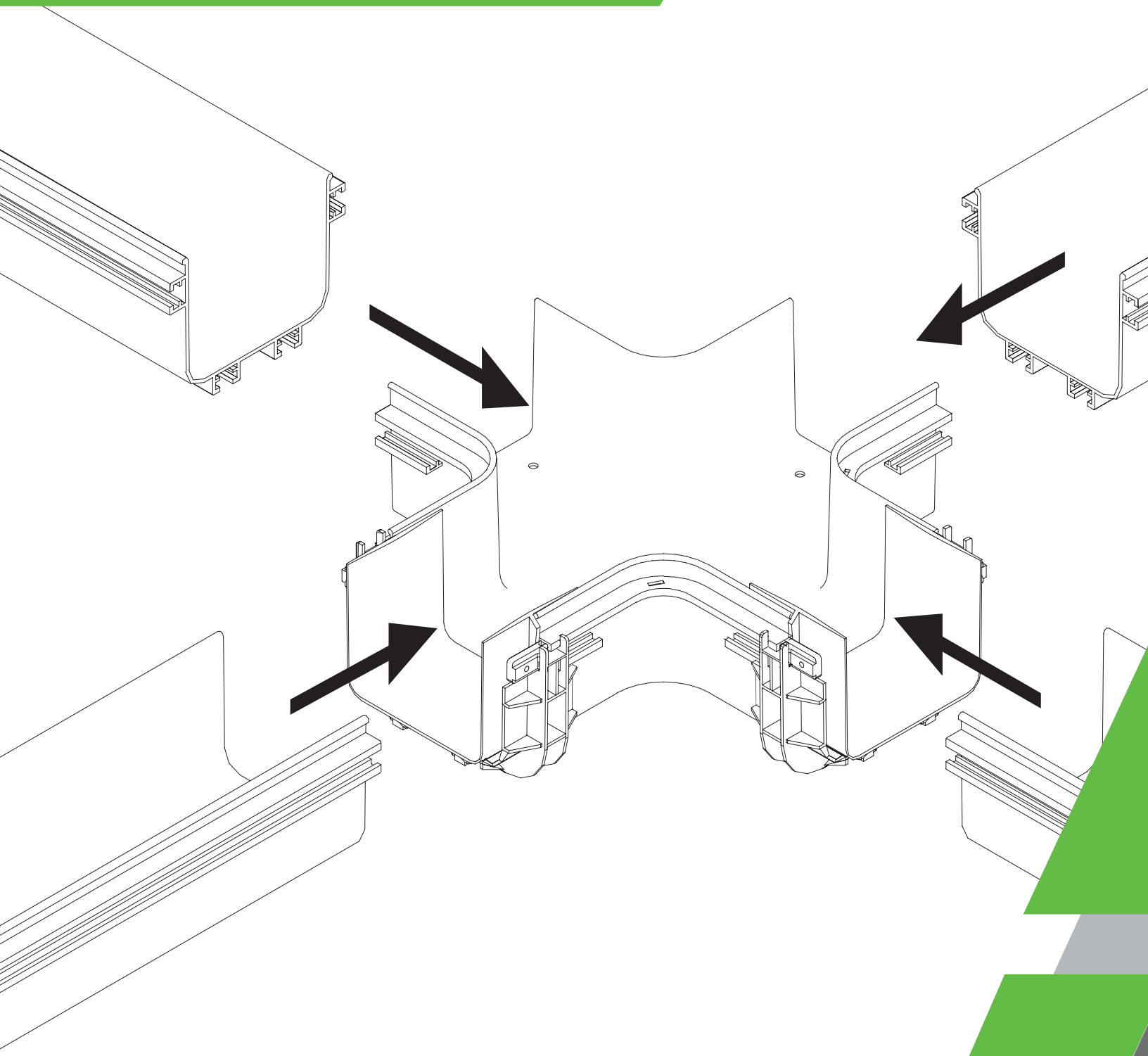
VERICOM®

## Fiber Cable Tray System



# INSTALLATION GUIDE

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## NOTIFICATIONS

This document is intended as a practical guide for the proper installation of Vericom's Fiber Tray system. It covers the most common components used in a fiber tray installation, but each installation is different and the unique circumstances and requirements of any given installation environment should be considered.

Installation and maintenance of cable tray wiring systems should be performed by a minimum of two qualified technicians. For the purposes of this guideline, a qualified technician is one who is familiar with electrical construction. In addition, that person is:

a) Trained and authorized to test, energize, clear, ground, tag, and lock out circuits, in accordance with established safety practices, and

b) Trained in the proper care and use of protective equipment, such as insulated rubber gloves, hard hats, safety glasses or face shields, dust masks, and flash-resistant clothing, in accordance with established safety practices.

**!WARNING!**

***Do not use a cable tray as a walkway, ladder, or support for people; cable tray is a mechanical support system for cables and raceways. Using cable trays as walkways can cause personal injury and can damage cable tray and installed cables.***

# GENERAL PROCEDURE

Following is a general guideline for installing a fiber tray system:

1. Prepare a sketch/drawing of the installation environment based on current/planned conditions. Use this information to determine a bill of materials required for the installation. Keep in mind any possible expansions when planning your capacity needs.
2. Install support structures:
   a. Install all required support structures prior to installing any fiber tray sections.
   b. If the tray system includes multiple tray widths, install the support structures for the widest tray first.
   c. Use the following table to determine the number of supports required:

| TRAY WIDTH | SUPPORT SPACING |
|---|---|
| 5” (120mm) | 6.5 ft max |
| 10” (240mm), 15” (360mm), and 24” (600mm) | 5 ft max |

   d. In addition, it is recommended to add a support at the junction of every transitional fitting (e.g., cross, T junction, 90° horizontal elbow, etc.)
   e. For 15” and 24” trays, install supports on each side of every junction.
3. Install horizontal tray components:
   a. Beginning with the longest/largest sections of the system, test fit several components (straight tray sections, couplers, and transitional fittings) on the floor before lifting into position.
   b. Cut any straight tray sections as required.
   c. Assemble components into lengths that can be lifted into position by the available personnel.
   d. Lift the assembled sections into position and secure to the support structures, adjusting the position of the support structures as needed. Finger tighten the fasteners to the support structures.
   e. Once the entire horizontal system has been installed, level and square all runs. Verify that the entire system is adequately supported. Tighten all fasteners.
4. Install vertical components:
   a. Position side drop and spill over items in the appropriate positions on the horizontal runs. Secure to the side of the tray as directed.
   b. Cut flexible tubing and/or straight tray sections to desired length (matching the vertical distance between the top of the cabinet/rack and the bottom of the side drop/spill over).
   c. Connect the flexible tubing and/or straight tray sections to the side drop/spill over and route to the desired location above the cabinet/rack.
5. Install tray covers (if used)
6. Inspect the entire system to ensure there are no missing fasteners or covers. Verify that all fasteners are tight and ensure that all runs are straight and level (i.e., no sagging).

# TRAY CAPACITY

The following capacity guidelines are based on Telecordia recommended pile-up (Generic Requirements and Design Consideration for Fiber Distrubuting Frames, GR-449-CORE, issue 1, March 1995). Recommended values (“Rec”) are based on random placement of patch cords in the tray, while maximum values (“Max”) are based on perfectly arranged cords within a tray.

## Tray Density

| PATCH CORD DIAMETER | RECOMMENDED DENSITY (per square inch) | MAXIMUM DENSITY (per square inch) |
|---|---|---|
| 1.7 mm | 120 | 142 |
| 2 mm | 90 | 103 |
| 3 mm | 40 | 46 |

## Tray Pile-Up

| | | 1.7 mm | | 2 mm | | 3 mm | |
|---|---|---|---|---|---|---|---|
| | TRAY WIDTH | REC | MAX | REC | MAX | REC | MAX |
| 2” PILE-UP | 5" (120 mm) | 1,080 | 1,278 | 810 | 927 | 360 | 414 |
| | 10" (240 mm) | 2,280 | 2,698 | 1,710 | 1,957 | 760 | 874 |
| | 15" (360 mm) | 3,480 | 4,118 | 2,610 | 2,987 | 1,160 | 1,334 |
| | 24" (600 mm) | 5,640 | 6,674 | 4,230 | 4,841 | 1,880 | 2,162 |
| 3” PILE-UP | 5" (120 mm) | 1,620 | 1,917 | 1,215 | 1,390 | 540 | 621 |
| | 10" (240 mm) | 3,420 | 4,047 | 2,565 | 2,936 | 1,140 | 1,311 |
| | 15" (360 mm) | 5,220 | 6,177 | 3,915 | 4,481 | 1,740 | 2,001 |
| | 24" (600 mm) | 8,460 | 10,011 | 6,345 | 7,262 | 2,820 | 3,243 |
| 4” PILE-UP | 5" (120 mm) | 2,160 | 2,256 | 1,620 | 1,854 | 720 | 828 |
| | 10" (240 mm) | 4,560 | 5,396 | 3,420 | 3,914 | 1,520 | 1,748 |
| | 15" (360 mm) | 6,960 | 8,236 | 5,220 | 5,974 | 2,320 | 2,668 |
| | 24" (600 mm) | 11,280 | 13,348 | 8,460 | 9,682 | 3,760 | 4,324 |

## CUTTING

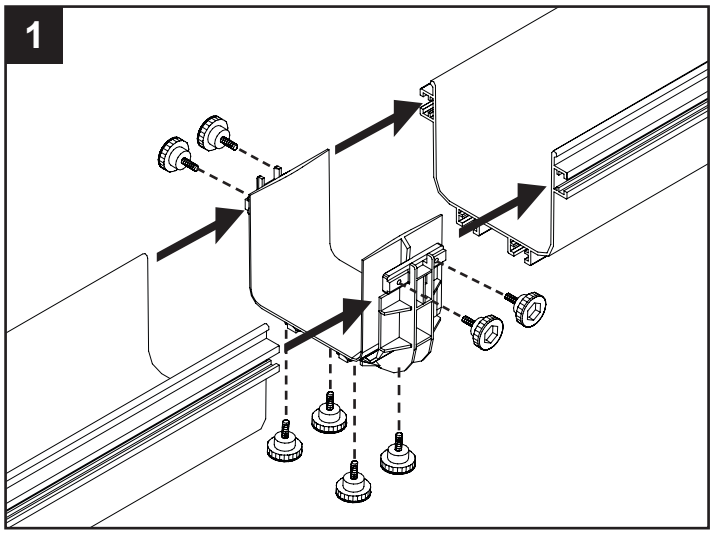
Straight tray sections come in 6.5 ft (2 meter) lengths that may need to be cut to fit a specific tray run length.

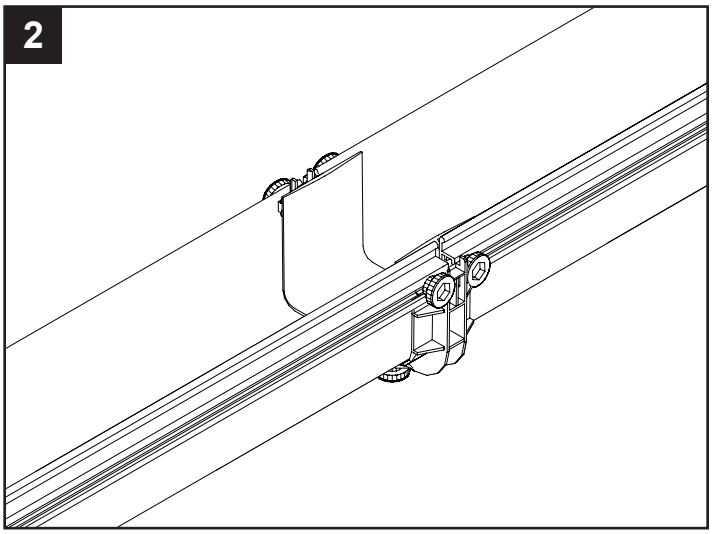
- Always use a miter box to ensure perpendicular cuts.
- Place the tray in the miter box upside down.
- Apply light pressure to the saw and cut slowly.
- Remove any remaining burrs with a file, utility knife, or sandpaper.

## TRAY ASSEMBLY

No tools are required to assemble/connect straight tray sections, couplers, elbows, crosses, tees, and other transitional fittings. When connecting any two tray components together, simply insert each into the coupler and push until fully in. Ensure that both components are flush against the center divider of the coupler, then insert the appropriate number of thumb screws into the threaded holes in the coupler and hand tighten.

### Coupler



## 90° Horizontal Elbow

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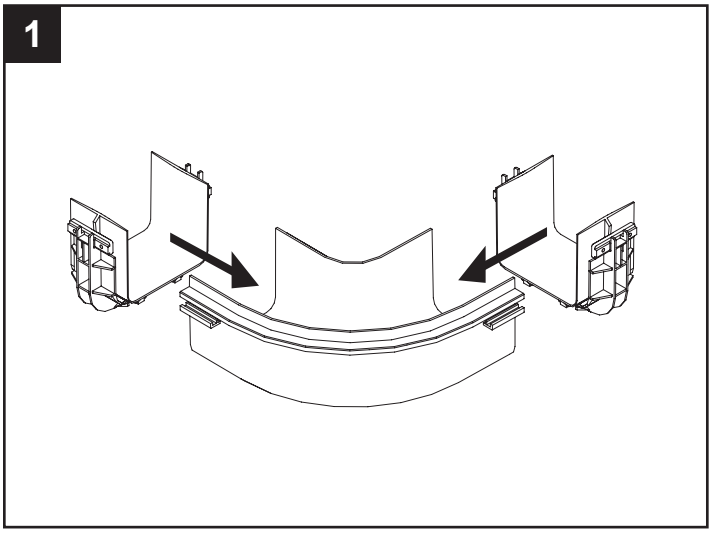

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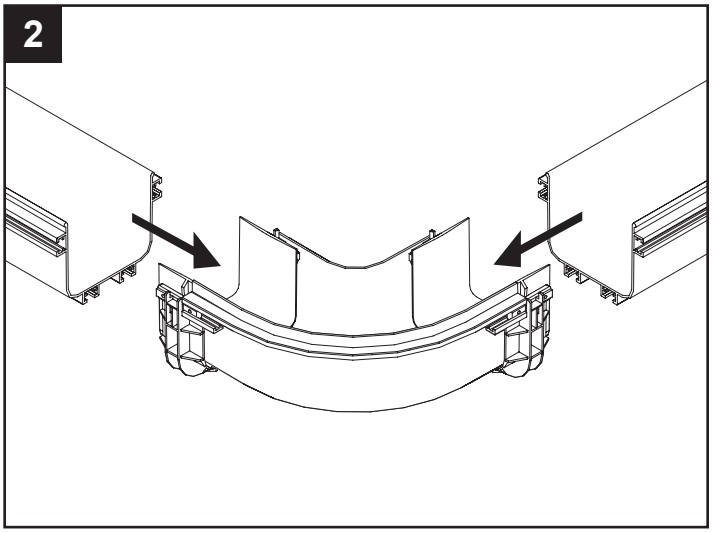

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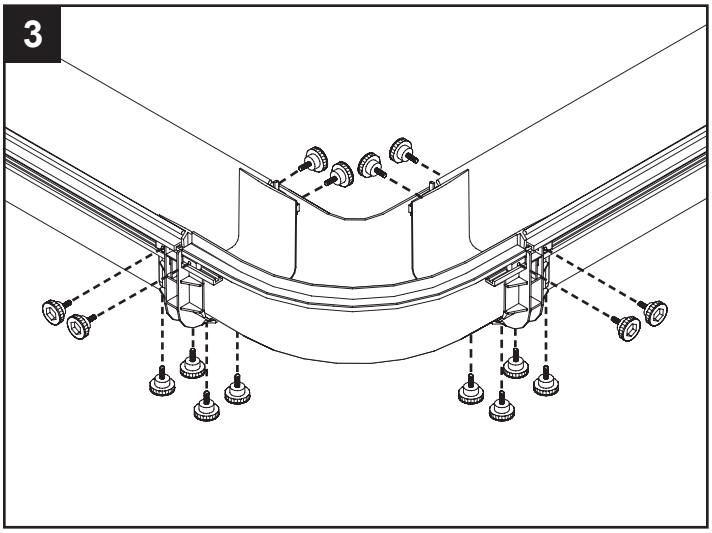

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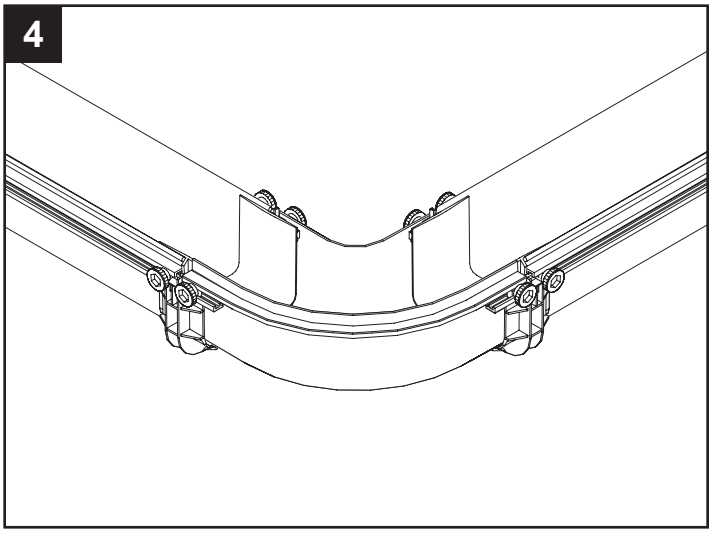

## T-Junction

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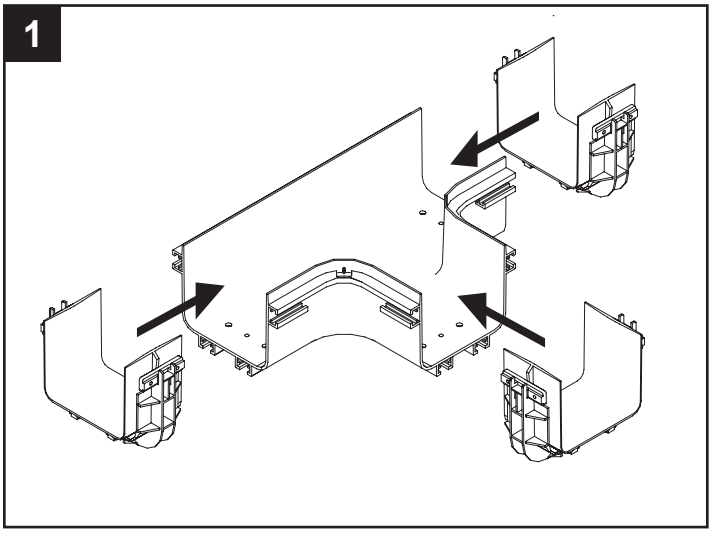

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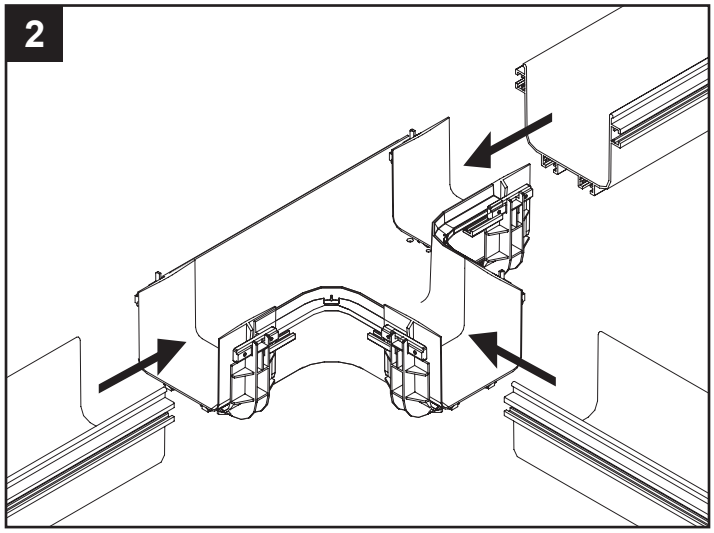
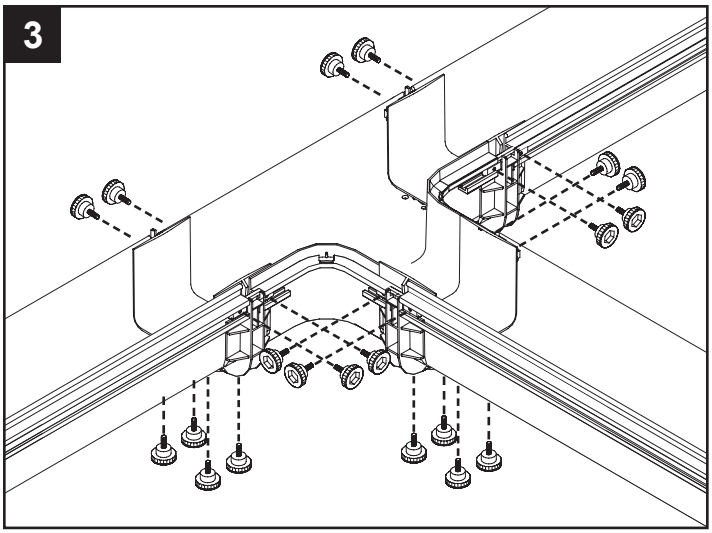
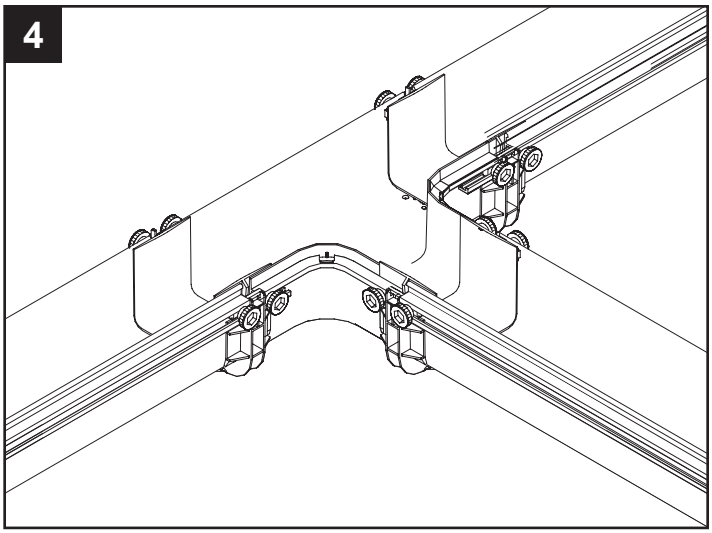
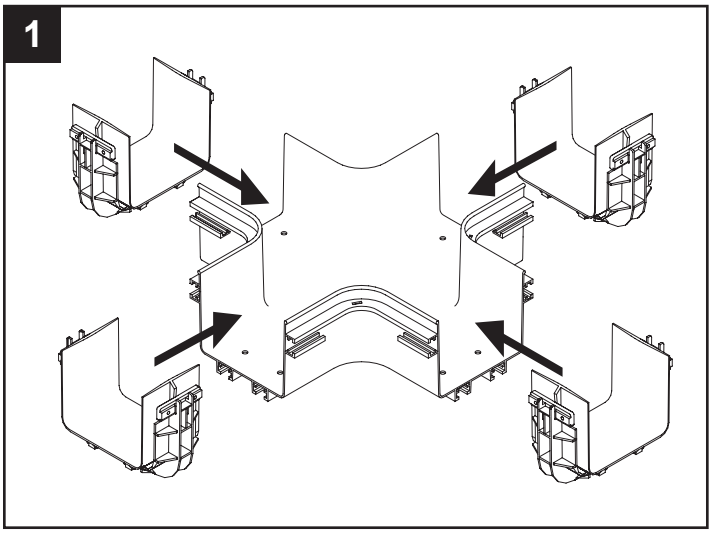
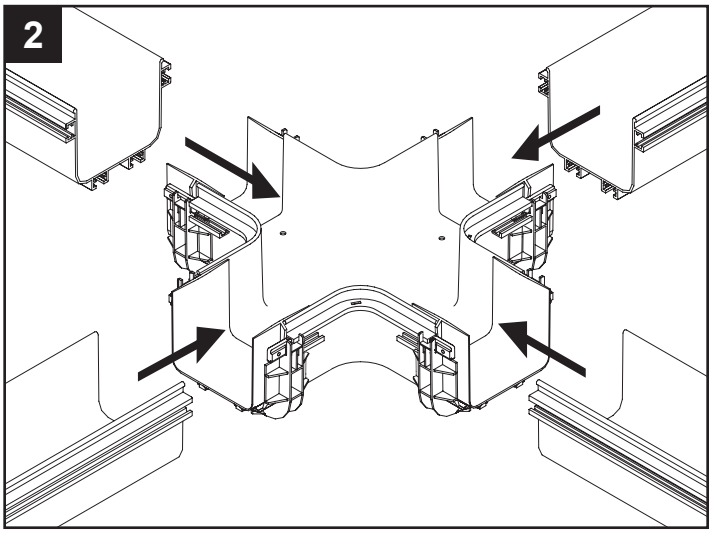


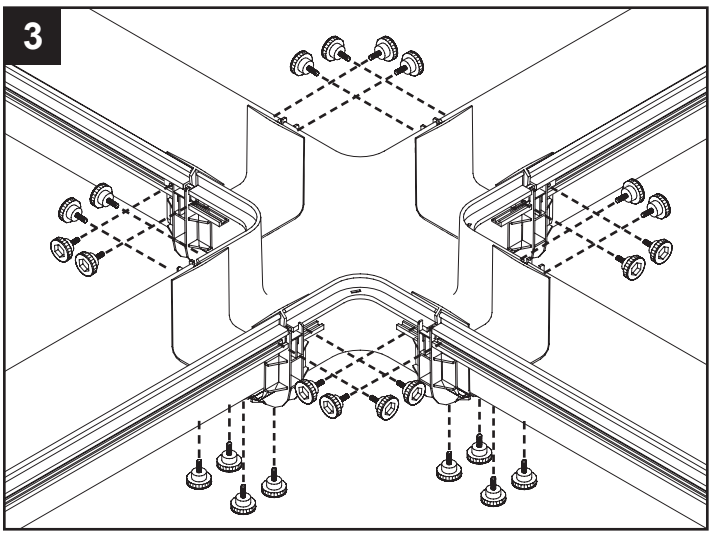


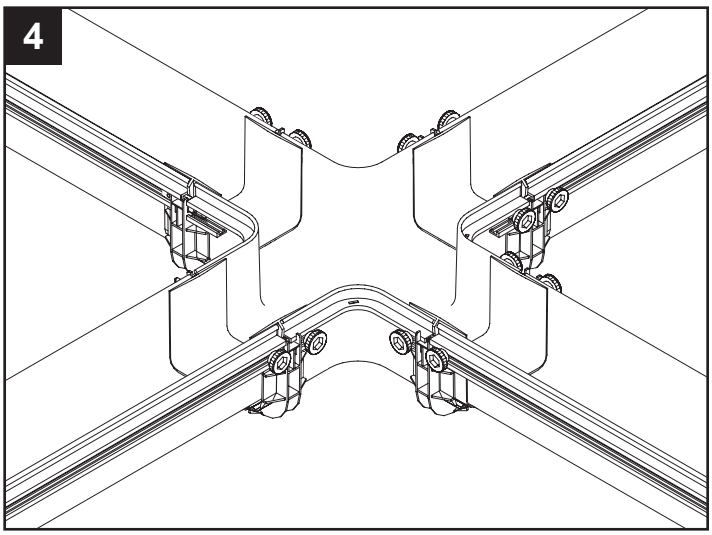




## Cross



## 45° Up Elbow

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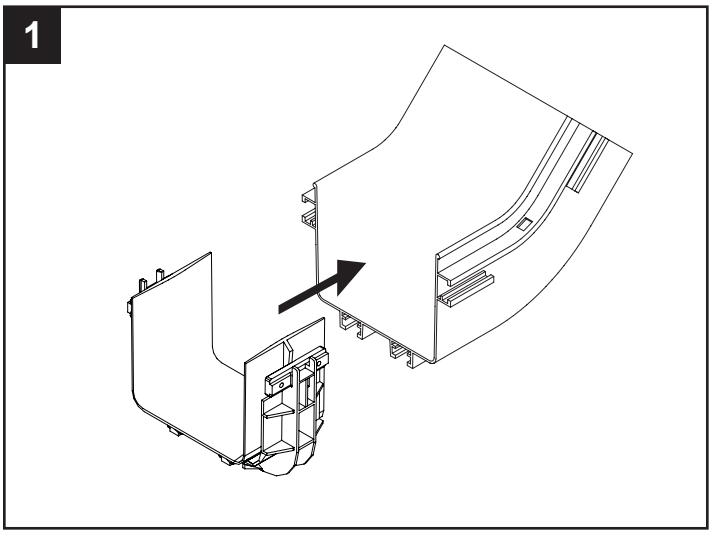

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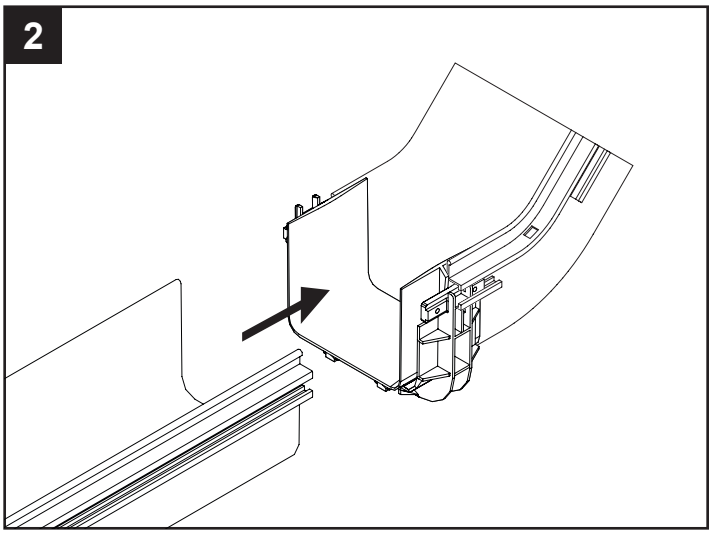

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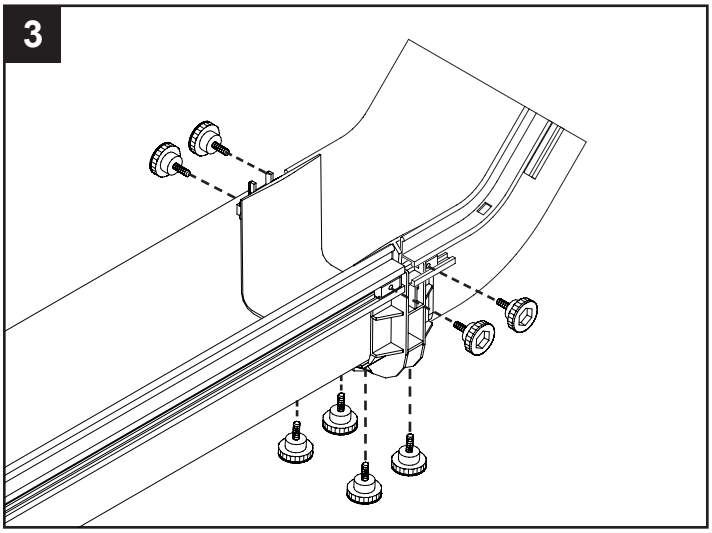

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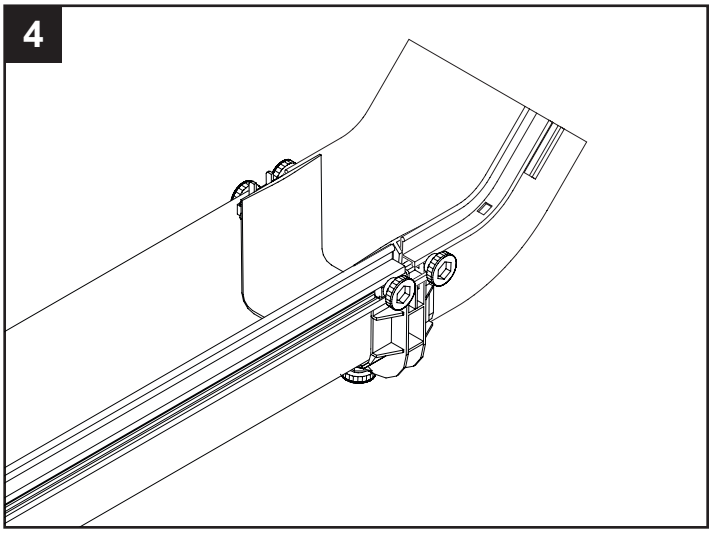

## 45° Down Elbow

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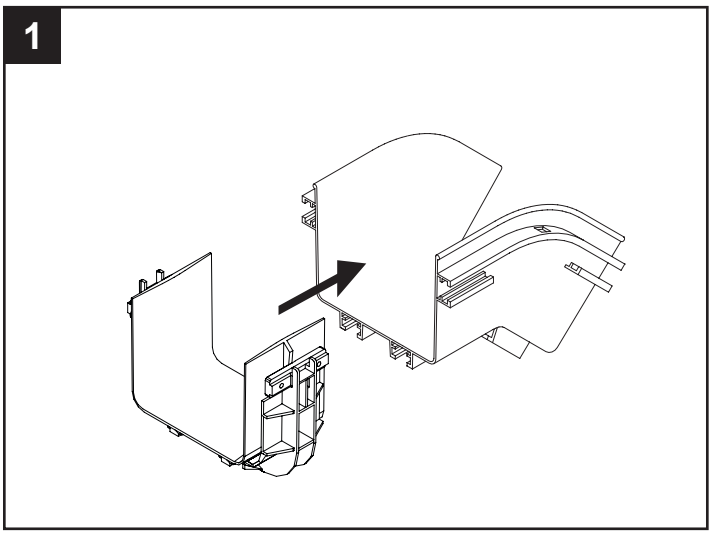

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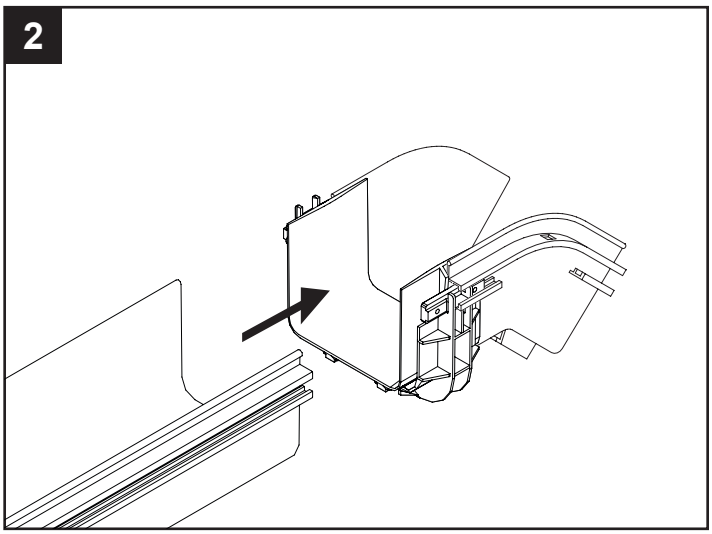
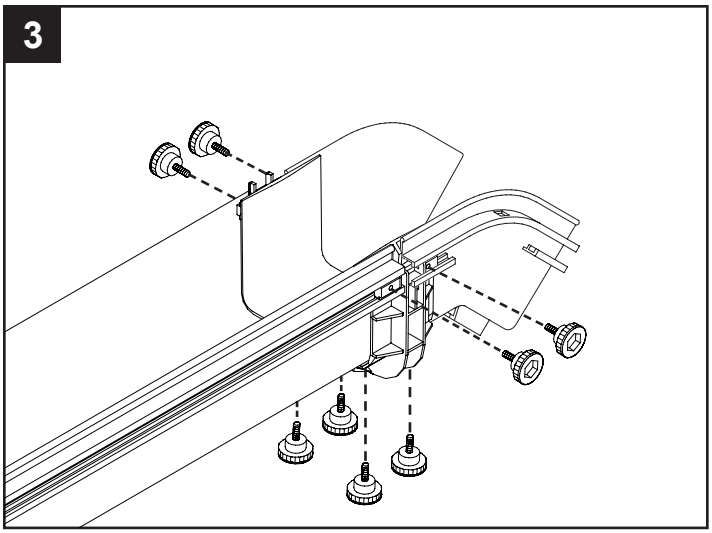
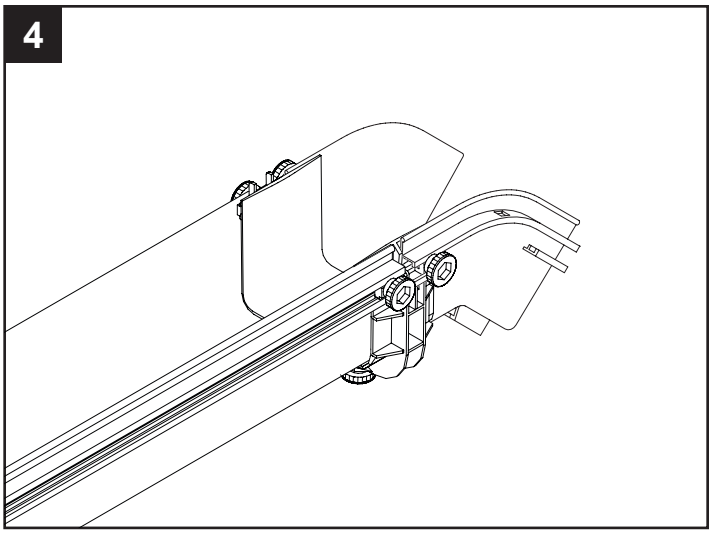


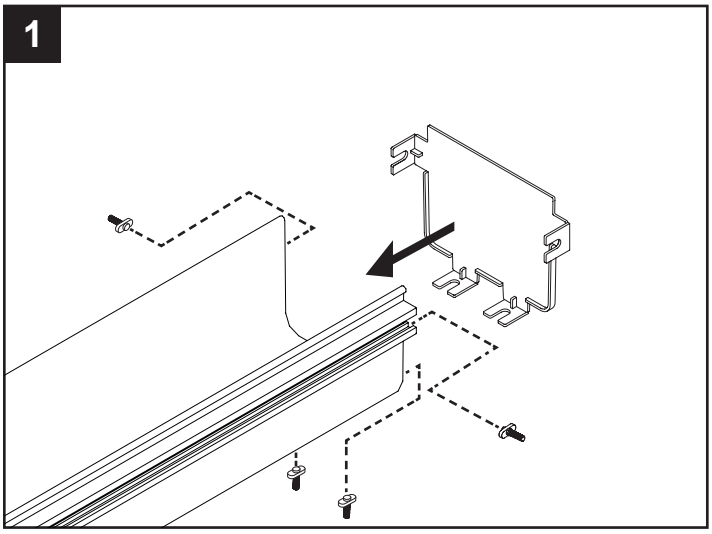


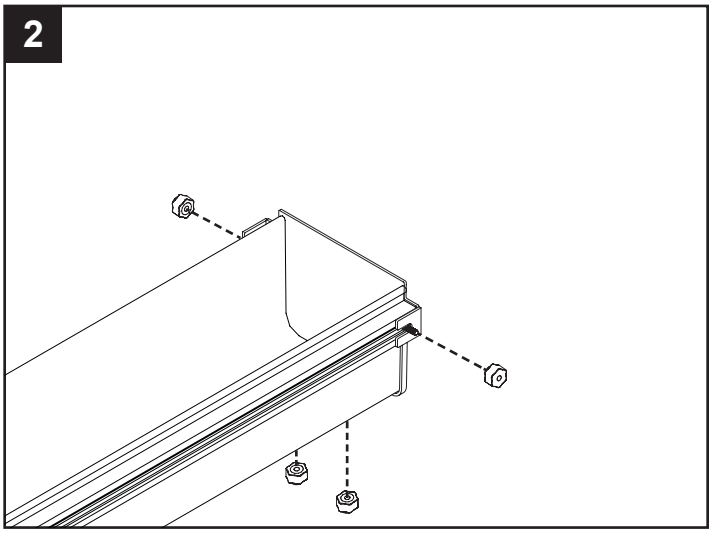



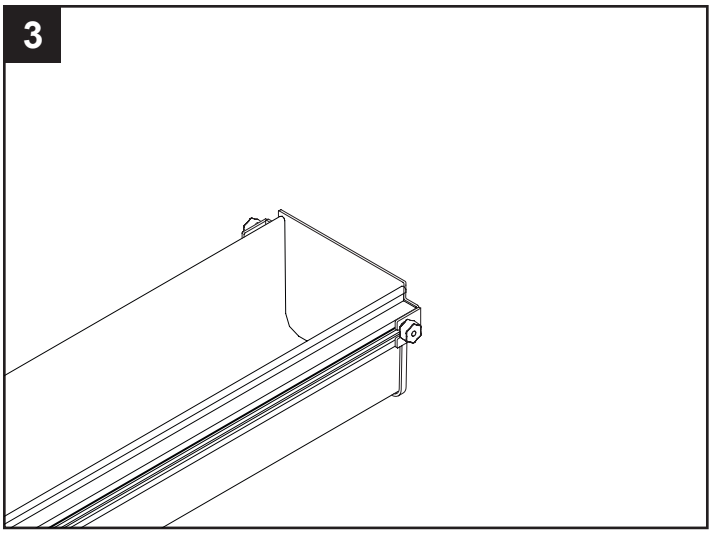

## End Cap

- Slide the End Cap over the end of the tray. The brackets on the End Cap should be on the outside of the side channels on the tray.
- Insert T-bolts into the outside channels of the tray and slide them into the brackets of the End Caps.
- Attach plastic hex nuts to the T-bolts and hand tighten.

*NOTE: It may be easier to attach a plastic hex nut to each T-bolt prior to inserting the T-bolt into the side channel. Also, it is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*





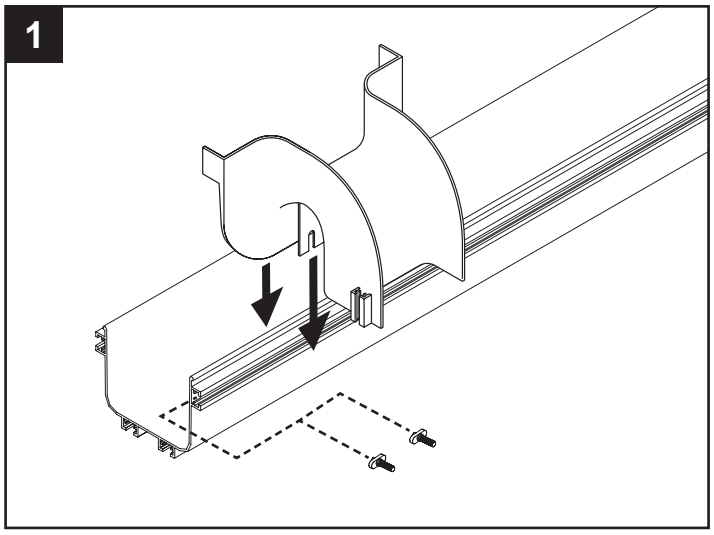

# EXIT ASSEMBLY/INSTALLATION

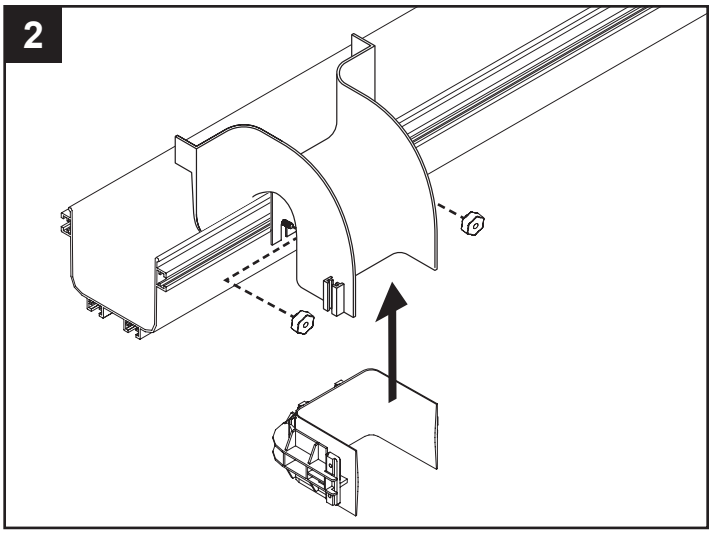
## Side Drop

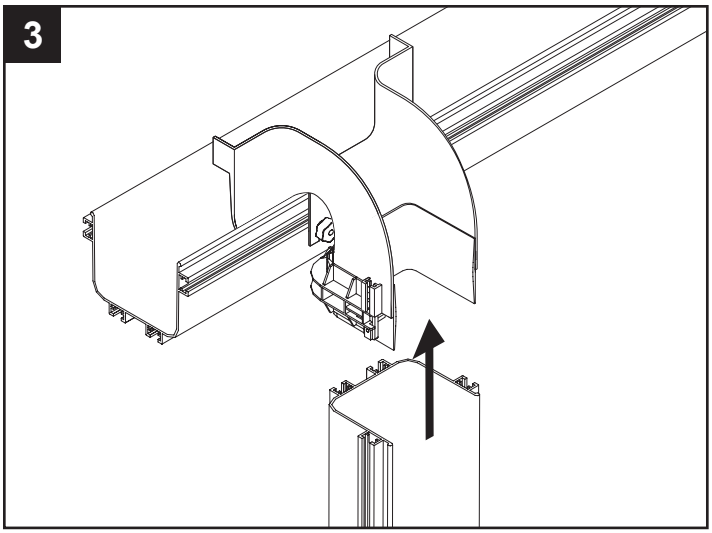
- If a vertical tray is being used, attach a coupler to the bottom of the bottom of the Side Drop. Connect the vertical tray to the bottom of the coupler.
- Insert 2 T-bolts into the side channel of the tray.
- Slide the Side Drop onto the side of the tray, aligning the slots in the Side Drop with the T-bolts.
- Secure the Side Drop to the tray using two plastic hex nuts.

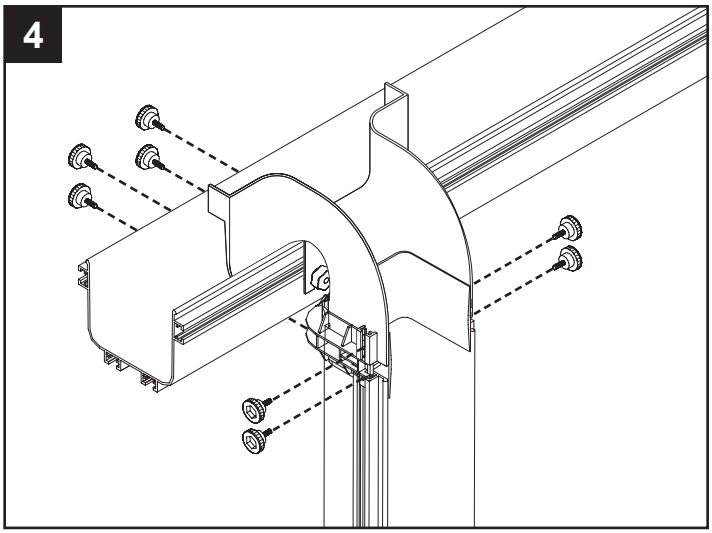
*NOTE: It may be easier to attach a plastic hex nut to each T-bolt prior to inserting the T-bolt into the side channel. Also, it is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*

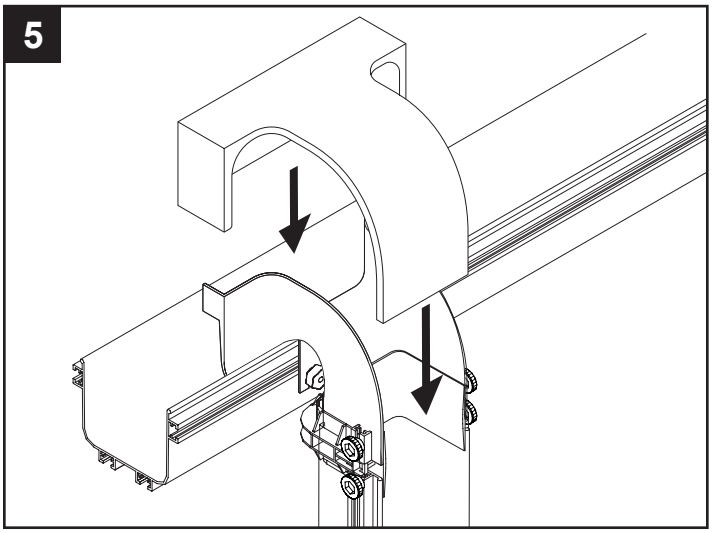
- Slide the cover onto the Side Drop.

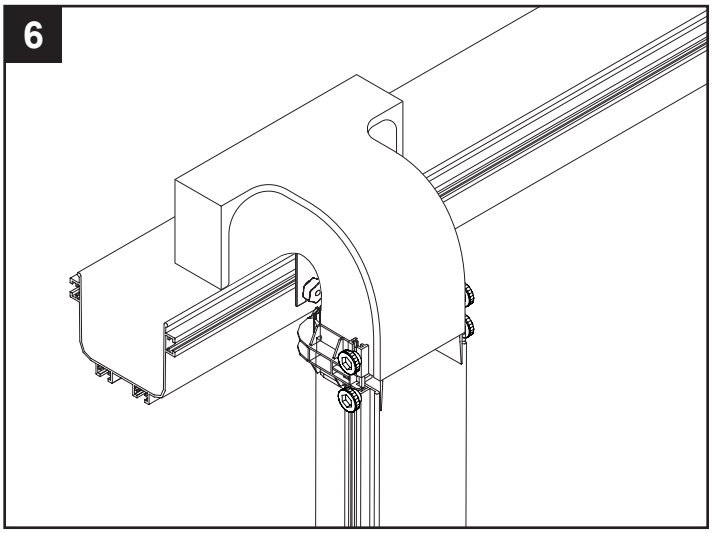




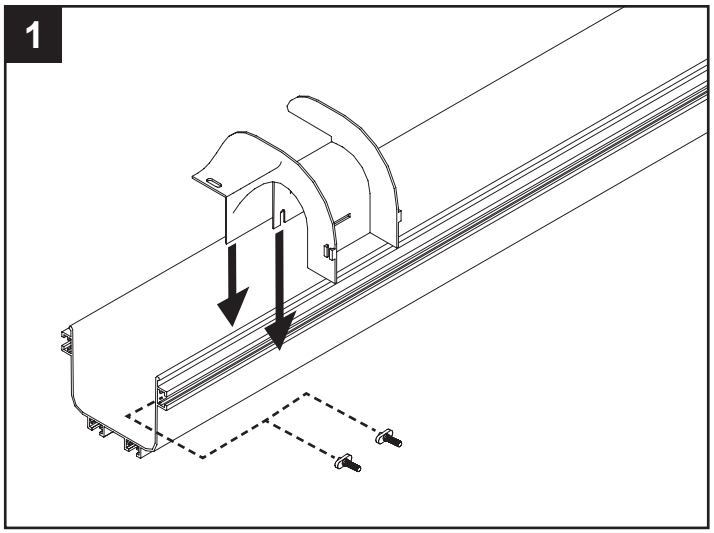



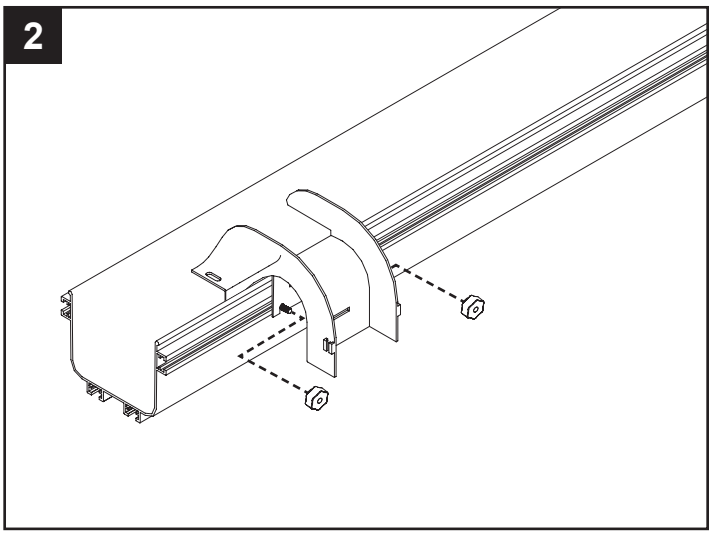

## Spill Over

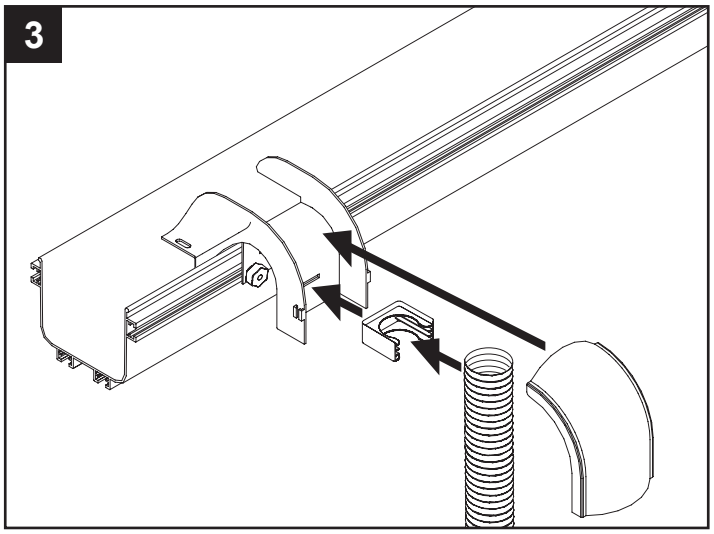
- Insert 2 T-bolts into the side channel of the tray.
- Slide the Spill Over onto the side of the tray, aligning the slots in the Spill Over with the T-bolts.
- Secure the Spill Over to the tray using two plastic hex nuts.

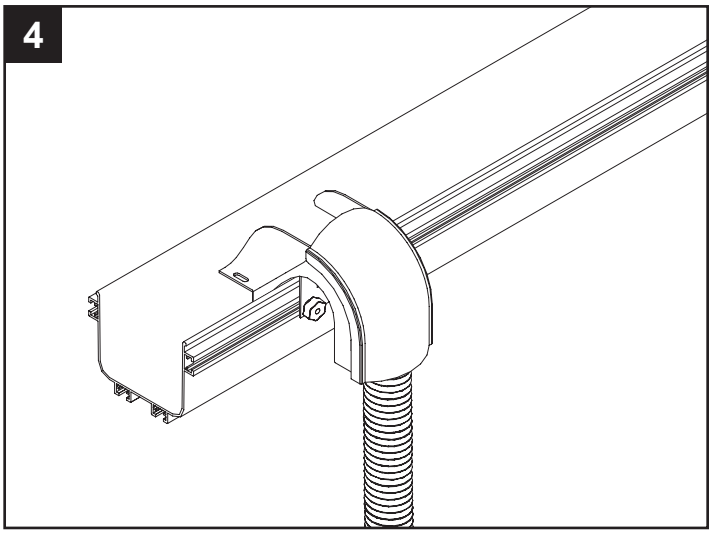
*NOTE: It may be easier to attach a plastic hex nut to each T-bolt prior to inserting the T-bolt into the side channel. Also, it is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*

- If using flexible hose, snap the hose bracket(s) into the slot(s) in the Spill Over.
- Cut the flexible hose to the desired length, then insert one end of the hose into the hose bracket and route the hose to the desired location at the top of the cabinet/rack.
- Slide the cover onto the Spill Over.



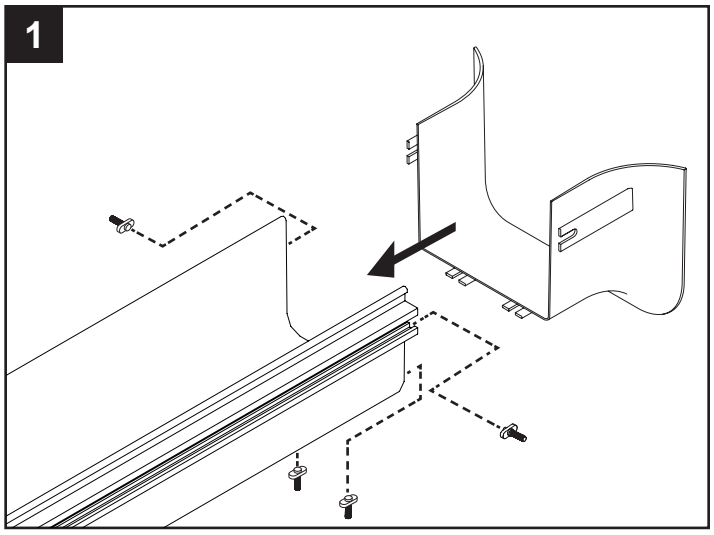



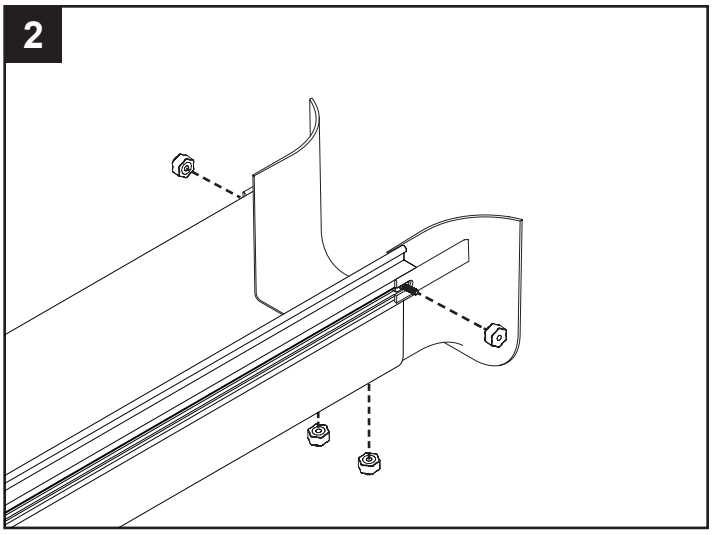

## Trumpet

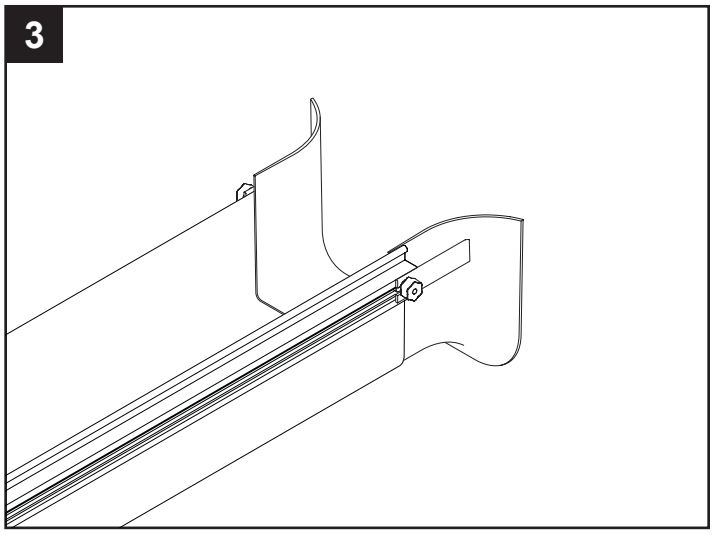
The Trumpet can be used at the end of a horizontal or vertical tray run.

- Slide the Trumpet over the end of the tray. The brackets on the Trumpet should be on the outside of the side channels on the tray.
- Insert T-bolts into the outside channels of the tray and slide them into the brackets of the Trumpet.
- Attach plastic hex nuts to the T-bolts and hand tighten.

*NOTE: It may be easier to attach a plastic hex nut to each T-bolt prior to inserting the T-bolt into the side channel. Also, it is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*




## SUPPORT ASSEMBLY/INSTALLATION

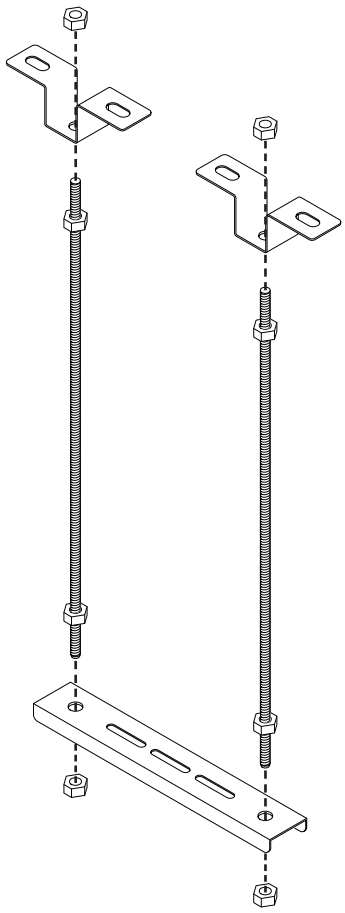
*Note: Hardware to secure trapezes to the ceiling and stand-offs to cabinets/racks is not included, due to the wide variety of potential mounting surface materials and conditions. Be sure to use the appropriate hardware based on the specific installation environment.*

### Trapeze

- Insert the threaded rods through the cross bar and secure using two hex nuts for each rod (one below and one above the cross bar).
- If the threaded rod is substantially longer than required, cut the threaded rod before installing to prevent damage to equipment and/or personal injury.
- To attach tray to the cross bar, insert two T-bolts into the channels on the bottom of the tray.

*NOTE: It is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*

**1**



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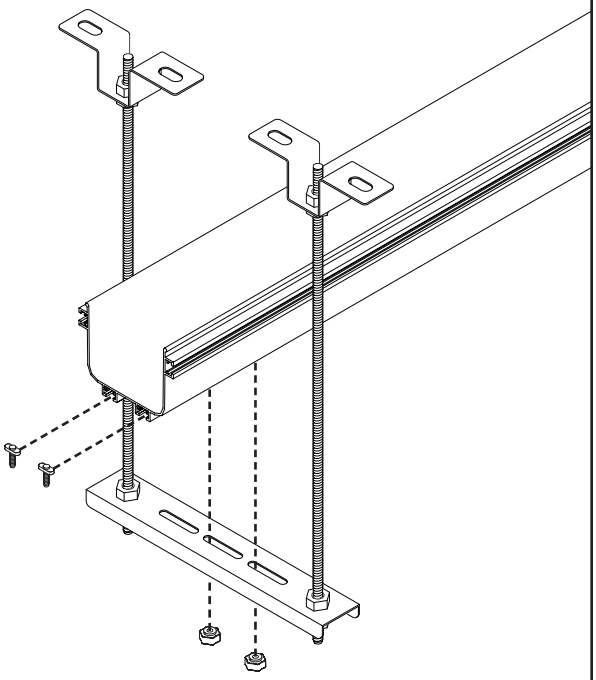

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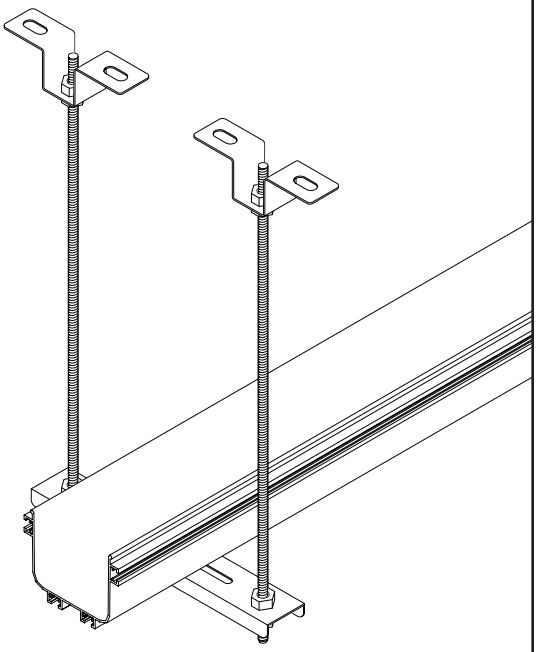
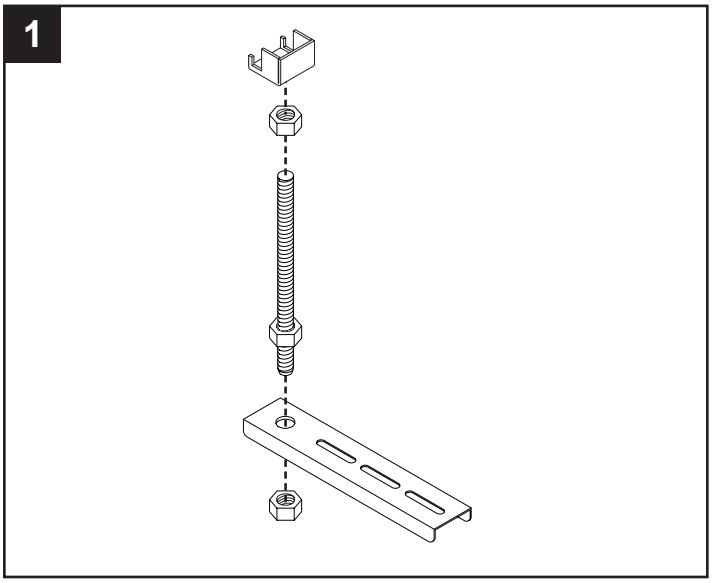
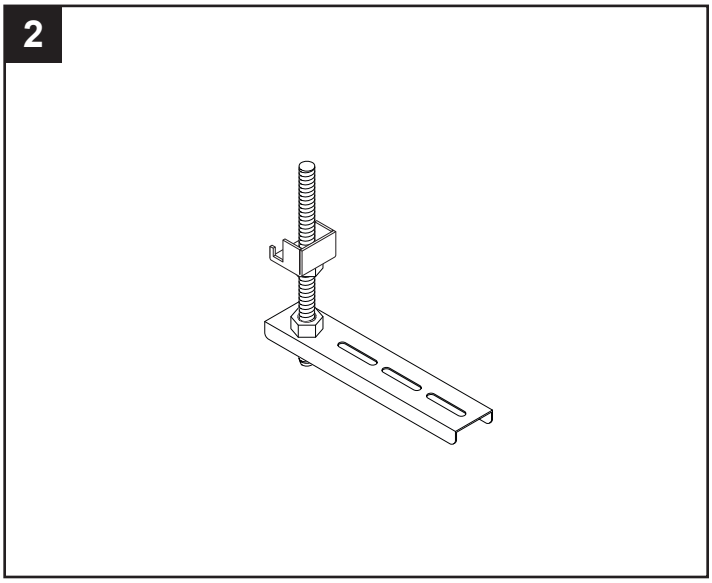


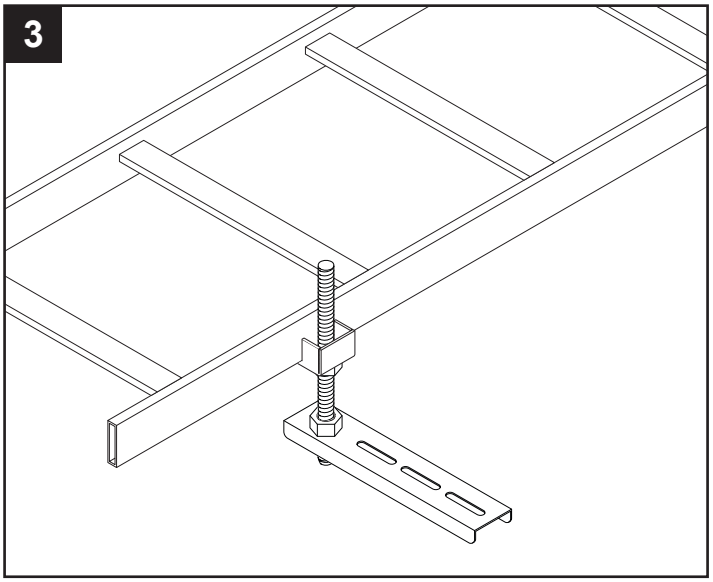
## Ladder Support Bracket

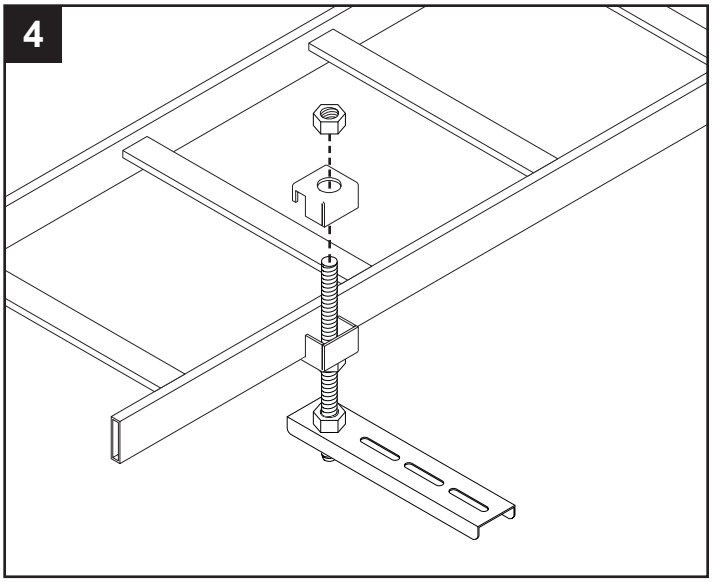
- Insert the threaded rod through the cross bar and secure using two hex nuts (one below and one above the cross bar).
- Slide the ladder jaw clamp onto the threaded rod, using one hex nut below the bottom jaw and one above the top jaw.
- Place the jaw clamp over the ladder side stringer and secure by tightening the top hex nut.
- To attach tray to the cross bar, insert two T-bolts into the channels on the bottom of the tray.
- Feed the T-bolts through the slots in the cross bar, and then secure from the bottom using two plastic hex nuts.

*NOTE: It is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*



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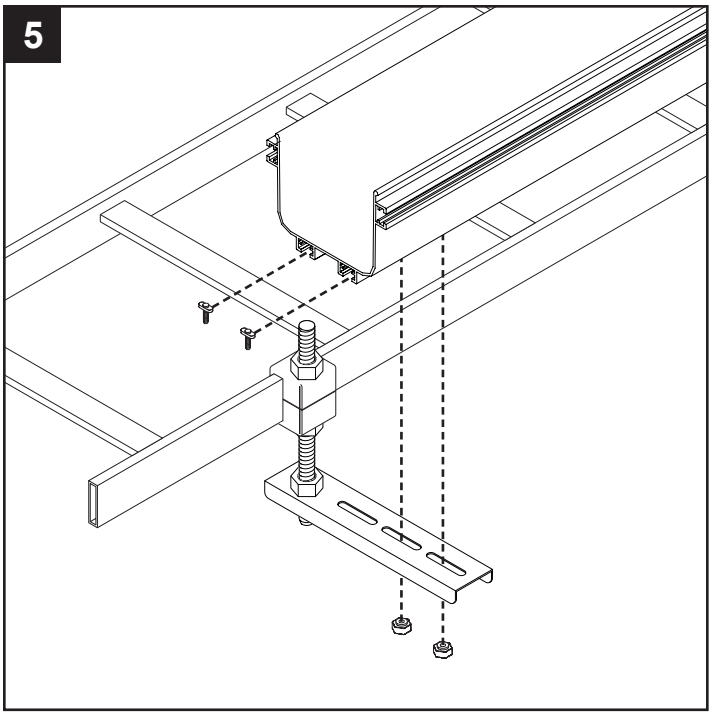

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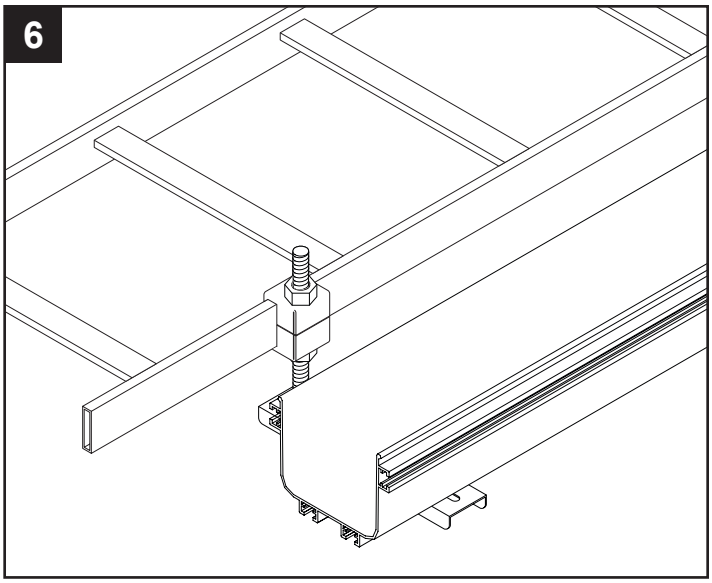
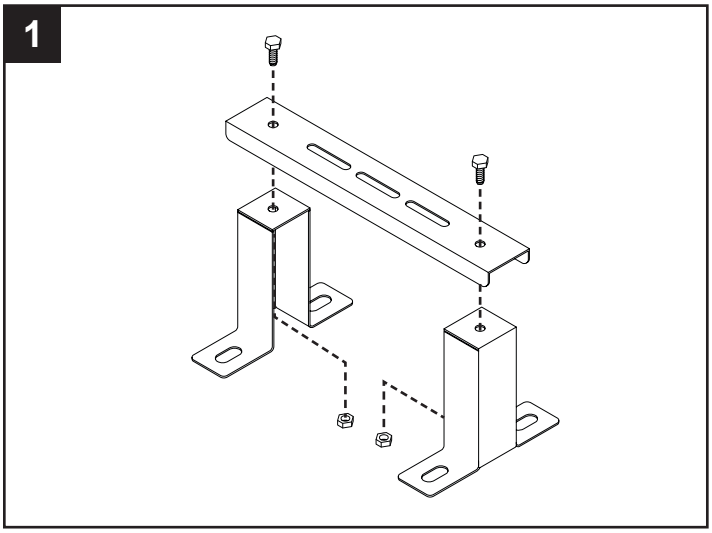


## Cabinet Stand-Off

- Attach the crossbar to the vertical supports using the included hardware.
- To attach tray to the cross bar, insert two T-bolts into the channels on the bottom of the tray.
- Feed the T-bolts through the slots in the cross bar, and then secure from the bottom using two plastic hex nuts.

*NOTE: It is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*

1



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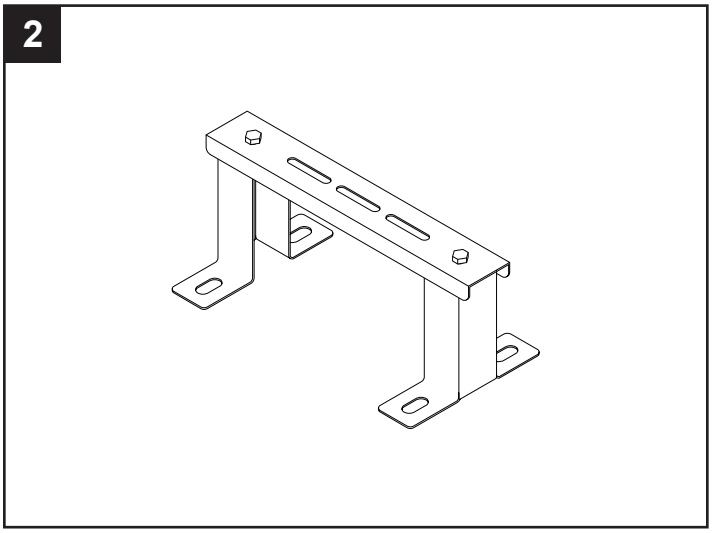
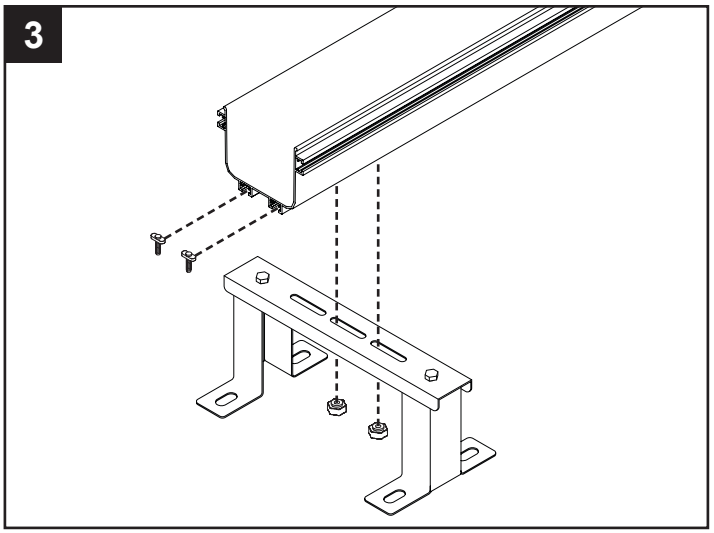
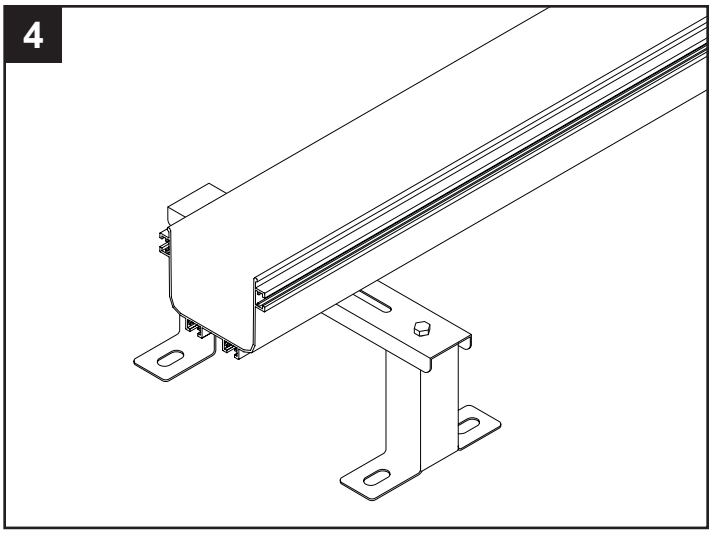





## Dual-Level Cabinet Stand-Off

This product is designed to support both a fiber tray run and a wire basket tray run. The drawings below show the wire basket tray on top and the fiber tray below, but the stand-off can be assembled to have either type of tray on top.

**Stand-off assembly:**

- Attach foot brackets to the vertical supports using square nuts and M6 x 14mm flange bolts. The square nuts should be inserted into the slots at the end of the vertical supports before the foot bracket is attached.
- Insert two additional square nuts into each vertical post. Be sure to insert them into the side that faces the other vertical support.
- Insert 2 square nuts into the top and bottom surface of each cross bar.
- Attach each cross bar to the vertical supports using the corner brackets and M6 x 9mm flange bolts. Ensure that both cross bars are horizontal and perpendicular to the vertical supports.

*Note: The vertical position of each cross bar is adjustable.*

**Install fiber tray:**

- Attach the fiber tray brackets to the cross bar using two M6 x 9mm flange bolts and the square nuts inserted into the top of the cross bar. Do not tighten at this time.
- Position the fiber tray between the brackets. Insert a T-bolt into each side channel of the tray, and then slide the bracket up against the fiber tray, feeding the T-bolt through the slot in the bracket.

- Insert a plastic nut onto the T-bolt and tighten to secure the bracket to the tray.

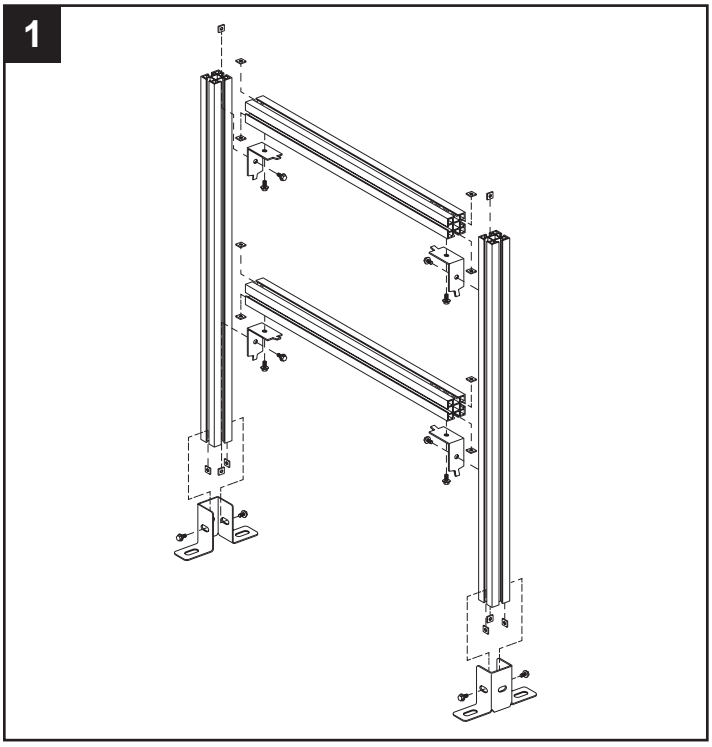
*NOTE: It may be easier to insert the T-bolt through the bracket and attach the plastic hex nut first, then slide the bracket up to the tray and insert the T-bolt into the side channel of the tray. Also, it is important that the wings of the T-bolt stay inside the slots in the side channel. The best way to ensure this is to push down on the plastic hex nut as you tighten it.*

- Secure the fiber tray bracket to the cross bar by tightening the M6 flange bolt.

**Install wire basket tray:**

- Place wire basket tray on top of the cross bar.
- Place wire basket brackets on top of the tray, directly over the cross bar.
- Insert one M6 x 9mm flange bolt through the wire basket bracket and into the square nut in the top of the cross bar. Tighten the flange bolts once the tray is in the correct position.

1



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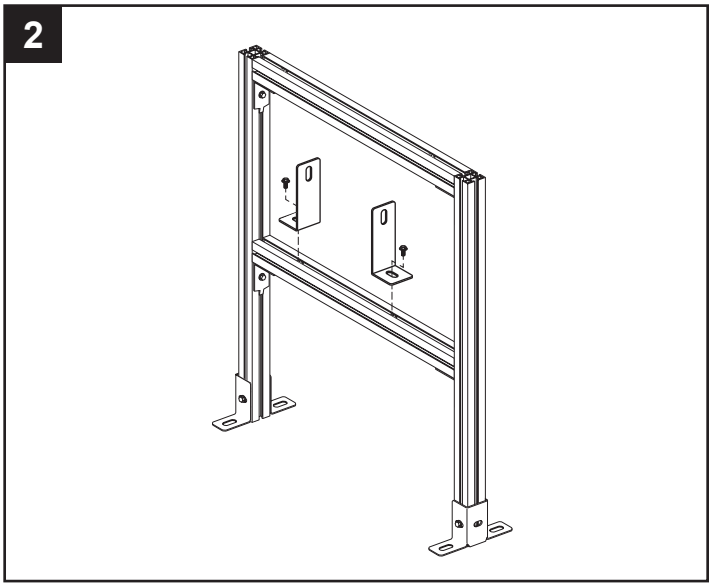

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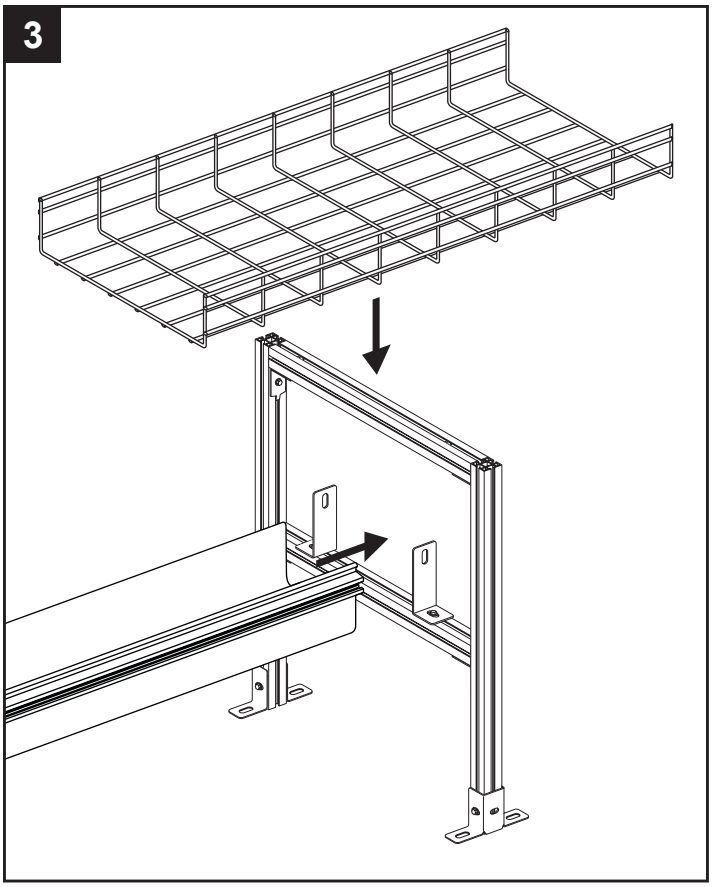

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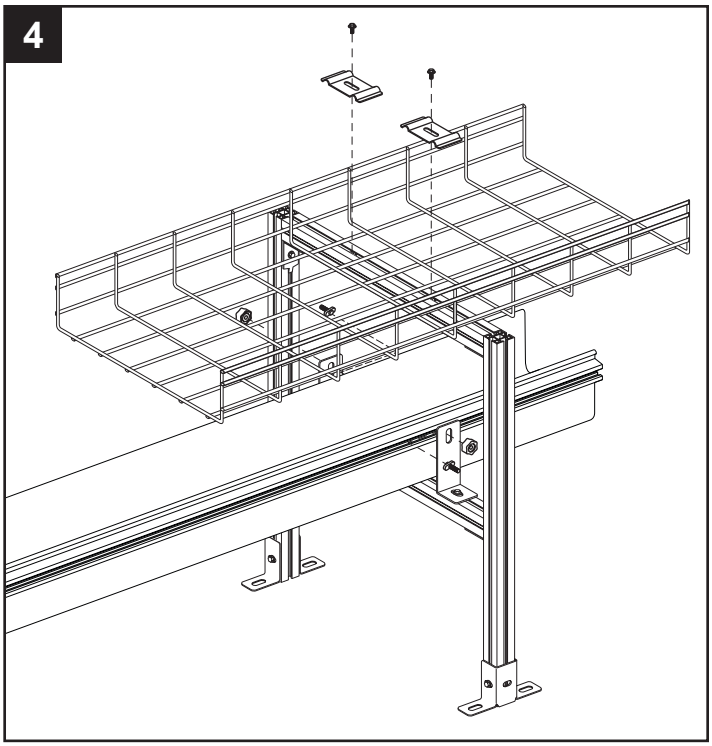

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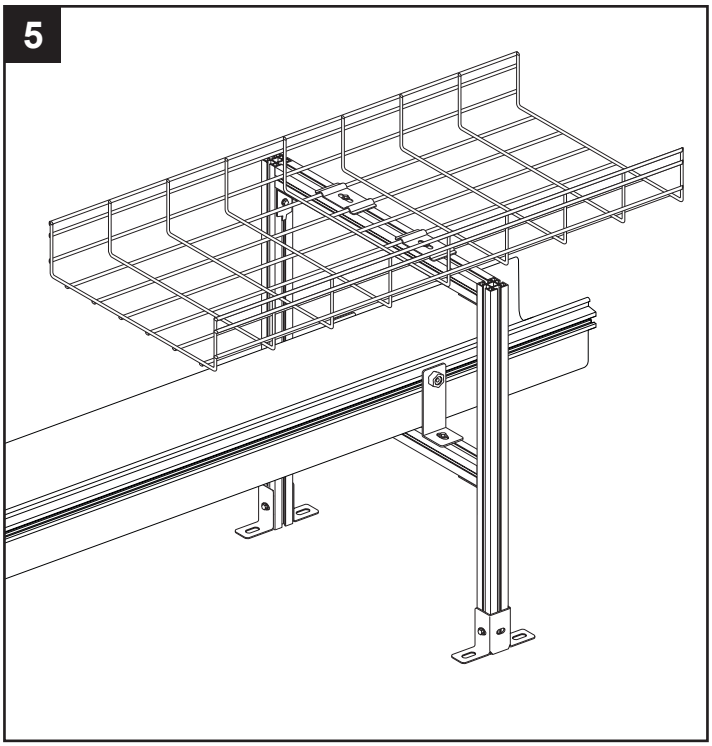


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**Phone:** 865.671.4455 | **Fax:** 865.671.4497

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