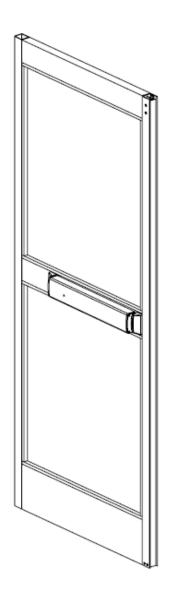
# **FALCON 2390 EXIT DEVICE INSTALLATION**





Index	
Parts List Before Installation Installation RX Device Wiring EL Device Wiring Cylinder Installation Touchbar Dogging Setting Rod Lengths Re-handing Device Template	. 5 . 5 12 13 14 17 18





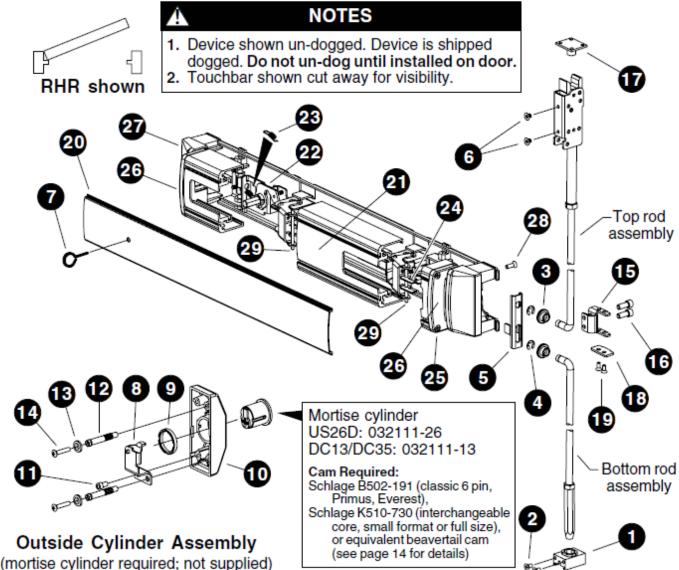






## **INSTALLATION**

## PARTS LIST



Package No. 4270107176 (US28 finish) or	
Package No. 4270107178 (DC13/DC35 fin	ish)
Item Quantity Description	Part No.

		2000	
1	1	Hex rod guide	4270101829
2	2	#10-24 x 3/8" UFPHTC	Typ F Stl
		US28 finish	4299100746
		DC13/DC35 finish	4299101027

Package No. PKG. 134	(US28 finish) or
Package No. PKG. 13	

Раск	Package No. PKG. 135 (DC13/DC35 finish)					
ltem	Quantity	Description	Part No.			
3	2	Rod bearing bushing	BUSH.108			
4	2	Reinforced retaining ring	RRING.108			
5	1	2390 lift bracket	BRKT.143			
6	2	#10-32 x 1/4" UFPHMS				
		US28 finish	963125-00			
		DC13/DC35	4270902255			
7	1	5/32" hex dogging key	4270106944			

#### Package No. CYLASY.1047 (P13 finish) or Package No. CYLASY.1046 (P28 finish) or Package No. CYLASY.1053 (P35 finish)

Package No. CYLASY.1053 (P35 finish)					
Quantity	Description	Part No.			
1 1	2390 NL/HB bracket assy.	BRKTASY.118			
1	Mortise locking collar	971851-00			
1	2390 cylinder housing				
	P13 finish	HOUSING.124			
	P28 finish	HOUSING.123			
	P35 finish	HOUSING.125			
1	1/4-20 x 3/8" SHCS	820975-00			
2	Mounting stud	971585-89			
2	#10 countersink washer				
	DC13/DC35 finish	WASHER.117			
	US32D finish	964016-00			
2	#10-24 x 1" OPHMS				
	DC13/DC35 finish	SCREW.1014			
	US32D finish	963120-00			
1	2390 cylinder lift bracket	BRKT.152			
2	1/4-28 x 3/4" SHCS	SCREW.1034			
	Quantity 1 1 1 2 2 2	Quantity         Description           1         2390 NL/HB bracket assy.           1         Mortise locking collar           1         2390 cylinder housing           P13 finish         P28 finish           P28 finish         P35 finish           1         1/4-20 x 3/8" SHCS           2         Mounting stud           2         #10 countersink washer           DC 13/DC35 finish           US32D finish           2         #10-24 x 1" OPHMS           DC 13/DC35 finish           US32D finish           1         2390 cylinder lift bracket			



## **INSTALLATION**

Pack	age No. Pl	348		ltem	Quantity	Description	Part No.
Note:	Contains I	PB48 strike, three shims, four	mounting screws.	20	1	Cover plate	See table
		Description	Part No.	21	1	Touchbar	See table
17	1	Strike		22	1	Dogging assembly	
.,		P13 finish	4270108354			DC13/DC35 finish	KIT.1022
		P35 finish	4270108355			US28 finish	KIT.1021
				23	1	Dogging spring	971493-89
		US28 finish	4270108353	24	1	2390 touchbar anchor bracket	BRKT.137
	N D	DICTAGY 455 // Oll Halada		25	4	#8 x 3/4" FPHTF	427010955
	•	RKTASY.155 (for 2" thick do	• • •	26	2	2390 mounting end cap P35	ECAP.143
ltem	Quantity	Description	Part No.	27	2	2390 fixed cover P35	COVER.12
18	1	2390 lift bracket 2" door	BRKT.154	28	4	#12-14 x 1/2" UFPH Typ 23	SCREW.10
19	2	#8-18 x 5/16" UFPHSMS	964327-89	29	2	Touchbar pin	PIN.125

### Cover Plate Part Numbers (Item 20 in "Parts List")

	21" Touchbar Length		24" Touchbar Length	
Finish	Without Dogging Hole	With Dogging Hole	Without Dogging Hole	With Dogging Hole
Champagne	EXT.2462	EXT.3011	EXT.2466	EXT.3015
DC13	EXT.2460	EXT.3009	EXT.2464	EXT.3013
DC35	EXT.2461	EXT.3010	EXT.2465	EXT.3014
US28	EXT.2459	EXT.3008	EXT.2463	EXT.3012

### Touchbar Part Numbers (Item 21 in "Parts List")

Finish	21" Touchbar Length	24" Touchbar Length
Champagne	EXT.3003	EXT.3007
DC13	EXT.3001	EXT.3005
DC35	EXT.3002	EXT.3006
US28	EXT.3000	EXT.3004

2390 Channel Package No. 4270108768 (used for mounting muntin to vertical door stiles)



2390 angle bracket Part No. 4204100819 Quantity: 4 pieces



#8-32 x 3/8" FPHTC Part No. 4299100726 Quantity: 8 pieces



#8-32 x 1/2" FPHTC Part No. 4299100741 Quantity: 8 pieces









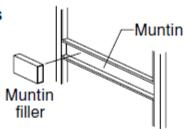


## **INSTALLATION**

### PARTS LIST (continued)

### Muntin Filler Part Numbers

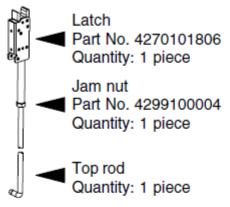
Muntin Filler Part Number
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4270107328
4270107325

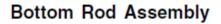


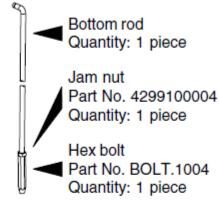
### **Muntin Part Numbers**

Finish	Muntin Part Number
DC13	4270102811
DC35	4270102812
US28	4270102809

### Top Rod Assembly







### Standard 7' Door Top Rod Assemblies (dimensions in inches)

Description	Part No.	Muntin Center Line	Door Height	By Cutting Top Rod, Assembly Can Be Shortened Up To
2390 Top Rod RHR AL = 40.176	RODASY.10001	42.5	83.188	4"
2390 Top Rod RHR AL = 41.426	RODASY.10002	41.25	83.188	6"
2390 Top Rod RHR AL = 44.801	RODASY.10003	37.875	83.188	9"
2390 Top Rod RHR AL = 42.676	RODASY.10004	40	83.188	5"
2390 Top Rod RHR AL = 41.489	RODASY.10005	41.25	83.25	6"
2390 Top Rod LHR AL = 40.176	RODASY.10006	42.5	83.188	4"
2390 Top Rod LHR AL = 41.426	RODASY.10007	41.25	83.188	6"
2390 Top Rod LHR AL = 44.801	RODASY.10008	37.875	83.188	9"
2390 Top Rod LHR AL = 42.676	RODASY.10009	40	83.188	5"
2390 Top Rod LHR AL = 41.489	RODASY.10010	41.25	83.25	6"

### Standard 7' Door Bottom Rod Assemblies (dimensions in inches)

Description	Part No.	Muntin Center Line	Door Height
2390 Btm Rod = 41.877 2390 Btm Rod = 40.627 2390 Btm Rod = 37.252 2390 Btm Rod = 39.377	RODASY.10011 RODASY.10012 RODASY.10013 RODASY.10014	41.25 37.875	83.188 83.188 83.188 83.188











### INSTALLATION

### PARTS LIST (continued)

2390 Extension Rod Kit (Part No. EXTROD.1001)

Description	Part No.	Quantity
3/8-24 jam nut	4299100004	1
Upper extension rod 7.5"	ROD.1049	1
Lower extension rod 6.5"	ROD.1048	1
Extension tube 70"	TUBE.300	1
1/8" x 5/8" roll pin	4299100060	2

### **BEFORE INSTALLATION**

- 1. Check "Parts List" (page 2 and page 3).
- 2. Prepare door using template on page 18.
- 3. Set initial rod lengths (see page 16). Rods lengths are factory set as specified on customer ord
- 4. If necessary, re-hand device (see page 17) and top rod (see Figure 1-1, page 4).

### INSTALLATION

### Install rod assemblies.

1.1. If using outside cylinder, install cylinder lift bracket on top rod (Figure 1-1). Do not tighten completely (final position will be determined in door). For 2" thick doors only, also install lift bracket 2" thick door and screws (#8-18 x 5/16" UFPHSMS) from package No. BRKTASY.15

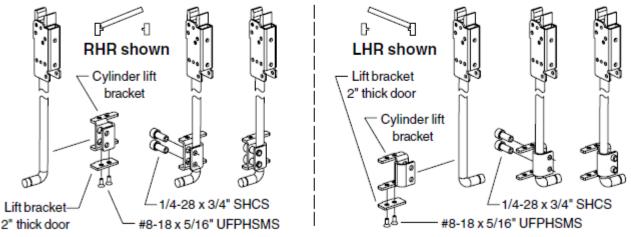
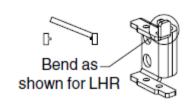
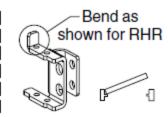


Figure 1-1

### A NOTE

If using on narrow architectural stile with adjustable astragal, bend one ear only of cylinder lift bracket as shown at right before installing.















## **INSTALLATION**

### 1 Install rod assemblies (continued).

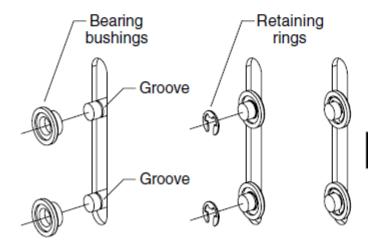
1.2. Fit top rod assembly into door.

### À

#### NOTE

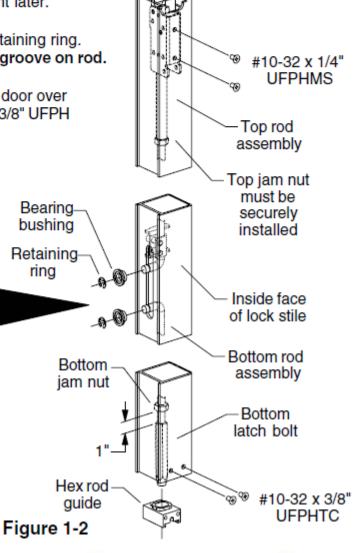
To simplify fitting rod and lift bracket through stile, remove lift bracket and reinstall after top rod is in door (prior to Step 11.5).

- 1.3. Secure top rod assembly with two #10-32 x 1/4" UFPH machine screws.
- Install top rod bearing bushing and retaining ring.
   Be sure retaining ring seats securely in groove on rod.
- 1.5. Fit bottom rod assembly into door. Install bottom rod with jam nut moved up approximately 1" from bottom latch bolt. This will simplify final adjustment later.
- Install bottom rod bearing bushing and retaining ring.
   Be sure retaining ring seats securely in groove on rod.
- 1.7. Install bottom hex rod guide into bottom of door over bottom latch bolt. Secure with two #10-32 x 3/8" UFPH thread cutting screws.



### **IMPORTANT**

Be sure retaining rings seat securely in grooves on rods.







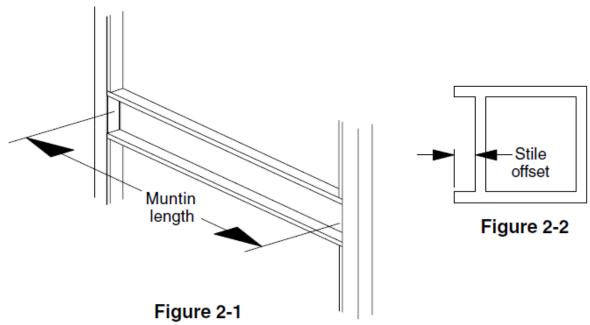




## **INSTALLATION**

### 2 Cut muntin filler to length. (Muntin filler required; not supplied.)

2.1. Measure muntin length (Figure 2-1) and stile offset (Figure 2-2).



**2.2.** If measured muntin length (width between stiles) is less than the minimum listed in Minimum Muntin Length table, the device is too long for the application.

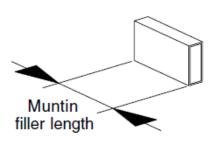
### Minimum Muntin Length

Long Device (24" touchbar)				
Stile Minimum Muntin Length Offset (width between stiles)				
0.115"	27.505"			
0.125"	27.495"			
0.142"	27.478"			
0.156"	27.464"			
0.187"	27.433"			

Short Device (21" touchbar)			
Stile Minimum Muntin Length Offset (width between stiles)			
0.115"	24.505"		
0.125"	24.495"		
0.142"	24.478"		
0.156"	24.464"		
0.187"	24.433"		

2.3. Calculate muntin filler length (Figure 2-3) using formula from Muntin Filler Length table and cut muntin filler to length.

### Muntin Filler Length



Fi	a	ur	e	2	-3

Long Device (24" touchbar)		
Stile Offset	Muntin Filler Length	
0.115" 0.125" 0.142" 0.156" 0.187"	= muntin length – 27.505" = muntin length – 27.495" = muntin length – 27.478" = muntin length – 27.464" = muntin length – 27.433"	

Short Device (21" touchbar)			
Stile Offset Muntin Filler Length			
0.115" 0.125" 0.142" 0.156" 0.187"	= muntin length – 24.505" = muntin length – 24.495" = muntin length – 24.478" = muntin length – 24.464" = muntin length – 24.433"		



## INSTALLATION

### 3 Install traveler.

- 3.1. Position traveler as shown (Figure 3-1) and place over rod ends.
- **3.2.** Push top rod up until rods are held retracted, traveler is held up (Figure 3-2), and top latch bolt is locked forward (Figure 3-3).

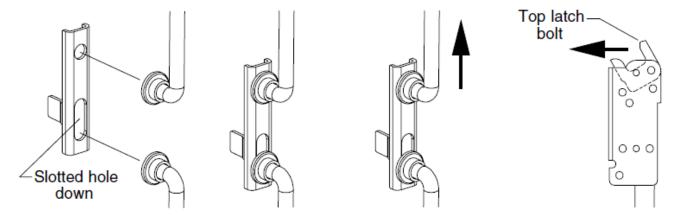


Figure 3-1 Figure 3-2 Figure 3-3

### 4 Adjust top rod.

- 4.1. With top rod retracted (see Step 3), press down on traveler end as shown (Figure 4-1). Make sure traveler is held over rod ends and against rod bushings.
- 4.2. Measure the gap between the bottom of the traveler end and the lower wall of the muntin (Figure 4-1 and Figure 4-2). Adjust top rod per directions in table below.

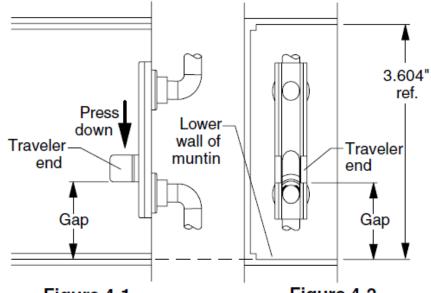


Figure 4-1

Figure 4-2

Gap	Directions
1.193"	Rod adjustment is correct. Go to Step 5.
1.151"	Shorten rod one (1) turn and repeat Step 4.
1.110"	Shorten rod two (2) turns and repeat Step 4.
1.068"	Shorten rod three (3) turns and repeat Step 4.
1.235"	Lengthen rod one (1) turn and repeat Step 4.
1.276"	Lengthen rod two (2) turns and repeat Step 4.
1.318"	Lengthen rod three (3) turns and repeat Step 4.



## **INSTALLATION**

5 Prepare hole for EL/RX device. (If device is not EL/RX, go to Step 6.)

5.1. Drill 3/8" diameter hole for EL/RX wiring through inside face of door, hinge side.

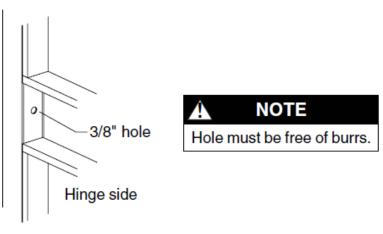
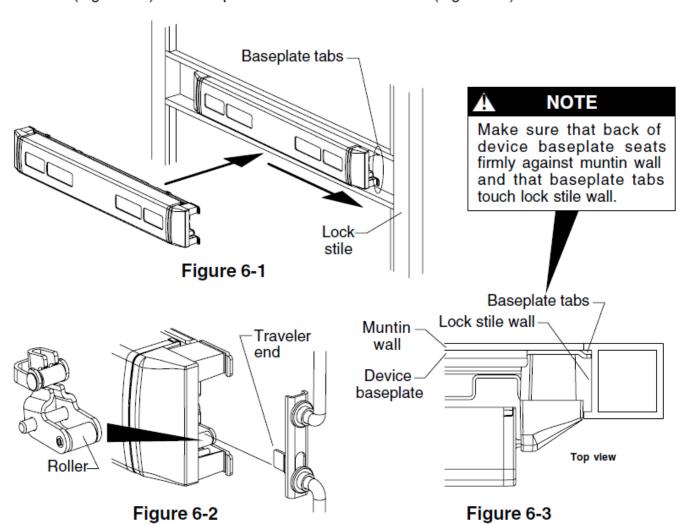


Figure 5-1

### 6 Install device.

6.1. Place dogged device in door and slide toward lock stile (Figure 6-1) so roller fits under traveler end (Figure 6-2) and baseplate tabs touch lock stile wall (Figure 6-3).



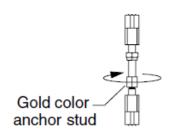
# FALCON 2390 EXIT DEVICE ARK INSTALLATION



### 7A Secure RHR device. (See next page for LHR device.)



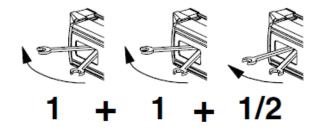
7A.1. With device seated against bottom of muntin, use a 3/8" open end wrench to tighten two gold color anchor studs to extend anchor pins. Tighten only until resistance is felt.



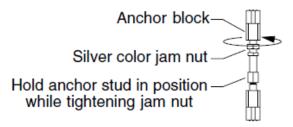
**7A.2.** After resistance is felt, tighten two gold color anchor studs 2-1/2 more movements of the wrench through the touchbar openings.

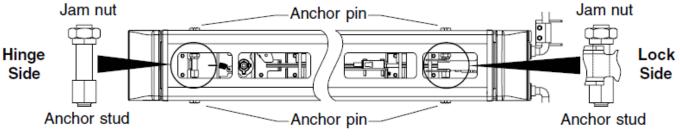
### **A** CAUTION

Do not overtighten or damage to device may occur.

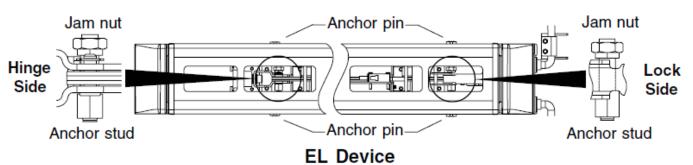


7A.3. Using a 7/16" open end wrench, tighten two silver jam nuts against anchor blocks. Use a 3/8" open end wrench to hold anchor studs in position while tightening jam nuts.





### Standard Device



# TRADEMARK HARDWARE WORLD DE QUALITY HARDWARE

## **INSTALLATION**

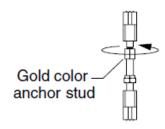
**FALCON 2390 EXIT DEVICE** 

7B Secure LHR device. (See previous page for RHR device.)



7B.1. With device seated against bottom of muntin, use a 3/8" open end wrench to tighten two gold color anchor studs to extend anchor pins. Tighten only until resistance is felt.

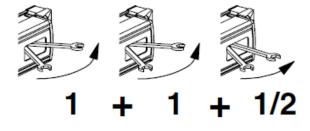
www.tmhardware.com



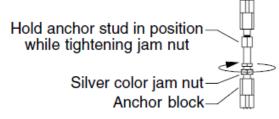
7B.2. After resistance is felt, tighten two gold color anchor studs 2-1/2 more movements of the wrench through the touchbar openings.

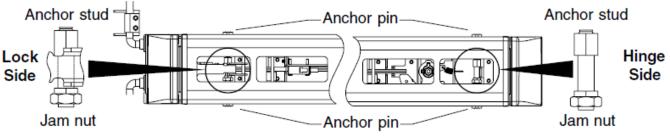
### **A** CAUTION

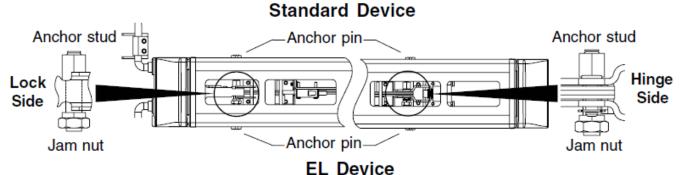
Do not overtighten or damage to device may occur.



7B.3. Using a 7/16" open end wrench, tighten two silver jam nuts against anchor blocks. Use a 3/8" open end wrench to hold anchor studs in position while tightening jam nuts.







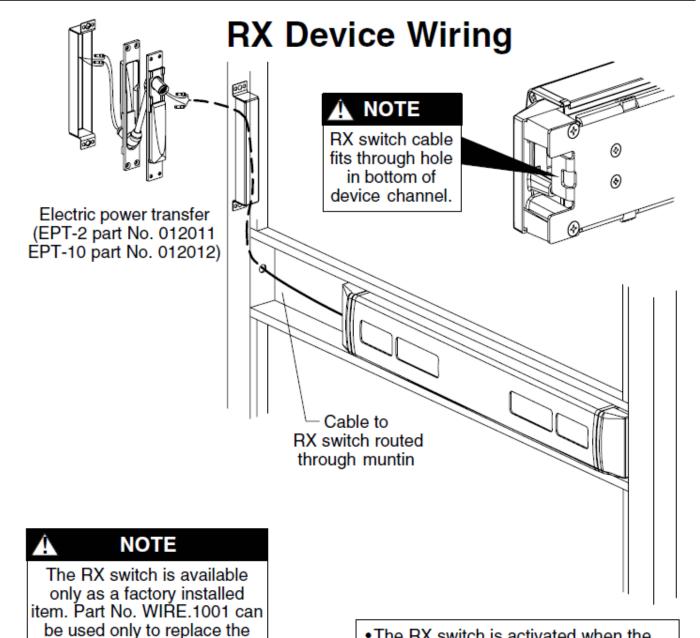
## TRADEMARK HARDWARE

## **INSTALLATION**

**FALCON 2390 EXIT DEVICE** 

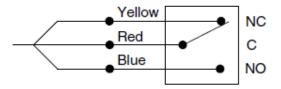
www.tmhardware.com

8 Wire EL or RX device. (If device is not EL or RX, go to Step 9.)



factory installed RX switch.

RX switch



(part No. WIRE.1001)

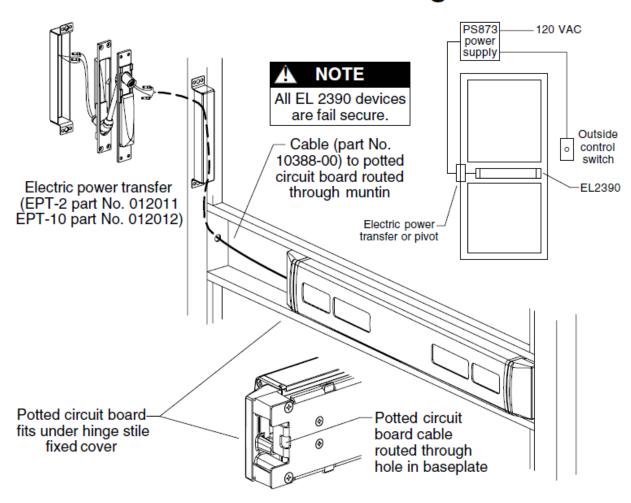
Switch shown not activated (touchbar not depressed)

- The RX switch is activated when the touchbar is depressed.
- Use the Von Duprin EPT-10 power transfer (for three wires), EPT-2 power transfer (for two wires), electric hinge, electric pivot, or door loop to transfer the wiring from the door to the frame.
- Connect the power transfer wires and switch assembly wires with crimp connectors. Unused wires should be insulated separately.



## **INSTALLATION**

## **EL Device Wiring**



### NOTE

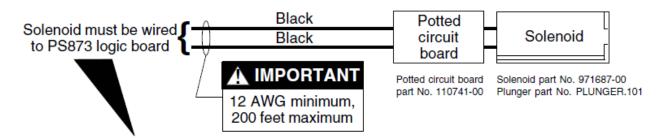
The potted circuit board is a protection circuit. It disconnects power from the solenoid if the plunger does not seat within a specified time. To reset the protection circuitry, remove power from the solenoid and reapply.

### **Electrical Specifications**

Voltage: 24 VDC

Current: 16 A inrush (0.3 sec.)

0.25 A holding





If 871-2 logic board, refer to Von Duprin instructions 941352. Any reference to Von Duprin EL devices also applies to EL2390.

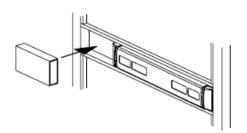


If other 873 logic board, refer to Von Duprin instructions 941353. Any reference to Von Duprin EL devices also applies to EL2390.



## INSTALLATION

Install muntin filler.



### 10 Adjust bottom rod.

- 10.1. Undog the device (see page 17) and release the top latch bolt so it faces up (Figure 10-1).
- 10.2. Pull bottom rod out as far as it will extend from door. Do not depress touchbar during this step.
- **10.3.** Measure the bottom bolt extension from the door (Figure 10-2):
  - If extension equals 7/16" rod is set correctly. Go to Step 11.
  - If extension is more than 7/16" shorten rod per Table 10-1.
  - If extension is less than 7/16" lengthen rod per Table 10-2.

Table 10-2 Extension Less than 7/16"

Extension	Lengthen Rod
13/32"	1 turn
3/8"	2 turns
11/32"	2 turns
5/16"	3 turns
9/32"	4 turns
1/4"	5 turns
7/32"	5 turns
3/16"	6 turns
5/32"	7 turns
1/8"	8 turns
3/32"	8 turns
1/16"	9 turns
1/32"	10 turns
0"	11 turns

### NOTE To change rod length, remove two guide mounting screws, remove guide, rotate bolt, re-install guide.

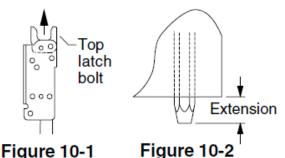


Figure 10-2

#### Extension | Shorten Rod 15/32" 1 turn 1/2" 2 turns 17/32" 3 turns 9/16" 3 turns 19/32" 4 turns 5/8" 5 turns 21/32" 6 turns

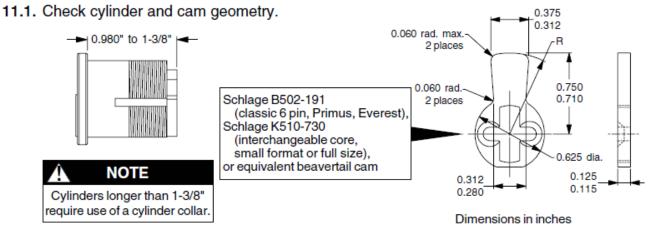
6 turns

7 turns

Table 10-1

Extension More than 7/16"

### Install outside cylinder. (If no outside cylinder, go to Step 12.)



11/16"

23/32"



## **INSTALLATION**

### Install outside cylinder (continued).

- 11.2. Make sure cylinder cam is in position for desired function with key removed (Figure 11-1). If not, remove cam and re-install in proper position.
- 11.3. Install cylinder into cylinder housing (Figure 11-2). Tighten cylinder retaining nut securely. Make sure end of cylinder housing marked "TOP" is up.

Cam position for HB (hold back) function with key removed





Cam position for NL (night latch) function with key removed

Figure 11-1

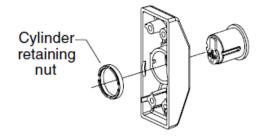
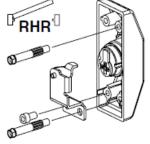


Figure 11-2

11.4. Install cylinder bracket (Figure 11-3). Install studs and screw where shown for RHR or LHR door. Make sure end of cylinder housing marked "TOP" is up.



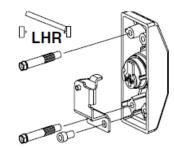
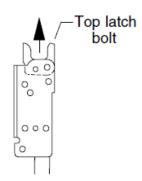


Figure 11-3

11.5. With top latch bolt released and facing up (Figure 11-4), position bottom of cylinder lift bracket 5/8" down from step in cutout (Figure 11-5). Maintain 5/8" location and tighten cylinder lift bracket mounting screws securely.



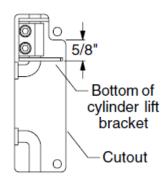
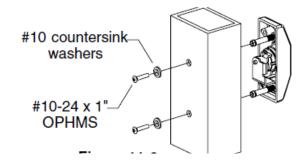


Figure 11-4

Figure 11-5

11.6. With key removed, install cylinder housing assembly on door (Figure 11-6). Secure with two #10 countersink washers and two #10-24 x 1" OPH machine screws.







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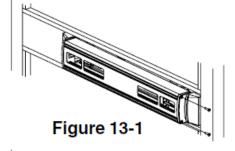
## INSTALLATION

### 12 Perform functional check.

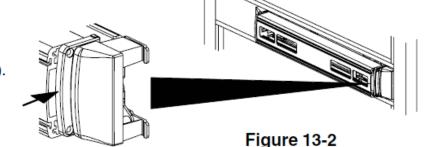
- 12.1. Dog device (see page 17). Top latch bolt should pivot freely.
- 12.2. Undog device (see page 17) and trip top latch bolt so it faces up. Top latch bolt should not pivot.
- **12.3.** If cylinder housing is installed, insert key and rotate 180° for NL or 360° for HB. Top latch bolt should pivot freely. For HB, key should come out of cylinder after clockwise rotation. For both NL and HB, rotate key back counterclockwise to starting position and remove key.
- **12.4.** With device undogged (touchbar and key cylinder), press touchbar and release so top latch bolt locks forward and rods are held up. Bottom latch bolt should be flush to within 1/32" to bottom of door.

### 3 Install cover plate.

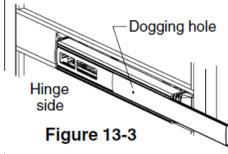
**13.1.** Undog device and remove lock side end cap screws (Figure 13-1).



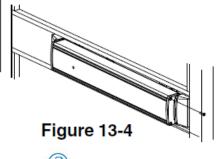
**13.2.** Slide end cap into device (Figure 13-2).



**13.3.** Slide cover plate into touchbar with dogging hole towards hinge side of device (Figure 13-3).



**13.4.** Raise end cap so screw holes align with holes in touchbar and re-install screws (Figure 13-4).









# TRADEMARK HARDWARE WORLD OF QUALITY HARDWARE

# INSTALLATION

**FALCON 2390 EXIT DEVICE** 

### **TOUCHBAR DOGGING**

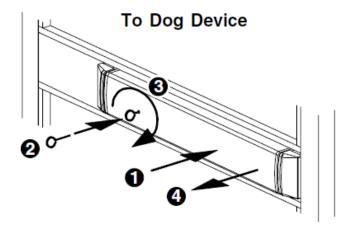
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### NOTE

EL (electric latch retraction) devices cannot be dogged using the touchbar. If mechanical hold back is required, use pull side HB key cylinder option.

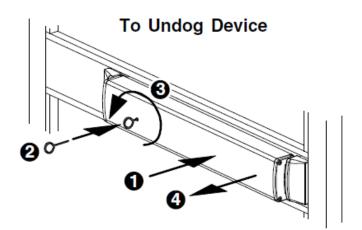
### To Dog Device (latch stays retracted)

- Depress touchbar with hand and hold in.
- 2. Insert dogging key into hole on touchbar.
- 3. Rotate key approximately 1/8 turn clockwise.
- 4. Release touchbar. Touchbar will remain depressed.



### To Undog Device (latch locks when door closes)

- 1. Depress touchbar with hand and hold in.
- 2. Insert dogging key into hole on touchbar.
- 3. Rotate key approximately 1/8 turn counterclockwise.
- Release touchbar. Touchbar will extend from door.



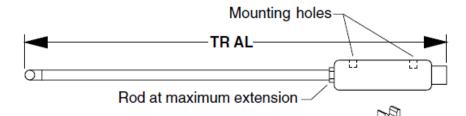


### INSTALLATION

### **SETTING ROD LENGTHS**

Rod lengths are factory set as specified on customer order. For configuring door for door height down to approximately 5.5 feet and up to approximately 10.5 feet, see 2390 Extension Rod Kit (part No. EXTROD.1001) or order rods from factory pre-set.

Determine top rod assembled length TR AL: TR AL = door height — C — 0.516"
 where C = distance from center line of muntin to bottom of door.



 Set top rod to nearest 1/32" as determined in Step 1. Jam nut must be tightened so bent end of rod is perpendicular to sides of latch housing. See Figure 1 for handing. See table below for common rod lengths.

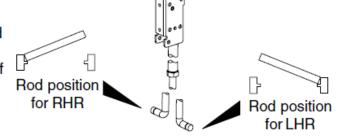
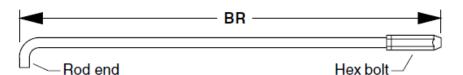


Figure 1

3. Determine overall bottom rod length BR: BR = C — 0.632"

where C = distance from center line of muntin to bottom of door.



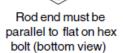


Figure 2

4. Set bottom rod to nearest 1/32" as determined in Step 3. Jam nut not required to be tight. End of rod must be oriented as shown in Figure 2 relative to flats on hex bolt. For common rod lengths, see table below (all dimensions in inches).

Door Height	•	nce from center line in to bottom of door)		R AL	ВГ	3
83.188 (83-3/16)	42.5	(42-1/2)	40.176	(40-11/64)	41.877	(41-7/8)
83.188 (83-3/16)	41.25	(42-1/4)	41.426	(41-27/64)	40.627	(40-5/8)
83.188 (83-3/16)	37.875	(37-7/8)	44.801	(44-51/64)	37.252	(37-1/4)
83.188 (83-3/16)	40	(40)	42.676	(42-43/64)	39.377	(39-3/8)
83.250 (83-1/4)	41.25	(41-1/4)	41.489	(41-31/64)	40.627	(40-5/8)











## INSTALLATION

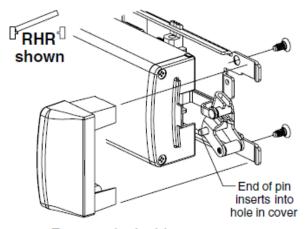
### **RE-HANDING DEVICE**

### À

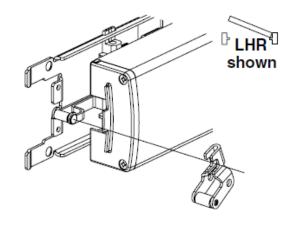
### NOTE

RHR to LHR conversion shown.

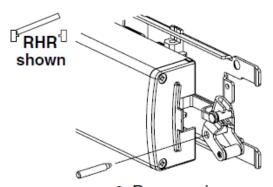
To convert LHR device to RHR device, follow figures in reverse order, removing parts in Figures 6 through 4 and re-installing parts in Figures 3 through 1.



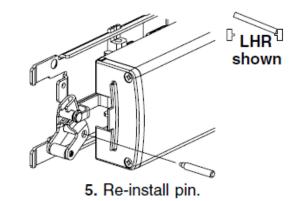
Remove lock side center case cover.

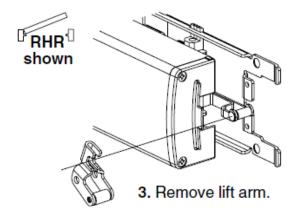


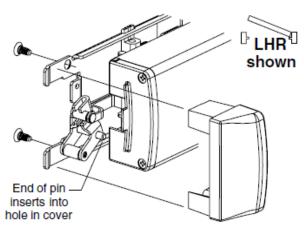
4. Flip device over and re-install lift arm.



2. Remove pin.







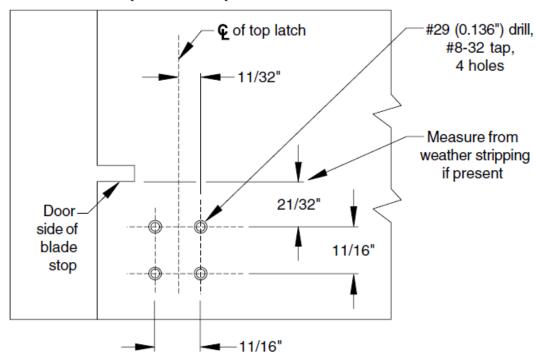
Re-install center case cover.

# FALCON 2390 EXIT DEVICE INSTALLATION

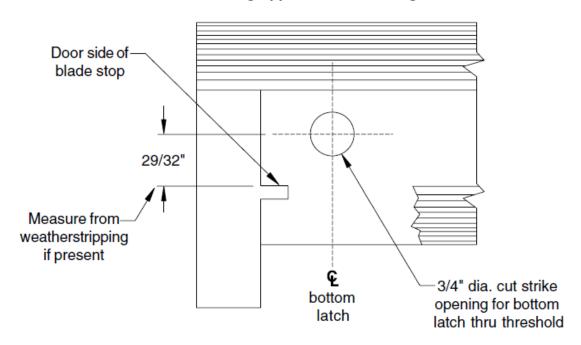


### TEMPLATE

Consult Falcon or door manufacturer for door-specific template information.



Bottom Plan View, Head Jamb (looking up) Showing Upper Strike Mounting Holes



Top Plan View, Threshold (looking down) Showing Strike Cutout in Threshold for Latch