#10-24

Dogging Key
(use to lock down pushbar)
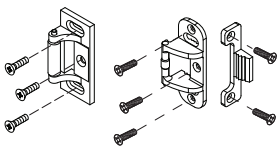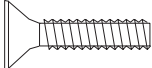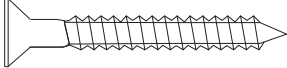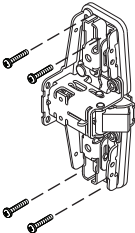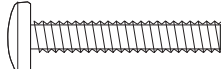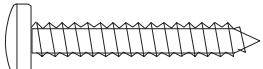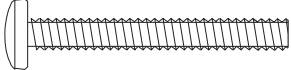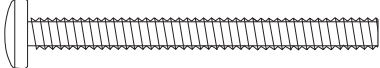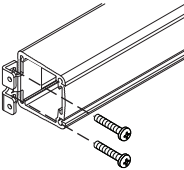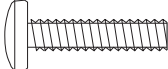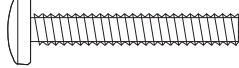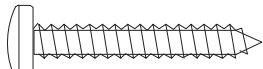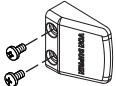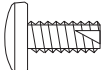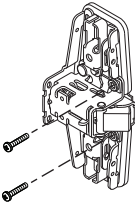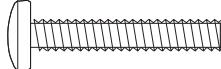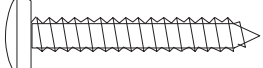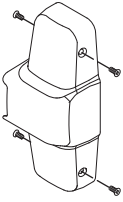
ALLEGION

SCREW CHART

Subassembly	Screw		Application
A 299 Strike 499F Strike		#10-24 x ¾" (19 mm)	Metal frame
		#10 x 1½" (38 mm) Wood screw	Wood frame
B		#10-24 x 1" (25 mm)	Surface mount or Sex bolts 1¾" (44 mm) door
		#10-24 x 1½" (38 mm)	Sex bolts, 2¼" (57 mm) door
		#10 x 1¼" (32 mm) Wood screw	Surface mount (wood)
	Packaged with 990 Trims:	#10-24 x 1⅜" (35 mm)	1¾" (44 mm) door, 990 Trim
		#10-24 x 1⅞" (48 mm)	2¼" (57 mm) door, 990 Trim
C		#10-24 x ¾" (19 mm)	Surface mount or Sex bolts 1¾" (44 mm) door
		#10-24 x 1⅛" (29 mm)	Sex bolts, 2¼" (57 mm) door
		#10 x 1¼" (32 mm) Wood screw	Surface mount (wood)
D		#10-16 x ⅜" (10 mm) Thread cutting	End cap
E		#10-24 x 1" (25 mm)	Surface mount (metal)
		#10 x 1¼" (32 mm) Wood screw	Surface mount (wood)
F		#8-18 x ⅜" (10 mm) Thread cutting	Center case cover

2

1   Draw horizontal device and strike center lines (℄).

* 39¹³⁄₁₆" (101.1 cm) from finished floor

RHR

RHR   LHR
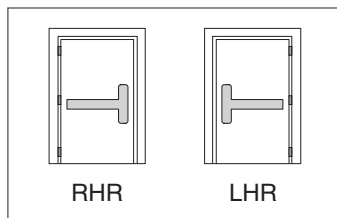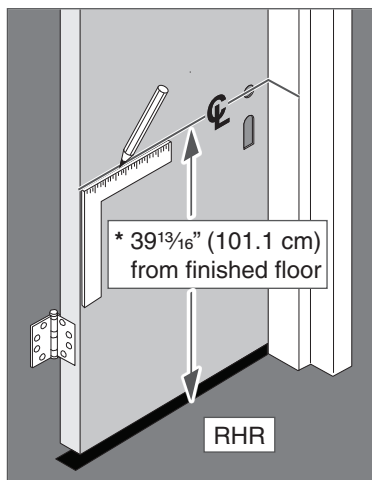
* For double doors with a mullion and strike already installed, use existing strike center line.

2   Align strike on ℄ and mark the two slotted holes.

ⓘ For 499F strike installation, see page 6.

Roller (against door)

299

OR

299F
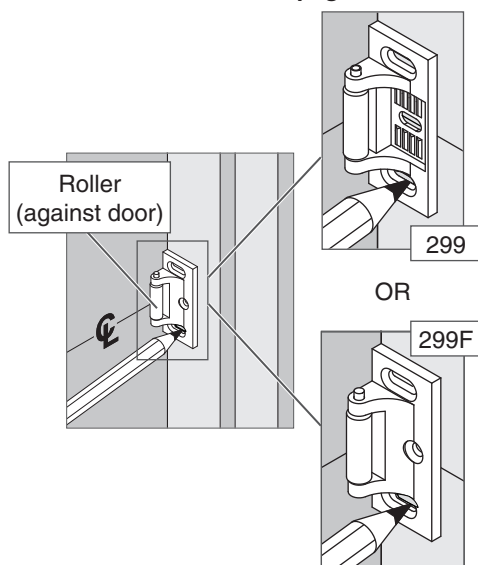
ⓘ For more information on the strikes shown below, go to http://w3securitytechnologies.com and look for the Support area for Von Duprin installation instructions.

1439   1609

264   1606
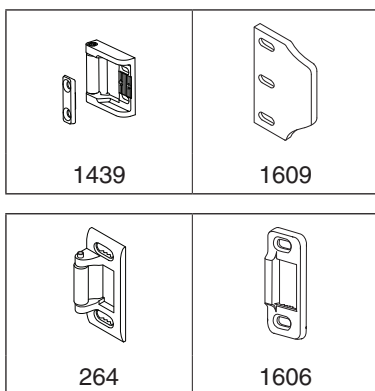
3   Prepare 2 holes and install 2 screws.

ⓘ See "Screw Chart" on previous page for screw types and sizes

A
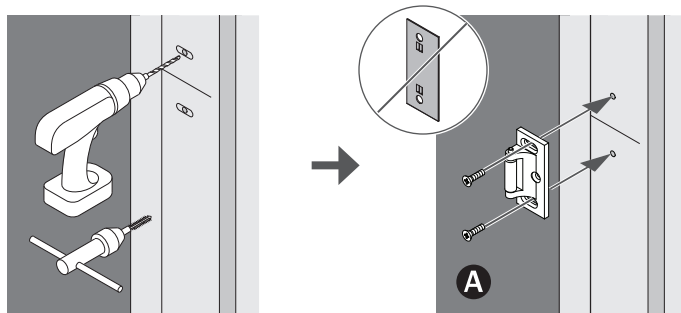
Metal	#25	#10-24

– – – – – – – OR – – – – – – –

Wood	⅛" (3 mm) x 1" (25 mm) deep	

4   Position template against strike and on ℄ and mark door.

Mark Vertical ℄

Mark 6 holes
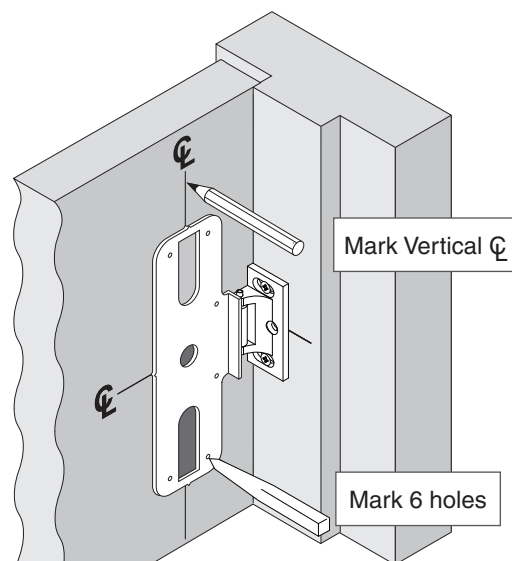
5   If necessary, prepare cutouts for cylinder and trim.

RHR shown, LHR opposite

For outside cylinder applications:
Mark with template and cut out
Metal door (cut device side)
Wood door (cut thru)

For trim applications with working lever, thumbpiece, or knob:
Mark with template and cut out (cut device side only)
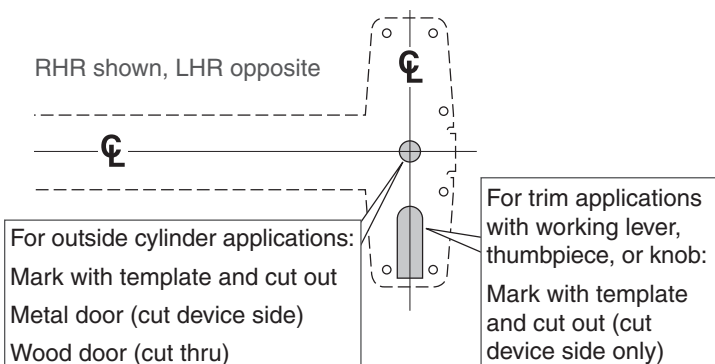
6 Prepare 4 center case mounting holes.

Four mounting holes
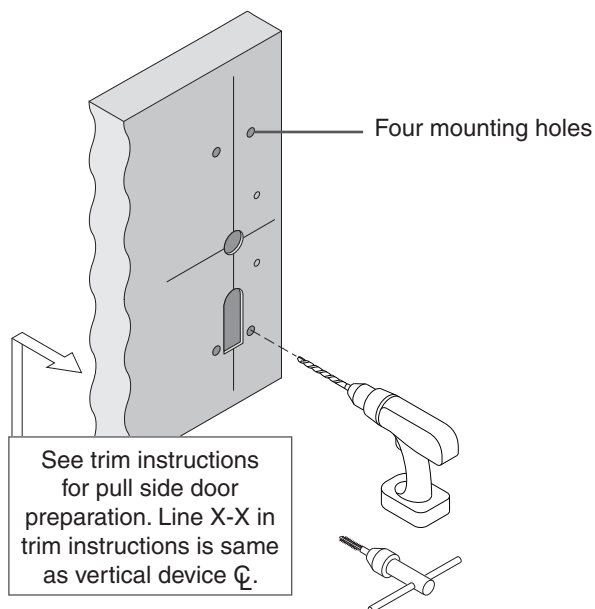
See trim instructions for pull side door preparation. Line X-X in trim instructions is same as vertical device C̶L̶.

	SURFACE MOUNT	OR	SEX BOLTS or 990 TRIMS
METAL	⬛⬛⬛ #25		¼" (6 mm) Device Side ⬛⬛⬛
	⬛⬛⬛ #10-24		¹³⁄₃₂" (10 mm) Trim Side
WOOD	⅛" (3 mm) x 1" (25 mm) Deep ⬛⬛⬛		¹³⁄₃₂" (10 mm) Drill Thru ⬛⬛⬛
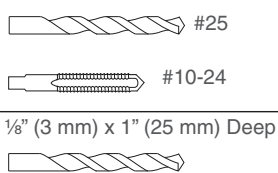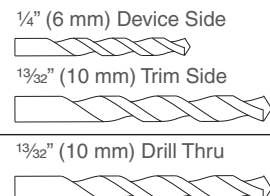
7 Prepare 2 center case support holes.

Two support holes

METAL	OR	WOOD
98/99 and 98/99-F		**98/99**
⬛⬛⬛ #25		⅛" (3 mm) x 1" (25 mm) Deep ⬛⬛⬛
⬛⬛⬛ #10-24		
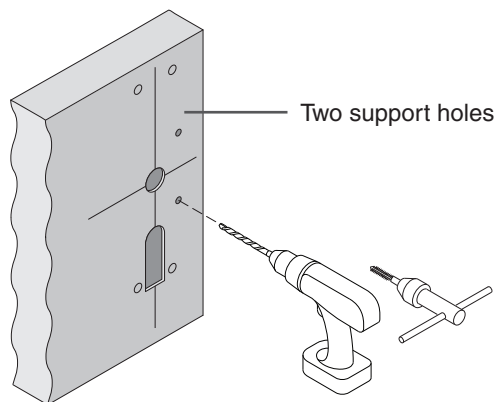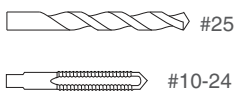
98/99-F
#825 Sex bolts (2) required

¹⁄₁₆" (2 mm)   ⅜" (10 mm)

Exterior

⁵⁄₁₆" (16 mm)
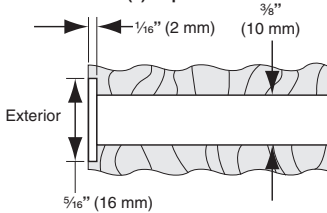
8 If necessary, remove NL drive screw

NL drive screw
Factory installed on back of center case
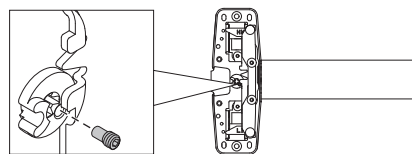
With the NL drive screw removed, key locks and unlocks lever, knob, or thumb piece. For the trims listed below, **REMOVE** NL drive screw.

996L	696TP	990TP
996K	697TP	

With the NL drive screw installed, key retracts latch bolt. **DO NOT** remove NL drive screw for the following applications:

NL, EO, DT trims and 98/99-2 double cylinder devices (i.e. TP-2, L-2, and K-2).

*996L-BE	*E996L	*696TP-BE	*990TP-BE
*996K-BE	*E996L-BE	*697TP-BE	

* If the trim being installed is "BE" (i.e. 996L-BE), the trim lock tumbler on the back of the device must be in the **UP** position before device is installed. This allows the trim to be unlocked at all times.

trim lock tumbler in UP position

Correct Orientation (RHR shown)
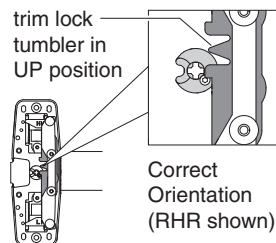
If necessary, remove drive screw and rotate cam until trim lock tumbler is in UP position, then reinstall drive screw

360°

Incorrect Orientation
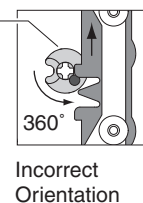
9 If using a cylinder with a tailpiece, prepare device and cylinder.

9a Install tailpiece guide.

Tailpiece guide
Tailpiece

Rotate tailpiece guide to match tailpiece
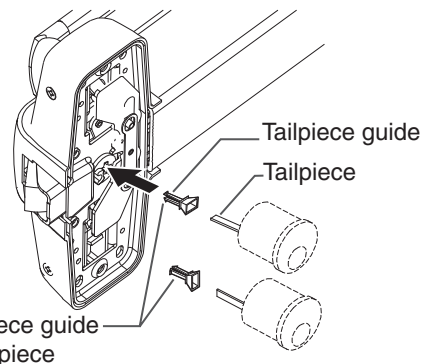
9b Cut tailpiece as needed.

½"

Door Surface

4
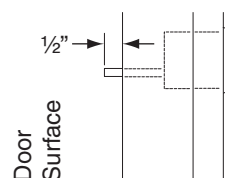
10 If necessary, cut device.

Jamb

Jamb

← 1½" (38 mm) recommended

₵

Temporarily remove anti-rattle clip

Cover plate flush
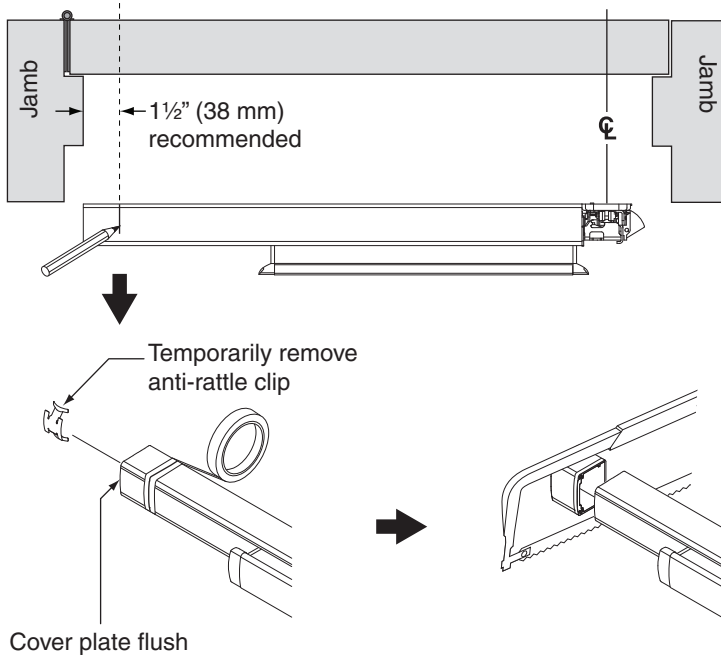
11 Attach center case to door.

Thru-Bolting Trim

B

OR

Surface Mount

Sex Bolts
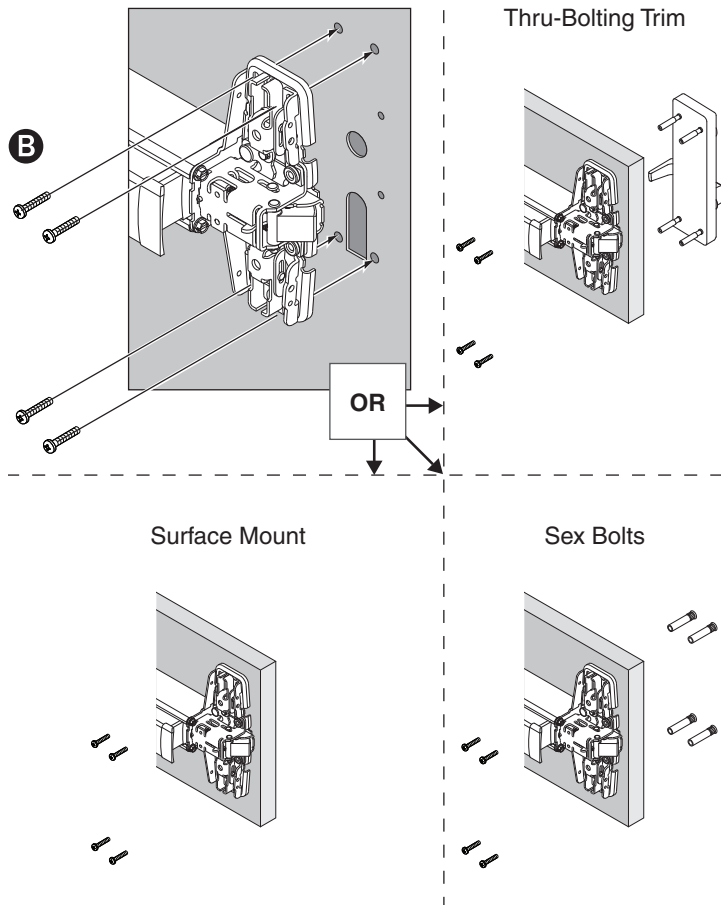
12 Mark and prepare two (2) holes.

ⓘ **Prepare holes after lock side of device is mounted and hinge side is leveled.**

a

b

c

SURFACE MOUNT		
METAL		#25
		#10-24
WOOD	⅛" (3 mm) x 1" (25 mm) Deep	

− − − − − **OR** − − − − −

SEX BOLTS	
METAL	¼" (6 mm) Device Side
	13⁄32" (10 mm) Trim Side
WOOD	13⁄32" (10 mm) Drill Thru
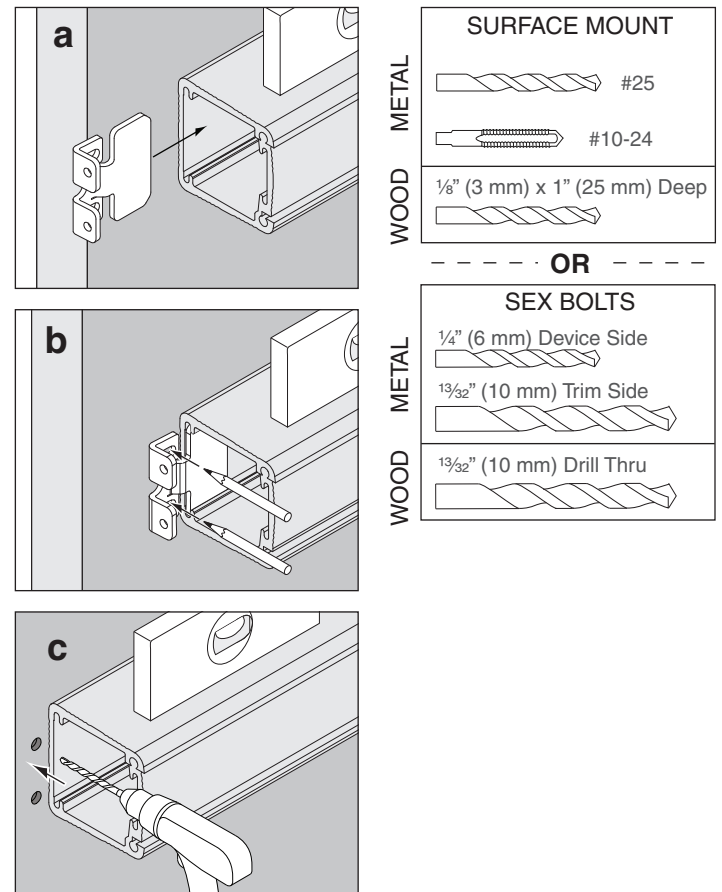
13 Install end cap bracket and end cap.

C

VON DUPRIN

D

5
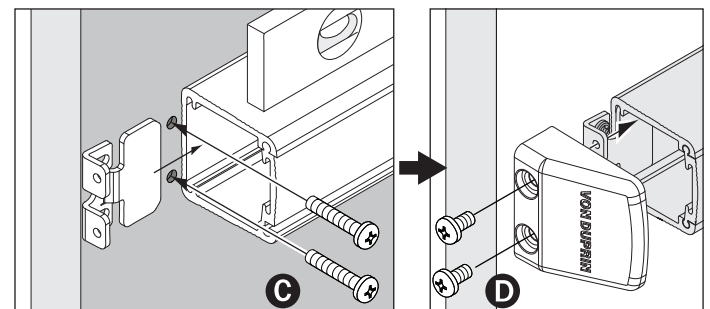
14 Install required support screws and center case cover.

Remove protective film from pushbar

F

E
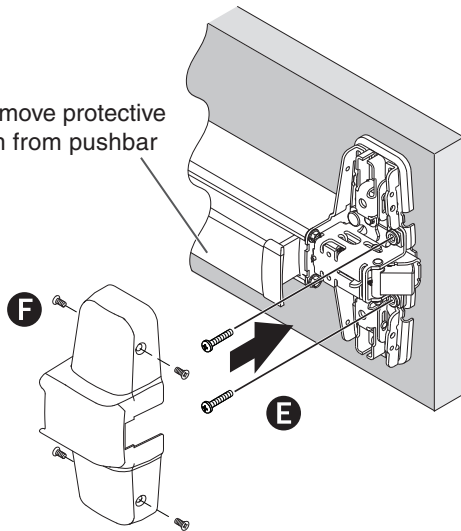
15 Adjust strike as needed.

299/299F Strike

Shim as needed

¾₁₆" (5 mm)

299

299F
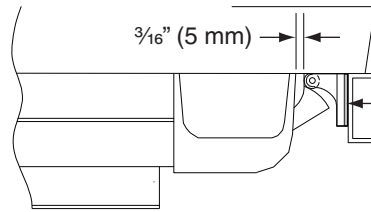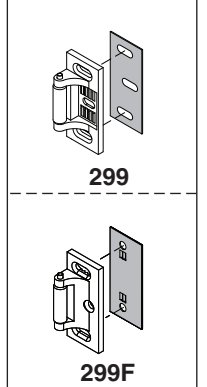
16 Install strike support screw.

OR

A

A

METAL

WOOD

🌀 drill	#25	⅛" (3 mm) x 1" (25 mm) Deep
screw	#10-24	🌀 drill
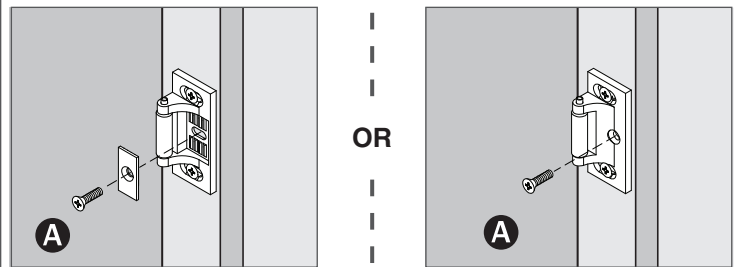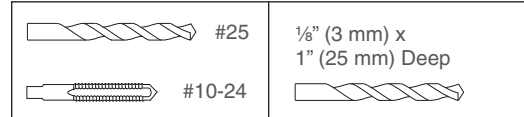
499F STRIKE INSTALLATION

1. Prepare and install screws through two strike slots.

Roller (against door)

A

ℂL

ℂL

ⓘ **If using a mullion, holes may be predrilled**
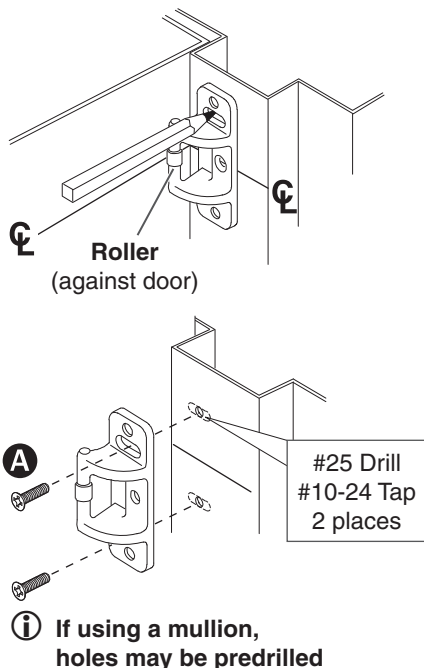
2. Install strike hook and additional strike screws.

Metal	#7 Drill ¼" (6 mm)-20 Tap 2 places
Wood	1³⁄₃₂" (10 mm) Drill thru for sex bolts 2 places

Strike hook

¹⁄₁₆" (1.6 mm)

A

#25 Drill #10-24 Tap 2 places

#25 Drill #10-24 Tap 3 places
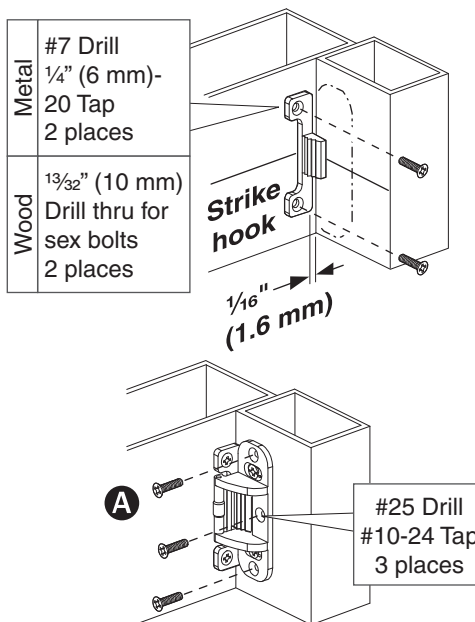
3. Template aligns as shown.

Template (align on ℂL and against strike

ℂL

6
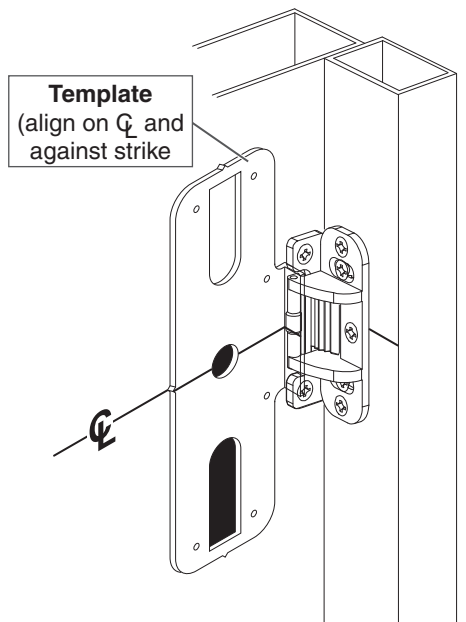
CD (Cylinder Dogging) Option

Dog

Undog

99-2 (Double Cylinder) Option

#8-18 x ⅜" (10 mm)
PPHSMS

#8-32 x ⁵⁄₁₆" (8 mm)
PPHMS

a **b** **c** **d** **e**

**RHR Shown
(LHR opposite)**
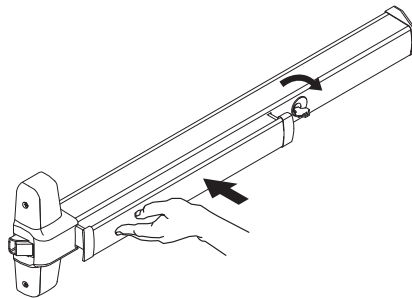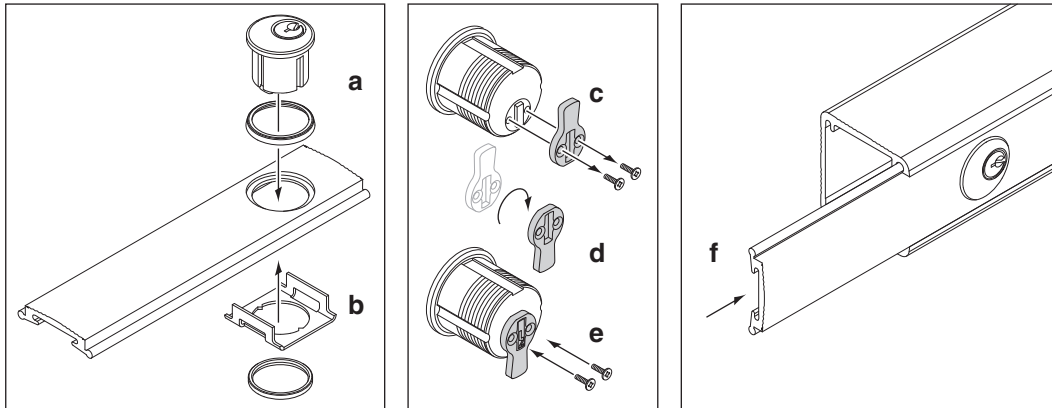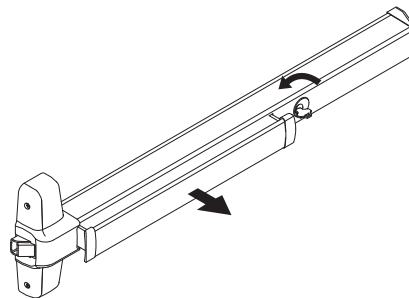
Cylinder
Mounting Screws
DO NOT over-tighten
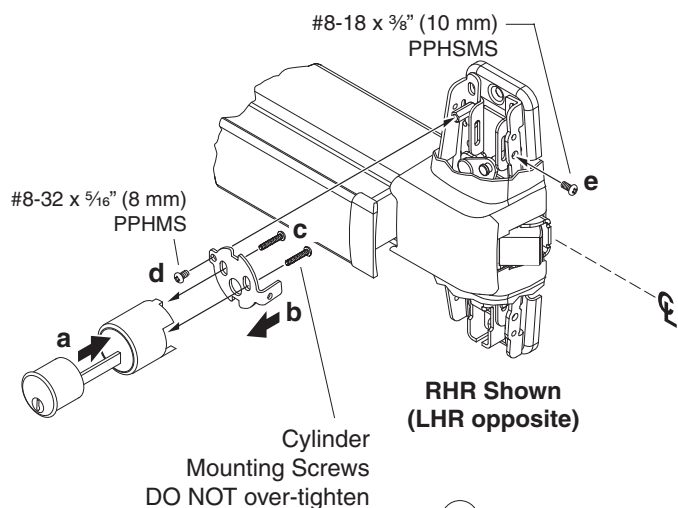
If using the -2SI with a keyed rim cylinder, remove the 2 stop screws from back of device prior to installing the cylinder.

Door Cutout for 99-2 "Double Cylinder" Option

Wood
¼" (6 mm)
Deep

⅝" (16 mm)

1¾" (44 mm)

⅛" (3 mm) R
4 places

1¼" (32 mm)

1⅜" (35 mm)

Device
and Strike
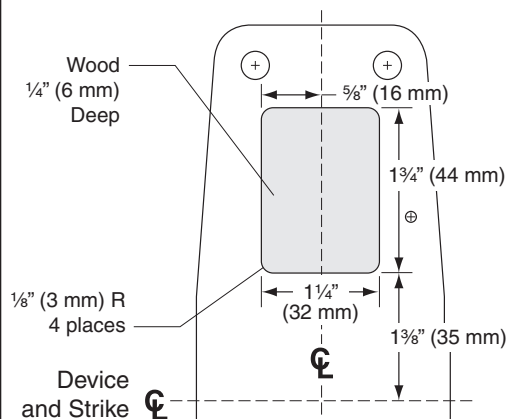
Door Cutout for 99-2SI "Double Cylinder" Option

Wood
¼" (6 mm)
Deep

2¼" (57 mm)

⅛" (3 mm) R
4 places

1⅝" (41 mm)

¹³⁄₁₆" (21 mm)

1⅜" (35 mm)

Device
and Strike
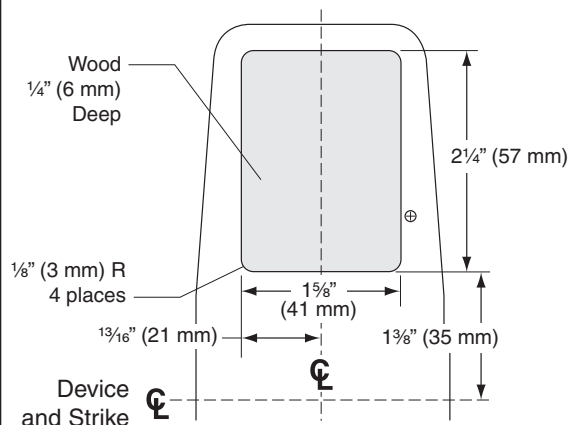
For 98/99-2SI models with Classroom Security Indicator, apply supplied labels above and below cylinder to match door handing, and 🔒 label on indicator.

LOCK
UNLOCK
99-2 LHR

LOCK
UNLOCK
99-2 RHR

Peel and stick appropriate set of labels depending on door handing. Stick labels above and below cylinder, and 🔒 label on indicator.
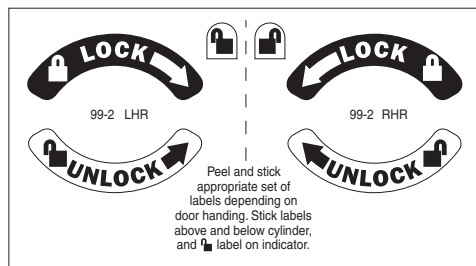
ⓘ **Manually affix the label:**

Ensure surface is clean of dirt, dust, or oils. Clean with alcohol if necessary.

Peel the label from the paper backing and apply to the surface. Minimize handling when applying and use pressure to burnish label to surface. The adhesive will require up to 8 hours to achieve the proper bond.

RHR shown
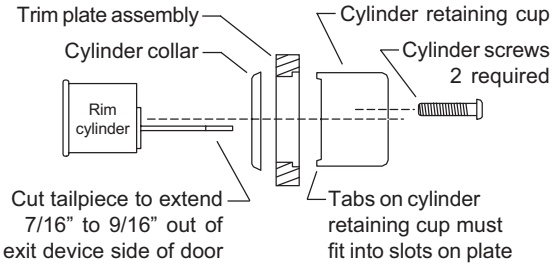
8

1 Prepare door for exit device. See exit device instructions for holes, line X-X, and center lines.

2 Prepare door for trim:

2a Transfer line X-X from inside (exit device side) of door to outside (trim side) of door. Use extra care if edge of door is beveled. Be sure line X-X is parallel to edge of door.

2b Locate and prepare holes as shown.

3 For TP and NL trim, install rim cylinder.

Trim plate assembly
Cylinder collar
Rim cylinder
Cut tailpiece to extend 7/16" to 9/16" out of exit device side of door

Cylinder retaining cup
Cylinder screws 2 required
Tabs on cylinder retaining cup must fit into slots on plate

4 For TP and TP-BE trim on 1-3/4" thick door, cut 1/4" off humbpiece.

1/4"
1/4" cutoff required on thumbpiece for TP and TP-BE trim on 1-3/4" thick doors

5 Apply trim.

6 For TP and NL trim, cut cylinder tailpiece to extend 7/16" to 9/16" out of exit device side of door.

7 Apply exit device, thru-bolt to trim (4 places), and use screw and #12 countersink washer for lower trim mounting stud.

Line X-X corresponds to line X-X on exit device instructions

Device Application Schedule
98/99 Rim Device
98/9927 Surface Vertical Rod Device
98/9947 Concealed Vertical Rod Device

TP TRIM

13/32" dia., 4 places
Metal door: this side
Wood door: thru

X

1-3/8"
11/16"
7"
1/4"
Cutout
Metal door: this side
Wood door: 1-3/8" deep
1-5/8" dia.
3-1/2"
4-1/4"
1/2" rad.
5-23/32"
TP TRIM
7/16" dia.
Metal door: this side
Wood door: thru
Outside face of lock stile X

TP-BE TRIM

13/32" dia., 4 places
Metal door: this side
Wood door: thru

X

1-3/8"
11/16"
7"
Cutout
Metal door: this side
Wood door: 1-3/8" deep
1"
3-1/2"
4-1/4"
1/2" rad.
5-23/32"
TP-BE TRIM
7/16" dia.
Metal door: this side
Wood door: thru
Outside face of lock stile X

NL TRIM

13/32" dia., 4 places
Metal door: this side
Wood door: thru

X

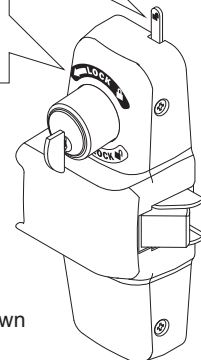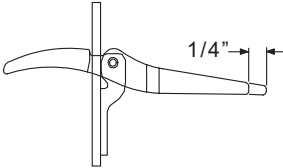1-3/8"
11/16"
7"
1-5/8" dia.
Metal door: this side
Wood door:1-3/8"deep
3-1/2"
1/4"
5-23/32"
NL TRIM
7/16" dia.
Metal door: this side
Wood door: thru
Outside face of lock stile X

ALL TRIM

X

1-3/8"
11/16"
Metal door: 1/4" dia. 4 places
7"
C_L
3-1/2"
5-23/32"
ALL TRIM
Corresponds to center line of exit device on exit device instructions
Metal door: 3/8" dia.
Inside face of lock stile X

LHR shown, RHR opposite

For cutouts on inside face of door, see exit device instructions

Customer Service
1-877-671-7011   www.allegion.com

ALLEGION

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Printed in U.S.A.
921265-00 Rev. 01/14-b

QEL 33A/35A, 98/99 Series

VON DUPRIN®

Conversion Kit

⚠ 1. This kit converts all 33/35A and 98/99 series mechanical exit devices to quiet electric latch (QEL) retraction devices.
2. This kit can also be used for motor replacement on existing QEL devices.
3. Install according to instructions or device will not function and panic or fire label will be void.
4. The QEL wiring must be attached to the fire alarm system if installed on fire exit hardware.
5. If existing device is fire rated or less dogging a QEL baseplate conversion kit is required.

Parts	**3** Remove Exit Device from Door
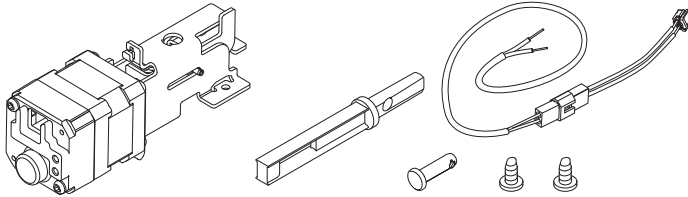
QEL
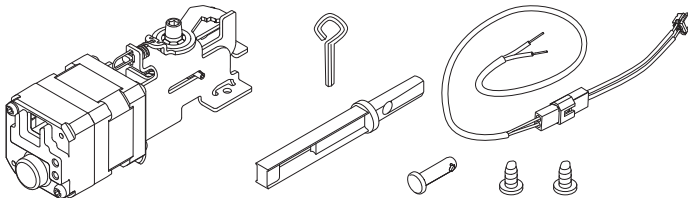
HD-QEL (Hex Dogging QEL)

⚠ WARNING ⚠

If existing exit device is fire rated, do not install HD-QEL (hex dogging) type motor. Doing so will void fire rating.

⚠ Device and trim must be held securely while screws are being removed, to prevent dropping to the floor

a

c

b
Unplug cable,

d
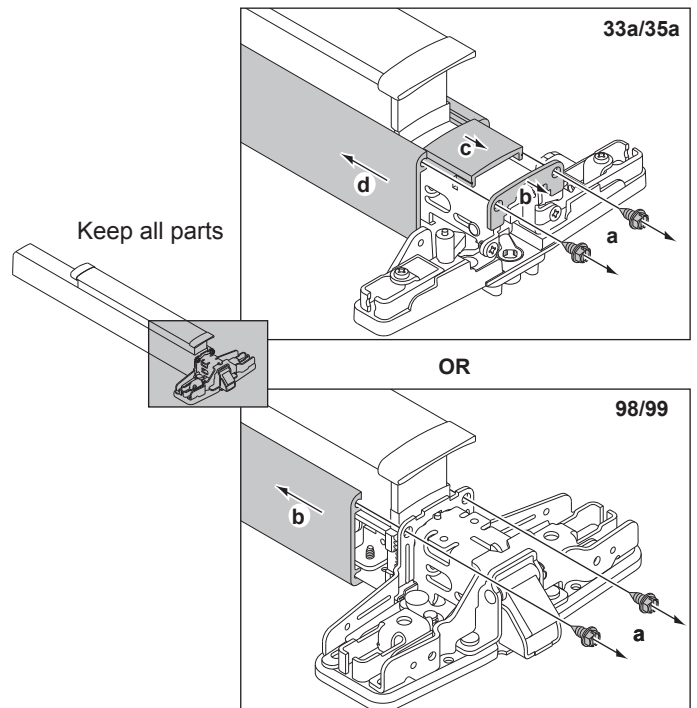
1 ⚠ Disconnect Power ⚠

To avoid risk of shock, disconnect AC power from power supply before proceeding with this conversion. If using 900-BB Battery Backup option, unplug all four wires from battery terminals.

2 Detach Vertical Rods if present

Refer to device instructions as needed.

4 Remove Mechanism Case

33a/35a

c

d

b

a

Keep all parts

OR

98/99

b

a

5 Prepare baseplate for new motor. Find your existing application below (on page 2 or 3) and follow steps.

FIRE OR LESS DOGGING DEVICE
(Applies to exit devices built after October 2014.
Baseplate conversion kit required for earlier devices.)

1. Remove pushpad from baseplate.

Keep pushbar
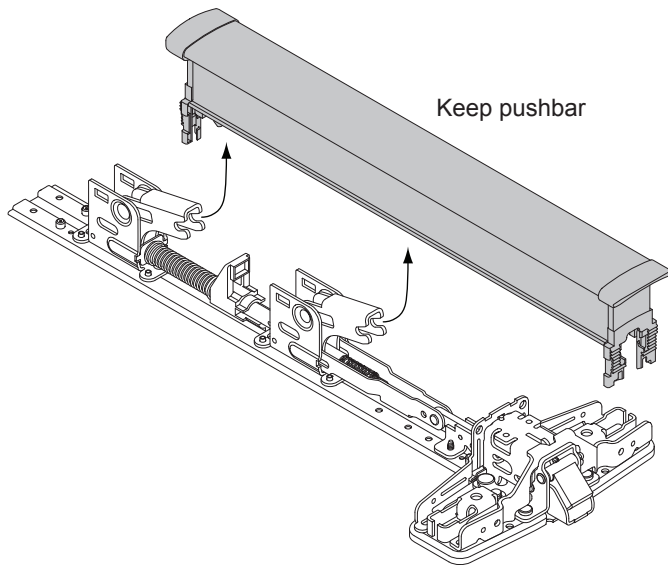
2. Install connector and pin.

Verify pin is snapped in place on other side of action rod. Pin should be inserted from side that will be up when device is mounted on door.

a

b
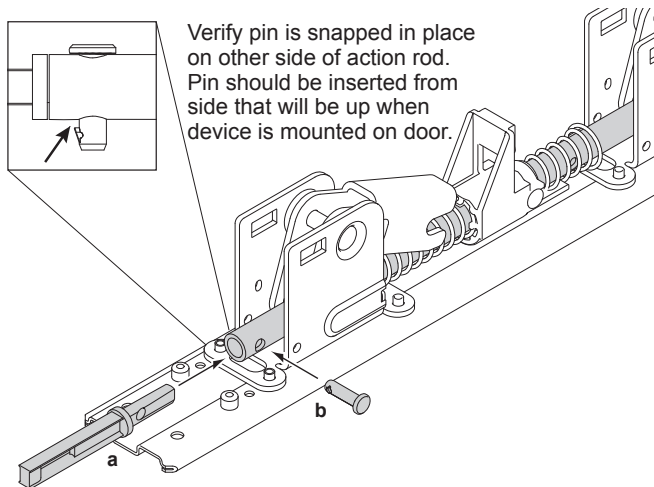
QEL DEVICE (built prior to December 2014)

1. Remove existing QEL motor

a

b

c
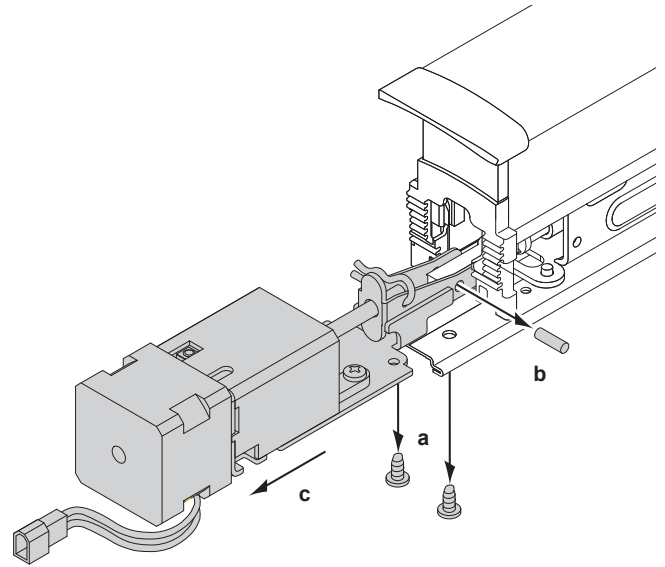
2. Discard old QEL motor assembly.
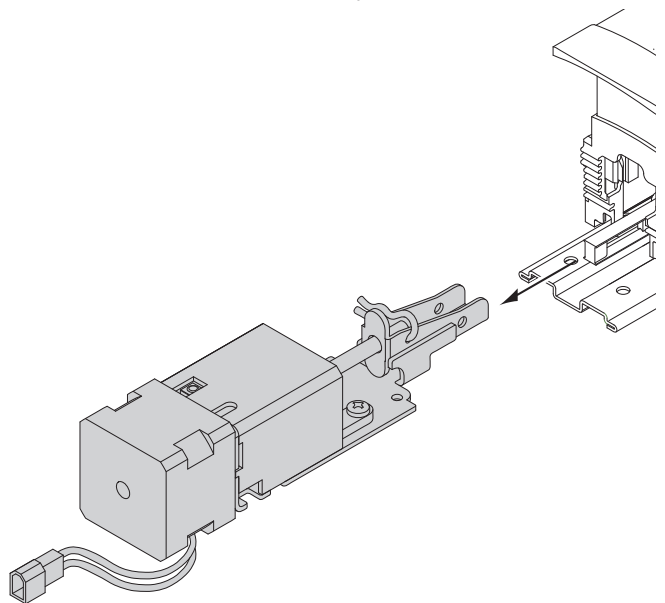
QEL DEVICE (built after December 2014)

1. Remove existing QEL motor.

a

b
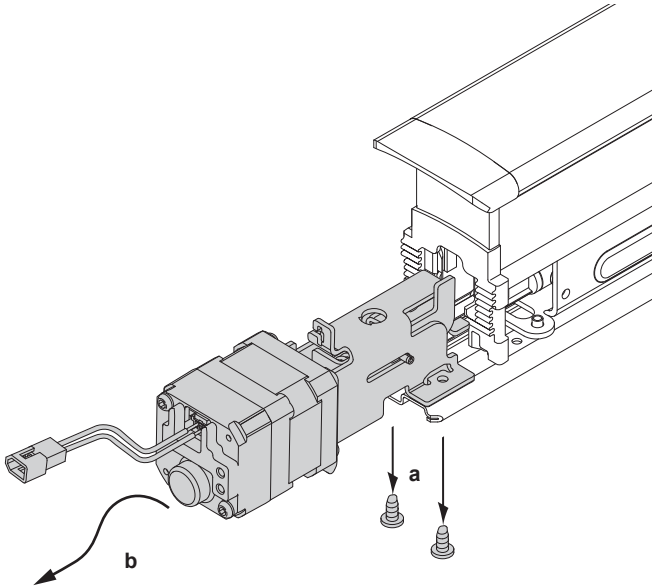
2. Discard old QEL motor assembly.
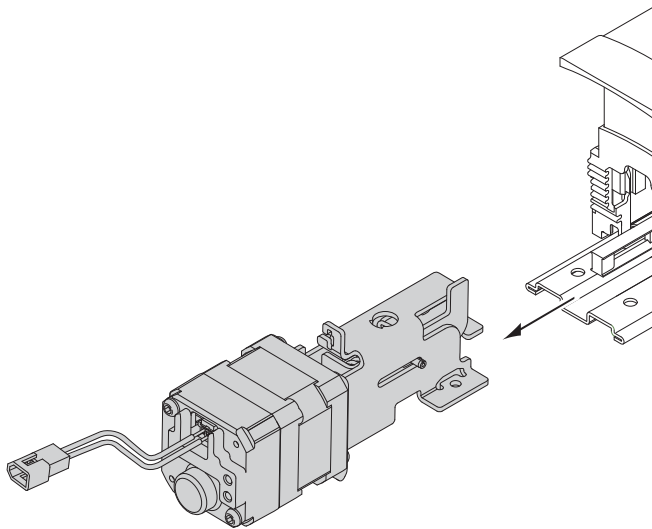
PANIC DEVICE (with dogging assembly)

1. Remove two screws from dogging assembly. If riveted see below.
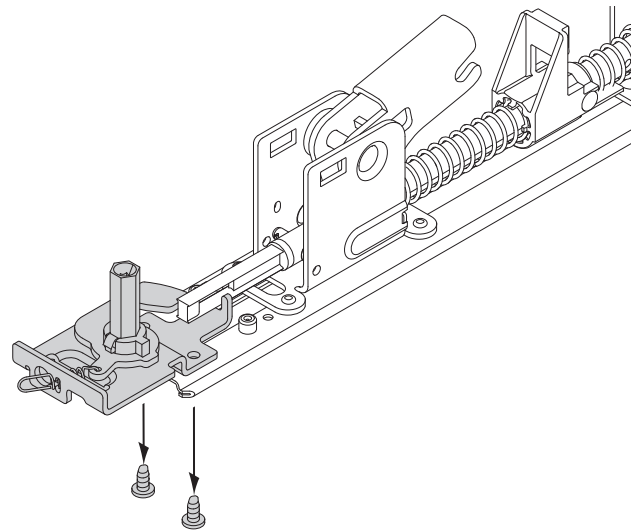
2. Drill or use center punch on two rivet heads until rivets can be removed from baseplate.

1/4" or 5/16"

or

**Note: Do not drill through baseplate.
Rivet may tend to spin with drill**
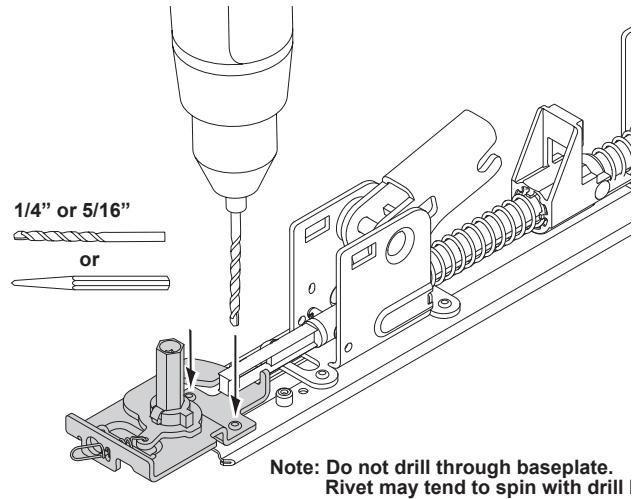
3. Remove and discard dogging assembly.
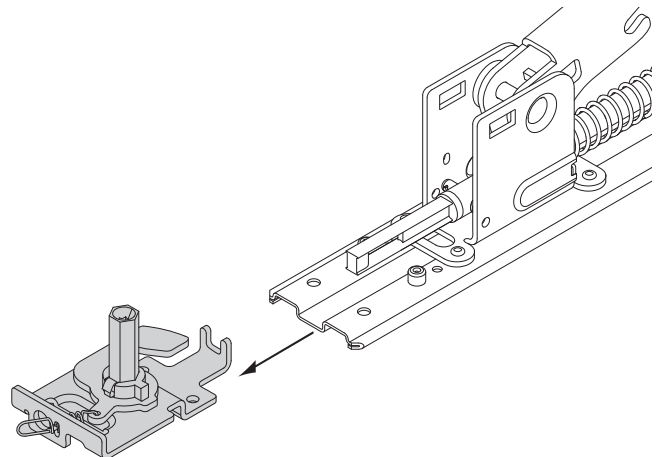
6   Install New QEL Motor Assembly

New QEL
motor assembly

a

b
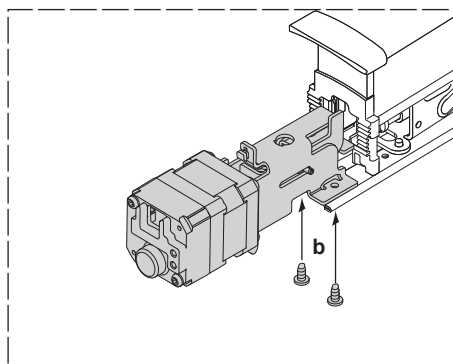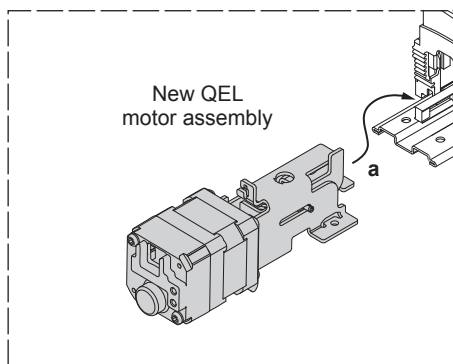
7   Install Mechanism Case

33/35

a

b

c

d

OR

98/99

a

b
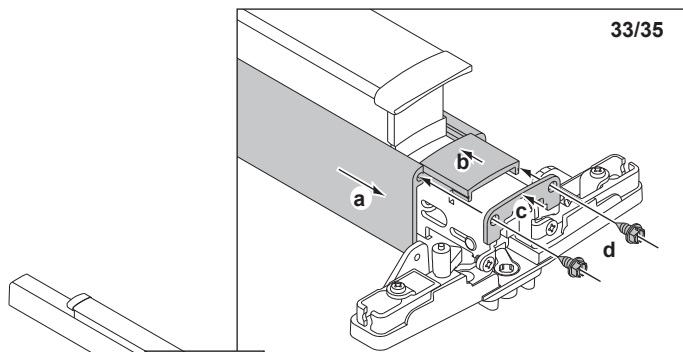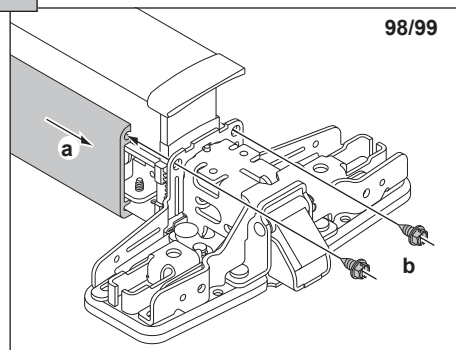
8   Prepare dogging cover for HD dogging key (if applicablle and only on panic devices).

8a   Locate and drill hole

1/4"

Center of Cover

Deburr edge of hole

1 1/2"
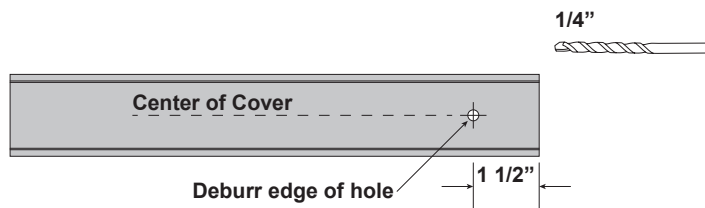
8b   Install dogging cover
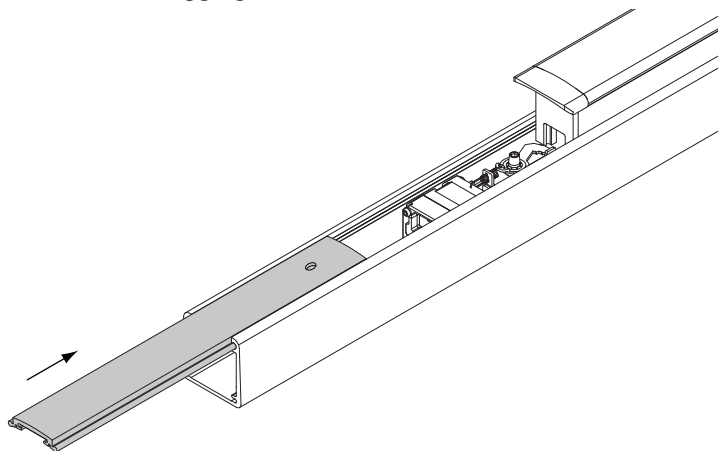
9   Drill Wire Access Hole (if required)

$5/16$"

Drill ⅝" dia. access hole
through device side of door.
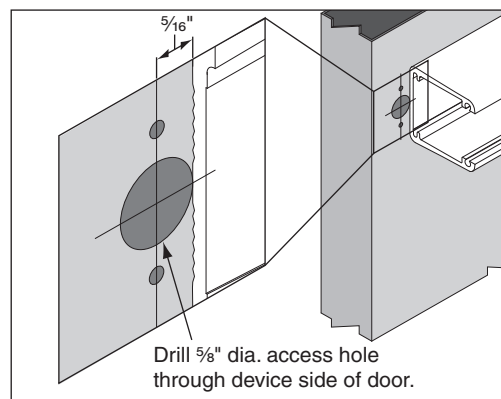
10 Attach Exit Device to Door

d

a

b
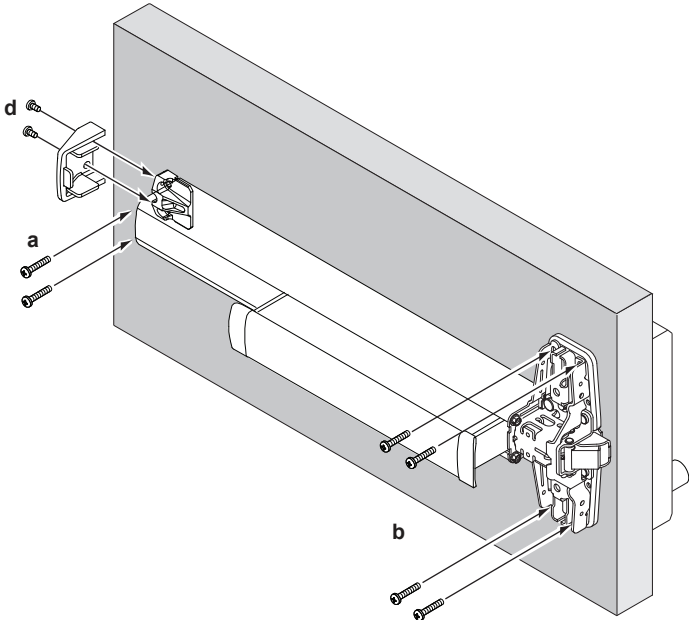
For more detailed installation instructions for specific Exit Devices, visit the Support area of the Allegion website at www.allegion.com/us

11 Confirm Equipment Compatibility

The QEL is compatible with the following equipment (refer to individual instructions as needed):
- PS900-SERIES Power Supplies - PS902, PS904, PS906, PS914
- 900-SERIES Option Boards - 900-2RS, 900-4R, 900-4RL, 900-2Q
- PS873 Power Supply Plus 871-2, 871-2Q, 873-4TD/AO Option Boards

12 Route Two Wires from QEL Exit Device to Power Supply

QEL Electrical Load

Voltage: 24 VDC
Current: 1.0 A inrush (0.5 sec)
0.14 A holding

PS900-Series power supply with 900-Series option board(s) installed

QEL device used with EPT, Door Loop, or Electric Hinge/Pivot

Distance (one way)	Wire Gauge
200'	18AWG
320'	16AWG
500'	14AWG
800'	12AWG

EPT shown. A door loop or electric hinge/pivot may also be used.

QEL Exit Device

Note: Power wires to QEL are not polarized.

13 Install 900-2Rs, 4RI, or 4R Option Board(s) into Power Supply

a Review Available 900 series Option Board Mounting Locations (Gray)

PS902

1

PS904
PS914

1 **2**

PS906

1 **2**

3
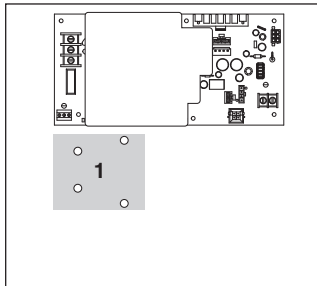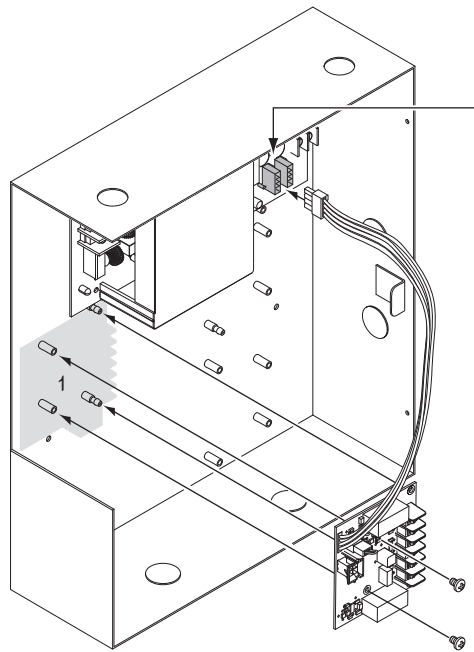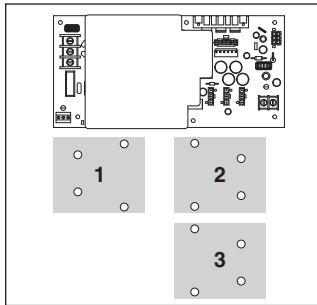
b Plug Option Board Cable into any Available Option Connector

Option 1

PS902
1 Board

Option 1 Option 2

PS904, 914
2 Boards

Option 1 Option 2 Option 3

PS906
3 Boards

1
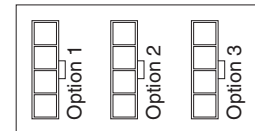
c Secure Board(s) with Screws

Notes: 1. 24VDC output setting required when QEL device connected

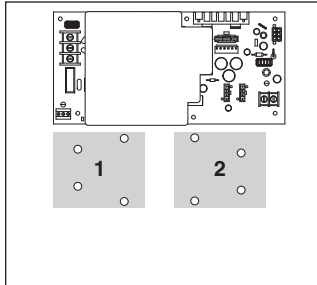2. If installing board in location 2 or 3, rotate board 180˚

3. The QEL is compatible with an existing 900-2Q board if currently installed.

4. Latchbolt retraction of (2) sequenced QEL's requires more than 1 second to complete.

5. When powering multiple components, verify that the amperage requirements of all components combined does not exceed the power supply output rating.

14 Connect Input and Output Wires to Option Board (2RS Shown)

Sequential Mode - Typical Wiring

PS900 Series

120/240 VAC 50/60Hz

(PS900 Series only)

2RS

Input $I1$ will activate both outputs

| SC | I1 | 01 | I2 | 02 | GND |

EPT-2/10 EPT-2/10

Access Control for Devices 1 & 2

QEL Device 1 QEL Device 2

Note:
Fail secure output only allowed if approved by Authority Having Jurisdiction
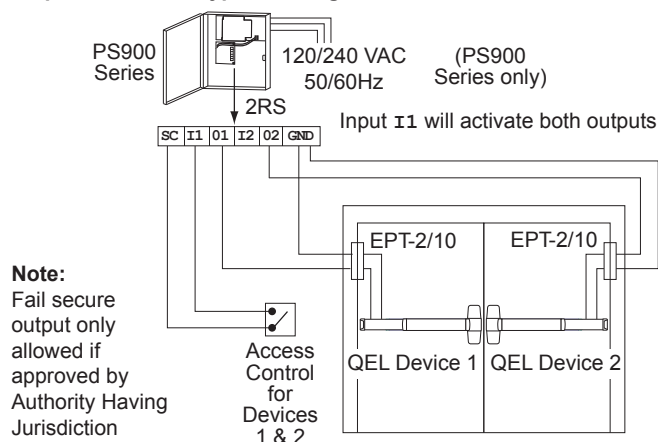
Individual Mode - Typical Wiring

PS900 Series

120/240 VAC 50/60Hz

Input $I1$ will activate output 1
Input $I2$ will activate output 2

2RS

| SC | I1 | 01 | I2 | 02 | GND |

EPT-2/10

Access Control for Device 2

QEL Device 2

EPT-2/10

Access Control for Device 1
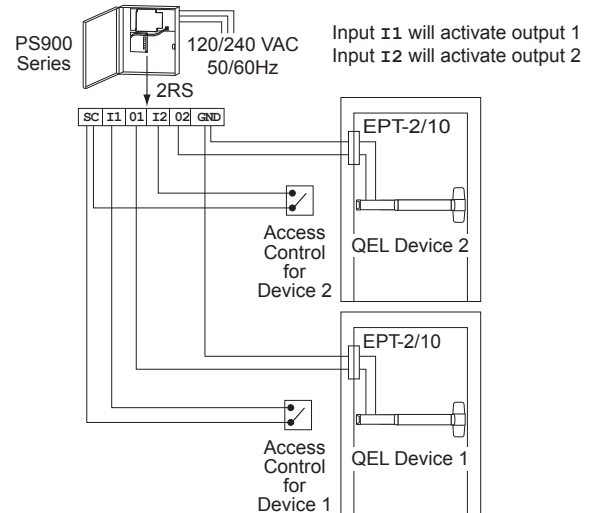
QEL Device 1

15 Check Operation

A. Activate each input and verify all QEL devices operate properly.

B. If any device does not operate properly, see step 16 for troubleshooting.

16 If Necessary, Troubleshoot Operation (LED is only visible with the mechanism cover removed)

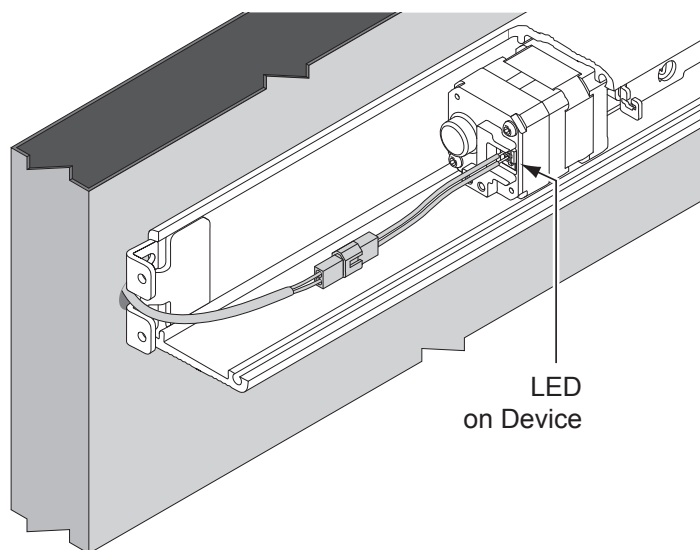| Power at the QEL	QEL Response	Condition/Solution
24VDC	LED - Solid green Latchbolt - retracted	Operation normal, latch retracted immediately
	LED - Solid red after latchbolt attempts to retract multiple times	Latchbolt cannot fully retract mechanically
		Verify mechanical adjustment (on vertical rod or mortise lock devices if used). Remove and reapply input voltage to reset this condition.*
		See *Check Mechanical Operation* on page 8 as needed.**
	LED - Flashing green/red Latchbolt - not retracted	Excessive tamper (while power applied, the pushpad was pulled out at least 3 time)
		Wait 15 seconds and latchbolt will retract again OR remove and reapply power to clear condition
24VDC low	LED - Flashing green Latchbolt - retracted	Voltage low during latchbolt retraction (latchbolt retracts at reduced force) Wire length is too long, wire gauge is too small or power supply has poor regulation
29VDC or greater		Input voltage is too high for proper operation
		Wrong power supply, power supply defective.
13VDC or lower	LED- Flashing red Latchbolt - will not retract	Input voltage is too low for proper operation
		Wrong power supply, power supply defective or not set to the proper output voltage.
		To set, remove AC power from power supply, change power supply setting from 12 to 24VDC, then reapply AC power and verify proper operation.
0VDC	LED - off Latchbolt - not retracted	No input voltage
		Problem with the power supply, control switch or wiring
0VDC	LED - off Latchbolt - retracted	No input voltage
		Mechanical dogging is engaged

For information about adjusting exit devices, you can find their installation instructions in the support area at www.allegion.com/us or call Technical Services at 1-877-671-7011

LED
on Device

33A/3527A	98/9927	98/9947WDC
33A/3547A	98/9947	98/9957
		98/9975

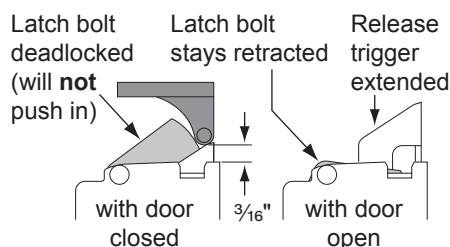| 33/3549A	98/9949
33/3550A-WDC	98/9949WDC
	98/9950WDC

1. Make sure device is not dogged for SD-QEL / HD-QEL.

2. Depress pushbar and make sure latch bolt retracts and extends fully (see Figure 1).

3. If latch bolt does not retract or extend fully, adjustments may be required per the device installation instructions.

1. Make sure device is not dogged for SD-QEL/HD-QEL.

2. Depress pushbar. Door should begin to open with pushbar depressed halfway.

3. Close door. Top latch should be secure. If two point latch, bottom latch should be secure as well.

4. If device does not function as described in steps 2 and 3, adjustments may be required per the device installation instructions.
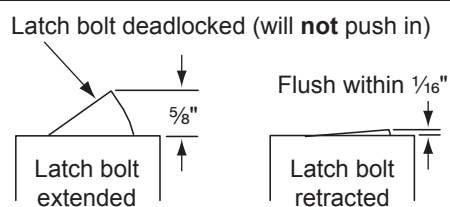
Any HD Device

1. Fully depress pushbar.

2. Insert hex dogging key and turn clockwise.

3. Release pushbar and verify latchbolt remains retracted.

4. Fully depress pushbar.

5. Insert hex dogging key and turn counter clockwise.

6. Release pushbar and verify latchbolt extends fully.

33A/3527A, 98/9927, 98/9957

Latch bolt deadlocked (will **not** push in)

Latch bolt stays retracted

Release trigger extended

with door closed $3/16"$ with door open

33A/3547A, 98/9947, 98/9947WDC

Latch bolt deadlocked (will **not** push in)

Flush within $1/16"$

$5/8"$

Latch bolt extended

Latch bolt retracted

98/9975

Latch bolt extended $3/4"$

Latch bolt retracted Flush within $1/16"$

Figure 1

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