the keys differ from each other slightly. These locks shall then be tested for non-interchangeability. If key of any of the locks opens any other lock amongst the 12 locks, the whole lot shall be rejected.

## 7. MANUFACTURE

### 7.1 Lock

**7.1.1 Body** — The clear depth of the body shall not be more than 15 mm.

**7.1.2 Fore End** — The case plate itself may form the fore end. However, where so desired by the purchaser, in order to obtain a clean plate free from rivets and to assist in decorating the fore end, a face plate may be provided. The fore end shall be firmly fitted to the body by suitable countersunk head machine screws ( see IS: 1365-1968\* ) or by any other suitable device.

\*Specification for slotted countersunk head and slotted raised countersunk head screws ( dia range 1.6 to 20 mm ) ( second revision ).

TABLE 2 MATERIALS FOR VARIOUS COMPONENT PARTS OF MORTICE LOCKS  
(VERTICAL TYPE)

(Clauses 3.1, 7.1.3, 7.1.6, 7.2.1 and 7.2.3)

Sl. No.	Component	Mild Steel	Malleable Iron	Cast Brass	Brass Sheet	Extruded Brass	Aluminum Alloy Pressing	Aluminum Alloy Sheet	Lead-Tin Bronze	Zinc Base Alloy Pressing	Phosphor Bronze Wire	Steel Wire	Stainless Steel
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
i)	Body	Yes	—	Yes	Yes	—	Yes	Yes	—	Yes	—	—	—
ii)	Body cover	Yes	—	Yes	Yes	—	Yes	Yes	—	Yes	—	—	—
iii)	Case plate	Yes	—	Yes	Yes	—	—	Yes	—	—	—	—	—
iv)	Key	Yes	Yes	Yes	—	—	—	—	—	Yes	—	—	Yes
v)	Follower	—	Yes	Yes	—	—	Yes	—	Yes	Yes	—	—	—
vi)	Face plate	Yes	—	Yes	Yes	—	—	Yes	—	Yes	—	—	—
vii)	Striking plate	Yes	—	Yes	Yes	—	—	Yes	—	Yes	—	—	—
viii)	Lever	Yes	—	—	Yes	—	—	—	—	—	—	—	Yes
ix)	Locking bolt and latch bolt	Yes	—	—	—	Yes	—	—	—	Yes	—	—	—
x)	Lever spring and latch spring	—	—	—	—	—	—	—	—	—	Yes	Yes	—

TABLE 3 REQUIREMENTS FOR MATERIALS

( Clause 3.1 )

Sl. No.	MATERIAL	SUTTABLE GRADE IN INDIAN STANDARD
(1)	(2)	(3)
i)	Mild steel	Grade 0-1079 of IS : 1079-1973 <sup>1</sup>
ii)	Malleable iron	Grade A or B of IS : 2108-1962 <sup>2</sup>
iii)	Cast brass	Grade 3 of IS : 292-1961 <sup>3</sup>
iv)	Brass sheet	Grade CuZn 40 of IS : 410-1967 <sup>4</sup>
v)	Extruded brass	IS : 319-1974 <sup>5</sup>
vi)	Aluminium alloy pressure die castings	IS Designation 4600 or 5230 of IS : 617-1975 <sup>6</sup>
vii)	Aluminium alloy sheet	IS Designation 52000 or 65032 of IS : 737-1974 <sup>7</sup>
viii)	Leaded tin bronze	Grade 2 of IS : 318-1962 <sup>8</sup>
ix)	Zinc base alloy die castings	IS : 742-1966 <sup>9</sup>
x)	Phosphor bronze	IS : 7608-1975 <sup>10</sup>
xi)	Steel wire	Grade 2 of IS : 4454 ( Part 1 )-1975 <sup>11</sup>
xii)	Stainless steel	IS : 1570 ( Part V )-1972 <sup>12</sup>
xiii)	Zinc plating on steel	Class Fe Zn 5 of IS : 1573-1970 <sup>13</sup>

<sup>1</sup>Specification for hot rolled carbon steel, sheet and strip ( *third revision* ).<sup>2</sup>Specification for blackheart malleable iron castings.<sup>3</sup>Specification for brass ingots and castings ( *revised* ).<sup>4</sup>Specification for rolled brass plate, sheet, strip and foil ( *second revision* ).<sup>5</sup>Specification for free-cutting brass bars, rods and sections ( *third revision* ).<sup>6</sup>Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes ( *second revision* ).<sup>7</sup>Specification for wrought aluminium and aluminium alloys, sheet and strip ( for general engineering purposes ) ( *second revision* ).<sup>8</sup>Specification for leaded tin bronze ingots and castings ( *revised* ).<sup>9</sup>Specification for zinc base alloy die castings ( *first revision* ).<sup>10</sup>Specification for phosphor bronze wires ( for general engineering purposes ).<sup>11</sup>Specification for steel wires for cold-formed springs: Part I Patented and cold drawn steel wires-unalloyed ( *first revision* ).<sup>12</sup>Specification for schedules for wrought steels for general engineering purposes.<sup>13</sup>Specification for electroplated coatings for zinc on iron and steel ( *first revision* ).

**7.1.3 Locking Bolt** — The locking bolt shall be of a single metal or a combination of metals recommended for this part in Table 2. The bolts shall be of section not less than  $8 \times 25$  mm for all sizes of locks. When steel bolt is provided, it shall be adequately protected against corrosion. The minimum throw of the locking bolt shall be 12 mm.

**7.1.3.1** If made as two-piece construction, both parts shall be riveted together and soundly brazed all round the surface of contact. The mild steel parts shall be zinc plated Designation FeZn5 of IS : 1573-1970\*.

**7.1.4 Mechanism** — The locking mechanism shall be of ordinary lever type or any other type approved by the purchaser.

**7.1.5 Levers** — Ordinary lever mechanism ( see Fig. 1 ) shall be provided with not less than two levers.

**7.1.5.1** False ( dummy ) levers shall not be used.

**7.1.6 Lever Spring** — Each lever shall be fitted with one flat or flattened wire spring which shall comply with the materials specified in Table 2. The lever spring fitted into the lever shall withstand the following tests without showing any sign of permanent set:

- a) The lever spring shall be pressed down so as to touch the top edge of the lever and released. This shall be repeated six times.
- b) The lever spring shall also stand a transverse load of 15 kg before the failure of the joint between the lever and the spring takes place.

**Note** — The lever shall be rigidly held flat and a point load of 15 kg applied to the spring gradually. The spring shall withstand the total load before the final failure of the joint between the lever and the lever spring occurs.

**7.1.7 Guide Pin, Lever Pivot Pin and Spring Fulcrum Pin** — The pin shall be suitably coated when used in conjunction with aluminium alloy body.

**7.1.8 Keys** — Each lock shall be provided with two keys.

**7.1.8.1** The key shall function smoothly and without any appreciable friction in the lock. The keys shall be suitably tied to the lock so that they are not lost or interchanged in transit. Malleable iron keys shall be protected against corrosion.

**7.1.8.2** The lock shall be capable of being opened with the key from both inside and outside.

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\*Specification for electroplated coatings for zinc on iron and steel (first revision).

**7.1.9 Screws** — The body cover shall be fitted to the body by countersunk head machine screws ( *see* IS : 1365-1968\* ). Screws shall be of mild steel and protected against corrosion, where necessary. However, the screws may be of aluminium alloy in the case of aluminium alloy bodies.

## 7.2 Latch

**7.2.1 Latch Bolt** — Latch bolt shall be of single metal or a combination of metals recommended for this part in Table 2. End bolt shall be reversible to enable lock to be fixed on right hand as well as on the left hand door and shall operate in such a position ( inside the mortice lock ) that the bolt shall not project from the face of the fore end of the lock. The bolt shall be of section not less than  $12 \times 16$  mm for all sizes of lock. Where steel bolt is provided it shall be adequately protected against corrosion.

**7.2.1.1** If made out of two-piece construction, both parts shall be riveted together and soundly brazed all round the surface of contact. The mild steel parts shall be zinc plated as per IS Designation FeZn5 of IS : 1573-1970†.

**7.2.2 Follower** — It shall have a square hole at the centre to suit the spindle which operates the latch bolt. It shall be protected against corrosion when made from malleable iron.

**7.2.3 Latch Spring** — Each latch bolt shall be fitted with one spring which shall be of materials as specified in Table 2. The spring shall withstand the following test without showing any sign of permanent set:

The spring shall be pressed down completely and then released. This shall be repeated twelve times.

**7.2.4 Striking Plate** — The striking plate shall have two rectangular slots to suit the locking bolt and latch bolt. It shall have two countersunk holes for fixing it to the door frame or shutter.

## 8. WORKMANSHIP AND FINISH

**8.1** Brass body shall be finished smooth. Steel body shall be given a suitable protective coating, such as painting. Aluminium alloy body may be anodized if required by the purchaser. The anodic coating shall not be inferior to Grade AC 10 of IS : 1868-1968‡. Face plate and striking plate shall be finished smooth and polished bright or satin. Where so desired by the purchaser, face plate and striking plate may also be chromium plated, anodized or oxidized.

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\*Specification for slotted countersunk head and slotted raised countersunk head screws ( dia range 1.6 to 20 mm ) ( *second revision* ).

†Specification for electroplated coatings for zinc on iron and steel ( *first revision* ).

‡Specification for anodic coatings on aluminium ( *first revision* ).

## 9. TESTS

**9.1** The finally assembled lock shall withstand the tests given in 9.1.1 to 9.1.5.

**9.1.1** The locking bolt shall be first locked in the forward position. A load of 40 kg minimum or as agreed to between the manufacturer and the purchaser shall be applied without shock in the direction perpendicular to securing face as well as on both the locking faces of protruding bolt in turn. Then the load shall be applied by means of a fixed steel board 3 mm thick by a rounded edge held in such a position that the centre line is approximately 3 mm from the fore end. A typical arrangement for the purpose of this test is shown in Fig. 2.

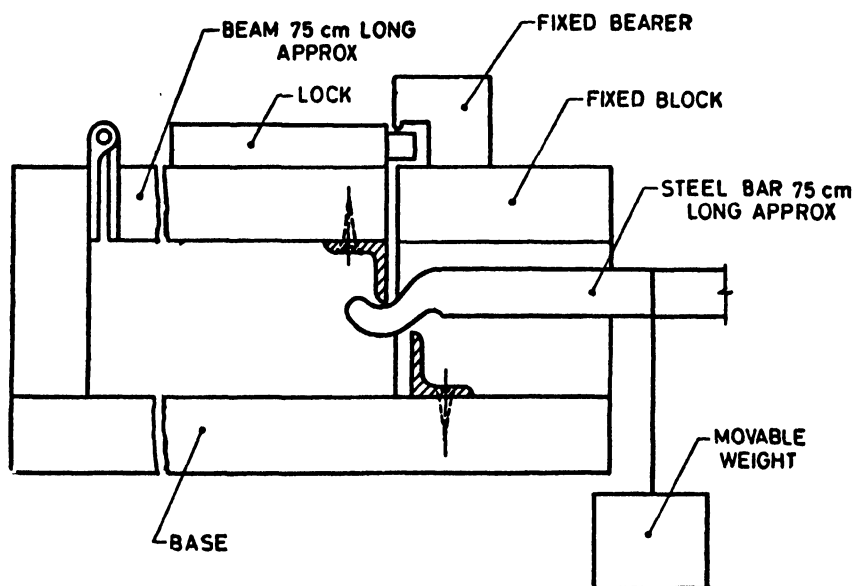


FIG. 2 STRENGTH TEST FOR LOCKING BOLT

**9.1.2** When the spindle with handle is inserted into hole in the follower and turned, the latch bolt shall draw smoothly into the lock body and shall be within one millimetre from the face of the fore end.

**9.1.3** When the latch bolt is pressed into the lock body by pressure; the action shall be smooth and when fully pressed the latch bolt shall not project more than one millimetre from the face of the fore end.

**9.1.4** The latch bolt shall be subjected to 50 000 operations either manually or by mechanical means. At the end of the test the components



should not show any undue movement from their normal position to cause impediment to the smooth working of the mechanism.

**9.1.5** When a key is inserted in key hole from one side of the lock and turned to withdraw the locking bolt the action shall be smooth and without impediment. When the direction of turn is reversed to lock the locking bolt then also the action shall be smooth and without impediment. In the locked position the locking bolt shall project 12 mm from the face of the fore end, although one millimetre free movement is permissible. In the withdrawn position the locking bolt shall not project more than one millimetre from the face of the fore end. The locking bolt shall be worked by turning key in both the directions 50 000 times. At the end of the test, the lock shall continue to work smoothly.

**9.1.5.1** The test shall be repeated with the key inserted from the other side of the lock.

**NOTE** — The clearance for levers while in the operating condition shall not exceed 0.25 mm.

**9.1.6** When the key is turned to lock the locking bolt at the same time applying a reasonable pressure by finger on it, after completion of the key rotation the locking bolt shall be positively locked in the forward position. This test shall be repeated with the key inserted from the other side of the lock.

## **10. INSPECTION AND CERTIFICATE OF COMPLIANCE**

**10.1** The purchaser or his representative shall be permitted to inspect locks in open condition before purchasing, if he so desires.

**10.2** Each manufacturer shall furnish, on request a certificate stating that the mortice locks comply with the requirements of this standard.

**10.2.1** The manufacturer's certificate shall be implied, if the lock bears the ISI Certification Mark ( *see 11.1.1* ).

## **11. MARKING**

**11.1** Each mortice lock shall be stamped with the following information:

- a) Manufacturer's name or trade-mark,
- b) Year of supply ( if specified by the purchaser ),
- c) Size of mortice lock,
- d) Number of levers, and
- e) Country of origin.

## **IS : 2209 - 1976**

### **11.1.1 The mortice lock may also be marked with the ISI Certification Mark.**

**NOTE —** The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI Marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

### **11.2 The keys shall be stamped on the head with the serial number of the lock.**

## **12. PACKING**

**12.1** Each mortice lock together with its keys shall be suitably wrapped in craft paper to avoid ingress of moisture during storage. It shall be further packed in a cardboard box. Each cardboard box shall be marked with the following information:

- a) Manufacturer's name or trade-mark,
- b) Type of lock,
- c) Size of lock,
- d) Quantity in the package, and
- e) Country of origin.

## **13. SAMPLING**

**13.1** Sampling and inspection of a consignment of locks shall be carried out in accordance with the provisions laid down in Appendix B.

## **APPENDIX A**

*( Clause 0.3 )*

### **INFORMATION TO BE SUPPLIED BY THE PURCHASER WHEN PLACING AN ORDER FOR SUPPLY OF MORTICE LOCKS**

#### **A-1. INFORMATION TO BE SUPPLIED**

**A-1.1** The purchaser shall furnish information to the manufacturer or the supplier in regard to the following points:

- a) Whether the door is single-shutter with rebated or straight ends, opening inside or outside, hinged on the right or left ( of a person facing the door when standing outside the room );
- b) Whether the door is double-shutter with rebated or straight ends, right or left overlaps the other ( of a person facing the door when standing outside the room );
- c) Width of stile, if any;
- d) Width of horizontal lockrail, if any;
- e) Thickness of stile, lockrail, if provided, or thickness of shutter itself;
- f) Depth of rebate; and
- g) Angle of rebate.

**Note** — All locks are usually fitted to the overlapping shutter.

## **APPENDIX B**

*( Clause 13.1 )*

### **SAMPLING AND CRITERIA FOR CONFORMITY**

#### **B-1. LOT**

**B-1.1** In any consignment all the locks of the same size and grade shall constitute a lot. This shall be ascertained by carrying out a general visual

inspection of the consignment to check that the lot is of the same type and size and appears to be homogeneous in regard to origin, source of production, period of manufacture and any other visually ascertainable characteristics. In case, the consignment does not appear to be homogeneous it should be segregated into separate groups; each group being homogeneous within itself and treated as a separate lot for the purpose of sampling.

**B-1.2** Number of locks to be selected at random from a lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 4.

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**TABLE 4 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVE LOCKS**

LOT SIZE	SAMPLE SIZE	PERMISSIBLE NUMBER OF DEFECTIVES
(1)	(2)	(3)
Up to 200	15	0
201 to 300	20	1
301 „ 500	30	2
501 „ 800	40	2
801 and above	50	3

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**B-1.3** Locks for the sample shall be selected at random from at least 10 per-cent of the packages subject to a minimum of three packages, equal number of locks being selected from each such package.

## **B-2. CRITERIA FOR CONFORMITY**

**B-2.1** The locks selected according to **B-1.3** shall be inspected for conformity to dimension, workmanship and finish, manufacturing details and testing for smooth working. The lot shall be considered as conforming to these requirements if the number of locks failing in any one or more of the requirements does not exceed the permissible number of defectives given in col 3 of Table 4.

# BUREAU OF INDIAN STANDARDS

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Plot No. 82/83, Lewis Road, BHUBANESHWAR 751002	5 36 27
Kalai Kathir Building, 6/48-A Avanasi Road, COIMBATORE 641037	2 67 05
Quality Marking Centre, N.H. IV, N.I.T., FARIDABAD 121001	—
Savitri Complex, 116 G. T. Road, GHAZIABAD 201001	8-71 19 96
53/5 Ward No. 29, R.G. Barua Road, 5th By-lane, GUWAHATI 781003	3 31 77
5-8-56C L. N. Gupta Marg. ( Nampally Station Road ) HYDERABAD 500001	23 10 83
R14 Yudhister Marg, C Scheme, JAIPUR 302005	6 34 71
117/418 B Sarvodaya Nagar, KANPUR 208005	21 68 76
Plot No. A-9, House No. 561/63, Sindhu Nagar, Kanpur Road, LUCKNOW 226005	5 55 07
Patliputra Industrial Estate, PATNA 800013	6 23 05
District Industries Centre Complex, Bagh-e-Ali Maiden, SRINAGAR 190011	—
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Pushpanjali. First Floor, 205-A West High Court Road. Shankar Nagar Square, NAGPUR 440010	52 51 71
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‡ Sales Office is at Unity Building, Narasimharaja Square,  
BANGALORE 22 39 71

Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2      JULY 1983**  
**TO**  
**IS : 2209-1976 SPECIFICATION FOR**  
**MORTICE LOCKS ( VERTICAL TYPE )**

**( Third Revision )**

**Alterations**

( Page 12, clauses 9.1 to 9.1.6 ) — Substitute the following for the existing clauses:

**9.1 Performance Tests** — The finally assembled lock shall withstand the performance tests given in 9.1.1 to 9.1.4.

**9.1.1** The locking bolt shall be first locked in the forward position. A load of 40 kgf (400N) minimum or as agreed between the manufacturer and the purchaser shall be applied without any shock in the direction perpendicular to securing face as well as on both the locking faces of protruding bolt in turn. Then the load shall be applied by means of a fixed steel board 3-mm thick by a rounded edge held in such a position that the centre line is approximately 3 mm from the fore end. A typical arrangement for the purpose of this test is shown in Fig. 2.

**9.1.2** When the spindle with handle is inserted into hole in the follower and turned, the latch bolt shall draw smoothly into the lock body and shall be within one millimetre from the face of the fore end.

**9.1.3** When the latch bolt is pressed into the lock body by pressure, the action shall be smooth and when fully pressed the latch bolt shall not project more than one millimetre from the face of the fore end.

**9.1.4** When the key is turned to lock the locking bolt at the same time applying a reasonable pressure by finger on it, after completion of the key rotation, the locking bolt shall be positively locked in the forward position. This test shall be repeated with the key inserted from the other side of the lock.

**9.2 Endurance Test** — The finally assembled lock shall withstand the endurance test as given in 9.2.1 and 9.2.2.

**9.2.1** The latch bolt shall be subjected to 50 000 operations either manually or by mechanical means. The number of operations that shall be carried out continuously at any time during the test shall not be less

than 3 000. One opening and closing shall constitute one operation. The test shall be conducted at the rate of maximum six operations per minute. At the end of the test the components shall not show defects, failure and undue movement from their normal position to cause impediment to the smooth working of the mechanism.

**9.2.2** When a key is inserted in key hole from one side of the lock and turned to withdraw the locking bolt, the action shall be smooth and without impediment. When the direction of turn is reversed to lock the locking bolt then also the action shall be smooth and without impediment. In the locked position the locking bolt shall project 12 mm from the face of the fore end, although one millimetre free movement is permissible. In the withdrawn position the locking bolt shall not project more than one millimetre from the face of the fore end. The locking bolt shall be worked by turning key in both the directions 50 000 times. The number of operations that shall be carried out continuously at any time during the test shall not be less than 3 000. One opening and closing shall constitute one operation. The test shall be conducted at the rate of maximum six operations per minute. At the end of the test, the lock shall show no defects and shall continue to work smoothly. The test shall be repeated with the key inserted from the other side of the lock.

**NOTE** — The clearance of levers while in the operating condition shall not exceed 0.25 mm.'

( BDC 15 )