This instruction covers new installation of the 98/9949 concealed vertical device for hollow metal and aluminum doors.

Also covered is the CS 98/9949 retrofit cabling system for converting 98/9947 Series to 98/9949 Series (compatible with models 98/9947, 98/9947-F, 98/9947-LBR, and 98/9947-F-LBR).

See page 16 for an explanation of Warnings and Cautions used in this booklet.
**CABLE IDENTIFICATION**

1 Identify Cables and Locations.

<table>
<thead>
<tr>
<th>Door Opening Height</th>
<th>A Top Cable (Red)</th>
<th>B Bottom Cable (White)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6' 0&quot; - 6' 10&quot;</td>
<td>47250398</td>
<td>47250403</td>
</tr>
<tr>
<td>6' 10&quot; - 8' 0&quot;</td>
<td>47250175</td>
<td>47250178</td>
</tr>
<tr>
<td>8' 0&quot; - 9' 2&quot;</td>
<td>47250176</td>
<td>47250179</td>
</tr>
<tr>
<td>9' 2&quot; - 10' 4&quot;</td>
<td>47250177</td>
<td>47250180</td>
</tr>
<tr>
<td>10' 4&quot; - 11' 6&quot;</td>
<td>47250399</td>
<td>47250404</td>
</tr>
<tr>
<td>11' 6&quot; - 12' 8&quot;</td>
<td>47250400</td>
<td>47250405</td>
</tr>
<tr>
<td>12' 8&quot; - 13' 10&quot;</td>
<td>47250401</td>
<td>47250406</td>
</tr>
<tr>
<td>13' 10&quot; - 15' 0&quot;</td>
<td>47250402</td>
<td>47250407</td>
</tr>
</tbody>
</table>

* Based on standard centerline of 39 5⁄8" from finished floor

**CABLE COMPONENTS**

**CABLE SIZING PREPARATION**

2 Align Sizing Tape to Horizontal Device Center Line as shown. For Bottom Cable Sizing (if applicable), Align Sizing Tape to Bottom Edge of Door.

Use cable components diagram above for reference.

For 2-Point Latch Only
**CABLE SIZING**

3 To Size Top Cable, Align Sizing Spacer Hook to Top Edge of Door.

4 Loosen Conduit Lock Nut ½ Turn. At Opposite End of Cable, Pull Casing Cap to Line on Tape.

5 Hand Tighten Conduit Lock Nut.

6 Wrench Tighten Conduit Lock Nut ¼ Turn.

7 Remove Warning Label. While Pulling Core Wire Tight, Hand Tighten End Fitting Nut.

8 Remove Sizing Spacer. (Do not discard.)

9 While Holding End Fitting in Place with Pliers, Fully Tighten End Fitting Nut with Wrench.

10 Cut Core Wire Flush with End Fitting.

11 Snap Sizing Spacer onto Large Diameter Conduit for Storage.

12 To Size Bottom Cable, Align Sizing Spacer Hook to Top Edge of Door as before, and Repeat Steps 3 thru 10.

**Caution:** Do not remove sizing spacer from cable assembly until indicated.

**Caution:** Do not overtighten.

**WARNING** Failure to properly tighten conduit lock nut will result in device malfunction and possible lock in or lock out situation.

**WARNING** Failure to properly tighten end fitting nut will result in device malfunction and possible lock in or lock out situation.

Once tightened down, end fitting nut can’t be loosened or readjusted.

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Repeat Steps 3 thru 10
**CABLE INSTALLATION**

### 13 Flip Top Cable.

**Caution:** After sizing, TOP cable must be flipped 180° before installing. See tag.

### 14 Install Top Cable.

a. There is an end fitting on one end of the red cable. Position this end to clip on center slide.

b. Pull cable into clip to snap it into place.

c. Push cable snap against center slide to secure cable.

d. Follow steps (a) thru (c) to install opposite end of red cable to top latch in the position marked red.

### 15 Install Bottom Cable.

**For 2-Point Latch Only**

a. There is an end fitting on one end of the white cable. Install this end to the remaining top latch position (marked as white).

b. Install opposite end of white cable to bottom latch.

### Cable Removal

(If the cable was installed in wrong position)

A cable removal tool was included with device. Slot in tool fits over cable, holding tabs down. Pull on cable snap to loosen cable for removal.
16 Determine if Bottom Latch Retraction Adjustment is Necessary.
For 2-Point Latch Only

a. Flex the cable into an L-shape as shown to simulate the installed condition of the latches.

b. To determine whether an adjustment is required, actuate the top latch to the hold-open position by pressing down on the connecting rod. Bottom latch should retract to within $\frac{3}{16}$" of flush. If it does not, an adjustment is necessary.

If no adjustment is needed, proceed to Step 18.

17 Adjust Bottom Latch Retraction (if necessary).
For 2-Point Latch Only

a. Use a permanent marker or tape to mark position of bottom cable conduit.

b. Loosen conduit lock nut so conduit is free to slide.

c. Pull until (1) extra wrap of conduit can be seen (1 wrap = $\frac{1}{8}$").

d. Hand tighten conduit lock nut.

e. Repeat Step 16. Confirm bottom latch now retracts to within $\frac{3}{16}$" of flush.

f. If not, loosen conduit lock nut, pull out an additional wrap of conduit, and hand tighten conduit lock nut.

g. Wrench tighten conduit lock nut ¼ turn.

Caution: Do not overtighten.

WARNING
Failure to properly tighten conduit lock nut will result in device malfunction and possible lock in or lock out situation.

18 Confirm Bottom Deadlatching.
For 2-Point Latch Only

a. Lock top latch. Flex the cable into an L-shape as before.

b. Push against flat side of bottom latchbolt. Latchbolt should NOT release.

If latchbolt releases, return conduit to position marked in Step 17a. Repeat bottom latch retraction adjustment.

CAUTION
If no bottom latch retraction adjustment was necessary, yet the bottom latch won’t deadlatch, contact technical support.
19 If Retrofit Installation

a. Remove device from existing door.

b. Remove existing door.

c. Remove and discard existing strikes.

20 With Door Laying Flat, Draw Horizontal Device Center Line (C).

NOTE: Centerline is predetermined by cutout. If no cutout exists, refer to Step 22 to determine centerline.

21 Align Plastic Template and Mark Door.

NOTE: This hole is to be 1/2" diameter (disregard larger center hole of plastic template).

22 If Necessary, Prepare Door Cutouts.

RHR shown (LHR uses same cutout and hole orientation)

LHR shown
(Use same cutout and hole orientation)

Plastic Template

Latch

Device

1/4" Backset

1" Min. Stile

1 1/4" to finished floor

3 3/4" to finished floor

1/2" Dia. (Omit for EO, DT, & TL)
If Necessary, Prepare 2 Center Slide Holes.

Push side of door, RHR shown

Prepare 4 Holes per Plastic Template.

Surface Mount (metal doors only)

<table>
<thead>
<tr>
<th>Device side</th>
<th>Trim side</th>
</tr>
</thead>
<tbody>
<tr>
<td>#25</td>
<td>#10-24</td>
</tr>
</tbody>
</table>

OR

Sex Bolts or 990 Trims

¼" (device side)

13/8" (trim side)

Assemble Latch Mounting Brackets.

Hollow Metal Only

Top

3/4" mounting shown

Deepth from top edge of door to the channel

10-32 x ¼"

Bottom

For 2-Point Latch Only

10-32 x ¼"
26 Prepare Access Hole for Bottom Latch Adjustment Pin. 

**Hollow Metal | For 2-Point Latch Only**

- Bottom of Door
- Door edge RHR
- Door edge LHR
- 4¼" depth clearance required
- ½" from push side of door
- 3⅞" RHR

27 If Necessary, Prepare Door for Top Strike Cutout.

- Cut out material this side only
- ½" RHR shown

28 Prepare Top of Door for Latch Mounting. 

**Aluminum Only**

- Door edge LHR
- ½" from push side of door
- 3⅞" Dia.

29 Prepare Bottom of Door for Latch Mounting. 

**Aluminum | For 2-Point Latch Only**

- Door edge LHR
- ½" Dia. hole
- ½" from push side of door

30 If Using 696/697 Thru-Bolting Trim, Remove Center Slide Mounting Nut.

- Thru-bolting trim uses standoffs (697DT trim shown)
- Center slide mounting nut
- ¾" socket with ¼" drive
- Mounting nut has left-handed threading

31 Remove Screw from Center Slide.

- This screw will be used to secure center slide to door in Step 33.

32 Slide Latch and Center Slide Assembly thru Door.

**NOTE:** Confirm top latch (and bottom latch, if applicable) is in correct orientation before proceeding.

- 1-Point Latch (LBL)
- Holes should face push side (notch side) of door

- 2-Point Latch
- Holes should face push side (notch side) of door

**Hollow Metal Door application shown**
Secure Center Slide to Door.

Secure center slide to door by lightly tightening lower screw.

Align upper hole visually.

Insert small screwdriver into upper hole to prevent center slide from rotating.

Fully tighten lower screw.

Align Bottom Latch and Install Mounting Screws.

Aluminum For 2-Point Latch Only

10-32 x ¼”

Secure Top Latch with 2 Screws.

Aluminum Only

10-32 x ¼”

Install Bottom Latch Mounting Bracket Assembly.

Hollow Metal For 2-Point Latch Only

NOTE: Confirm correct orientation of assembly before proceeding. Open side of housing should face pull side of door.

NOTE: Use 2 screws per bracket (center hole not used for this application).

Push Side (Notch Side) of Door

If using ¾” undercut door

¼” spacer blocks (2) are required

Spacer Block Kit (24231516) purchased separately
37 Insert Latch Adjustment Pin to Hold Bottom Latch in Place. (Hollow Metal For 2-Point Latch Only)

- Pin must go through both sides of bracket.
- Bottom edge of latch housing should be flush with bottom of door (for 3/8" standard undercut).

Assemble pin

Squeeze tabs on cap, then insert pin

38 Secure Top Latch Mounting Bracket. (Hollow Metal Only)

- NOTE: It is normal for the cable to bend inside the door, forcing the latch outward as shown here.
- 3/25 3/10-24 3/10-24 x 1/2"
- NOTE: Use 2 screws per bracket (center hole not used for this application).

39 Hang Door on Frame.

- Caution: For 2-point latches, bottom latch cannot be in locked position while hanging door on frame. Latch must be retracted.

40 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.

<table>
<thead>
<tr>
<th>Trims</th>
<th>NL drive screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>996L</td>
<td>996K</td>
</tr>
<tr>
<td>996K</td>
<td>996L-BE</td>
</tr>
<tr>
<td>996K-BE</td>
<td>E996L</td>
</tr>
<tr>
<td>*996L-BE</td>
<td>E996L-BE</td>
</tr>
<tr>
<td>*996K-BE</td>
<td>*696TP-BE</td>
</tr>
<tr>
<td>*696TP-BE</td>
<td>*990TP-BE</td>
</tr>
<tr>
<td>*990TP-BE</td>
<td>697TP</td>
</tr>
</tbody>
</table>

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).

* 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

If necessary, remove drive screw and rotate cam until trim lock tumbler is in UP position, then reinstall drive screw

41 If Necessary, Cut Device.

- Temporarily Remove Anti-Rattle Clip
- Cover Plate Flush

- 1 1/2" (38 mm) Recommended
42 Install Top Center Slide Screw.

NOTE: If using 696/697 trim, this screw will pass thru top center slide hole and secure directly into trim during Step 43.

43 Attach Center Case to Door.

44 Mark and Prepare 2 Holes.

Surface Mount (metal doors only)

Sex Bolts

1/4" (device side)

3/8" (trim side)

45 Install End Cap Bracket and End Cap.

Surface Mount or Sex Bolts

(1 3/4" door) 10-24 x 3/4"

Sex Bolts

(3/4" door) 10-24 x 1"

(3/4" door) 10-24 x 1 1/2"

10-24 x 1 1/4"

10-24 x 1 1/8"
46 If New Installation, Prepare Door Frame for Top Strike.

If Retrofit Installation, Install Steel Cover Plate to Cover Existing 338 Strike Opening in Accordance with the Frame Manufacturer's Fire Listing.

47 Install 2 Top Strike Screws Using the Slot Features on the Strike.

48 Prepare Floor for Bottom Strike.

Hollow Metal For 2-Point Latch Only

49 Install Bottom Strike.

Hollow Metal For 2-Point Latch Only

50 IMPORTANT:
Anchors must be below flush.
Prepare Threshold.

Aluminum For 2-Point Latch Only

a. After closing door with bottom latch installed, mark location where bottom latch bolt is contacting the threshold.
b. Drill a \( \frac{3}{4} \)" diameter hole in the threshold.

Install Lift Finger and Retainer Clip.

NOTE: Lift finger installation must be performed while the latches are in the extended (latched) position.

Slide L-shaped lift finger thru block in device center case and then into center slide

For 2-Point Latch Only

Push cable to the side so it does not interfere with lift finger.

a. Lock top latch.
b. Push down on top latchbolt. Latchbolt should NOT release.

If latchbolt releases,
- Loosen retainer clip screw.
- Rotate adjustment screw clockwise a couple turns to raise lift finger.
- Retighten retainer clip screw.

Confirm Top Deadlatching.

a. Lock top latch.
b. Push down on top latchbolt. Latchbolt should NOT release.

If latchbolt releases,
- Loosen retainer clip screw.
- Rotate adjustment screw clockwise a couple turns to raise lift finger.
- Retighten retainer clip screw.
55 Perform Functional Test of Door.

a. Depress pushbar. Door should begin to open when pushbar is nearly fully depressed. If necessary, refer to Step 53 to readjust lift finger.

b. With door closed, top latch should be secure.

c. With door closed, bottom latch should be secure.

d. Confirm that bottom latch does not drag against floor when door is opened.

56 Adjust Top Strike as Necessary, then Install the Third Strike Screw to Fix the Strike Position.

57 Install Center Case Cover.
CD (CYLINDER DOGGING)

CD function conversion

1. Remove mortise cylinder cam and reinstall in reverse (Figure 1).
2. Insert key and rotate cam to install the cylinder to the cover plate (Figure 2).
3. Remove key to slide cover plate in position in the mechanism case.

Dogging procedure

Turn cylinder key approximately \(\frac{1}{8}\) turn for standard dogging

Depress pushbar

Figure 1

Figure 2
WARNINGS AND CAUTIONS

**WARNING**

Warnings indicate potentially hazardous conditions, which if not avoided or corrected, may cause death or serious injury.

**CAUTION**

Cautions indicate potentially hazardous conditions, which if not avoided or corrected, may cause minor or moderate injury. Cautions may also warn against unsafe practices.

**Caution:** Cautions indicate a condition that may cause equipment or property damage only.