

General

This instruction sheet provides procedures for mounting, wiring, and splicing the 489 Indoor Building Entrance Protector (BEP).

How to Contact Us

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- For technical assistance regarding Apparatus Products: contact your local CommScope account representative or technical support at 1-800-344-0223.
- Report any missing or damaged parts to CommScope Customer Service in Omaha, Nebraska, at 1-866-539-2795

Tools Required

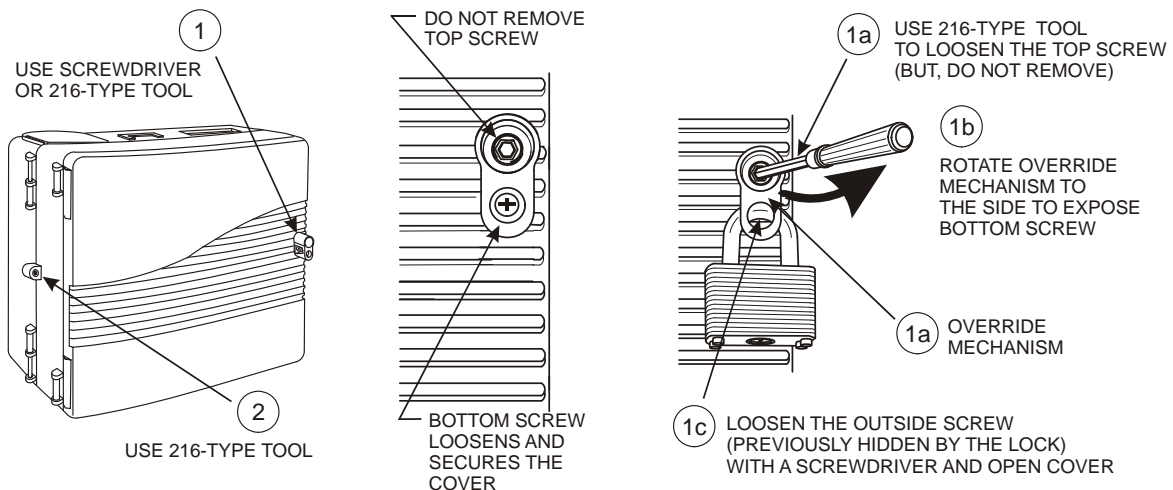
- Level
- Flat- or cross-head screwdrivers, or 216-type tool (part of 489SEC kit, Material ID 108314360).
- Tape measure or other measuring device
- Drill with 3/32-inch (2.38 mm) and 3/16-inch (4.76 mm) wood bits.

Opening The Unit

To open the 489 Indoor Building Entrance Protector:

1. Open the cover from the right-hand side of the unit, see Figure 1.
 - If the unit is **not padlocked**, ignore the top screw. Loosen only the bottom screw using a screwdriver or a 216-type tool. Open the outside cover.
 - If the unit is **padlocked**, perform the following procedure.
 - a. Use a 216-type tool to loosen the top screw of the override mechanism. Only loosen the screw; do not remove the screw or the override mechanism.
 - b. Rotate the override mechanism to the side to expose the bottom screw.
 - c. Use a screwdriver, 216-type tool to loosen the bottom screw. Open the outside cover.
2. The bottom layer opens from the left-hand side of the unit. Use a 216-type tool to loosen the screw and open the bottom layer of the 489 BEP, see Figure 1.

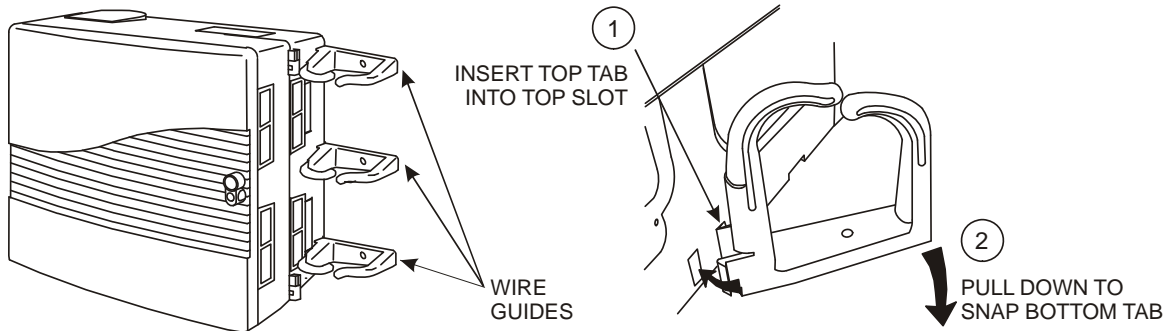
Figure 1. Opening the 489 Indoor Building Entrance Protector (BEP)



Installing Wire Guides To The Unit

1. Attach the wire guides to the right-hand side of the unit by inserting the top tab of the wire guide into the top slot of the unit, see Figure 2.
2. Rotate the wire guide down and snap the bottom tab of the wire guide into the unit, see Figure 2.

Figure 2. Wire guide installation

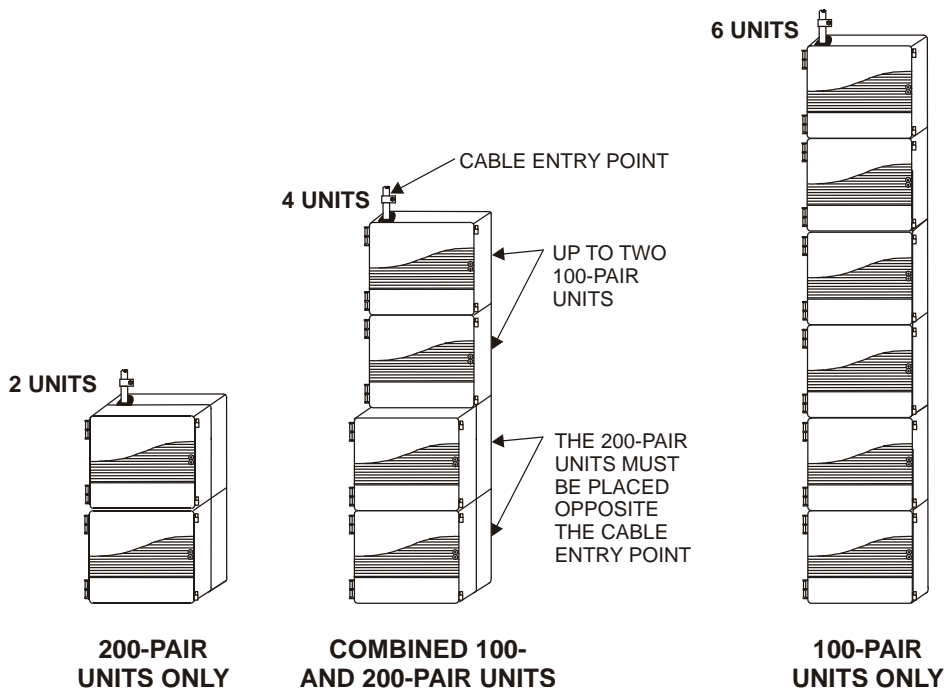


Maximum Stacking Configurations

The basic stacking rules are as follows (see Figure 3 for stacking configuration information):

1. The maximum number of 200-pair units in any one stack can be no more than two units.
2. When stacking a combination of 200-pair units and 100-pair units, the 200-pair units must be placed far opposite the cable entry point.
3. Any one stack can provide for no more than 600 pairs.

Figure 3. Stacking configurations



Installing The Backboard

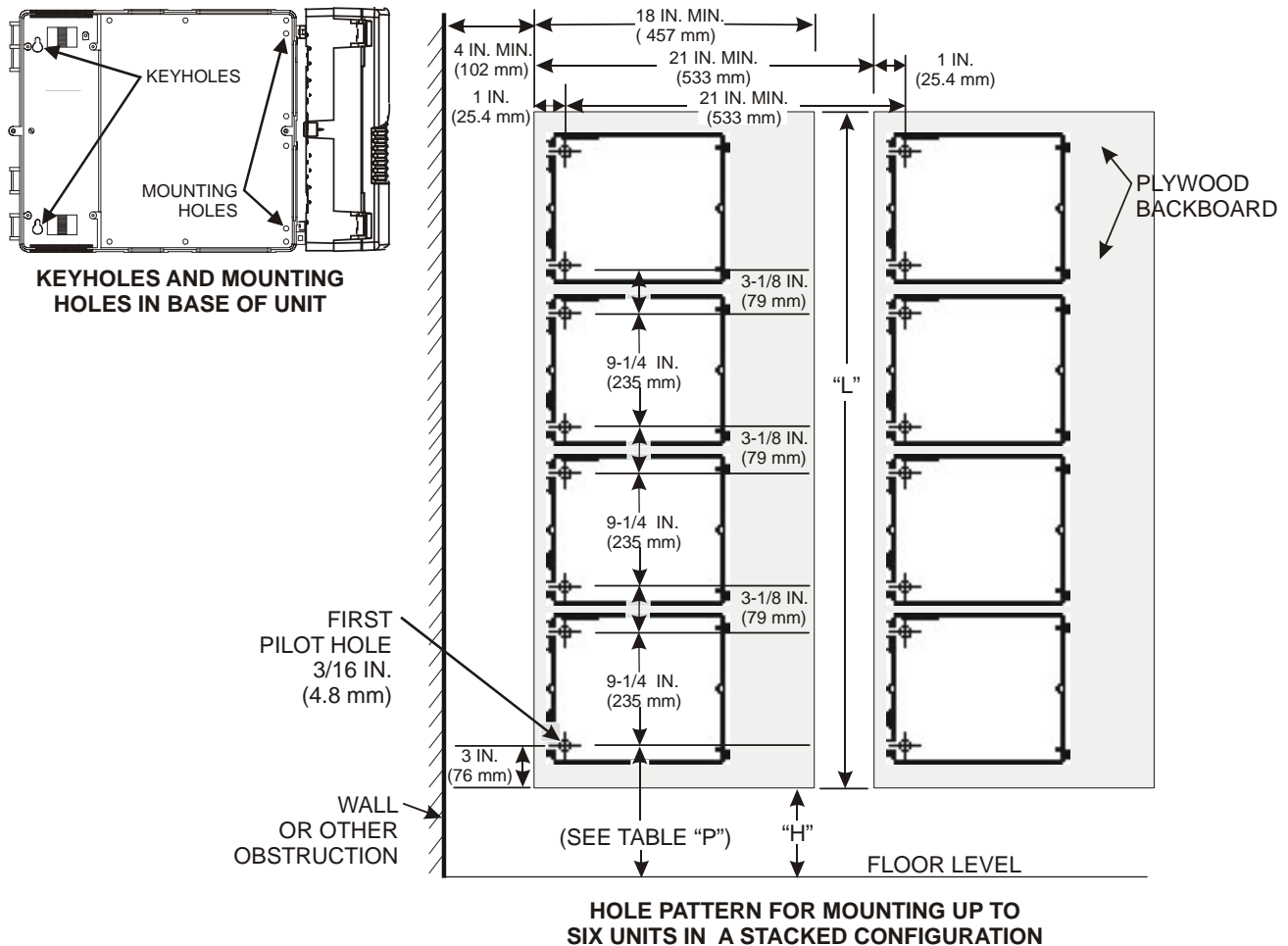
Building Entrance Protectors must be installed on a smooth, flat surface. The installation of a 3/4-inch (18 mm) plywood backboard is strongly recommended.

Table 1. Backboard dimensions

Number of Units in Stack	Plywood Length "L" Inches (mm)	Plywood Height from Floor "H" Inches (mm)	Lowest BEP Mounting Hole from Floor "P" Inches (mm)
1	15 1/2 (394)	51 (1295)	54 (1372)
2	28 (711)	39 (991)	42 (1067)
3	40 (1016)	27 (686)	30 (762)
4	52 1/2 (1334)	15 (381)	18 (457)
5	65 (1651)	11 (279)	14 (355)
6	77 (1956)	11 (279)	14 (355)

1. Measure, mark, and cut a strip of plywood backboard for each column of units. The minimum width of the plywood is 18-inches (457.2 mm) wide. The length and height from the floor vary depending on the number of stacked units in a column, according to Table 1.
2. Mount plywood to wall. Ensure that bottom is three inches closer to the floor than the first pilot hole, see Figure 4.

Figure 4. Hole pattern for mounting up to six units in a stacked configuration



Installing The Mounting Screws

Use the measurements as shown in Figure 4, or use the templates provided with the units.

1. Measure, mark, and drill the required 3/16-inch (4.8 mm) diameter pilot holes as shown in Figure 4. You can also use the mounting template provided with the unit to locate the pilot holes.
2. Install the short wood screws provided with the units into pilot holes leaving 5/8-inch (16 mm) to 3/4-inch (19 mm) clearance between each screwhead and the mounting surface, see Figure 4.

Note: You can install the units in a stacked formation as long as the top of the highest unit does not require a ladder for installation or for maintenance and the total number of units stacked does not exceed six units.

Mounting The Unit To The Backboard

For each unit, beginning with the unit to be mounted closest to the floor, perform the following steps.

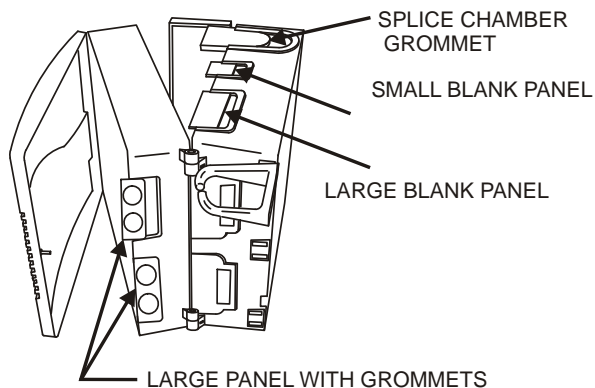
1. Open the unit to expose the two mounting keyholes on the left-hand side of the base, see Figure 4.
2. Position the unit so that the two keyholes are aligned with the heads of the two screws. Push forward, then down until the top of the keyholes rest on the screw stems. Tighten the screws, but do not overtighten them.
3. Insert the two long wood screws into the mounting holes and tighten the screws, but do not overtighten them.
4. Remove the splice chamber grommets, see Figure 5.
 - a. For **top fed outside plant cable** entry, open splice chamber of installed unit and remove all splice chamber grommets except bottom grommet of lowest unit.
 - b. For **bottom fed outside plant cable** entry, open splice chambers of installed unit and remove all splice chamber grommets except top grommet of the top unit.

Note: For gel filled cables, use only bottom entry.

5. If needed, rearrange the sliding type wire troughs (Figure 5), large blank panels, and large panels with grommets to allow for either top, bottom, or side routing of output wire. Insert the wire trough, blank panel, or large panel with grommets such that the top edge is flush with the top edge of the BEP unit.

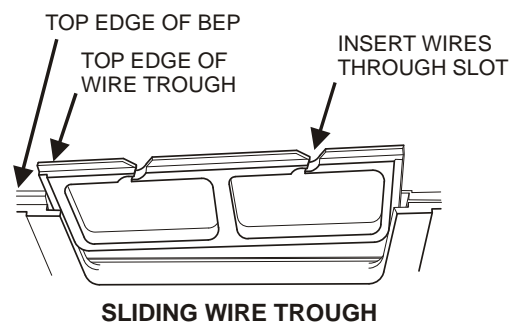
Figure 5. Mounting the 489 Indoor Building Entrance Protector (BEP)

INTERCHANGEABLE WIRE TROUGHS, LARGE BLANK PANELS, AND LARGE PANELS WITH GROMMETS ALLOW FOR TOP, BOTTOM, OR SIDE ROUTING OF OUTPUT WIRES.



INSTALL WIRE TROUGH OR LARGE PANEL WITH GROMMETS SUCH THAT TOP EDGES MATCH.

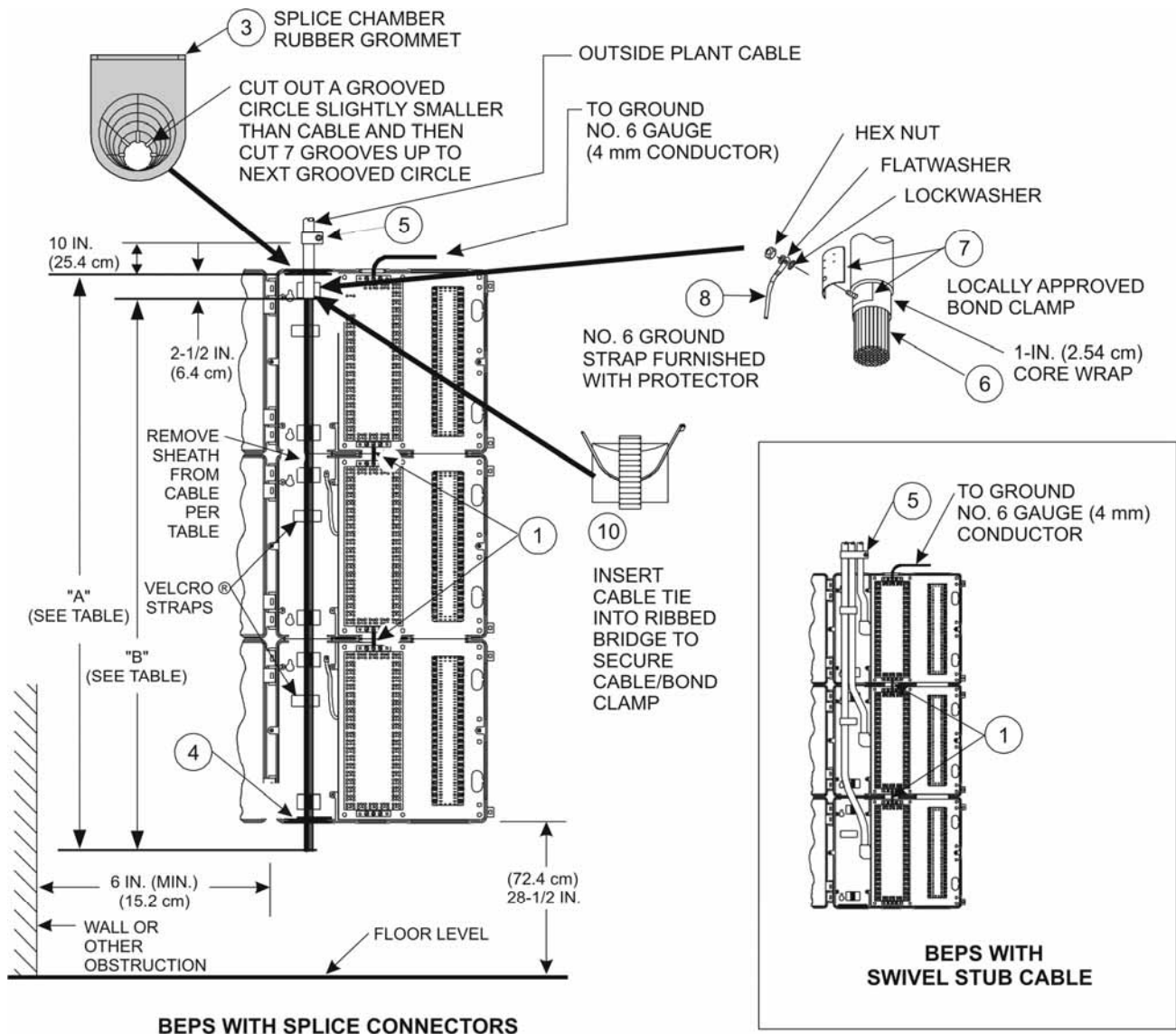
NOTE: USE LARGE PANEL WITH GROMMETS TO PROTECT AGAINST SAND/DUST ENTRY. THE WIRE TROUGH DOES NOT PROTECT AGAINST SAND/DUST ENTRY.



Wiring Procedure

1. Using short pieces of No. 6 gauge (4 mm) solid conductor wire, bridge ground connections between adjacent BEPs, shown in Figure 6. Route conductor through grommet in small panel to protect against sand and dust entry.
2. Connect a No. 6 gauge (4 mm) solid conductor ground wire from an approved building ground to the protector ground per local practices, see Figure 6.
3. Use one of the previously removed splice chamber grommets and cut around the grooved circular pattern which is equal or slightly smaller than the diameter of the cable entering the BEP. Make additional 0.1-inch (2.5 mm) long radial cuts around the precut hole at all marked radial lines, see Figure 6.
4. Insert cable into splice chamber grommet and pull through required length "A" as indicated in Table 2.

Figure 6. Wiring the 489 Indoor Building Entrance Protector (BEP)



®Velcro is a trademark of Velcro Industries B.V.

Table 2. Cable length and sheath removal dimensions

Protector Position in Stack	Length of Cable Pulled Through From Top Protector to Stack Position Protector Distance "A"	Amount of Sheath Removed Relative to Stack Position Distance "B"
1	22-1/2 IN. (57.2 cm)	20 IN. (50.8 cm)
2	35 IN. (88.9 cm)	32-1/2 IN. (82.6 cm)
3	47-1/2 IN. (120.7 cm)	45 IN. (114.3 cm)
4	60 IN. (152.4 cm)	57-1/2 IN. (146.1 cm)
5	72-1/2 IN. (184.2 cm)	70 IN. (177.8 cm)
6	85 IN. (215.9 cm)	82-1/2 IN. (209.6 cm)

5. Secure incoming cable to wall about 10 inches (25.4 cm) before entry gate, see Figure 6.
6. Strip sheath from cable 2-1/2 inches (6.35 cm) past entry gate. Conductor length is shown in Table 2 as Distance "B".

Note: When terminating gel-filled cable, remove all filling compound from exposed conductors, and apply two wraps of vinyl tape tightly around first 3 inches (7.6 cm) of loose conductors extending beyond cable jacket.

7. Install bond clamp (customer-supplied) on incoming cable per local practices.
8. Connect No. 6 gauge (4 mm) flexible ground strap (provided in splice chamber) to the bond clamp. Make sure there is electrical continuity between ground strap and bond clamp, see Figure 6.

Note: Only the ground strap closest to cable entry point will be used to ground incoming cable. Ground straps on all other protectors will not be used.

Note: For gel-filled cable, apply three tightly wrapped laps of vinyl tape around last 3 inches (7.6 cm) of cable jacket, bond clamp, and first 3 inches (7.6 cm) of loose conductors (3 complete layers of tape).

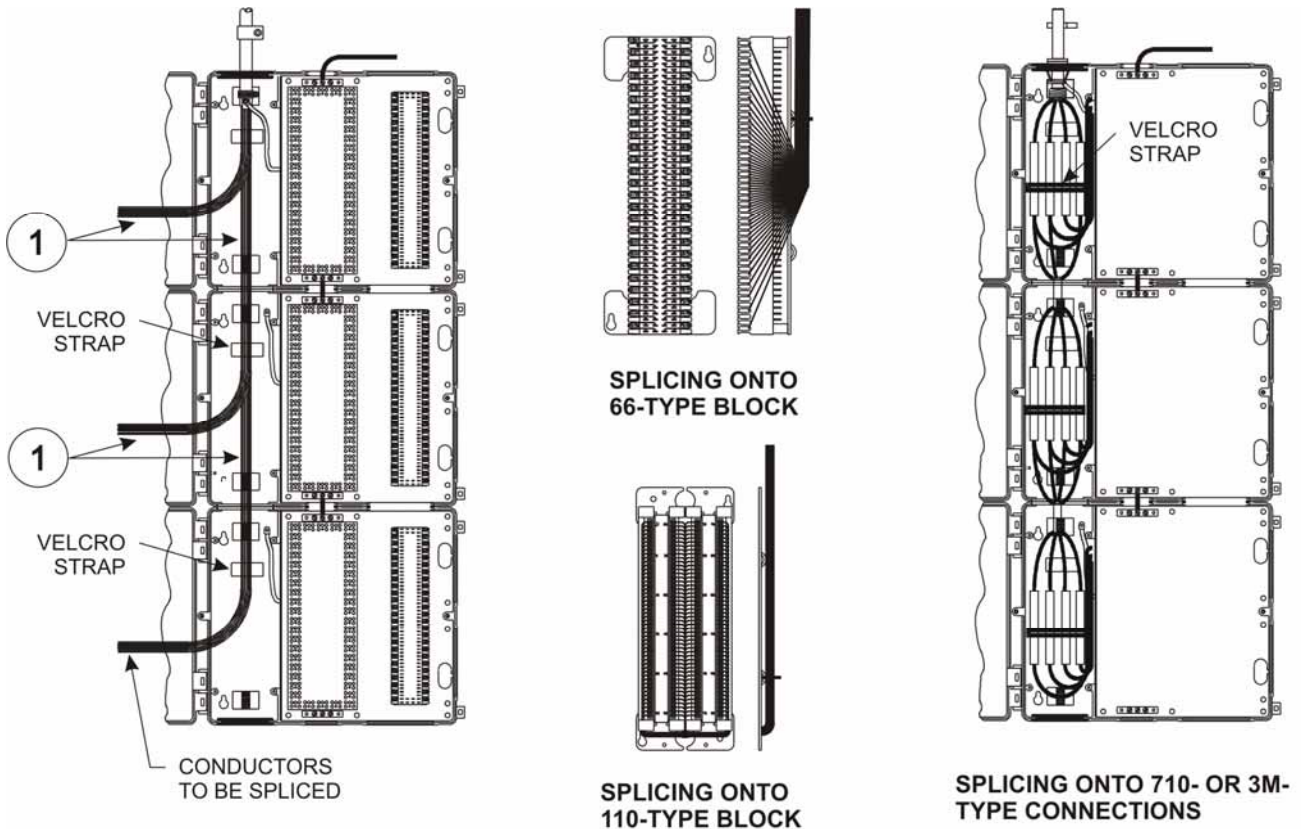
9. Push splice chamber grommet (on cable) to bottom of guides located at entry gate, see Figure 6.
10. Push the tip of a cable tie (furnished) into the ribbed bridge located at the entry gate until equal lengths of cable tie extend from the bridge. Using the two cable ties, secure cable/bond clamp to the ribbed bridge, see Figure 6.

Splicing Procedure

The following procedure applies to all BEPs that are not equipped with swivel stub input cable.

1. Identify and separate the bundles of wires to be spliced into the various BEPs. Exercise care during the splicing procedure to prevent sharp bends or kinks in the conductors.
2. Each connector type requires a slightly different splicing and routing method.
 - a. For splicing onto a **66-type connector**, use a cable tie to fix all incoming wires to the back of the mounting bracket leaving enough wire slack to reach the front face of the splicing connector. Route wires around the right and left side of the 66 block and terminate them to the front of the connector.
 - b. For splicing onto a **110-type connector**, use a cable tie to fix all incoming wires to the back of the mounting bracket leaving enough wire slack to reach the front face of the splicing connector. Route wires around the top or bottom side of the 110 block and terminate them to the front of the connector.
 - c. For splicing onto **710-type or 3M-type connectors**, terminate wires onto splicing connectors. Dress splice connectors and conductor neatly into splice chamber, group connectors to form a bundle against back of splice chamber and secure with attached Velcro strap.

Figure 7. Splicing connectors for the 489 Indoor Building Entrance Protector (BEP)



Wiring the Circuit (for 489J BEPs only)

Operating the Mini-Rocker

1. Press on top edge to release and pull up to open as shown in Figure 8.

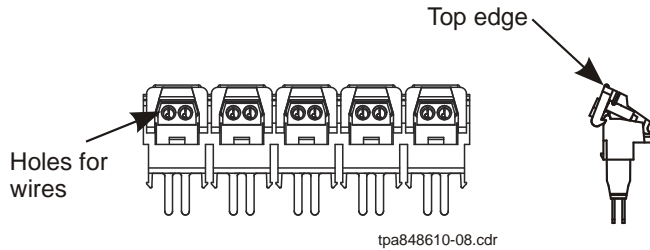


Figure 8. Mini-Rocker Open Position

2. Insert wires fully into holes. Look through clear plastic to ensure that wires are fully inserted.
3. While holding wires in place, push down on cap to close. Refer to Figure 9.

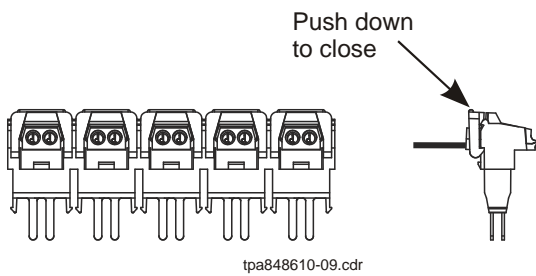


Figure 9. Mini-Rocker Closed Position

4. Push installed wires between rows of contacts and through mini-rocker wire guides.

Protector Modules Recommended for Use in all 489-type Indoor BEPs

Table 3. Ordering Information for 5-Pin Protector Modules

Protector Code	Material ID	Description	Sneak Current Rating @ 25 Degree C	DC Voltage Breakdown	Impulse Sparkover Voltage
3B1EW	104 410 147	Gas tubes	N/A	265-465 V	265-700 V
4B1EW	104 401 856	Gas tubes + Heat Coils	Carry 350 mA Operate in <210 seconds at 540 mA	265-465 V	265-700 V
9B1EW	700 211 865	Gas Tube + Heat Coil DSL (Cat 3 up to 10MHz)	Carry 350 mA Operate in <210 seconds @ 540 mA	265-465V	265-700V
3C1S	105 514 756	Solid State, Balanced	N/A	220-300 V	<300 V
4C1S	104 386 545	Solid State + Heat Coils, Balanced	Carry 350 mA Operate in <210 seconds at 540 mA	220-300 V	<300 V
7ABOT	106 945 074	Solid State, Balanced	N/A	265-400 V	<400 V
7CBOT	106 945 538	Solid State, Balanced + Heat Coils	Carry 350 mA Operate in <210 seconds at 540 mA	265-400 V	<400 V
<p>Note: For the full range of protector modules available to you, contact your CommScope account representative.</p>					
<p>IMPORTANT: UL* PROTECTOR SHOULD BE INSTALLED IN ACCORDANCE WITH NEC†, NCS, ANSI/NFPA 70 (ARTICLE 800 SECTION C).</p>					
<p>* Registered trademark of Underwriter Laboratories, Inc. † Registered trademark of National Fire Protection Association.</p>					

RoHS Declaration for 107894909 (25-Pair)

Table 4. China RoHS Declaration Table For 107894909 Only

489ACA1-025 建筑物 入口保护器 (489ACA1-025 Building Entrance Protector)	有毒有害物质或元素 (Toxic and Hazardous Substances or Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
零配件：螺丝 (loose parts kit: screws)	O	O	O	X	O	O
25- 对线 配线板组装：螺母 (25-pr panel assembly: nuts)	O	O	O	X	O	O
配线板 分组件：螺丝/螺母 (sub-assembly panel: screws/nuts)	O	O	O	X	O	O
189-25 配线板组装 (189-25 panel assembly)	X	O	O	X	O	O
地线条 (ground strap)	X	O	O	O	O	O
110 连接模块 (110 connector block)	O	O	O	O	O	O
外壳 (housing)	O	O	O	O	O	O

Date of Manufacture: XXZZZYY, XX = week, ZZZ = manufacturing location, YY = year

O: 表示该有毒有害物质在该部件所有均制材料中的含量在SJ/T 11363-2006规定的限量要求以下
 (O: indicates that the content of the toxic and hazardous substance in all the homogeneous materials of the part is below the concentration limit requirement as described in SJ/T 11363-2006.)

X: 表示该有毒有害物质至少在该部件的某一均制材料中的含量超出SJ/T 11363-2006规定的限量要求
 (X: indicates that the content of the toxic and hazardous substance in at least one homogeneous material of the part exceeds the concentration limit requirement as described in SJ/T 11363-2006.)

RoHS Declaration for 107894917 (50-Pair)

Table 5. China RoHS Declaration Table For 107894917 Only

489ACA1-050 建筑物 入口保护器 (489ACA1-050 Building Entrance Protector)	有毒有害物质或元素 (Toxic and Hazardous Substances or Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
零配件：螺丝 (loose parts kit: screws)	O	O	O	X	O	O
50- 对线 配线板组装：螺母 (50-pr panel assembly: nuts)	O	O	O	X	O	O
配线板 分组件：螺丝/螺母 (sub-assembly panel: screws/nuts)	O	O	O	X	O	O
189-50 配线板组装 (189-50 panel assembly)	X	O	O	X	O	O
地线条 (ground strap)	X	O	O	O	O	O
110 连接模块 (110 connector block)	O	O	O	O	O	O
外壳 (housing)	O	O	O	O	O	O

Date of Manufacture: XXZZZYY, XX = week, ZZZ = manufacturing location, YY = year

O: 表示该有毒有害物质在该部件所有均制材料中的含量在SJ/T 11363-2006规定的限量要求以下
(O: indicates that the content of the toxic and hazardous substance in all the homogeneous materials of the part is below the concentration limit requirement as described in SJ/T 11363-2006.)

X: 表示该有毒有害物质至少在该部件的某一均制材料中的含量超出SJ/T 11363-2006规定的限量要求
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RoHS Declaration for 107894966 and 107894925 (100-Pair)

Table 6. China RoHS Declaration Table For 107894966 Only

489ACC1-100 建筑物 入口保护器 (489ACC1-100 Building Entrance Protector)	有毒有害物质或元素 (Toxic and Hazardous Substances or Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
零配件：螺丝 (loose parts kit: screws)	○	○	○	X	○	○
电缆及套管组装：螺丝/螺母 (cable & sleeve assembly: screws/nuts)	○	○	○	X	○	○
100- 对线 配线板组装：螺母 (100-pr panel assembly: nuts)	○	○	○	X	○	○
配线板 分组件：螺丝/螺母 (sub-assembly panel: screws/nuts)	○	○	○	X	○	○
189-50 配线板组装 (189-50 panel assembly)	X	○	○	X	○	○
地线条 (ground strap)	X	○	○	○	○	○
110 连接模块 (110 connector block)	○	○	○	○	○	○
外壳 (housing)	○	○	○	○	○	○

Date of Manufacture: XXZZZYY, XX = week, ZZZ = manufacturing location, YY = year

○: 表示该有毒有害物质在该部件所有均制材料中的含量在SJ/T 11363-2006规定的限量要求以下
 (○: indicates that the content of the toxic and hazardous substance in all the homogeneous materials of the part is below the concentration limit requirement as described in SJ/T 11363-2006.)

X: 表示该有毒有害物质至少在该部件的某一均制材料中的含量超出SJ/T 11363-2006规定的限量要求
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Table 7. China RoHS Declaration Table for 107894925 Only

489ACA1-100 建筑物 入口保护器 (489ACA1-100 Building Entrance Protector)	有毒有害物质或元素 (Toxic and Hazardous Substances or Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
零配件：螺丝 (loose parts kit: screws)	○	○	○	X	○	○
100- 对线 配线板组装：螺母 (100-pr panel assembly: nuts)	○	○	○	X	○	○
配线板 分组件：螺丝/螺母 (sub-assembly panel: screws/nuts)	○	○	○	X	○	○
189-50 配线板组装 (189-50 panel assembly)	X	○	○	X	○	○
地线条 (ground strap)	X	○	○	○	○	○
110 连接模块 (110 connector block)	○	○	○	○	○	○
外壳 (housing)	○	○	○	○	○	○

Date of Manufacture: XXZZZYY, XX = week, ZZZ = manufacturing location, YY = year

○: 表示该有毒有害物质在该部件所有均制材料中的含量在SJ/T 11363-2006规定的限量要求以下。
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