

# INSTALLATION GUIDE

## Solitaire 850L/850/950

American Steel Mortise Version

PK2955



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# **INSTALLATION GUIDE**

## **Solitaire 850L/850/950**

American Steel Mortise Version

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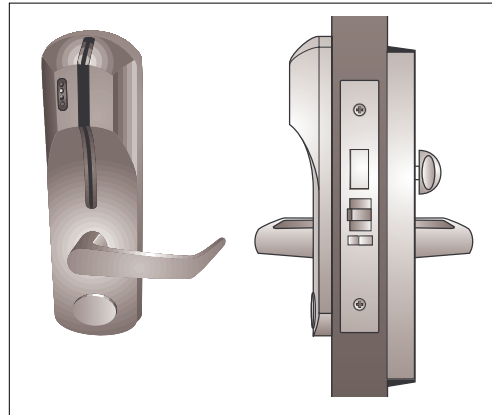
## 1.0 Introduction

The Kaba Ilco Solitaire Electronic Lock (see Figure 1) is designed to be installed over a standard mortise or cylindrical lock cutout. The mortise lock can be mounted on wood or metal doors  $1\frac{3}{8}$ " to  $2\frac{1}{2}$ " (35 to 63mm) thick without adapters. You may require the 1" (25mm) mortise faceplate for doors measuring less than  $1\frac{3}{4}$ " (44mm) thick.

Other than a standard mortise cut-out, the only additional door cutouts needed to mount the lock are four holes for the mounting screws, a hole for the reader cable, and a hole for the lock's override mechanism.

Mortise lock package contents:

- Outside lock housing assembly
- Inside housing assembly
- Inside housing cover assembly
- Inside lever handle
- Mortise lock with face plate
- Strike plate
- Dust box
- 2 steel combination screws
- 2 brass combination screws
- 2 8-32 x  $\frac{1}{4}$ " screws
- Hardware bag containing the following:



- AA batteries (4)
- Battery holder (1)
- Bottom end cap (1)
- #6-32 X  $\frac{1}{4}$ " hex socket capscrew (2) for bottom end cap
- #10-24 long mounting screws (2)
- #10-24 short mounting screws (2)
- $\frac{1}{4}$ " -28 X  $\frac{3}{8}$ " hex socket set screw (1) for inside lever handle
- $\frac{3}{8}$ " diameter nylon bearing (1) for inside lever handle
- Aligning studs (2)
- Medallion (1)

Figure 1

Tools Needed:

- Phillips #2 screwdriver
- Allen keys:  $\frac{1}{8}$ " for the set screw
- Allen keys:  $\frac{5}{64}$ " for bottom end cap screw & medallion retaining screw
- Drill bits:  $\frac{1}{4}$ " (6.5mm),  $\frac{7}{16}$ " (11mm),  $\frac{7}{8}$ " (22.5mm),  $1\frac{1}{4}$ " (32mm) and  $1\frac{3}{8}$ " (35mm)
- Mortising machine (optional)
- Chisel
- Hex socket  $\frac{3}{16}$ " or adjustable wrench
- Pliers (for locks with the mechanical key override option)
- Steel file (medium or fine)

## 2.0 Checking the Door

Proper alignment of the door with the frame and the lock with the strike are crucial for the performance and durability of the lock. On pairs of doors with overlapping astragal\* or rabbeted edges ensure that all auxiliary hardware, such as: flush bolts, vertical rod panic devices, door closers, and door coordinators, is installed correctly (see Figure 2). Rabbeted doors may require a different mortise.

\*An astragal is a strip running the length of the passive door opposite the hinges. (see Figure 3).

Make sure the lock hand and door hand are the same (see Figure 4).

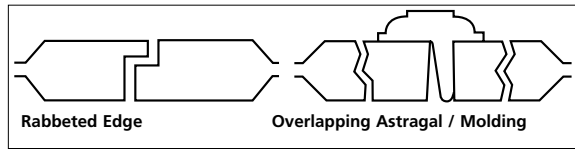


Figure 2

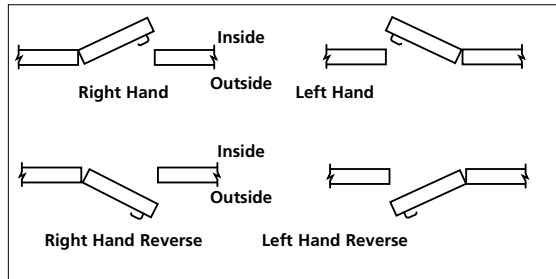


Figure 4

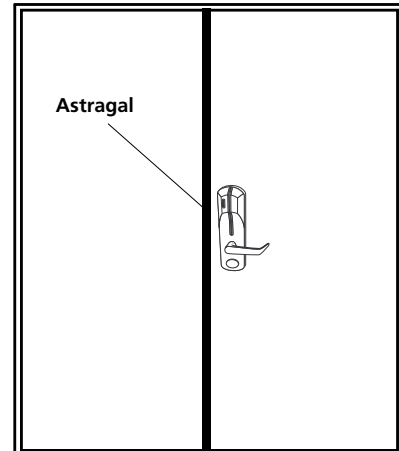


Figure 3

### 3.0 *Marking the Door*

- 1) Using the drilling template, establish the proper lock mounting height on the door according to local industry standards.
- 2) Place the template on the door edge and line up the centerline of the lock face on the template with the center of the door thickness.
- 3) Mark the outline of the lock face and the outline of the mortise cutout for the lock body (shaded area).
- 4) Mark the axis of rotation so you can line up the template on the door face.
- 5) Remove the template, fold where indicated and reposition the template with the fold on the exterior corner of the door edge. Make sure the axis of rotation lines up with the axis of rotation marking on the door edge.
- 6) Mark the holes to be drilled with a punch on the exterior face of the door.
- 7) Remove the template, fold on the other fold line and reposition the template with the fold on the interior corner of the door edge. Make sure the axis of rotation lines up with the marking on the door edge.
- 8) Mark the holes to be drilled with a punch on the interior face of the door.

Keep the template aligned with the lock mounting height line at all times.

### 4.0 *Making the Mortise Cutouts*

- 1) Using a lock mortising machine, or by drilling a series of 1" (25mm) holes, make the 4 1/4" (11 cm) deep mortise cutout in the door edge.
- 2) Place the mortise in the cutout to ensure that it is a proper fit. Remove the mortise.
- 3) Use a router to make a 1/4" (6 mm) cutout inside the previously marked outline for the mortise face plate.
- 4) Use a chisel to make the antifriction cutout.
- 5) Drill the mortise mounting screw holes.

## 5.0 Making the Electronic Lock Cutouts

- 1) Starting on the inside of the door, drill the required holes on each side of the door as per the template.
- 2) Clean out the mortise cutout, so no objects interfere with its mechanism.

## 6.0 Installing the Mortise Lock

Note: All mortise locks being installed on hollow metal doors require the use of a stabilizing bracket. (part #: 50567701045) The stabilizing bracket is placed on the end of the mortise pocket.

- 1) Examine the bevel on the mortise. If the bevel on the mortise is incorrect, loosen the bevel adjusting screws, adjust the front for the correct bevel, and tighten the screws.
- 2) Remove the faceplate from the mortise lock.
- 3) Place the mortise lock into the door cutout. Make sure that the mortise is positioned with the latch bolt above the auxiliary latch (see Figure 6).
- 4) Fasten the mortise in place using the steel combination screws provided (see Figure 6).
- 5) Make sure the latch moves freely in the lock and in the door.
- 6) Fasten the faceplate with the two 8-32 x 1/4" screws provided.

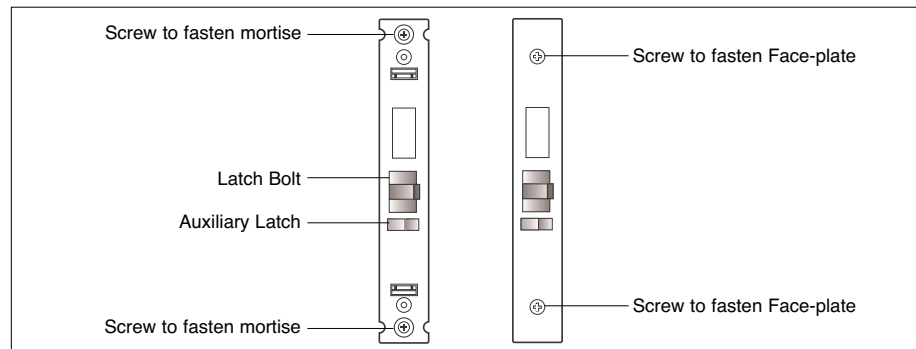


Figure 6

## 7.0 Installing the Electronic Lock

All locks have a mechanical override. The override is operated by a key and cylinder.

### Lock Housing Preparation

- 1) Position the outside housing assembly on the outside of the door.
- 2) The override cylinder connecting bar (A) should extend 1/8" (3mm) from the inside surface of the door (see Figure 7). If necessary, measure and mark the connecting bar accordingly.
- 3) If necessary, remove the housing from the door and break the connecting bar, where marked, with pliers.
- 4) Position the aligning studs (B) on the outside housing based on the handing of the lock (see Figure 8). Screw them into place firmly.
- 5) Rotate the cylinder connecting bar on the outside housing to a horizontal position (see Figure 8).
- 6) Set the latch hub drive (C) on the inside housing to the proper position for the handing of the lock. Make sure the position of the spindle is as shown (see Figure 9).
- 7) With a screwdriver, rotate the override cam (D) on the inside housing counter clockwise, until it stops. Then return it to the horizontal position (see Figure 17)

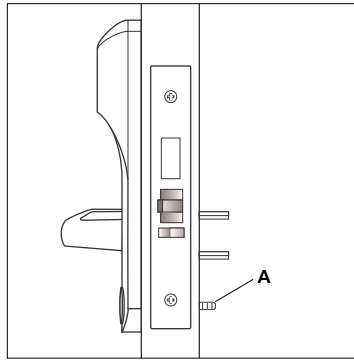


Figure 7

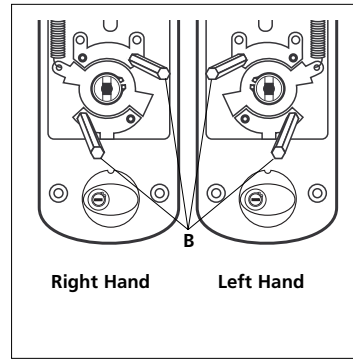


Figure 8

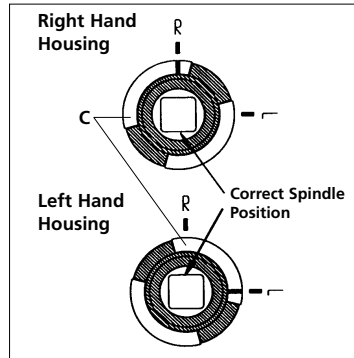


Figure 9

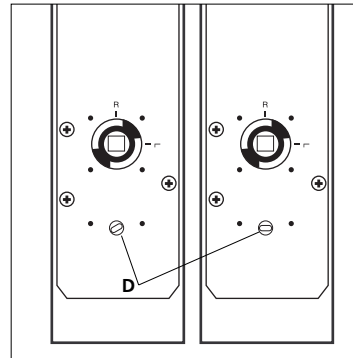


Figure 10

### Installing the Lock on the Door

- 1) Insert the aligning studs (E), on the outside housing, through the holes in the mortise lock. Thread the reader cable (F) through the reader cable hole, and mount the housing on the door (see Figure 11).
- 2) Connect the reader cable to the inside housing. Make sure the connector is fully engaged.
- 3) Guide the cylinder connecting bar on the outside housing into the override cam on the inside housing.
- 4) Mount the inside housing on the door. The entire reader cable should be inside the reader cable hole. Make sure it is not pinched between the door and the lock.
- 5) Using the inside lever to turn the inside spindle (G), retract the latch bolt. This will ensure the latch hub drive is properly engaged with the mortise latch hub (see Figure 11).
- 6) Using the two long #10-24 screws at the top of the lock and the two short ones at the bottom, secure the inside housing to the outside housing.
- 7) Install the removable core and test the operation of the mechanical keys. The rotation should be very smooth. When the key is rotated 180° verify that the outside lever retracts the latch bolt. Rotate back the key to initial position and verify that outside lever does not retract the latch bolt.
- 8) Install the inside housing cover assembly. The turn knob (H) should line up with the deadbolt hub drive (I) and the lever bushing (J) should line up with the hole in the cover (see Figure 12).
- 9) Install the medallion (K) on the outside housing. Position the medallion over the override cylinder and secure it with the retaining screw (L) at the bottom of the lock (see Figure 13).

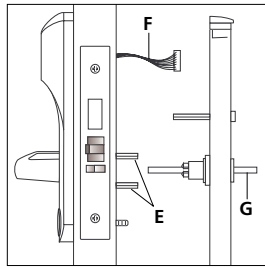


Figure 11

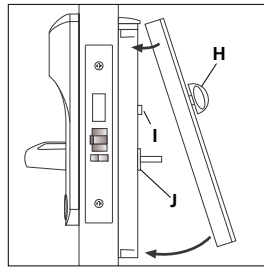


Figure 12

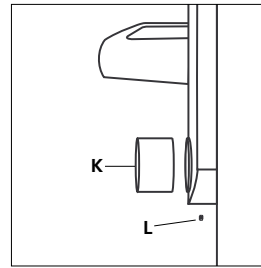


Figure 13

- 10) Install the nylon bearing (M). Secure inside lever (N) with the set screw (O) tighten the screw to 40 inch pounds or 4.5 Nm. Insert the battery holder assembly (P) into the housing and secure it with the 6-32 X 1/4" hex socket cap screw (R) (see Figure 14). When you connect the batteries, you should hear the motor run for a short period of time. If you do not, replace the batteries. Anytime the battery is disconnected from the lock, a 3 second pause is required before reconnection. If the lock motor runs constantly, disconnect and then reconnect the battery (do not forget the 3 second pause). If the lock motor runs constantly after the battery is reconnected, replace the lock.

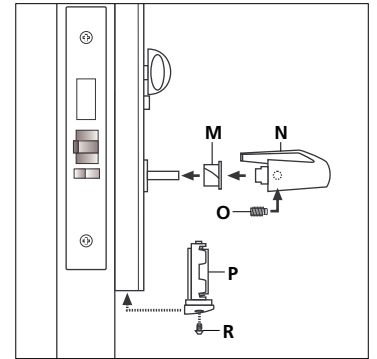


Figure 14

## 8.0 Installing the ASA Strike

The bottom of the strike lip (A) (see Figure 15) must line up with the axis of rotation of the lever handle. Once the position of the strike has been established, follow the steps below:

- 1) Make the 1" (25 mm) cutout for the dust box according to the template. On prefabricated metal frames or when you are not installing the dust box, make sure the recess in the jamb is deep enough, over 1" (25 mm).
- 2) Place the dust box in the cutout.
- 3) Make sure you have the correct strike plate for the hand of your door - the larger and wider cutout, for the dead-bolt, should be at the top and the long end of the plate should be at the bottom (see Figure 15).
- 4) Secure the strike plate with the two screws provided. If necessary, draw a line around the strike and use the line as a guide to cut out enough material to make the strike plate flush with the door frame.
- 5) In a proper installation, the auxiliary latch should rest against the strike plate between the bottom of the cutout and the bottom of the lip (B). If the strike was improperly installed, the auxiliary latch may slip into the strike hole and prevent the latch from locking securely.

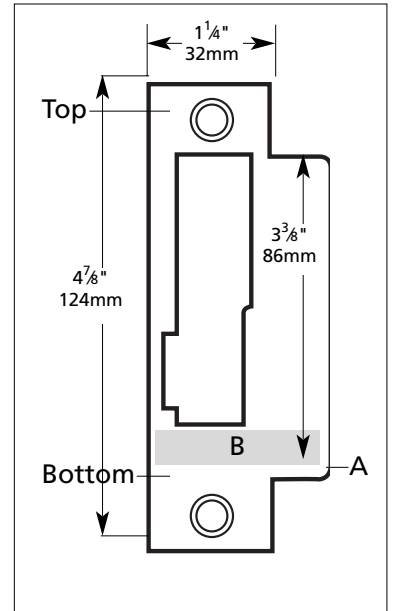


Figure 15

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## 9.0 Testing the Operation of the Lock

Once the installation of the lock is complete, the lock should be tested for proper operation. All testing procedures should be performed with the door open, unless otherwise specified.

### Inside Lever

- 1) Rotate the inside lever towards the floor. The latch bolt will fully retract if the lock is properly installed.  
If the latch bolt does not retract check the hand setting of the latch hub drive on the inside housing, and its connection to the mortise.  
If the lever does not rotate, the handing of the inside housing may be incorrect.  
If the lever feels tight, the latch hub drive may be squeezed between the inside housing and the mortise. Check the position of the mortise in the door. It should be centered. If the mortise is centered, check to make sure the lock is the correct one for the thickness of the door.

### Deadbolt (if applicable)

- 1) Throw the deadbolt with the turn knob. The deadbolt should project fully, without any friction.
- 2) Retract the deadbolt with the turn knob. The deadbolt should retract fully, without any friction.
- 3) Throw the deadbolt again. This time retract it by turning the inside lever. The deadbolt and the latch bolt should retract fully and simultaneously.
- 4) For locks with the mechanical key override option, make sure the cylinder rotates freely with the override key. If it does not, the connecting bar is too long (refer to page 4, "Lock Housing Preparation" Steps 1 - 3 ).

### Outside Lever

Rotate the outside lever towards the floor. The latch bolt should not retract. If it does, check the batteries and the position of the override cam on the inside housing.

If the lever feels tight or you are encountering some friction, the lock components may not be aligned correctly. Loosen the mounting screws and try to shift the outside housing until the friction is eliminated. If the problem persists, check the position of the holes in the door.

To test the lock's response to keycards, a User keycard and an Emergency keycard will be needed.

### If you have a lock with a deadbolt:

- 1) Program the lock.
- 2) Make sure the deadbolt is retracted. Swipe the User keycard through the reader. The green LED should be flashing and the latch should fully retract as the outside lever is rotated.
- 3) Throw the deadbolt.
- 4) Swipe the User keycard through the reader again. If the User keycard was not programmed with the resident function the green LED should flash once followed by the red LED flash twice. If the User keycard was programmed with the resident function the red LED should flash once followed by the green LED flashing for six seconds. The latch bolt and deadbolt should retract as the outside lever is rotated.
- 5) Swipe the Emergency keycard through the reader. The green LED should flash for six seconds. The latch bolt should fully retract as the outside lever is rotated.



- 6) Close the door and ensure that it is properly latched.
- 7) Open the door using the User keycard.
- 8) Stand inside the room, close the door, and then throw the deadbolt. Open the door several times by disengaging the deadbolt with the thumbturn.

Next starting with the deadbolt thrown, open the door several times by disengaging the deadbolt with the lever. Take note of any excess friction you encounter. Excess friction between the latch (or the deadbolt) and the strike may necessitate filing the strike (refer to 2.0 of this section, Checking the Door).

**If you have a lock without a deadbolt:**

- 1) Swipe the test keycard through the reader. The red and green LED's should each flash once. The green LED should then flash for six seconds or until the outside lever is activated.
- 2) Rotate the outside lever towards the floor while the green LED is flashing. The latch bolt should fully retract.
- 3) Program the lock.
- 4) Swipe the User keycard through the reader. The green LED should be flashing and the latch should fully retract as the outside lever is rotated.
- 5) Swipe the Emergency keycard through the reader. The green LED should flash for six seconds. The latch bolt should fully retract as the outside lever is rotated.
- 6) Close the door and ensure that it is properly latched.
- 7) Open the door using the User keycard.

Next open the door several times. Take note of any excess friction you encounter. Excess friction between the latch and the strike may necessitate filing the strike (refer to 2.0 of this section, Checking the Door).

## **10.0 Changing the Handing of the Lock**

In emergency situations, it may be necessary to convert a right hand lock for use on a left-hand door or vice versa. This is possible with the Solitaire Electronic Lock, but does involve some time and some skill. Both the outside and the inside housing must be converted. You will also need the correct hand of mortise to install the lock. The following procedure is recommended in extreme cases only and should only be done by a certified installer or a professional locksmith.

Warning: Safety glasses must be worn to prevent eye injury from springs under tension that may be ejected from the lock.

**Outside Housing Assembly (see Figure 16)**

- 1) Remove the spring screw (A).
- 2) Unhook the spring from the spring hook (B).
- 3) Remove the retaining ring (C).
- 4) Remove the stop plate (D).
- 5) Rotate the lever to the other side of the housing.
- 6) Reinstall the stop plate with the spring on the same side as the lever.
- 7) Reinstall the retaining ring.

- 8) Attach the spring to the spring hook on the same side of the lock as the lever.
- 9) Screw the spring into place.
- 10) If the self-aligning studs have previously been installed, change their position in keeping with the new handing of the lock (see Figure 16).

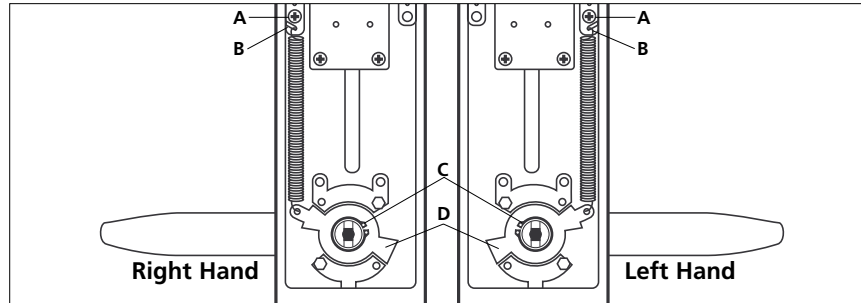


Figure 16

**Inside Housing Assembly (see Figure 17)**

- 1) Remove the access plate (A). The screw is located underneath the warning sticker.
- 2) Attach the inside lever to the shaft and rotate towards the bottom of the lock.
- 3) Remove the silver colored spacer (B).
- 4) Remove the lever.
- 5) Reposition the coil spring (C) (the tip of the coil spring must be down) and the hand siding pin (D) for the new handing of the lock, as shown. Before changing the hand siding pin make sure that the override cam (E) (see Figure 18) is turned completely clockwise, and that the spindle is straight. After changing the pin turn the override cam counter clockwise back to its original position.
- 6) Attach the inside lever to the shaft, corresponding to the new handing, and rotate towards the bottom of the lock.
- 7) Reinstall the silver colored spacer on the opposite side of the lock.
- 8) Remove the lever, reinstall the access plate and screw it into place.

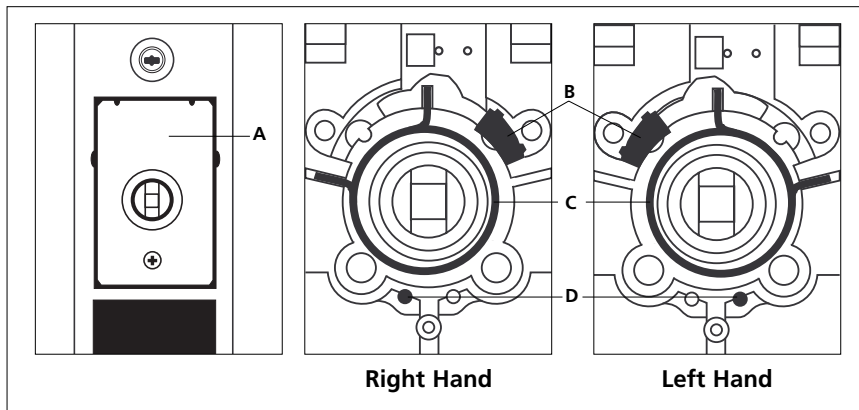


Figure 17

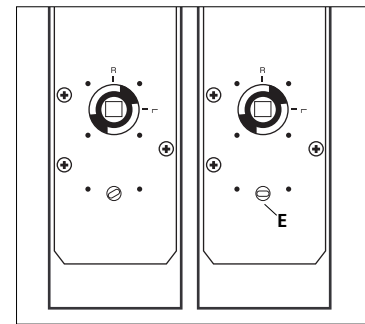


Figure 18

## **11.0 The Mechanical Key Override**

In the event you need to open the door mechanically, or to remove the override cylinder, please follow the following instructions.

- 1) Remove the retaining screw from the bottom edge of the outside housing.
- 2) Remove the medallion from the housing.  
You can now access the override cylinder to either use the entry key to open the door, or the control key to remove the cylinder.

To use the entry key:

- 1) Rotate the key 180° clockwise and activate the outside lever. The latch bolt must retract fully.
- 2) Rotate the key counter-clockwise to put the lock in lockout mode & remove the key.



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