Installation Guide

High Security Pedestrian Exit Device with Electric Locking Trim
WARNING: Kaba Mas locks are well protected from Electrostatic Discharge (ESD) damage once they are installed, but can be damaged during the installation process if proper precautions are not observed. Follow these precautions to avoid ESD damage when installing the lock:

- Do not touch the end of the flex cable if the ESD protective cover has been removed.
- Remove the X-09 lock cover assembly before touching the end of the flex cable.
- For the best protection, use an ESD wrist band grounded to the lock during installation.
- The lock is protected to greater than 25,000 V when correctly installed.

TRADEMARKS

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- PowerStar
- X-09
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Installation Overview
The High Security Pedestrian Exit Device - Electric Trim Version consists of:

1. A Rim Exit Device with Electric Locking Trim and Outside Lever Trim with Rim Cylinder
2. A High Security Pedestrian Door Lock (CDX-09)
3. Interface Hardware, Covers and Cover Brackets
4. A Relatching Delay System (RDS) with power supply and control module

The Installation Guide will describe the steps required to install each of these components of the High Security Pedestrian Exit Device.

Basic Tools and Materials Needed
Before beginning installation, be certain that you have the following tools readily available:

• Measuring tape
• Level
• Combination square
• Tape
• Hammer
• Center punch
• Electric hand drill
• 1/4” drill bit
• 9/32” drill bit
• 5/16” drill bit
• 3/8” drill bit
• 1/2” drill bit
• No. 25 drill bit
• 2” hole saw with 1/4” pilot
• 1 1/4” hole saw with 1/4” pilot
• Long nose pliers
• Pliers
• 3/4” end wrench
• 1/4” end wrench
• Hacksaw
• File
• 1/4” or smaller slotted head screwdriver
• #1 Phillips head screwdriver
• #3 Phillips head screwdriver
• #1 Phillips head stubby screwdriver
• Safety glasses

Other tools that may be required:
• #10-24 Screw cutter
• External snap ring pliers

For a metal door installation, the following tools are needed:
• Tap handle
• #10-24 tap
• #10-32 tap
Door Handing

Determine whether the door is left hand reverse (LHR) or right hand reverse (RHR) by referring to Figure 1.

Note: Installer must insure that the door meets all building, fire and security code requirements prior to installing the High Security Pedestrian Exit Device.

Ensure that the Exit Device you are installing is compatible with the handing (LHR or RHR) of the door.

Templates

Rim Exit Device
A template is provided for the appropriate door installation (LHR or RHR) to assist in (1) laying out hole locations for mounting the Rim Exit Device, (2) locating the lock horizontal centerline, and (3) locating the lock strike top and bottom mounting hole centerlines. Ensure that the template is the correct one for the handing of the door.

CDX-09 Lock Assembly
A separate template is included to assist in laying out the hole locations for the CDX-09 lock assembly. This template is positioned on the inside of the door as described in the “CDX-09 Lock Assembly Template” section.

Dial Ring Mounting Template
An additional template is provided as an aid for locating, drilling, and tapping the dial ring mounting screw holes relative to the spindle hole. This template is positioned on the outside of the door as described in the “CDX-09 Dial Ring Mounting Template” section.
Parts Check

Packaging
The High Security Pedestrian Exit Device - Electric Trim Version is packaged in three boxes:

1. The Rim Exit Device Box contains:
   - Rim Exit Device with associated parts and mounting hardware
   - Outside Lever Trim with Rim Cylinder Lock and mounting hardware
   - Interface Hardware, Covers and Cover Brackets with mounting hardware

2. The CDX-09 Box contains:
   - High Security Pedestrian Door Lock (CDX-09)

3. The RDS Box contains:
   - RDS-2 Power Supply Control Module

See the following sections for detailed part contents of the Rim Exit Device and CDX-09 boxes. The RDS-2 is the only item contained in the third box.
## Rim Exit Device Box

### Rim Exit Device Fasteners, Parts

- **#10-24 x 1-1/2" PPHMS**
  - (2 QTY.)
  - (Device Head)

- **SEX BOLT - 1/4" x 20 THREAD**
  - (1 QTY.)
  - (End Cap)

- **1/4" X 20 x 3/4" TPHMS**
  - (1 QTY.)
  - (End Cap)

- **#10-24 x 1" PPHMS**
  - (4 QTY.)
  - (Device Head)

- **#10-24 x 3/4" FPHMS**
  - (3 QTY.)
  - (Strike)

- **END CAP MOUNTING BRACKET**
  - (1 QTY.)

- **F-490 STRIKE**
  - (1 QTY.)

### Rim Exit Device

- **END CAP, MOUNTING SCREWS**

- **CHANNEL END CAP**
  - (1 QTY.)

- **#8-32 x 3/8" UFPHMS WITH NYLON PATCH**
  - (2 QTY., Black)

### Outside Lever Trim with Rim Cylinder

- **Rim Cylinder Mounting Bracket**

- **RHR Shown**
Rim Exit Device Box (continued)

CABLE ASSEMBLIES, FASTENERS, COVER MOUNTING BrACKETS AND SCREWS

- Bellcrank Cable Assembly (1 QTY.)
  - #10-24 Brass Nut

- LHR Lock Cable Assembly (1 QTY.)
  - OR

- RHR Lock Cable Assembly (1 QTY.)

- Shoulder Screw (1 QTY.)
- Locknut (1 QTY.)
- #8-32 x 1/4" UPHMS Black Screw (8 QTY.)

Top and Bottom Lock Cover Mounting Brackets (1 QTY. Each)
CDX-09 Box

Lock Parts for Installation
1. CDX-09 Dead bolt lock assembly
2. CDX-09 base hardplate
3. Dial hub assembly
4. Strike kit (type 2)
5. Spindle
6. Dial assembly
7. Dial ring assembly

Installation Kit Contents
1. Blade, saw (52 teeth/inch)
2. Handle, saw
3. Tube, outer
4. Tube, inner
5. CDX-09 to door mounting screws, pan head #10 x 1.25, Type AB (6)
5. Dial ring attaching locknuts, #8-32 (2).
   (Packaged with and used with exterior mounting plate)
6. Rubber vise clamp
7. Lubricant.
8. Gage, dial hub locating
9. Zebra Connector and Retainer
10. Cable Tie Clips (3)
11. Dial ring to door mounting screws, pan head #8 -32 X 1.0 Type AB (2).
12. Cover Lock Pin Clip
13. Cover Lock Spring
14. Cover Lock Pin
15. Stone, deburring
16. Hexkey (5/64")
The Electric Locking Trim (ELT) feature is available from Kaba Mas as a Special Engineering request (SER) based on the Model 1000 High Security Pedestrian Exit Device. This feature includes a Relatching Delayed System (RDS) with power supply and control module.

The ELT feature provides control capabilities of trim lock/unlock by a guard or security system while allowing free egress at all times. The ELT system can be activated to hold the trim unlocked momentarily or for extended periods of time.

The ELT feature can be interfaced with automatic doors, card readers, automatic fire alarm systems, etc. The ELT application requires the use of the RDS control module. For details on the RDS, see the section below. Closing the normally open dry contact retracts the latch. Opening the normally open switch returns the latch to the locked position.

RDS - Power Supply Control Module

The RDS, when energized by pressing the dry contact switch, will activate the first ELT device and one second later, will activate a second ELT device. Please note that for each RDS, two ELT devices can be controlled by one switch.

Notes:

1. Each RDS comes in a 6” x 6” x 4” NEMA rated box.
2. RDS weight is 8 lbs.
3. The RDS-2 specifications and wiring schematic can be found in the Electric Locking Trim & RDS Installation section of the manual.
DOOR PREPARATION

Mark Rim Exit Device and Strike Locations

Note: Door must be fitted and hung properly before proceeding.

1. With the door closed, establish the Rim Exit Device horizontal reference centerline by measuring 40-1/4” from the finished floor surface.

Note: The 40-1/4” distance from the finished floor surface to the Rim Exit Device horizontal reference centerline is a suggested distance, and may be varied to meet application requirements. However, in no case should this distance be greater than 48” due to National Fire Protection Association code requirements.

2. Using a level, draw a horizontal line on the door as shown in Figure 2. Transfer the Rim Exit Device horizontal reference centerline to the door jamb stop face.

3. Establish the Rim Exit Device vertical reference centerline by measuring 2-1/4” from the face of the door jamb stop along the Rim Exit Device horizontal reference centerline as shown in Figure 3. Using a level, mark the Rim Exit Device vertical reference centerline on the door approximately 13½ inches above and 9½ inches below the Rim Exit Device horizontal reference centerline as shown in Figure 4.

Figure 2 - Establish Rim Exit Device Horizontal Reference Centerline

Figure 3 - Establish Rim Exit Device Vertical Reference Centerline
Rim Exit Device Template

1. Position the Rim Exit Device drilling template on the inside of the door using the Rim Exit Device horizontal and vertical reference centerlines previously established and shown in Figure 4. Tape the template to the door.

2. Center punch all hole positions onto the door.

Note: *It is very important to accurately center punch all holes since hole locations establish the distance between the Rim Exit Device and the CDX-09 lock assembly.*

3. Transfer the lock horizontal reference centerline from the Rim Exit Device template to the door and door jamb. This centerline will be used to position the CDX-09 lock assembly drilling template on the door, and locate the center mounting hole for the strike.

4. Transfer the lock strike mounting hole centerlines from the Rim Exit Device template to the door jamb. These centerlines will be used to position the CDX-09 strike in the correct vertical location on the door jamb.

Install CDX-09 Lock Strike

1. Horizontal positioning of the CDX-09 lock assembly drilling template is referenced to the CDX-09 lock strike, so this strike must be installed before the CDX-09 lock assembly template can be positioned on the door. #10-32 machine screws are recommended for a metal door jam and #10 thread forming screws are recommended for a wood jamb.

2. Position the CDX-09 lock strike on the door jamb face as shown in Figure 5. Align the strike vertically so that the top and bottom strike mounting counterbored holes are centered over the lock strike mounting hole centerlines. Align the strike horizontally so that the strike edge adjacent to the open tang is 3/32” from the door jamb stop.

3. Center punch the two slotted strike hole locations (mid-slot) onto the door jamb face.

4. Drill and tap the two (2) slotted hole locations for attaching screws. (No. 25 drill, 0.149 inch diameter for #10 thread forming screw. No. 21 drill, 0.159 inch diameter for #10-32 machine screw).

5. Mount the strike to the door jamb face using two (2) #10-32 pan head machine screws for the two slotted holes.

6. Install the remaining 3 flat head (machine or thread forming) screws after mounting the CDX-09 lock assembly and the rim exit device.

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Figure 4 - Door Layout for Rim Exit Device

Figure 5 - CDX-09 Strike Installation
CDX-09 Lock Assembly Template

1. Fit the CDX-09 strike tang opening of the CDX-09 lock assembly cardboard drilling template over the strike tang mounted on the door jamb face. Center the strike tang opening of the template horizontally over the strike tang as shown in Figure 6.

2. Position the lock template on the inside of the door and align the lock horizontal reference centerline on the lock template with the lock horizontal reference centerline on the door. Tape the template to the door.

   Note: The door must be ajar and free to swing while positioning the template to the strike tang and door.

3. Center punch all hole positions onto the inside door surface.

   Note: It is very important to accurately center punch all holes since hole locations establish the distance between the Rim Exit Device and the CDX-09 lock assembly.

4. Remove CDX-09 Lock Assembly Template and the Rim Exit Device Template.

Door Preparation for Rim Exit Device and Outside Lever Trim

1. Using information on the Rim Exit Device template, drill holes and cut rectangular opening as directed.

Drill Holes for CDX-09 Lock Assembly

1. Drill the 0.5 inch diameter spindle hole 1.25 inches deep. DO NOT drill through the door.

2. Drill all six CDX-09 attaching screw holes (No. 25 drill, 0.149 inch diameter). Drill the holes 1.25 inches deep. DO NOT drill through the door.

CDX-09 Dial Ring Mounting Template

1. Using a square or level, transfer the lock horizontal reference centerline from the inside door surface to the outside door surface.

2. Establish the center of the spindle hole on the outside door surface as follows:
   A. On the inside door surface measure the horizontal distance from the edge of the door to the center of the 0.5- inch spindle hole.
   B. Establish the spindle hole center on the outside door surface by measuring this distance from the edge of the door (compensating for the door edge bevel, if necessary) along the lock horizontal reference centerline and mark vertical centerline for 1 inch in each direction.
   C. Mark horizontal line so as not to extend beyond dial ring.

3. Center punch the hole position onto the outside of the door and drill the 0.5-inch spindle hole through the door.

4. Align the CDX-09 dial ring mounting template on the outside door surface with the lock horizontal reference centerline and the 0.5-inch spindle hole. Tape the template to the door.

5. Center punch the dial ring mounting hole positions (either the horizontal or vertical set of holes) onto the outside of the door, and remove the template.

6. Drill two (2) attaching screw holes (No. 29 drill, 0.136 inch diameter) 1.25 inches deep. DO NOT drill through the door.

7. Tap two (2) #8-32 holes, if required.
Hardware Preparation

Before installing the Rim Exit Device and Outside Lever Trim, it is necessary to:

1. Cut Lever Spindle and Rim Cylinder Tailpiece to length.
2. Determine Rim Exit Device length required and cut device to length and drill.

Note: The electric locking trim fail secure rim device cannot be re-handed.

Details on each of these items follow.

Cut Lever Spindle and Rim Cylinder Tailpiece to Length

1. Position the outside lever trim on the door and measure the Lever Spindle and Cylinder Tailpiece as they extend through the door.
2. If necessary, cut the Lever Spindle to extend beyond inside face of door by 5/8”.
3. If necessary, cut the cylinder tailpiece to extend beyond inside face of door by 5/16” - 3/8”.

Determine Rim Exit Device Length, Cut to Length and Drill End Cap Mounting Hole

1. Determine the Rim Exit Device length.

![Figure 7 - Rim Exit Device Length Calculation](image)

A. Locate the Rim Exit Device vertical reference centerline on the door.
B. Measure the distance “Y” from the Rim Exit Device vertical reference centerline to the door jamb stop surface on the hinge side.
C. Subtract 1” for recommended clearance.
D. Length of Rim Exit Device from vertical reference centerline “X”.

Figure 7 - Rim Exit Device Length Calculation
2. If the Rim Exit Device is longer than “X”, cut the device.
   A. Remove the device channel cover, rotate 180 degrees, and then re-insert it. (U-shaped slot towards touchbar.)
   B. Mark the device channel and channel cover to length “X”.
   
   **Note:** Be sure channel cover is pushed snug to touchbar prior to marking or cutting to size.

   ![Figure 8 - Mark Device Channel and Cover Length](image)

   C. Cut both device channel and channel cover to marked dimension and remove burrs.
   
   **Note:** Factory recommends sawing rather than grind cut to size. Grinding can damage the finish of the device and sawing results in less damage to the device finish.

   ![Figure 9 - Cut Device Channel and Cover](image)

3. Drill end cap mounting hole in device channel.
   A. Remove the device channel cover and drill a 5/16” diameter hole on the device reference centerline 5/16” from the end of the channel as shown in Figure 10.

   ![Figure 10 - Drill End Cap Mounting Hole in Device Channel](image)
Installation

Mount Rim Exit Device and Outside Lever Trim

1. Insert Rim Cylinder into trim plate and secure on opposite side of trim with mounting bracket and two screws as shown in Figure 11. Tighten screws securely.

Note: The Rim Cylinder Mounting Screws may need to be shortened. You may discard the mounting plate that was included with the Rim Cylinder as it is not needed for this installation.

2. Place Outside Lever Trim on door using holes previously drilled.

3. Throughbolt the Rim Exit Device to the Outside Lever Trim using four (4) #10-24 x 1” PPHMS as shown in Figure 12. Do not tighten screws.

4. Locate, mark and drill end cap mounting hole following these steps:
   A. Level the Rim Exit Device
   B. Mark the center of the 5/16” diameter hole at the end of the channel.
   C. Drill a 9/32” diameter hole through the door.
   D. Drill a 3/8” diameter hole on the trim side of the door using the 9/32” diameter hole as a guide.

6. Insert the device channel cover as shown in Figure 13, with the U-shaped slot toward the open end.

7. Install the end cap mounting bracket using the sexbolt and the 1/4”-20 x 3/4” TPHMS mounting screw as shown in Figure 13. Make sure the Rim Exit Device is level. Tighten the mounting screw.

8. Tighten all mounting screws and check for smooth operation.
9. Attach the channel end cap using two #8-32 x 3/8" UFPHMS with nylon patch as shown in Figure 14.

Mount Strike

1. Ensure that the Rim Exit Device centerline has been transferred to the door jamb stop.

2. Refer to Figure 15. Center strike on door jamb stop across Rim Exit Device reference centerline and flush to door surface.

3. Mark top and bottom screw locations, then center punch and drill (and tap if required) for mounting screws.

4. Apply strike to door jamb stop using two #10-24 x 3/4" FPHMS screws.

5. Check Rim Exit Device for smooth operation and secure latchbolt engagement. Adjust strike if required.

6. For third (center) mounting screw on strike, mark location, center punch, drill (and tap if required) hole. Use a #10-24 x 3/4" FPHMS screw to mount.

Figure 14 - Install Channel End Cap

Figure 15 - Mount Rim Exit Device Strike
**Installation Procedure**

1. Install ELT devices per device installation instructions.
2. Install power supply (RDS-2). See Wire Guage Chart below.
3. Complete wiring as indicated on System Schematic.

**Caution:** Ensure that cover is secured on RDS-2 box before applying 115 VAC power.

4. Test operation of ELT devices. (Refer to RDS-2 Specifications on next page.)

**System Schematic**

![System Schematic Diagram]

<table>
<thead>
<tr>
<th><strong>WIRE GAUGE CHART</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>LENGTH OF RUN</td>
</tr>
<tr>
<td>0-100 FT</td>
</tr>
<tr>
<td>101-200 FT</td>
</tr>
<tr>
<td>201-300 FT</td>
</tr>
<tr>
<td>301-400 FT</td>
</tr>
</tbody>
</table>
RDS-2 Specifications

- Solenoid rated for continuous duty (with **RDS**).
- Input voltage required: 115 VAC, 60 Hz, 5 amps to transformer.
- Output voltages:
  - First Device: Terminal #1 and #2; 24V DC impulse; 5V DC continuously after impulse.
  - Second Device: One second delay after first device; Terminal #3 and #4; 24V DC impulse; 5V DC continuously after impulse.
- Dip switch (when on) will hold device(s) retracted for set time period as indicated below:

<table>
<thead>
<tr>
<th>DIP #</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hold Time (seconds)</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>16</td>
<td>32</td>
<td>64</td>
</tr>
</tbody>
</table>

- DIP switches moved to the ON position have a hold time of all ON settings added together. Example: DIP #1 and #2 = 6 seconds hold time. A hold time of less than 4 seconds (DIP #1 only) is not recommended.
- For continuous ELR retraction, turn all DIP switches to OFF position and apply a jumper or other source switch to terminal #7 and #8.
- A green flashing LED indicates that power is applied to the board. A solid green LED indicates that the device(s) are being retracted. An orange LED indicates that the devices are being held in the retracted position. A flashing red LED indicates a short in the wiring between the board and device.

Operational Test for FSE (Fail Secure) Devices

1. With power engaged, the trim will be unlocked.
2. Function the control device or disconnect main power from the RDS-2, the trim will lock.
3. With power disengaged, the trim will be locked. Check to ensure that the key-override feature functions properly by unlocking the trim.
Preliminary Lock Installation

**WARNING:** The electronics in the X-09 are susceptible to damage from Electro Static Discharge (ESD). Make sure you are properly grounded before removing the lock cover and be careful to avoid touching the connectors on the card.

1. Remove the two screws from the lock back cover assembly. Hold the case and pull the cover straight out from the lock case so as not to bend any of the motor pins on the card assembly.

   **Caution:** The drive cam assembly is only retained by the lock back cover assembly. Be careful that it does not fall out when the cover is removed.

2. Remove the drive cam assembly from the lock case assembly.

3. Remove the protective casing from the end of the cables.

4. Refer to Figure 16. Feed the cables through the outer, larger, tube starting from the flared end of the tube. Seat the tube into position on the tube retainer on the back of the lock case assembly. Be careful to keep the cables pulled taut while seating the tube to avoid pinching damage to them.

   **Alternate Method:** Depending on the width of the door, it may be easier to insert the non-flared end of the outer tube through the spindle hole from the inside of the container and feed the cables through the tube. Then seat the flared end of the tube on the tube retainer.

5. Place the 3.5 x 5 x 1/8 inch hardplate against the back of the CDX-09 lock case assembly.

6. Feed the cables and outer tube through the 0.5 inch hole in the door while positioning the CDX-09 and hardplate against the door. Insert and tighten slightly two #10-32 screws nearest the strike opening (top and bottom) to attach the CDX-09 and hardplate to the door.

---

![Figure 16 - Tube-Cable Assembly Relationships](image)
Helpful Hint: If available, another inner tube inserted from the dial ring side, with the cables carefully fed through it, can be very helpful as a guide in feeding the cables through the container wall.

On some containers the only way to complete this step is to retract the bolt. Contact Technical Support for detailed instruction on completing this activity.

7. Loosely attach the lock case assembly to the container wall with two of the four mounting screws, placing them diagonally across from each other.

8. Tighten the lock case mounting screws to hold the lock case in place.

Cutting the Tubes

Warning: The end of the large tube that is to be discarded must be from the plain (unflared) end of the tube. The end of the small tube that is to be discarded must also be from the plain (unnotched) end of the tube.

1. Make sure that the outer tube is properly placed over the lock case tube retainer.

2. While holding the outer tube firmly in its seated position, use a 6 inch scale or ruler to measure 5/16 inch from the container wall and mark the outer tube at this length.

3. Remove the lock case assembly from the container and remove the outer tube for cutting.

4. Assemble the saw blade and wooden saw handle provided. To assemble the saw, grip the saw frame in a vise, just below the neck. Drive the handle fully onto the neck. This will reduce the tendency of the handle to turn on the saw frame when sawing.

Note: This saw is intended only for cutting the tubes. A standard hacksaw should be used to cut the spindle.

5. Insert the tube to be cut into the rubber vise clamp (provided), with the mark just beyond the clamp. Then firmly clamp the rubber vise clamp in a vise. Use the saw to cut the tube where marked. Be careful to keep the cut as straight as possible. Remember the saw only cuts when pushing. Trying to cut while pulling may pull the handle off of the saw blade.

6. The inside and outside of the tubes must be deburred after cutting. Use the stone which is provided for this purpose. Make sure there are no sharp edges on either tube inside and outside so as not to damage the cables.

7. Install the inner tube on the lock case. Feed the cables through the outer tube and install the outer tube on the lock case. Measure and mark the inner tube to be 1/16 to 1/8 inch longer than the outer tube. Remove the inner tube and cut by the same method as described in Step 5.
Warning: The end of the outer tube that is to be discarded must be from the plain (unflared) end of the tube. The end of the inner tube that is to be discarded must also be from the plain (unnotched) end of the tube.

Installation of the Lock

1. Place the inner tube into the lock case tube retainer. Make sure that the cutout in the tube aligns with the cables and allows the tube to seat completely in the tube retainer.

2. Feed the cables through the outer tube from the flared end. Seat the tube into position on the tube retainer on the back of the lock case assembly. Be careful to keep the cables pulled taut while seating the tube to avoid pinching and damaging them.

3. Refer to Figure 17. Feed the cables through the outer, larger, tube starting from the flared end of the tube. Seat the tube into position on the tube retainer on the back of the lock case assembly. Be careful to keep the cables pulled taut while seating the tube to avoid pinching damage to them.

Alternate Method: Depending on the width of the door, it may be easier to insert the non-flared end of the outer tube through the spindle hole from the inside of the container and feed the cables through the tube. Then seat the flared end of the tube on the tube retainer.

4. Place the 3.5 x 5 x 1/8 inch hardplate against the back of the CDX-09 lock case assembly.

5. Feed the cables and outer tube through the 0.5 inch hole in the door while positioning the CDX-09 and hardplate against the door. Insert and tighten slightly two #10-32 screws nearest the strike opening (top and bottom) to attach the CDX-09 and hardplate to the door.

Helpful Hint: If available, another inner tube inserted from the dial ring side, with the cables carefully fed through it, can be very helpful as a guide in feeding the cables through the container wall.

6. Loosely attach the lock case assembly to the container wall with two of the four mounting screws, placing them diagonally across from each other.

7. Verify that the lock case assembly is centered with respect to the Horizontal Reference centerline of the lock.

8. Tighten the lock case mounting screws to hold the lock case firmly in place.
Installation of the Dial Ring

1. Remove the two screws from the dial ring assembly cover and remove the cover.

Note: Make sure the tubes are projecting through the container. If not, the tubes are not seated properly in the lock or they were not cut to the proper length. Correct the problem before proceeding.

2. If necessary, rotate the tube retainer in the dial ring so that the cables come through the notch in the tube retainer.

3. Feed the cables through the tube retainer on the dial ring assembly and place the dial ring assembly over the end of the tubes. Make sure the tubes are seated in the tube retainer on the dial ring assembly.

4. Attach the dial ring to the container with the dial ring mounting screws and tighten to the specified torque.

Installation of the Cables

1. Open the ZIF (Zero Insertion Force) seal cover and move the ZIF connector locking actuators outward to their open position.

2. Plug the cables into the ZIF connectors with the bright metal tabs on the cables facing toward the circuit board to which the ZIF connectors are mounted. Push the cables into the connectors as far as they will go.

3. Close the ZIF locking actuators to lock the cables in place.

4. Close the ZIF seal cover. When closing, be sure the tenons in the seal cover align with the holes in the coordinating piece of the seal cover.

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**Diagram:**

- LCD BASE
- SEAL COVER
- ACTUATOR
- 4 CONDUCTOR ZIF CONNECTOR
- 5 CONDUCTOR ZIF CONNECTOR
- BRIGHT METAL TABS
- FLEX CABLE
- TOP VIEW
- CLOSE ACTUATOR WHEN CABLE IS COMPLETELY INSERTED IN CONNECTOR
- OPEN POSITION
- CLOSED POSITION
- PCB

**Legend:**

- LCD and ZIF connectors
Installation of Generator Cable and Cable Guides

1. Place the generator cable into the dial ring housing recess containing a post used for positioning the cable. The hole in the cable must be positioned over the post on the dial ring, and the five gold tabs must be exposed.

2. The Zebra connector and Zebra connector housing are assembled at the factory but may come apart during shipment. If so, insert the Zebra connector back into the Zebra connector housing before proceeding.

**CAUTION:** The Zebra connector is an electrical connector. Keep it clean!

3. Place the generator Zebra connector and connector housing assembly over the generator cable, and press it into the recess. The hole in the Zebra connector housing must be positioned over the post in the dial ring. Be sure that the black Zebra connector housing is positioned.

4. Install at least one of the stick-on cable guides in an appropriate position to restrain the cables.

5. Route the cables through the cable guide that was just installed.

6. Depending on the thickness of the container, additional cable guides may be necessary to ensure the cables are sufficiently restrained. Install additional guides as needed, and route the LCD and generator cables through them to ensure that the cables do not get routed through the “KEEP CLEAR” area, over the Zebra connector, or near where the geared end of the dial hub will project through the dial ring cover.

Installation of the Dial Ring Cover

1. Align the dial ring cover with the dial ring so that the generator will seat into the five o’clock position and the four aligning lugs align with the corresponding slots in the dial ring.

2. Carefully slide the dial ring cover into the dial ring.

3. Hold the dial ring cover in place and tighten the two dial ring cover mounting screws to the specified torque.

Cutting and Installing the Spindle

1. Ensure that the lock bolt is extended and remove the cam from the lock case.

2. Check the stepper motor gear positioning.
Note: To avoid unnecessary damage, always make sure that the motor gear is in its proper detent position when inserting the drive cam. If it is not, a pencil may be used to move it to the proper position. This must be done with the lock bolt extended.

3. Slide the spindle through the cam and reinsert the drive cam assembly into the lock case and the dial ring cover until the spindle nut is snug against the cam and the cam is seated against the lock case. Note that the square portion of the spindle must be aligned with the square hole in the lock case.

Service Tip: If it becomes necessary to remove and reinstall the spindle nut during lock installation or maintenance, the drive cam can be secured by carefully placing a #1 Phillips screwdriver between the cam and the lock case.

4. Slide the dial hub onto the spindle, turning the hub slightly to align the generator drive gear teeth. Hold the drive cam assembly in place while installing the dial hub.

5. Snug down one setscrew to hold the dial hub in place.

6. Mark the spindle flush to the dial hub.

7. Loosen the setscrew and remove the hub.

Alternate Method: Instead of removing the hub, you may leave it on, using the hub as a vise to hold the spindle while cutting.

8. Carefully cut the spindle so that it will be flush to the dial hub after installation.

Caution: The spindle should not extend past the dial hub once installed but may be recessed up to 1/32 inch below the surface of the hub. If it extends past the dial hub, it must be filed to flush.

9. Remove all burrs from the end of the spindle.

Installation of the Dial Hub and Dial

1. Apply lubricant to the hub bearing surface.

2. While holding the drive cam and spindle in their proper positions in the lock case assembly inside the container, push the dial hub assembly onto the spindle.

3. Make a bend in the dial hub locating gage at its midpoint. This will keep it from acting as a spring as the hub is positioned for locking to the spindle.
4. Place the Dial Hub Locating Gage over the spindle and between the dial hub assembly and the bushing in the dial ring cover. This sets up an initial 0.010 inch end play.

5. Push the dial hub and the spindle assembly toward each other. While maintaining a constant pressure on them, SECURELY tighten the setscrews in the dial hub assembly to 17-20 inch-pounds of torque (a minimum of 1 inch deflection of the handle of the hex key). Tighten the inner setscrew first.

**Caution:** *Tighten in a downward motion in case the hex key should break.*

6. Remove the dial hub locating gage.

7. Apply lubricant to the retaining ring on the dial hub assembly and position the retaining ring so that an equal amount of it is consistently exposed around the hub. Also, apply grease from the lubricant tube to the entire ramp area just inside the back of the dial and also to the inner surface of the 5-sided formed clutch spring within the dial.

**Note:** *Ensure that the retaining ring gap is aligned with the setscrews and that an equal amount of the retaining ring is exposed around the hub so the dial can slide easily into place on the hub without interference from the retaining ring.*

8. Assure the the 5-sided flat spring is fully recessed in the dial with the spring gap aligned with the internal key of the dial.

9. Carefully align the dial assembly such that the 5-sided formed spring matches the flats of the dial hub assembly. Holding the dial square to the spindle, apply pressure to the dial until the retaining ring seats in the dial.

**Note:** *You should not be able to pull the dial away from the dial hub assembly. The dial clutch should provide a slip torque of 7 to 25 inch pounds.*
Attach Back Cover Assembly for Testing

1. Install the back cover assembly with the two mounting screws in order to test the operation of the lock. Do not install the cover lock pin at this time.

**Caution:** Take care to align the connectors and the baffle to the hole in the cover.

2. Verify the operation of the lock as described on the following page under INSTALLATION COMPLETION CHECKLIST.

3. Check the operation of the lock by verifying the following:
   - Ensure that the dial turns freely without scraping or binding.
   - Ensure that all screws have been securely tightened.
   - Dial the combination (it has been factory set to 50-LEFT, 25-RIGHT, 50-LEFT). Your lock should dial freely without scraping or rubbing and should open when the correct combination has been dialed.

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Final Installation of the Back Cover Assembly

**WARNING:** Failure to verify that the lock is operational before installing the cover lock pin assembly may cause a lock out condition.

1. Open the lock. Leave the bolt in the fully retracted position and remove the back cover assembly.

2. Insert the cover lock pin through the back cover.

3. Install the cover lock spring and retainer clip onto the cover lock pin. The “fingers” of the retainer clip should be angled away from the cover lock spring, and the retainer clip must be seated in the groove of the cover lock pin.

**Helpful Hint:** A small hammer and the cut off piece from the inner tube can be used to install the spring and clip.

**Caution:** Do not push the clip retainer past the small groove in the cover lock pin. If the clip is not located in the pin groove, it can interfere with pulling the bolt or prevent withdrawal of the pin for normal back cover removal.

4. Record the lock serial number in a secure location.

5. Make sure the bolt is fully retracted and reinstall the back cover with the cover lock pin in place.

**Caution:** Take care to align the connectors, the baffle to the hole in the cover, and the cover lock pin to the keyhole slot in the bolt rack.

6. Tighten the mounting screws to the specified torque.

7. After restoring the bolt to the extended position, verify that the cover lock pin is fully recessed into the back cover. If not, gently wiggle the cover lock pin to seat it.
Cable Assemblies

These steps involve attaching the two stainless steel mechanical cable assemblies to the lock and Rim Exit Device chassis, respectively; connecting these cable assemblies; and adjusting the cable length to achieve proper timing of the high security lock bolt retraction relative to the Rim Exit Device latchbolt.

Install Lock Cable Assembly

1. Locate the correct lock cable assembly needed for the handing of your installation. The bag labeled with part number 114048 contains the LHR lock cable assembly. The bag labeled with part number 114047 contains the RHR lock cable assembly. The lock cable assembly has a brass ball-end plug on one end and a turnbuckle secured by a brass ball-end plug on the other end.

Note: The LHR lock cable assembly is approximately 1/4 inch shorter than the RHR lock cable assembly.

2. Detach the lock pulley cover from the pulley assembly by removing the #6-32 x 1/4” flat head screw.

3. Refer to Figure 18 or Figure 19 depending on the handing of your installation. Insert the brass ball-end plug of the lock cable assembly into the face of the lock pulley and thread the cable counterclockwise around the pulley. Position the lock pulley cover over the locating pin on the pulley and secure the cover to the pulley with the #6-32 x 1/4” flat head screw.

Figure 18 - Lock Cable Assembly - RHR

Figure 19 - Lock Cable Assembly - LHR
Install Bellcrank Cable Assembly

1. Locate the bellcrank cable assembly. It has a strap fork secured by a ball and shank on one end and a brass threaded plug with a brass nut on the other end.

2. Refer to Figure 20 or Figure 21 depending on the handing of your installation. Spread the strap fork over the upper bellcrank of the Rim Exit Device chassis and align the strap fork holes with the hole in the bellcrank.

3. Secure the strap fork to the bellcrank using the #8-32 shoulder screw and #8-32 locknut. The shoulder screw is inserted from the outside and the locknut is secured on the inside. Tighten the locknut until it bottoms against the shoulder of the screw.
Connect Cable Assemblies

1. Refer to Figure 22 or Figure 23 depending on the handing of your installation. Move the brass nut away from the open end of the brass threaded plug on the bellcrank cable assembly. Turn the brass threaded plug into the turnbuckle on the lock cable assembly until approximately half of the threaded plug is inside the turnbuckle.

2. Do not tighten the brass nut on the threaded plug at this time.

Figure 22 - Connect Lock and Bellcrank Cable Assemblies - RHR

Figure 23 - Connect Lock and Bellcrank Cable Assemblies - LHR
Adjust Cable Length

The effective cable length may be changed by turning the brass threaded plug into and out of the turnbuckle. The cable length must be adjusted so that as the push bar of the Rim Exit Device is depressed, the CDX-09 bolt is fully retracted and latched back just before the Rim Exit Device latchbolt clears its strike. Refer to Figure 24 and Figure 25 in preparation for adjusting the cable length. The proper sequence of adjustment is:

1. With the door open, slowly depress the push bar and determine if the CDX-09 bolt retracts and latches back prior to maximum depression of the push bar. If the CDX-09 bolt does not retract and latch back, slightly shorten cable and recheck.

2. Close the door and slowly depress the push bar until the Rim Exit Device latchbolt just clears its strike. Check to see if the CDX-09 bolt is fully retracted and latched back at this point.

*If not fully retracted and latched back:* Shorten the cable length until the CDX-09 bolt retracts and latches back just before the Rim Exit Device latchbolt clears its strike.

*If fully retracted and latched back:* With the door open, depress the push bar until the CDX-09 bolt retracts and latches back. Depress the CDX-09 bolt reset latch to allow the CDX-09 bolt to extend. Check to see if the pulley restores clockwise sufficiently to prevent the CDX-09 bolt from being pushed back. (A thin-blade screwdriver may be inserted between the end of the bolt and the bolt guard for the purpose of pushing back on the bolt.) If the CDX-09 bolt can be pushed back, slightly increase the cable length and recheck the CDX-09 bolt latching status by following the directions in Step 2 above. If necessary, needle nose pliers may be used to preset the “curl” to the pulley end of the cable.

3. Tighten the brass nut on the threaded plug against the turnbuckle.

4. Adjust the CDX-09 strike such that the throat of the strike has minimum clearance of the bolt guard when the door is contacting the jamb.

5. Mark or transfer punch the locations of the remaining three (3) flat head screw locations for the CDX-09 strike. Drill #21, 0.159 inch diameter and tap #10-32 to install flat head machine screws. (Dril #25, 0.149 inch diameter to install flat head thread forming screws.)
Covers

Install Chassis Cover

1. Locate the chassis cover and plastic cover insert.
2. Orient the chassis cover as it will be installed, based on door handing, and slide the plastic cover insert into the bottom of the chassis cover.
3. Position the chassis cover over the Rim Exit Device, aligning the cover cutouts to fit over the chassis. Locate the cover flush to the surface of the door and bias the cover away from the door edge.
4. Secure the chassis cover to the Rim Exit Device chassis using four (4) #8-32 x 1/4” UFPHMS black flat head screws.

Install Lock Cover

1. Locate the correct lock cover based on door handing. (Both a RHR and a LHR lock cover are included in the Rim Exit Device box.)
2. Position the lock cover over the lock cover mounting brackets. Locate the cover flush to the surface of the door and bias the cover away from the door edge.
3. Secure the lock cover to the lock cover mounting brackets using four (4) #8-32 x 1/4” UFPHMS black flat head screws.