

# Mortise Lockset IN100 with Aperio™ Technology Installation Instructions

**Corbin  
Russwin**

**ASSA ABLOY**

FM403 10/18

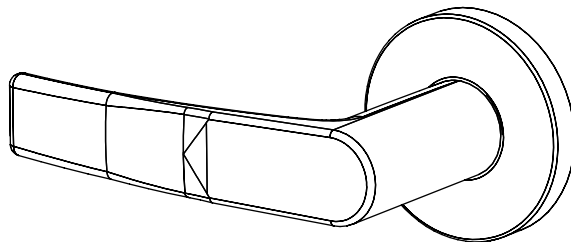
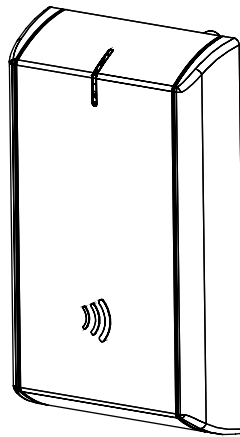
## Attention Installer

Please read these instructions carefully to prevent missing important steps.

Please Note: Improper installations may result in damage to the lock and void the factory warranty.

Important: The accuracy of the door preparation is critical for proper functioning and security of this lock.

Misalignment can cause premature wear and a lessening of security.



### **WARNING**

This product can expose you to lead which is known to the state of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

08/2018

For Technical Assistance call Corbin Russwin at 1-800-810-WIRE (9473)

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## 1) Warning

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced technician for help

The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met. This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareillage numérique de la classe B répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.



To comply with "Fire Listed" doors, the batteries must be replaced with alkaline batteries only.

To avoid possible damage from electrostatic discharge (ESD), some basic precautions should be used when handling electronic components:

- Minimize build-up of static by touching and/or maintaining contact with unpainted metal surfaces such as door hinges, latches, and mounting plates especially when mounting electronic components such as readers and controllers onto the door.
- Leave components (reader and controller) protected in their respective anti-static bags until ready for installation
- Do not touch pins, leads or solder connections on the circuit boards



## 2) General Description

The Corbin Russwin® IN100 mortise lock with Aperio™ Technology makes it easy and cost-effective to bring access control to more doors. It uses local wireless communication between the lock and an Aperio hub to connect to an access control system, eliminating the greatest cost and inconvenience of traditional access control – the wiring at the door. The IN100 utilizes HID® multiCLASS SE® technology; it supports heightened identity security and multiple credentials, including mobile access.

All technology features are supported by the physical security of Corbin Russwin ANSI/BHMA Grade 1 hardware - quality components that provide high security, performance and durability.

## 3) Specifications / Features

### Hardware Specifications

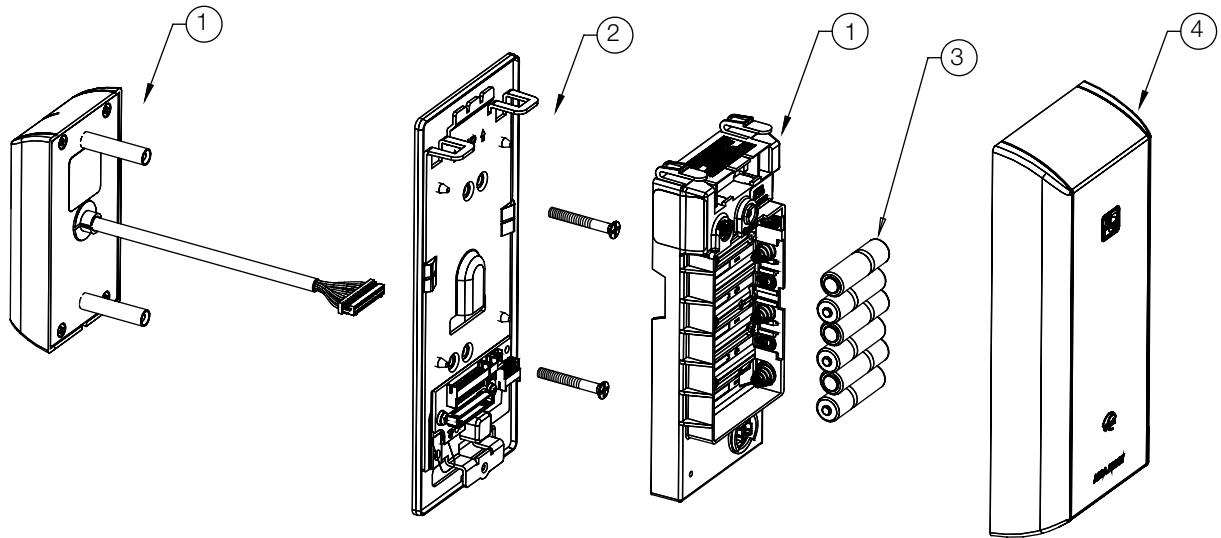
- Latch – Stainless Steel (Easily field reversible without disassembling lock body)
- Deadbolt – Stainless Steel
- Auxiliary Latch – Stainless steel, non-handed
- Door Thickness – 1-3/4” Standard; can be furnished for other door thicknesses upon request. Consult factory.
- Case – 12 gauge heavy duty wrought steel
- Outside lever controlled by reader or key retracts latch
- Inside Lever produces REX (request to exit) signal and retracts latch and deadbolt\*
- UL fire listed
- May be used for both indoor and exterior applications
- A weather-protective gasket is required for exterior applications

### Electronic Specifications

- Input Power: DC 9V, 1.5A (6 AA alkaline batteries)
- Optional hard-power 12VDC to 24VDC
- HID® multiCLASS SE® technology offers support for the following credentials:
  - High Frequency (13.56 MHz):
    - HID iCLASS®
    - HID iCLASS SE® (SIO-enabled)
    - HID iCLASS® Seos™
    - HID MIFARE® SE
    - HID DESfire® EV1 SE
    - MIFARE Classic
    - DESfire EV1
  - Low Frequency (125 kHz):
    - HID Prox®, AWID, EM4102
  - NFC-enabled Mobile Phones
- Utilizes IEEE 802.15.4 wireless communication
- Multiple time zone and holiday access scheduling
- First-in unlock or automatic unlock configuration, based on specified time schedule
- Uses AES 128-bit wireless encryption\*\*
- Privacy button

\*\*For specific security information, please contact your local ASSA ABLOY Door Security Solutions sales consultant or call 800-810-WIRE.

## 4) Product Illustrations



ITEM	PART NUMBER/ORDER STRING	DESCRIPTION	COLOR/TRIM	QTY
1	IN-100-EM01[locktype]*-IP-B	HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESfire® EV1 SE, HID Prox®, NFC-enabled mobile phones	Black	1
	IN-100-EM01[locktype]*-IP-W	HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESfire® EV1 SE, HID Prox®, NFC-enabled mobile phones	White	1
	IN-100-EM01[locktype]*-IP-MB-[finish]**	HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESfire® EV1 SE, HID Prox®, NFC-enabled mobile phones	Black with metal trim	1
	IN-100-EM01[locktype]*-IP-MW-[finish]**	HID iCLASS®, HID iCLASS SE® (SIO-enabled), HID iCLASS® Seos™, HID MIFARE® SE, HID DESfire® EV1 SE, HID Prox®, NFC-enabled mobile phones	White with metal trim	1
	IN-100-EM01[locktype]*-IPS-B	All credentials supported by the IP option plus MIFARE Classic and DESfire EV1	Black	1
	IN-100-EM01[locktype]*-IPS-W	All credentials supported by the IP option plus MIFARE Classic and DESfire EV1	White	1
	IN-100-EM01[locktype]-IPS-MB-[finish]**	All credentials supported by the IP option plus MIFARE Classic and DESfire EV1	Black with metal trim	1
	IN-100-EM01[locktype]-IPS-MW-[finish]**	All credentials supported by the IP option plus MIFARE Classic and DESfire EV1	White with metal trim	1
2	820F558	Inside Mounting Kit (mounting plate & hardware)		1
3	N/A	AA battery		6
4	820F489	Inside Escutcheon	Black	1
	820F499	Inside Escutcheon	White	
	820F525 [finish]**	Inside Escutcheon	Black with metal trim	
	820F535 [finish]**	Inside Escutcheon	White with metal trim	
5	FM355	Field prep template (not shown)		1
6	T31202	Door manufacturers template (not shown)		1
--	FM403	Instructions (this manual)		1

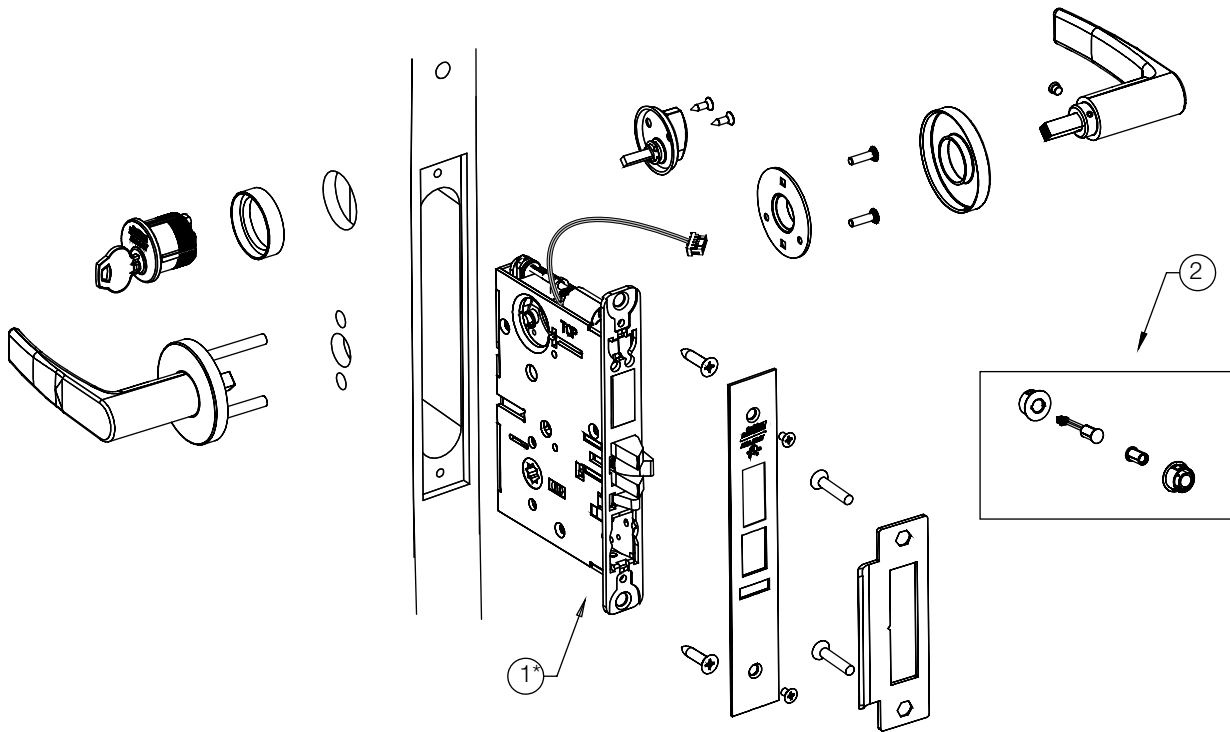
\* ML20133/36 (example: IN-100-EM01ML20136-IP-B)

\*\* Specify finish

## 4) Product Illustrations (Continued)

Tools Required:

- Phillips Screw Driver #2, #3
- Flat Blade Screw Driver (Standard size)
- 1/8" Security Allen Wrench (supplied)
- 7/64" Allen Wrench (supplied)



1	784F848[handing]*26D	ML20133/ML20134 Lock Case (No Deadbolt)**	1
	784F858[handing]*26D	ML20135/ML20136 Lock Case (With Deadbolt)**	
2	820F609	Door Position Switch Kit (SPDT)	1

\*Replace with handing (L, LR, R, RR)

\*\*Escape Return functionality is not available with the IN100 ML201xx mortise lock.

For parts not listed, refer to ML2000 Parts and Service Manual

## 5) Installation Instructions

### 1. Verify Hand and Bevel of door

Illustrations shown are as viewed from the outside or secure side of opening.

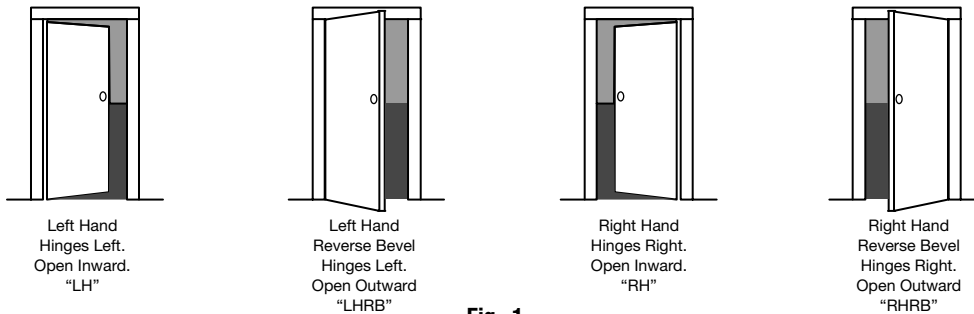


Fig. 1

### 2. Door Preparation

Prep door according to supplied door marker (FM355). For door manufacturer templates visit [www.corbinruswin.com](http://www.corbinruswin.com) and reference template # T31202.

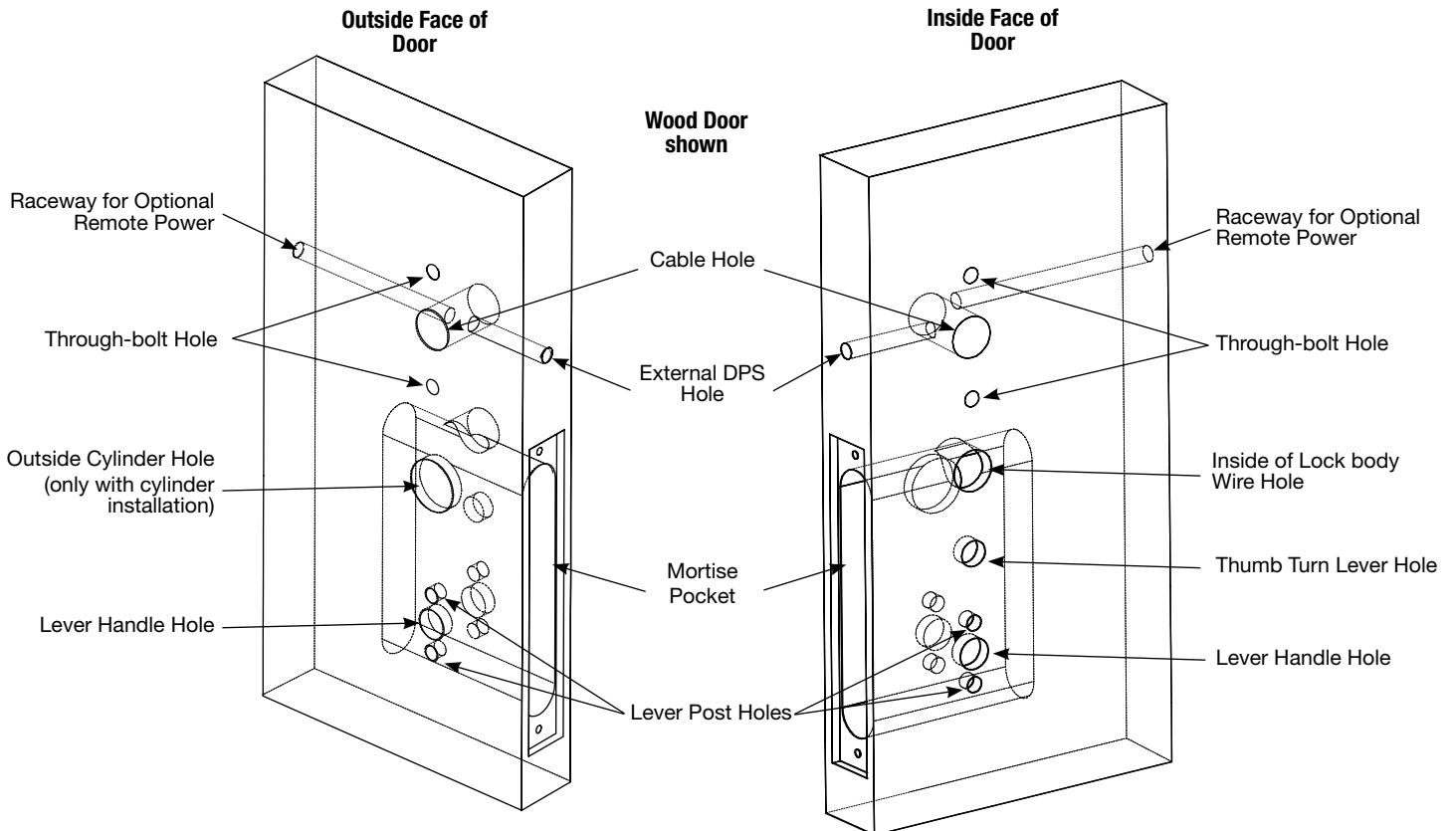


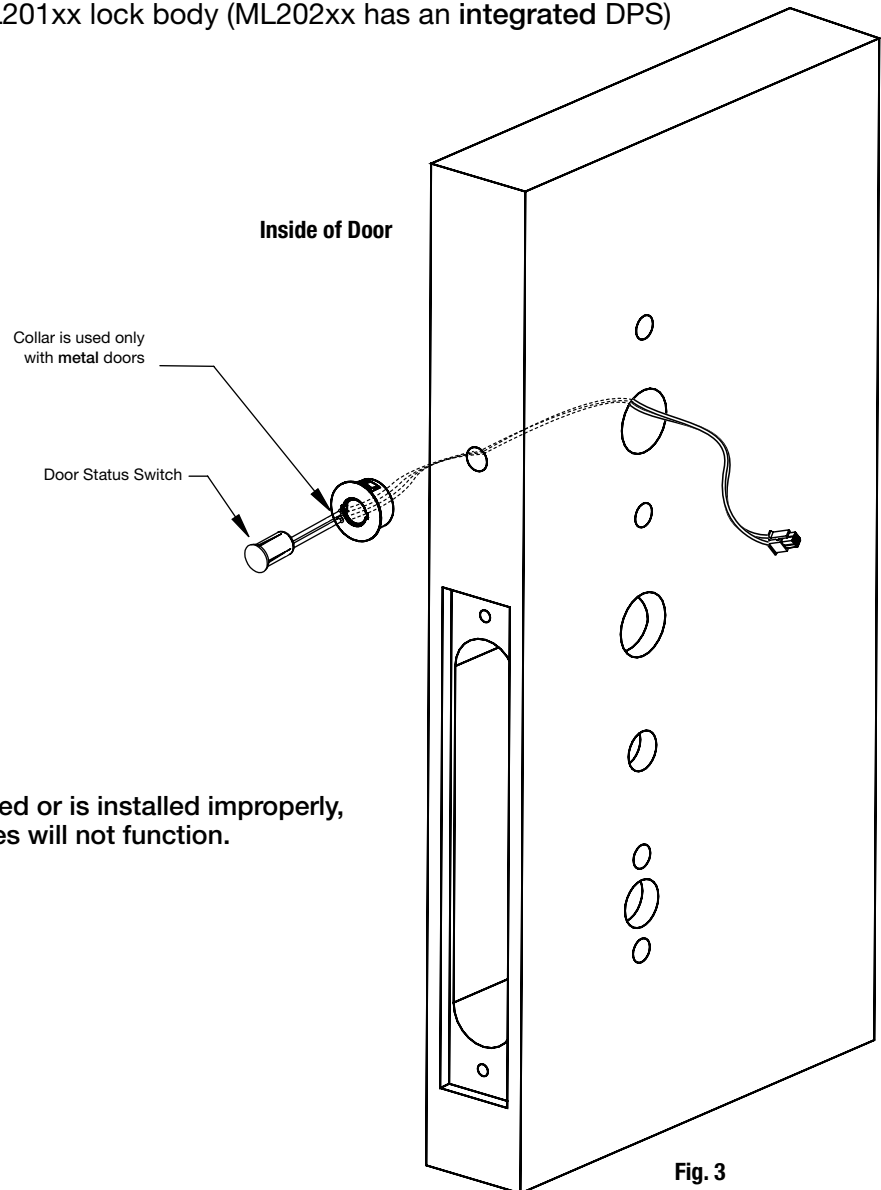
Fig. 2

## 5) Installation Instructions (Continued)

### 3. Install Door Position Switch (DPS)

- a. Push wires through raceway toward lock prep.
- b. Push DPS firmly into place by hand.  
Note: **DO NOT TAP SWITCH WITH ANY TOOL.**
- c. Install magnet into door frame. Push firmly into place by hand.  
See instruction A7983.

\*Only required on the ML201xx lock body (ML202xx has an integrated DPS)

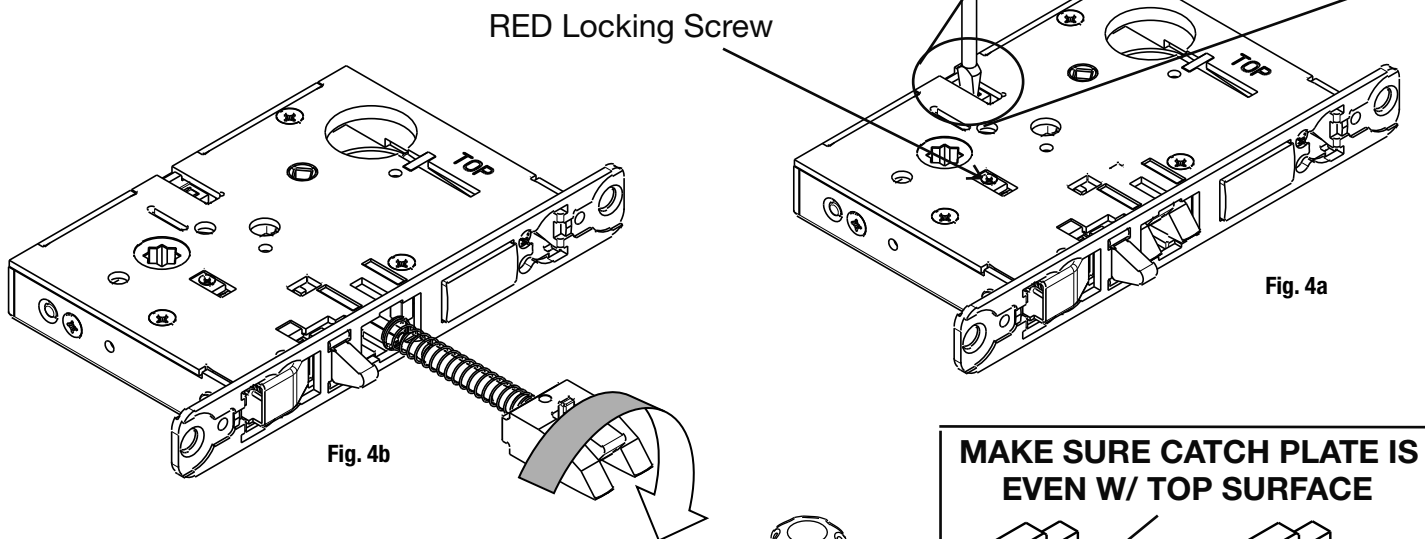


**CAUTION:** if DPS is not installed or is installed improperly, door status monitoring features will not function.

## 5) Installation Instructions (Continued)

### 4. Lock Handing Instructions

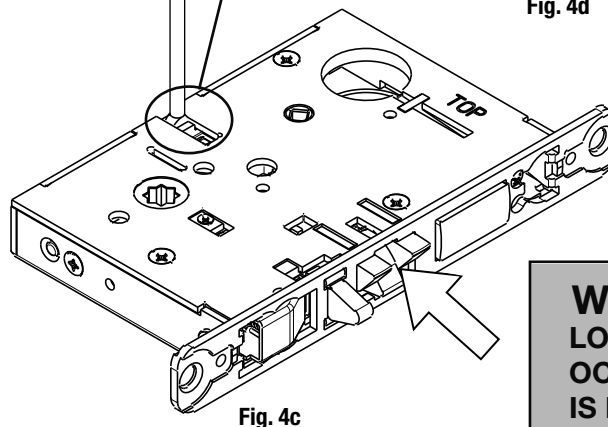
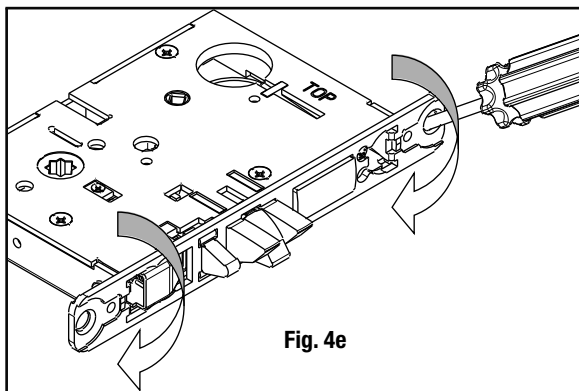
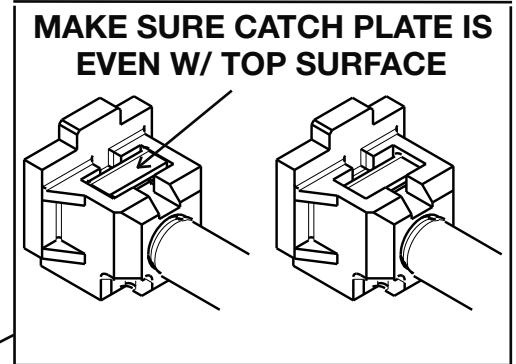
- a. Move the Red locking screw to side of lock-body being locked (Fig. 4a)
- b. Push in latch then depress catch plate with screw driver (Fig. 4a)
- c. Pull latch out of lock-body and turn latch over (Fig. 4b)



- d. Push in latch while holding screw driver behind latch tail (Fig. 3)

Note: Push in latch until catch plate is no longer depressed (Fig. 4)

- e. Rotate lock front to match bevel of door as shown (Fig. 5)



**WARNING:**  
LOCK-IN CAN OCCUR IF LATCH IS NOT PROPERLY INSTALLED



## 5) Installation Instructions (Continued)

### 5. Install Lock Body in Door:

- Feed wires through 1-5/16" diameter hole on INSIDE of door while installing lock body (Fig. 5a).
- Pull wires through hole while inserting lock body. DO NOT push wires back into cylinder hole (Fig. 5b).  
**Important: Door must remain open during installation. Use door stop.**
- Install, but do not tighten two #12 x 1" combination screws through lock body (Fig. 5a).

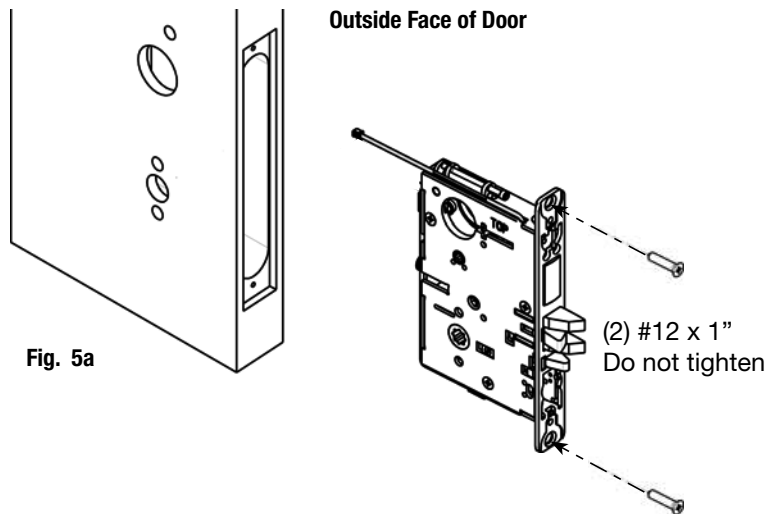


Fig. 5a

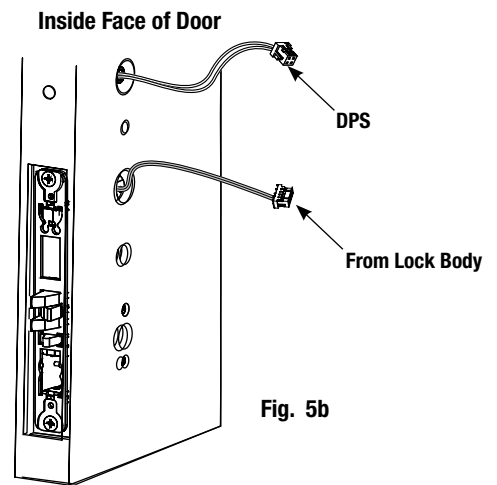


Fig. 5b

### 6. Install Cylinder:

- Slide cylinder through collar. Thread cylinder into lock body (Fig. 6a).  
**Note: Make sure cylinder is oriented correctly (Fig. 6a1).**
- Tighten cylinder clamp using 7/64" allen wrench (Fig. 6b).
- Turn the key to make sure that lock functions correctly (latch, deadbolt, and key).

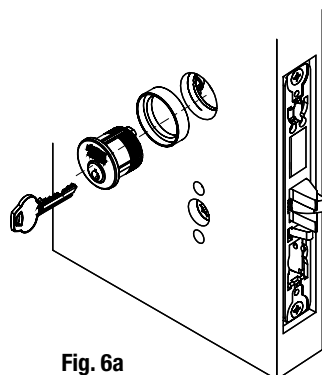


Fig. 6a

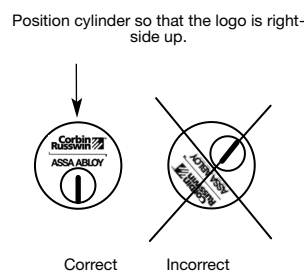


Fig. 6a1

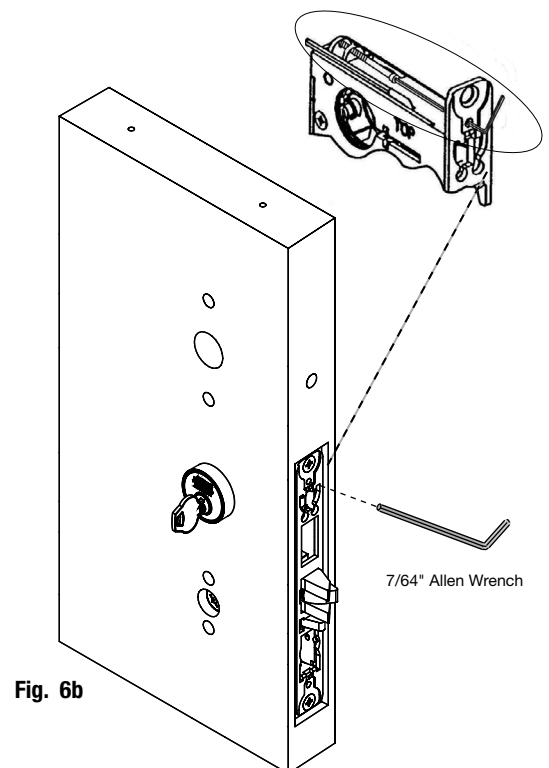


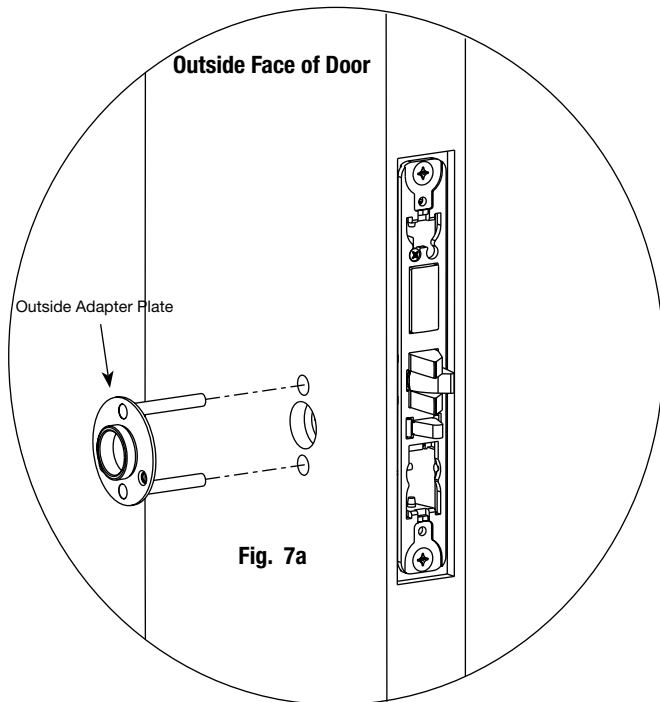
Fig. 6b

## 5) Installation Instructions (Continued)

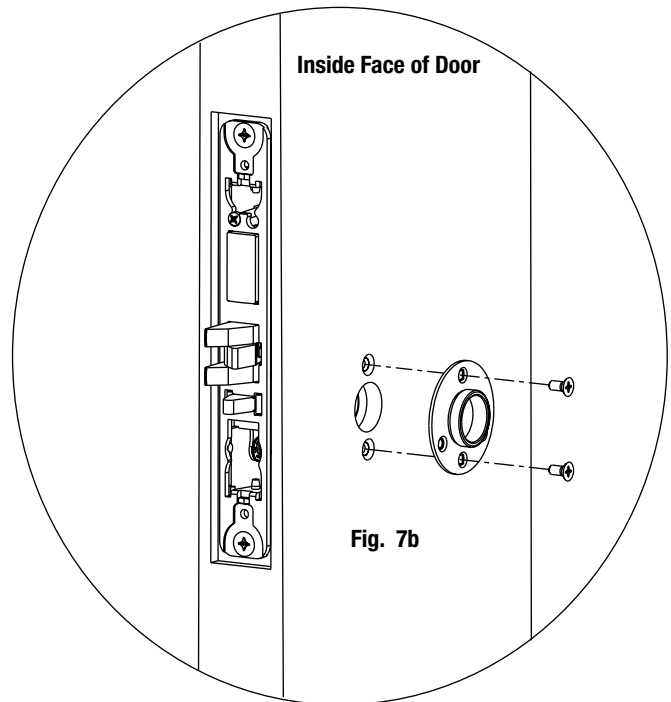
### 7A. Install Standard Lever Trim:

(Refer to Step 7b on following pages for Museo® Trim):

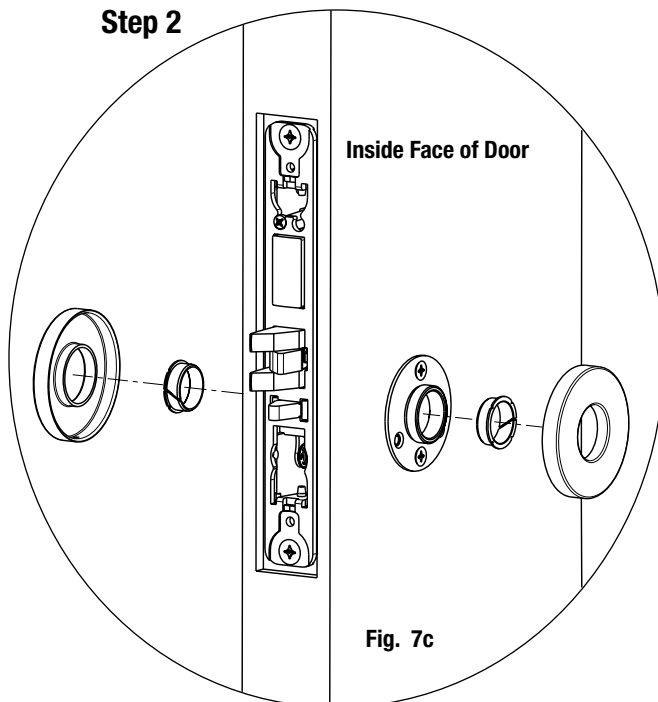
#### Step 1a



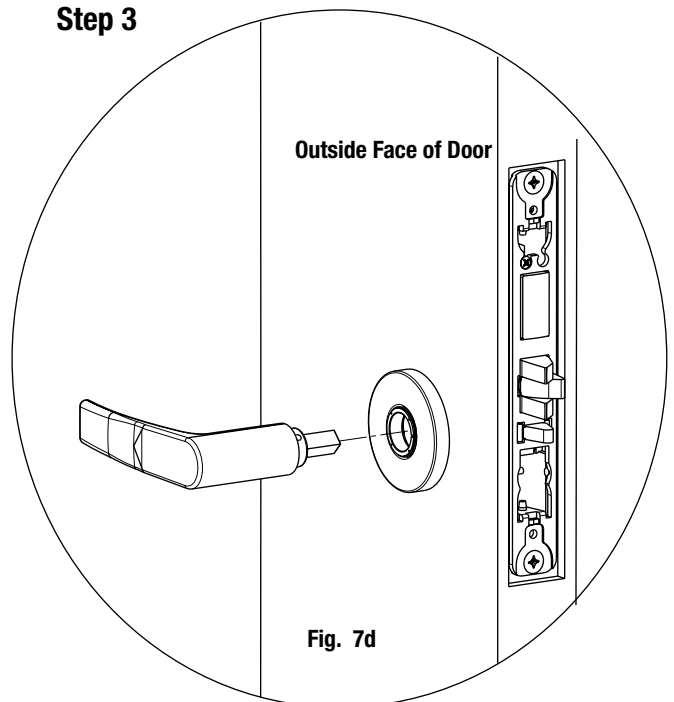
#### Step 1b



#### Step 2

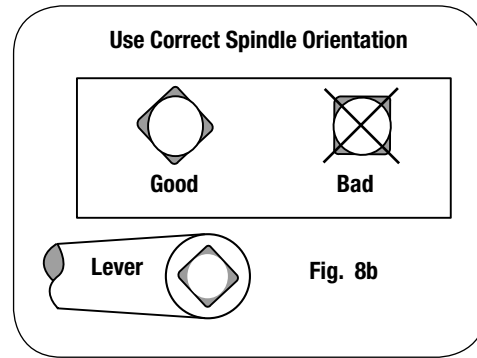
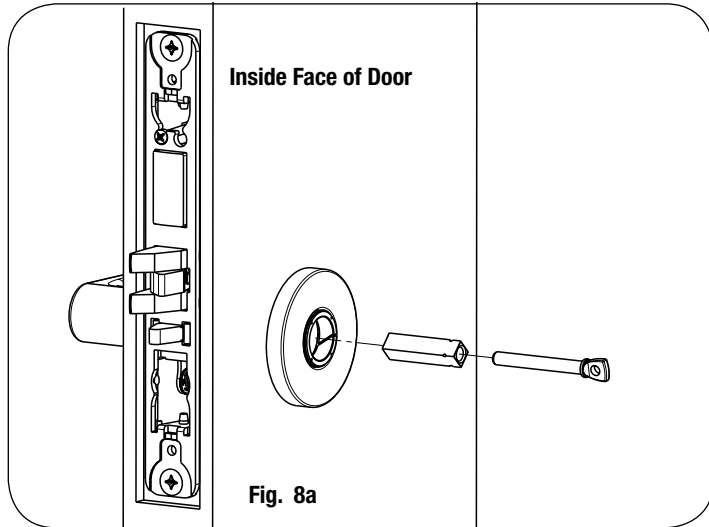


#### Step 3

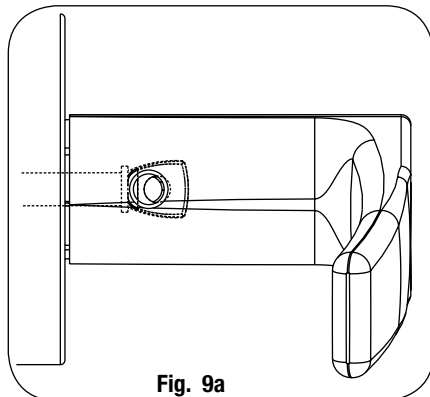


## 5) Installation Instructions (Continued)

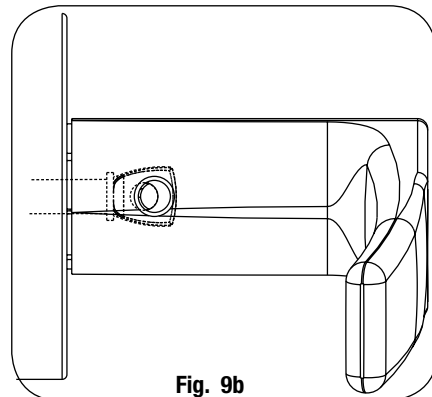
### Step 4



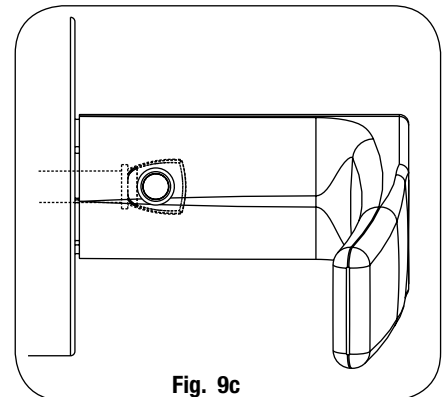
### Step 5 Align adjustment bolt with threaded hole in lever



Adjustment bolt needs to be threaded in farther.



Adjustment bolt needs to be unthreaded.

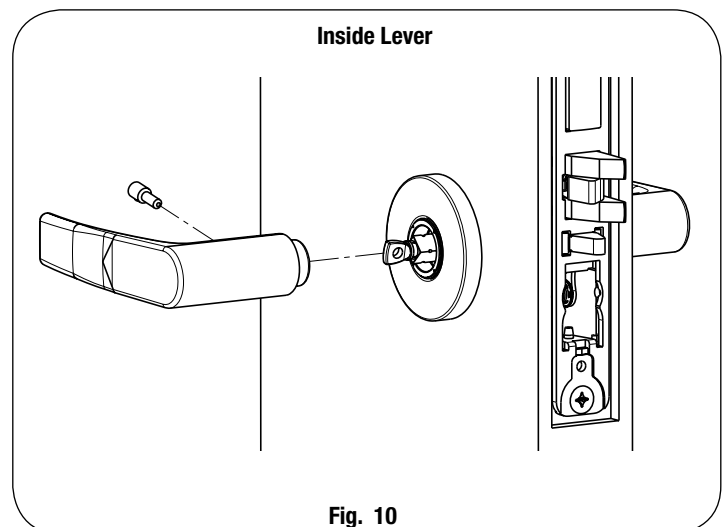


Adjustment bolt fully aligned.

### Step 6 Install I/S lever with set screw:

Notes:

- Unthread adjustment bolt approximately four turns for a good starting point (after being fully tightened).
- Make sure O/S lever is fully inserted into adapter plate before aligning adjustment bolt.



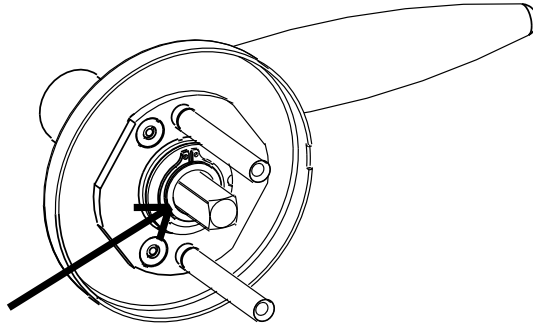
## 5) Installation Instructions (Continued)

### 7B. Install Museo® Trim:

**Step 1** Thread adapter plate hub into lever and fully tighten

**Step 2** Align adapter plate hub with square hole in lever; keeping hub as tight as possible

NOTE: Spindle can be used to help thread hub into lever



Adapter Plate Hub

Fig. 11a

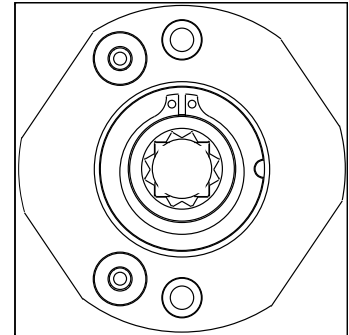


Fig. 11b

**Step 3** Install O/S trim assembly and inside adapter plate

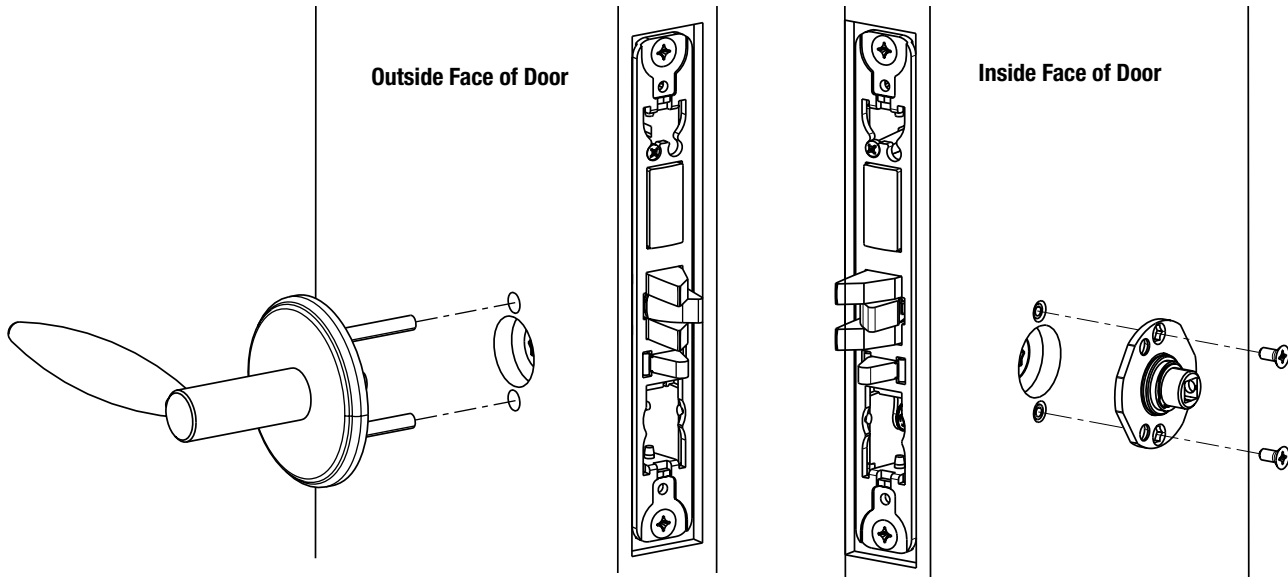
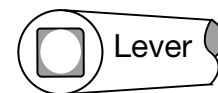


Fig. 12

#### Use Correct Spindle Orientation



## 5) Installation Instructions (Continued)

### Step 4 Install Spindle and Rose:

- a. Align studs on rose with bushings in adapter plate.

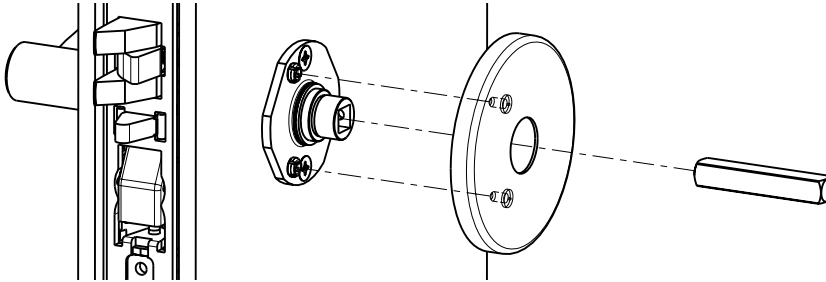


Fig. 13a

### Step 5 Install I/S lever with set screw:

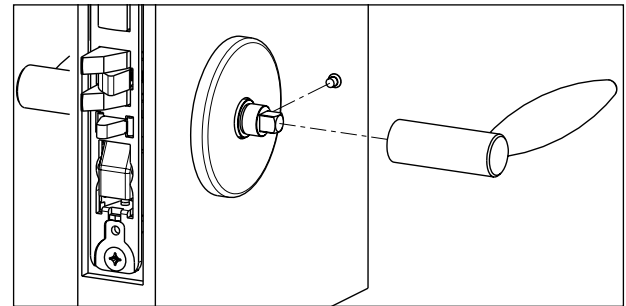


Fig. 13b

### Step 6 Install Armored Front:

- a. Tighten (2) screws through lock body.
- b. Attach armored front with two #8 x 1/4" screws (Fig. 13c).

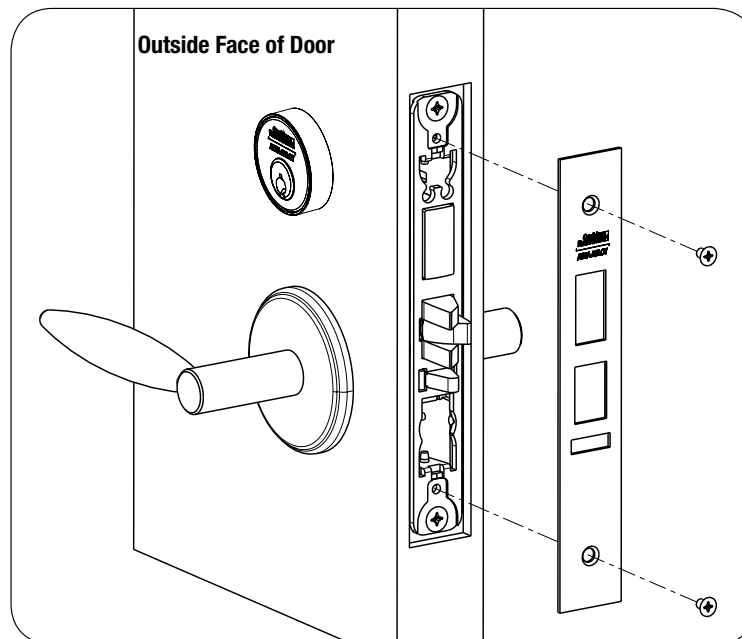


Fig. 13c

## 5) Installation Instructions (Continued)

### 8. Install Turn Piece:

#### Step 1

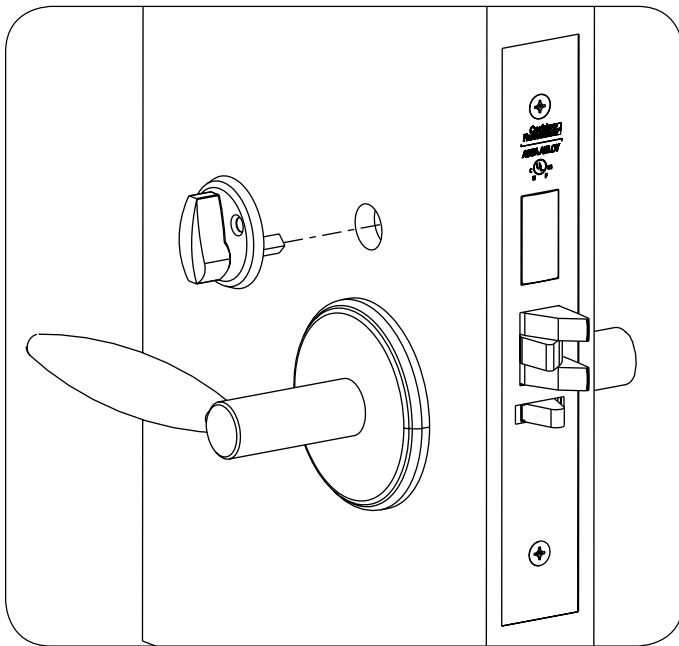


Fig. 13d

#### Step 2

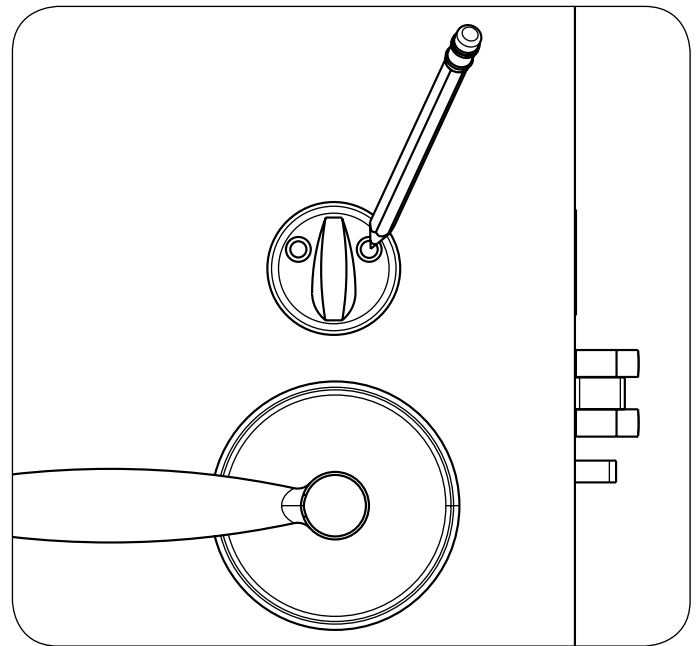


Fig. 13e

#### Step 3

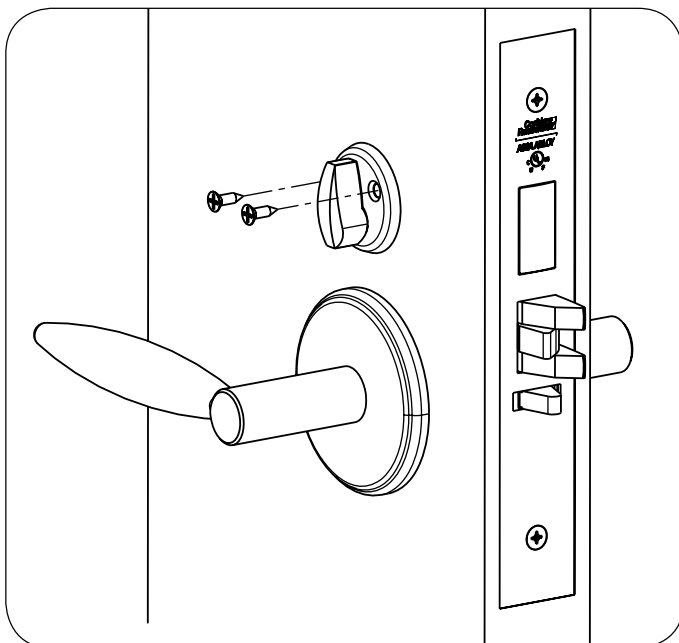


Fig. 13f

## 5) Installation Instructions (Continued)

### 9. Install Outside Reader and Inside Mounting Plate:

- a. Orient the reader so the LED lens is at the top.
- b. Feed the reader harness through the door (from outside to inside).
- c. Install the reader to the outside of door by aligning the mounting posts with the door preparation holes. Hold the reader flush against door while ensuring proper alignment.

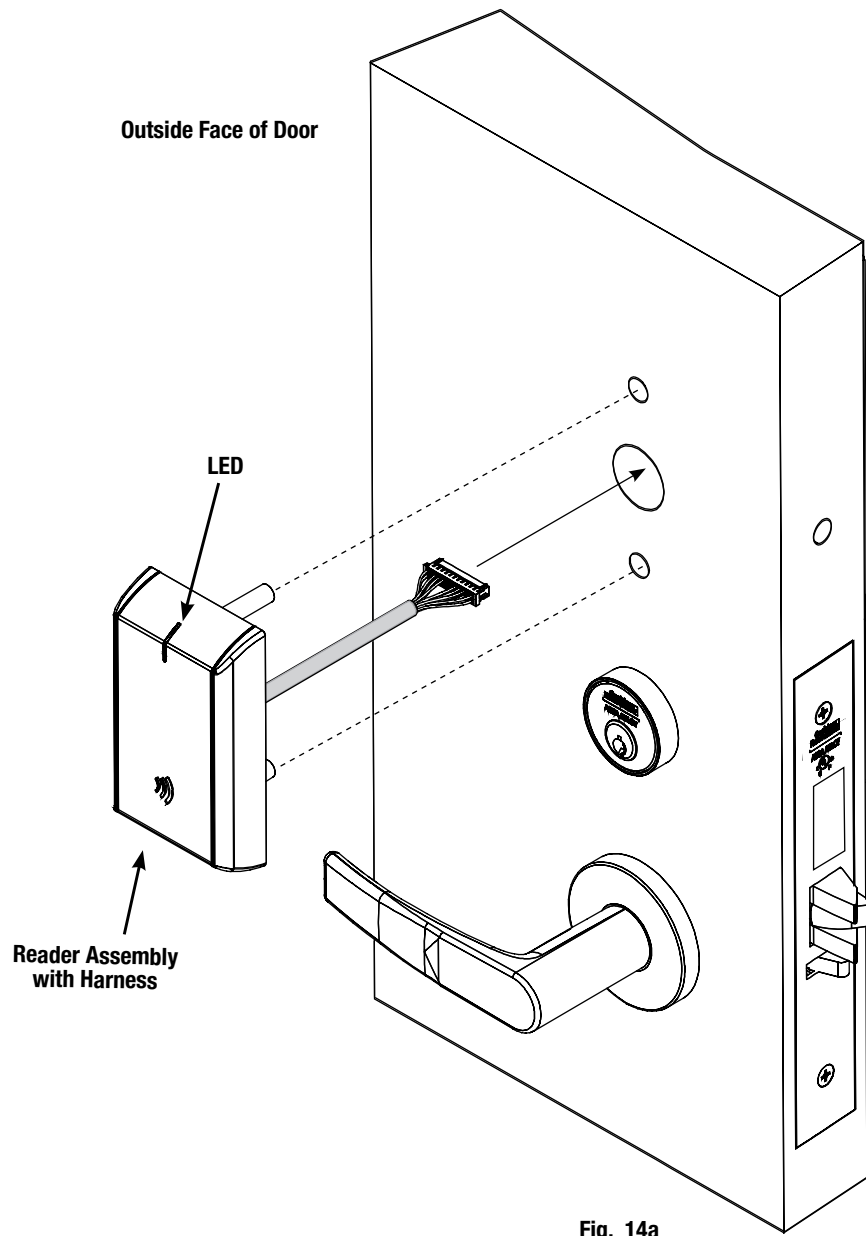


Fig. 14a

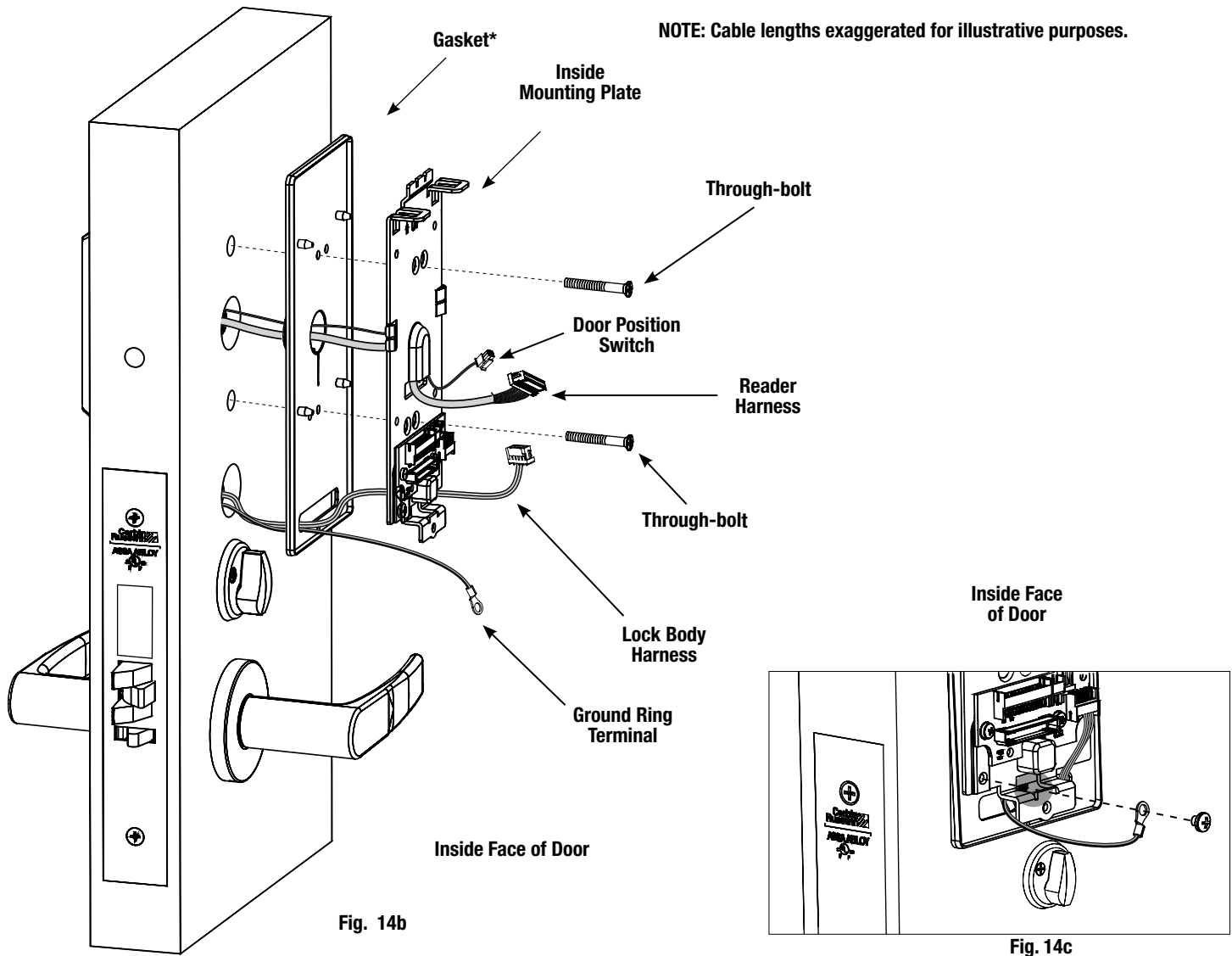
## 5) Installation Instructions (Continued)

d. Feed the reader harness and DPS connectors through the inside mounting assembly (and gasket if required\*). See Figure 11B.

**IMPORTANT:** Do not run wires through bottom flange hole in plate (Fig. 11B, C) - it will damage wires and the controller connector. Route wires around flange, do not route wires through the flange hole (Fig. 11C).

e. Tuck excess cable into wire hole on inside of door.

f. Begin to secure the mounting assembly by partially tightening the (2) through-bolts on the inside of the door while ensuring proper alignment as you secure the reader (Fig. 11B).



g. Secure ground lug with #6-32 machine screw (Fig.10C).

**\*Gasket is required for outdoor installations. Do not use gasket for fire-rated openings.**

If installing with gasket; separate gasket from mounting plate to feed cables/connectors through holes as indicated (Fig. 14c).

Once cables/connectors are fed through, reattach gasket to mounting plate.



## 5) Installation Instructions (Continued)

### 10. Installation of Connectors

**CAUTION - Do not touch or allow debris to enter connector contacts.**

Secure the following connectors to their respective terminals (Fig. 10D):

- A. Secure the 4-pin DPS connector.
- B. Secure the 10-pin lock body assembly connector.

\*NOTE: Optional 2-pin external 9-24VDC power connector.

**IMPORTANT:** Do not run wires through bottom hole in plate - it will damage wires and the controller connector.  
Route wires around flange, do not route wires through the flange hole (Fig. 10B, D).

- C. When all connections have been made, tuck excess cable into wire hole on inside of door.

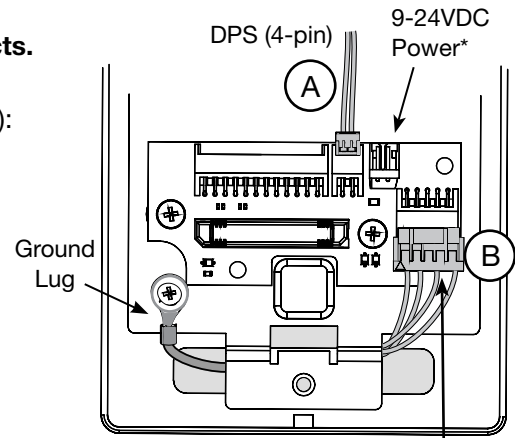


Fig. 10D

Lock  
Body  
(10-pin)

#### Secure Mounting Plate

- D. Secure the mounting assembly while ensuring proper alignment of outside reader and tighten the (2) through-bolts on the inside of the door to secure the reader (Fig. 10E).
- E. Secure the 24-pin card reader connector (Fig. 10F).

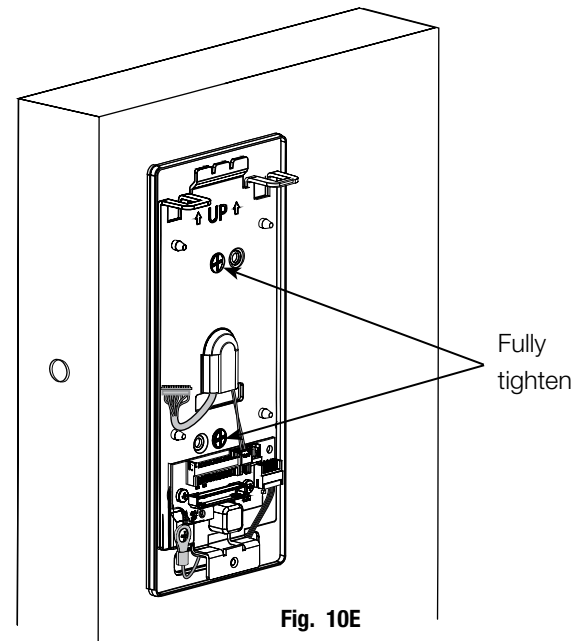


Fig. 10E

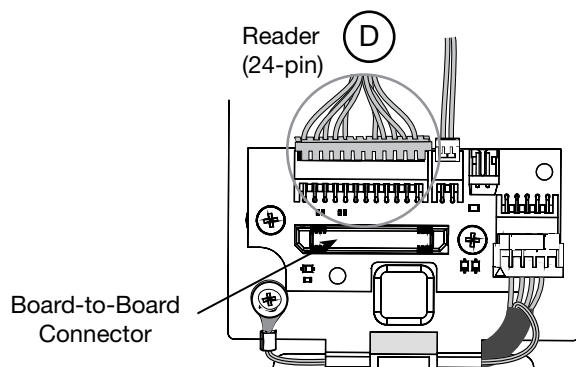


Fig. 10F

## 5) Installation Instructions (Continued)

### 11. Installation of Inside Module Component Assembly

- a. Insert top tabs of controller into slots on mounting plate (Fig. 17).
- b. Ensure proper alignment of board-to-board connectors while pivoting bottom of controller toward door until tab on bottom snaps securely into place on mounting plate.

**CAUTION:** To avoid possible damage to board-to-board connectors, care should be taken when securing controller to mounting plate. If there is resistance when securing, detach controller to determine cause before re-attaching controller.

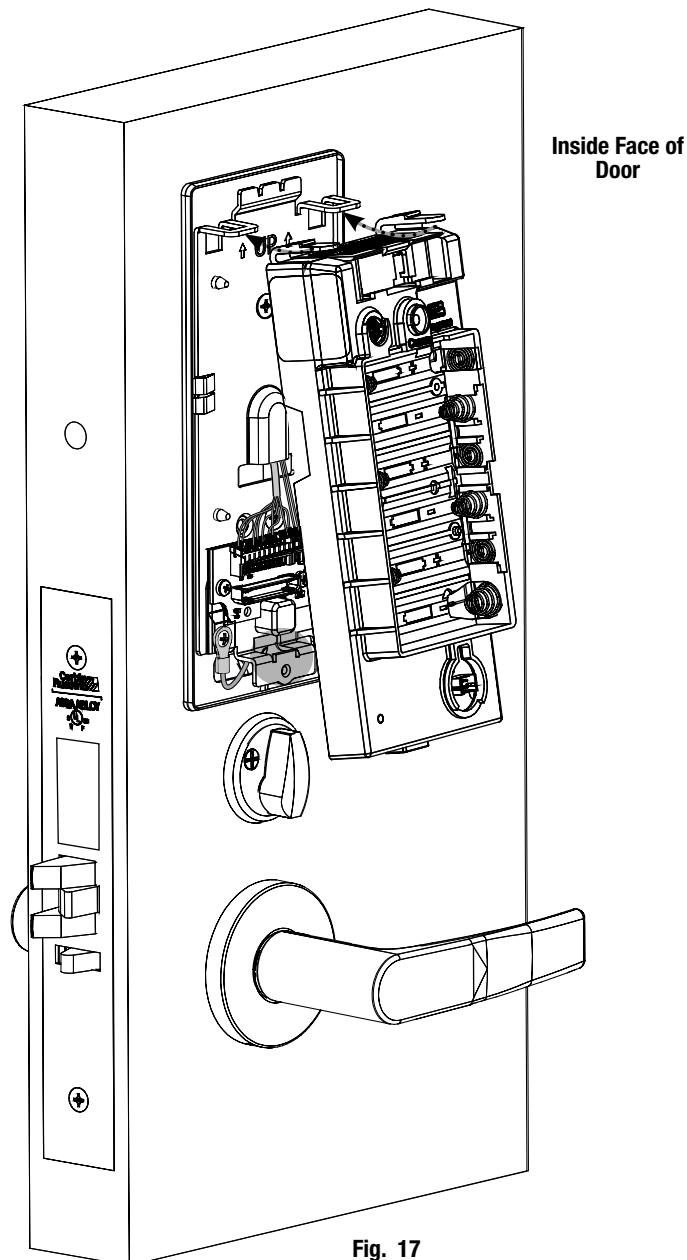


Fig. 17

## 5) Installation Instructions (Continued)

### 12. Installing Batteries

- a. Place (6) "AA" alkaline batteries in the compartment, being careful to align polarity properly (Fig. 18).
- b. After batteries are installed, there is a slight delay; then red and green flash, audible "beep" and lock motor will cycle.

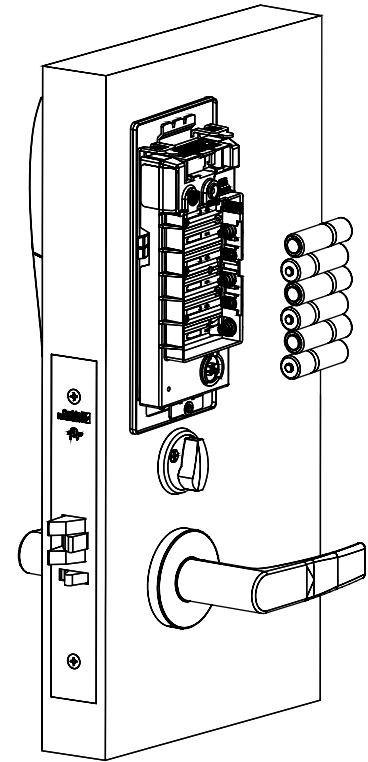


Fig. 18

### 13. Inside Cover Installation

- a. Assemble cover by hooking top edge on inside mounting plate.
- b. Carefully press bottom of cover toward door with out pinching or damaging any wires.
- c. Fully secure cover by tightening the security screw at bottom of cover (Fig.19), utilizing a security allen wrench.

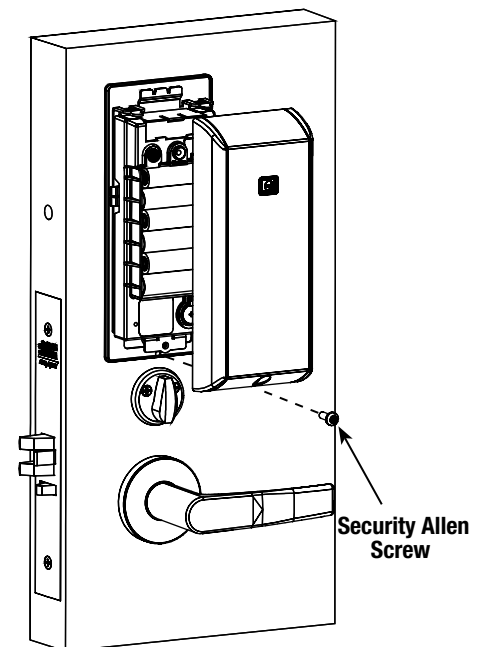


Fig. 19

## 6) Operational Check

When lock is fully installed, perform the following steps:

- Insert key into cylinder and rotate (Fig. 20a).
- There should be no friction against lock case, wire harness or any other obstructions.
- Check that the key retracts the latch.
- The key should rotate freely.
- Try the inside lever; ensure it retracts latch.
- Present a valid credential\* (Fig. 20b) to unlock outside lever; turn lever handle to ensure latch retracts.

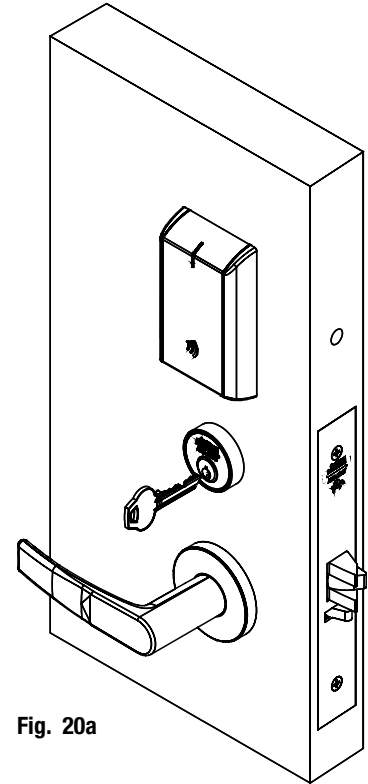


Fig. 20a

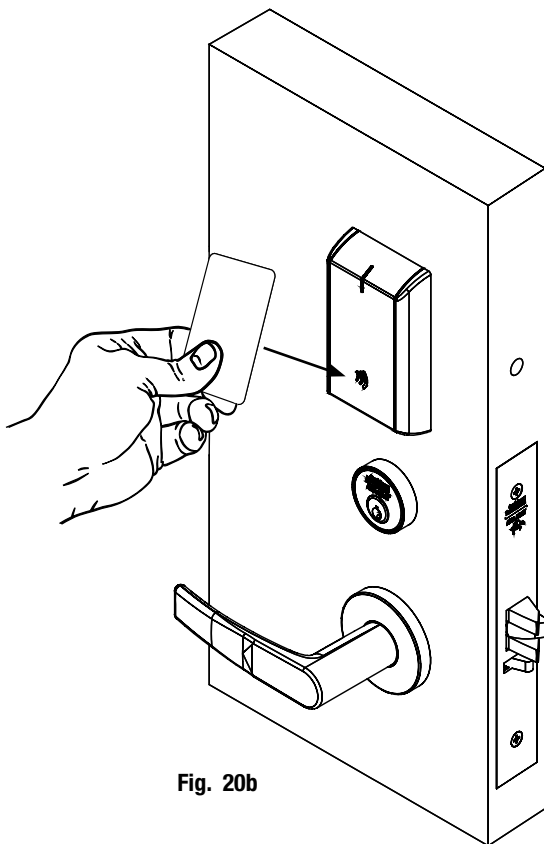


Fig. 20b

Note: The credential should approach the inscription on the reader as indicated (Fig. 20b) to ensure that the credential is read properly.

Do not wave credential.

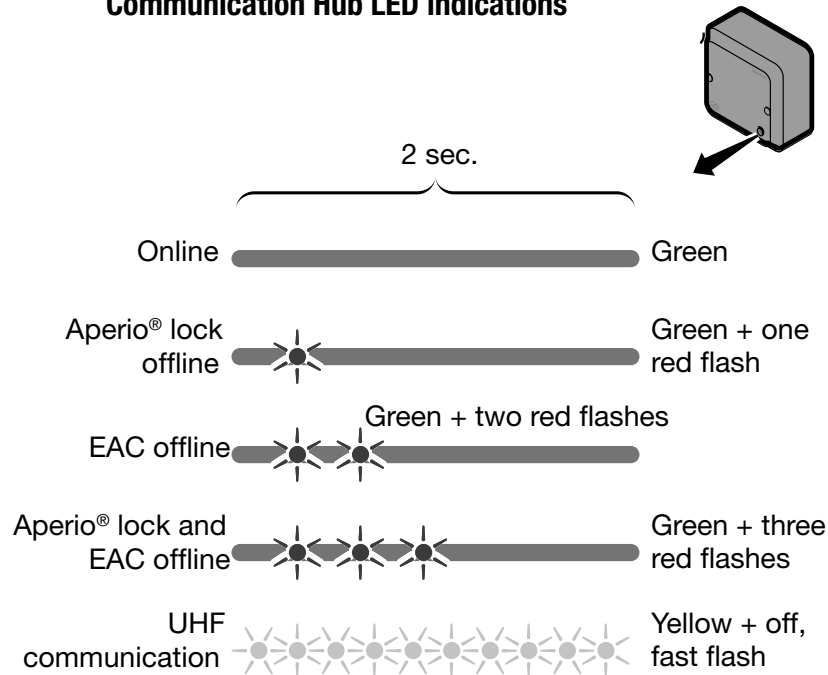
## 7) LED Indications

The communication hub has a single LED. It supports an optical scheme of red, green and yellow. The indication scheme is described by the figures below:

Figure 1.

Communication hub normal operation LED indication

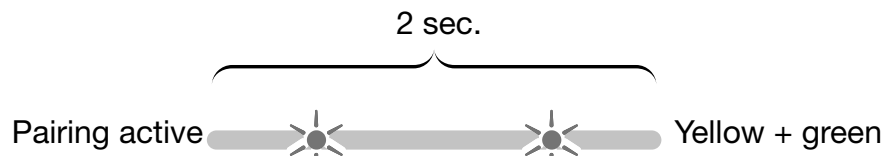
### Communication Hub LED indications



Some special LED indication schemes\* are used during lock maintenance actions:

Figure 2.

Communication hub maintenance LED indication

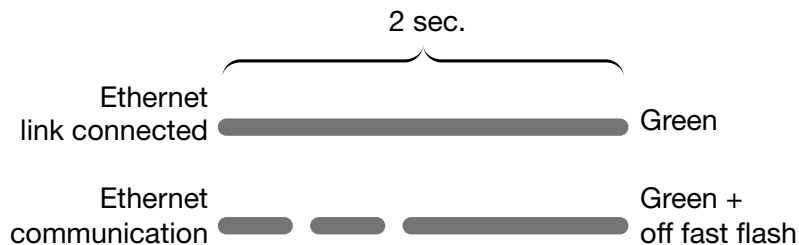


### Ethernet LED indication

The LED on the AH40 communication hub\* indicates both the status of the Ethernet link level and ethernet communication:

Figure 3.

AH40 Communication hub Ethernet LED indication



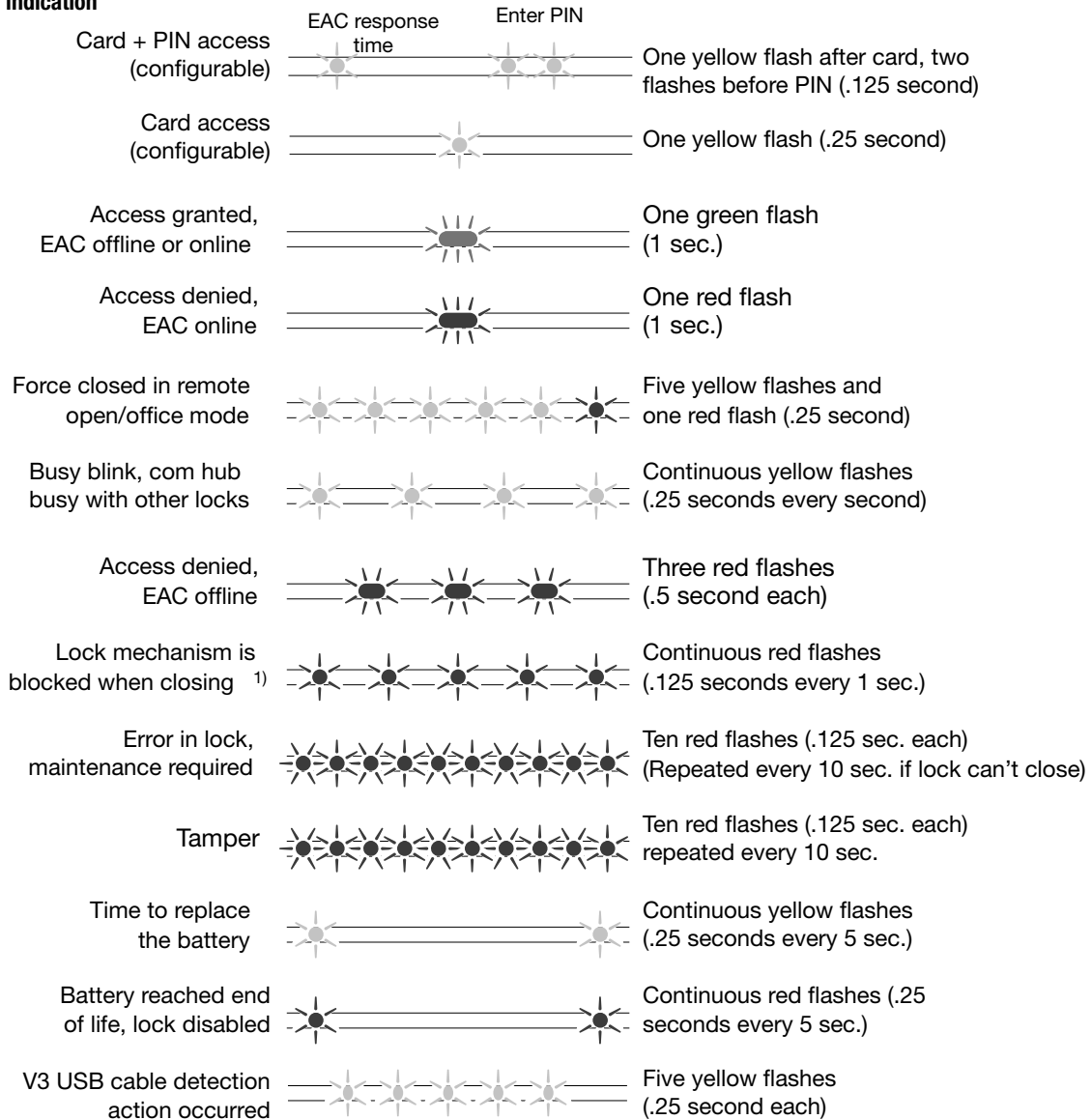
\*For more information, refer to Aperio Online Quick Installation Guide (Document No: ST-001322-PF Date: 2015-12-23)

## Lock LED indications

The lock has three LEDs. They support an optical scheme with red, yellow and green.

The indication scheme is described by the figures below:

**Figure 4. Lock normal operation LED indication**



1) When the lock mechanism is blocked (lock jammed) the lever must be turned to release the lock mechanism.

Some special LED indication schemes are used during lock maintenance actions:

**Figure 5. Lock hub normal operation LED indication**



## Lock Self-Test LED indication

After replacing batteries, a Power on Self Test (POST) is performed. The result is indicated using a series of red and green LED flashes as described by the figures below.

### LED indication after power up/replacement of the battery

#### 8.3.1 Battery not fully charged

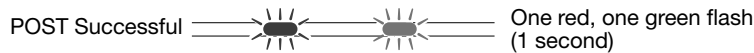
Error in lock is an indication -10 quick (125ms) red blinks, that either new batteries are not at the right voltage or a backward battery has been installed; battery not fully charged; energy counter not reset or no Power on self-test done.



#### 8.3.2 Test pass

1 red (1s) + 1 green (1s), Power on self-test passed, see table below.

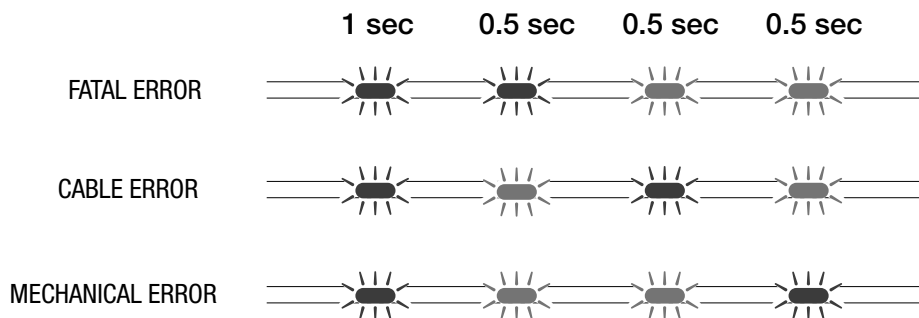
**Figure 6. Lock POST LED indication**



#### 8.3.3 Test fail

1 red (1s) + 3 blinks (500ms, green or red), at least one test failed (red), see table below.

If a fatal error is detected the lock will enter an Error state and continuously indicating fatal error and will not read cards nor unlock.



FATAL ERROR	Tests core functionality - MCUs, memory and internal communication, etc.
CABLE ERROR	Tests communication between the different parts in the system, i.e. different boards connected with a wire.
MECHANICAL ERROR	Test related to moving parts of the lock.

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