CEILING | SYSTEMS

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OPTIMA® Vector 4′ x 4′

Installation Instructions

1. GENERAL

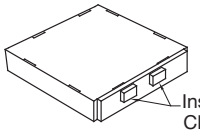
1.1. Product Description

The Vector products referenced in these instructions are made from fiberglass. Vector panels are 100% downward accessible and are designed to be installed on a conventional 15/16" wide T-bar suspension system. All full panels can be removed and re-installed without the need for access to the plenum. Fiberglass panels are 48" x 48" and can be used with standard Optima Vector 48" x 24", 24" x 24" and 12" x 24" panel sizes.

Only two sides support installed panels. These edges have specially designed kerf details, which allow one edge of the panel to be raised slightly off of the grid flange and then moved out of position. The other two sides are fitted with rabetted edges, which work to center the panel within the grid opening.

IMPORTANT NOTE: Because Vector panels are supported by just two sides, it is imperative that the walls or bulkheads surrounding the ceiling installation be constructed and braced in a manner that will limit lateral movement at the elevation of the ceiling to less than 1/4" under the loads anticipated for the application. Where bracing capable of performing at the level is not possible, the perimeter closure element is to be detached from the wall surface and mechanically fastened to the ceiling suspension system. Additional support to structure will need to be added to the suspension system to replace that which would have been provided through wall attachment.

1.1.1. Installation Clips A box of Optima Vector Mid-Point Clips (item #522) and Vector Border Clips (item #441) are included with each carton of panels. Remove them from the protective pad on the end and be careful not to discard with waste wrapping. To order additional clips call 1 877 276 7876, Option 1.



1.2. Surface Finish

Optima Vector features the Armstrong DuraBrite® finish. The surface of these panels is scratch and soil resistant, washable and non-directional. The panel edges are finished with a factory applied paint finish. Optima panels are available with or without CAC backing, and have square edges.

1.3. Storage and Handling

The ceiling panels shall be stored in a dry interior location and shall remain in cartons prior to installation to avoid damage. The cartons shall be stored in a flat position. Proper care should be taken when handling to avoid damage or soiling.

NOTE: Vector panels feature exposed edges. Exercise appropriate care to avoid unnecessary contact with the panel edges. Remember that the grid flanges will not conceal panel edge damage.

1.3.1. Working With Fiberglass & Mineral Fiber Products

FIBERGLASS CEILINGS

MAN-MADE VITREOUS FIBER CEILING PANELS

⚠WARNING THIS PRODUCT CONTAINS MAN-MADE VITREOUS FIBERS. POSSIBLE CANCER AND RESPIRATORY TRACT HAZARDS CAN CAUSE TEMPORARY RESPIRATORY, SKIN AND EYE IRRITATION.

1.3.2. Precautionary Measures: During the installation be certain that the work site is well ventilated and avoid breathing dust. If high dust levels are anticipated during installation such as with the use of power tools, use appropriate NIOSH designated dust respirator. All power cutting tools must be equipped with dust collectors. Avoid contact with skin or eyes. Wear long-sleeve, loose fitting clothes, gloves and eye protection.

1.3.3. First Aid Measures: If contact occurs flush eyes and skin irritation with plenty of water for at least 15 minutes and remove contaminated clothing. After installing material, wash with warm water and mild soap. Wash work clothes separately from other clothing. Rinse washer thoroughly. Refer to Armstrong MSDS (which includes information on established occupational exposure limits) which are available from Armstrong or your employer.

1.4. Site Conditions

Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard® Plus performance can be installed in conditions between 32°F (0°C) and 120°F (49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. These products are not recommended for exterior applications or where standing water is present or where moisture will come in direct contact with the ceiling.

1.5. Plenum

Installation of Vector panels requires a minimum of space in the plenum, primarily that which is required to install the hanger wires for the suspension system. Three inches (3") is generally accepted as the minimum practical space that is needed to attach these wires. NOTE: light fixtures and air handling systems require more space and will determine the minimum plenum height for the installation.

Armstrong®

2. PANEL EDGES

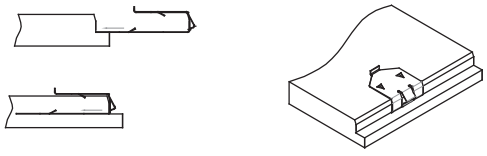
2.1. General
The edges of the Vector panels feature unique edge detailing. The following section is intended to define and explain the function of the edge details.

2.2. Access Kerf Edge
The panel edge designated as “A” has a stepped groove detail and is called the access kerf. This edge is the first to engage the suspension system. An arrow printed on the back of the panel will identify this edge.

2.3. Registration Kerf
Edge “B” has a single kerf detail that supports the second side and centers the panel in the A - B direction. This edge is referred to as the registration kerf and is opposite edge “A.”

2.4. Reverse Tegular Edges
The two remaining panel edges are rabetted to fit between the flanges of the grid system. These edges center the panel in the C - D direction and are called reversed tegular edges.

2.4.1. Mid-Point Clips (MPC)
(Supplied in a separate box with each carton of panels)
Use a Mid-Point Clip at the middle of both C and D edges to support the panel on the grid flange. Rest the bottom of the clip on top of the C or D edge and gently push the clip into the edge until it fits against the reverse tegular edge.



3. SUSPENSION SYSTEM

3.1. General
The suspension system shall be standard 15/16" intermediate duty or heavy duty, double web exposed tee grid. The suspension system, whether new or existing, shall be properly installed and leveled using not less than 12-gage galvanized steel wire. Suspension system installation shall conform to ASTM C636 requirements.

3.2. Suspension Grid
Optima Vector 4' x 4' panels install in a 48" x 48" module. The main beams shall be spaced 48" o.c. The 48" cross tees shall intersect the main beams at 90° every 48". Use 24" or 12" cross tees for fixtures or lighting. The suspension system must be leveled to within 1/4" in 10' and must be square to within 1/16" in 4'. Installation on grid systems that do not meet this tolerance will produce unacceptable panel alignment.

3.3. Stabilizer Bars
Stabilizer bars or BERC Clips are recommended at the perimeters of all installations. While they would only be a code requirement for certain seismic applications, their use greatly improves the installation and removal of the border panels and helps maintain proper panel alignment.

3.4. Vector Seismic Hold Down Clips
Vector Seismic Hold Down Clips, #442, are recommended for use on installations in areas of light to moderate seismic activity (Zones 0-2 or SDC A, B & C) and required in areas of severe seismic activity (Zones 3-4 or SDC D, E & F).

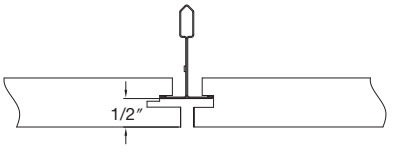
NOTE: Vector Seismic Hold Down Clips are recommended for all installations of Optima Vector. The hold down clip will keep the panel tight in the grid, help maintain the proper panel alignment and prevent the panel from disengaging the grid due to system movement or vibrations.

Vector Seismic Hold Down Clips #442 are not supplied with the panels and must be ordered separately. Contact your Armstrong representative or call 1 877 276 7876, options 1-1-1-2.

3.4.1. Clip Application
One clip is required for each panel. Clips should be applied to the grid before the placement of the panels and should be located near the center of the kerfed edges.

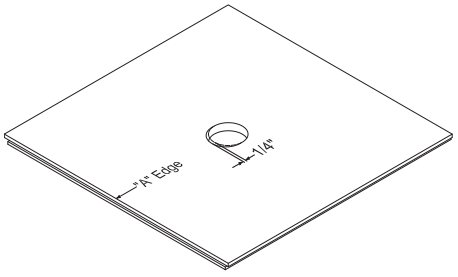
All “A” edges must have seismic hold down clips. No seismic hold down clips should touch “C” or “D” edges. Clips do not interfere with panel installation or removal.

3.5. Panel Face Offset
The face of the Vector panel extends 1/2" below the suspension system. The height of components that interface with the ceiling panels, such as sprinkler heads and light fixture trim rings, will have to be adjusted to accommodate this 1/2" offset.



3.6. Panel Penetrations

Holes cut for sprinkler heads and other services that penetrate the ceiling panel must be cut slightly oval shaped to allow the panel to move 1/4" in the direction of the “A” edge. Additionally, trim rings for these devices must be wide enough to accommodate this 1/4" movement.

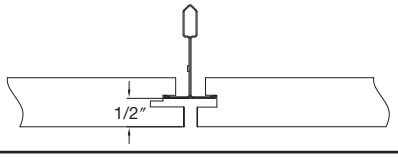


PENETRATIONS THROUGH VECTOR CEILINGS

Most Vector ceilings will be installed with penetrations through the panels such as sprinklers or “can” lights. Because the ceiling panels may not be in place when these penetrations are installed, the grid will be the installers’ primary reference for ceiling plane height. The installers must be advised that THE ACTUAL CEILING PLANE WILL BE LOWER THAN THE GRID HEIGHT.

PANEL FACE OFFSET

The face of the Vector panel extends 1/2" below the suspension system. The height of components that interface with the ceiling panels, such as sprinkler heads and light fixture trim rings, must be adjusted to accommodate this 1/2" offset.



Panel Installation & Removal

3.7. General

Vector ceiling panels are easily installed and removed from below the suspension system without the aid of tools or special equipment, allowing easy downward access to the plenum.

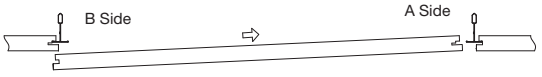
3.8. Orientation of Full Panels

Install all full-size panels with the “A” edge facing in the same direction to provide access consistency, uniform visual and proper panel alignment. Align panels as you proceed to ensure a uniform reveal width in both directions. Pay particular attention to this alignment process. Minor variations in placement can be difficult to see from the scaffold, but will become obvious when looking down long runs of panels.

3.9. Installing Full-Size Panels

The Vector panels are installed in a simple four step process.

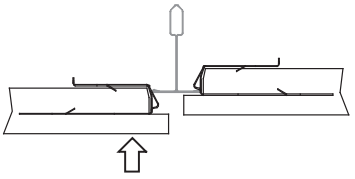
STEP 1: Fully insert the deepest kerf of edge “A”, the access kerf, onto the exposed grid flange.



STEP 2: Raise the “B” edge of the panel, the registration kerf, into the grid opening until the kerf lines up with the grid flange.

STEP 3: Slide the panel so that the registration kerf on edge “B” engages the grid flange. Ensure that the access kerf on edge “A” drops down into the correct position.

STEP 4: Gently push up on the “C” and “D” edge at the location of the Mid-Point Clip to engage the clip on the grid flange.



3.10. Panel Removal

Press on the face of the panel and raise it up to touch the grid. Slide the panel in the direction of the “A” edge (the only way it will move). Allow the “B” edge to disengage the grid flange and drop down off the grid flange. Next gently pull or snap down on the “B” edge to disengage the Mid-Point Clips on the “C” and “D” edges. Slide the “A” edge off of the grid. Do not allow the panel to hang on the “A” kerf. Damage could occur, and result in poor alignment when the panel is re-installed.

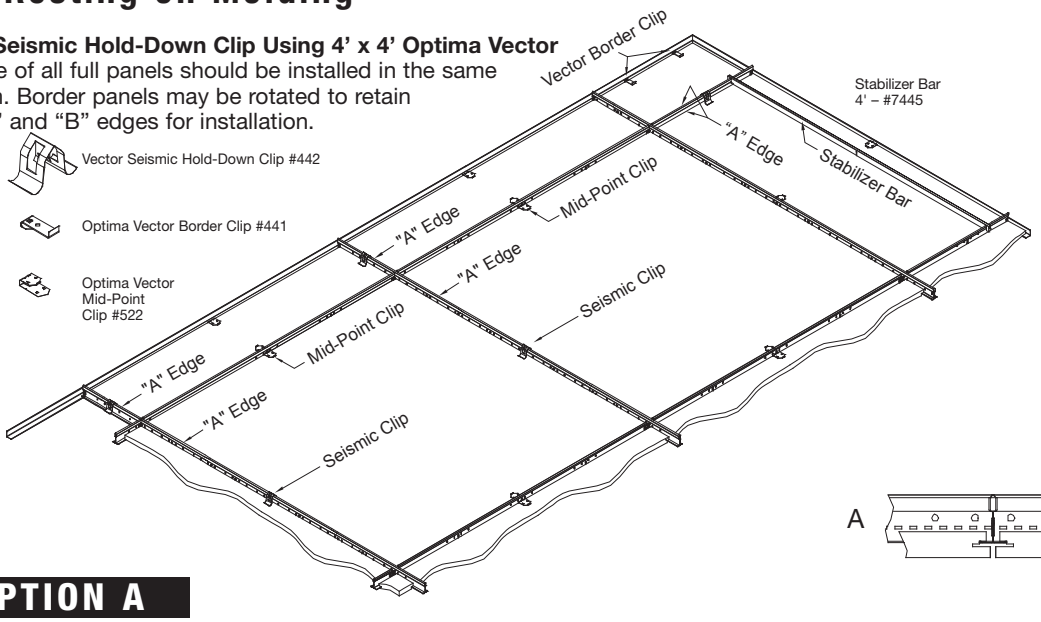
4. PERIMETER DETAILS

4.1. General

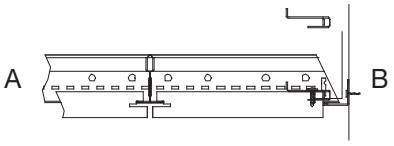
The following two options (A – 4.2 series and B – 4.3 series) are recommended for perimeter detailing. Regardless of the actual material used, either the grid will rest on the perimeter trim or the face of the panel will. Follow the instructions appropriate for the job conditions, either A or B.

Grid Resting on Molding

Vector Seismic Hold-Down Clip Using 4' x 4' Optima Vector
"A" edge of all full panels should be installed in the same direction. Border panels may be rotated to retain both "A" and "B" edges for installation.



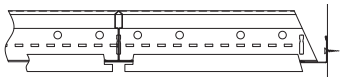
The following modification to the #441 Vector Border Clip is required for Optima Vector 4′ x 4′ installation in SDC C, D, E & F. Insert the #441 clip on the panel. Push a #8 x 9/16" sheet metal screw (or equivalent) through the clip into the plank to secure the border clip to the plank.



OPTION A

4.2. Grid Resting on Molding

In a conventional installation of T-bar grid, the face of the suspension system components rests directly on the molding or trim flange. When this detail is used with Vector, the border panels are cut to butt against the molding as shown here.

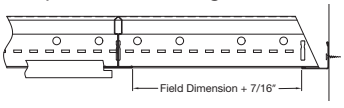


When this option is used, the cut is made parallel to either the C or D edge of the panel. This will retain the "A" and "B" details on opposite sides of the border panel. Panels may be rotated as you move around the walls to retain the kerfed edges.

NOTE: Border panels may be rotated to keep the "A" & "B" edges along the perimeter. Align "A" edges with full panels when possible. If the panel must be rotated, keep all border "A" edges in the same direction.

4.2.1. Measuring the Panel – Straight Cuts

Measure the size of the opening from the edge of the T-bar to the edge of the molding and add 7/16". Measure and mark the face side of the panel at both edges.



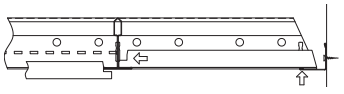
4.2.2. Cutting and Installing the Panel

Cut from the face side using a sharp knife and a straight edge. Insert the Mid-Point Clip on the remaining "C" or "D" edge. Insert a Mid-Point Clip on the cut edge, 3/8" up from the face of the panel. This clip will engage onto the wall molding. Install the same as a full-size panel.

4.2.3. Curved and Angled Walls

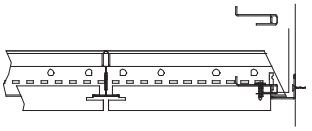
Panels that meet curved or angled walls can be marked using the same method that is used for standard tegular edge panels. Cut the board large enough to rest on the grid and wall molding as shown.

Slide the panel away from the wall until it touches the web of the grid. Scribe and cut the panel to the edge of the wall molding. Insert Mid-Point Clips as needed. Install the panel as shown on the drawing in section 4.2.



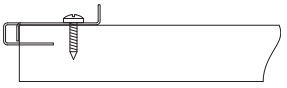
4.2.4. Corner Panel Installation

Preparation of the corner panel will require the removal of two edges. Mark and cut the panel to retain a portion of the "A" edge. Support the opposite side of the panel by inserting **Vector Border Clips – item #441** (supplied in a separate box with each carton of panels) as shown in the drawing below. Install clips 6" from the edge and then every 12" o.c. Use Mid-Point Clips on "C" or "D" edges if the border panel is greater than 30" wide.



4.2.5. Border Clips

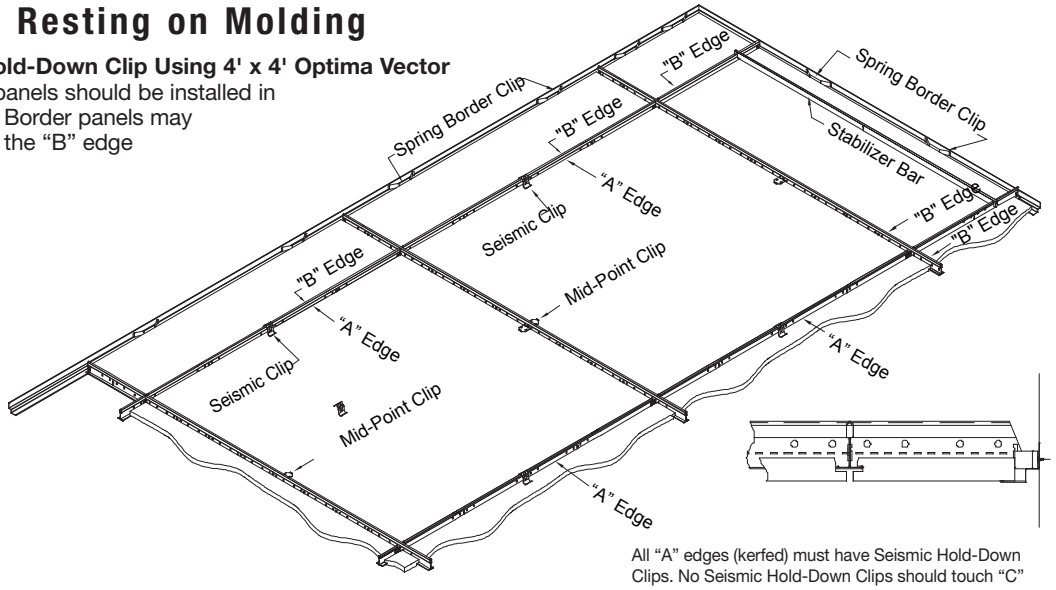
The following modification to the #441 Border Clip is required for Optima Vector 4' x 4' installation in SDC C, D, E & F.



Insert the #441 clip on the panel. Push a #8 x 9/16 sheet metal screw (or equivalent) through the clip into the plank to secure the border clip to the plank.

Panel Face Resting on Molding

Vector Seismic Hold-Down Clip Using 4' x 4' Optima Vector
"A" edge of all full panels should be installed in the same direction. Border panels may be rotated to retain the "B" edge for installation.

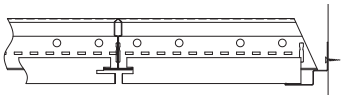


All "A" edges (kerfed) must have Seismic Hold-Down Clips. No Seismic Hold-Down Clips should touch "C" or "D" edges.

OPTION B

4.3. Panel Face Resting on Molding

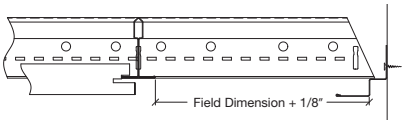
The second perimeter option is to have the grid system raised above the trim by 1/2". This clearance will allow the face of the panel to pass over and rest upon the support leg of the trim. The following drawing shows Vector terminating at a shadow molding. An alternate option would be to use a standard angle molding but hold the grid 1/2" above the horizontal flange.



In this installation, the shadow molding has a 1/2" x 1/2" offset (item #7875). The grid is resting up on the shoulder and the face of the panel is on the lower flange. This method will create "mouse holes" where the grid passes over the molding flange, but it eliminates field cut panel edges that may be exposed to view.

4.3.1. Measuring the Panel

Measure the distance from the edge of the grid flange to the shoulder of the shadow molding (or wall if you are using angle molding) and add 1/8". Mark this dimension on the face of the panel, measuring from one of the kerfed edges.

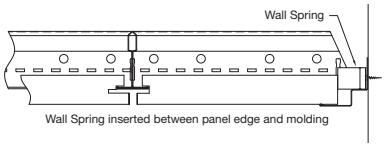


4.3.2. Cutting and Installing the Panel

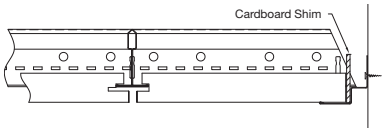
Cut from the face side of the panel with a sharp knife and a straight edge. Use Mid-Point Clips on "C" or "D" edges if the border panel is greater than 30" wide. Install this panel much like you would a full-size panel. Start with the cut edge going up and over the flange of the molding. Raise the panel up to horizontal and then slide the kerfed edge back onto the grid flange.

4.3.3. Shimming the Border Panels

Insert a wall spring between the edge of the panel and the upper vertical leg of the shadow molding (or wall). Alternately, place a shim cut from corrugated cardboard between the cut edge of the panel and the lower vertical leg of the molding. This step is required to prevent the border panel from disengaging the grid flange and falling from the ceiling. Shims must be carefully sized to prevent any possibility of the panel falling.



Wall Spring inserted between panel edge and molding

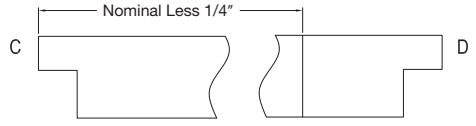


4.3.4. Corner Panel Installation
Preparation of the corner panel will require the removal of two edges. Mark and cut the panel to retain a portion of the “B” edge. Use a Mid-Point Clip on the non-support edge if it is greater than 30" wide. Install the panel from above the suspension system and align the “B” edge with the grid flange. It may be necessary to swing a cross tee to the side to ease installation. Wall springs or shims must be used on two sides to maintain the location of the panel.

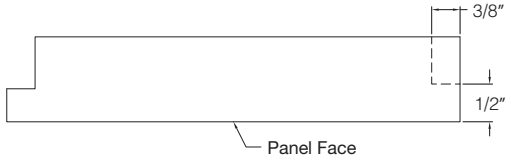
4.4. Treating Exposed Edges
All field cut edges “exposed to view” should be colored to match the factory finish. **Armstrong SuperCoat™ Ceiling Panel Touch-up Paint is recommended.**

4.5. Odd-Size Panels
Panels within the field of the ceiling that are less than full size must be cut to replicate factory edges. An example of a condition that might require a special cut would be odd sized panels next to a linear air diffuser. 1' x 2', 2' x 2' and 2' x 4' Optima Vector panels are available to accommodate the use of standard size ceiling fixtures. Use these panel options for the easiest and best panel fit and alignment.

4.5.1. Measuring the Panel
Measure, mark and cut the panel 1/4" smaller than the “nominal” dimension required. For example, if the panel is to fit into a nominal 18" x 24" opening it would be cut 17-3/4" wide.



4.5.2. Re-cut the Edge Detail
Turn the panel over and re-cut the reverse tegular edge as dimensioned in the drawing below. Protect the face of the panel from damage.

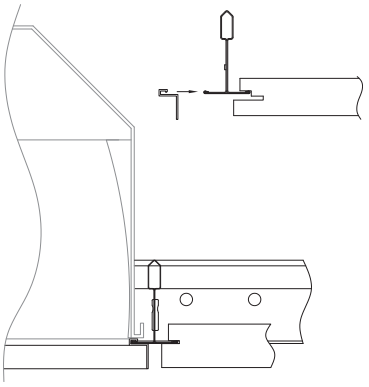


4.5.3. Treat the Cut Edge
Color the re-manufactured edge as described in section 4.4. Allow the paint to skin over before installing the panels. Install like a full-size panel.

5. FIXTURE TRIM

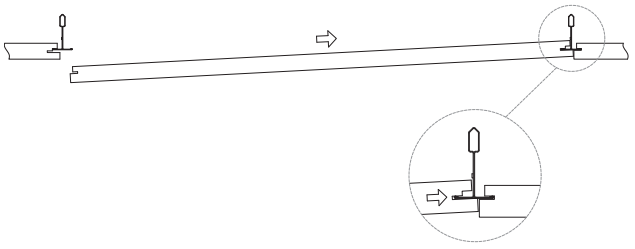
5.1. General
The design of the edge details used on Vector creates a gap between the face of the grid and the edge of the panel. This gap is necessary to allow the panel to lift sufficiently to allow installation and removal. This gap may be objectionable when type G light fixtures and air diffusers are used. For this reason, fixture trim kits are available for use with Vector panels.

5.2. Trim Installation
Fixture trims are pre-mitered lengths of plastic molding that snap onto the exposed flanges of the grid at the location of lay-in light fixtures or other accessories that set into the grid in place of a ceiling panel. Trim elements may be installed before or after the placement of the ceiling panels.

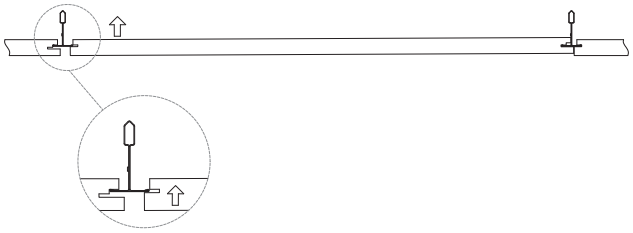


HOW TO INSTALL
a Vector® Panel

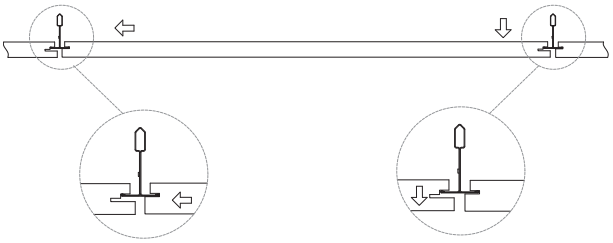
1. Place the deepest portion of the double kerfed edge onto the grid flange.



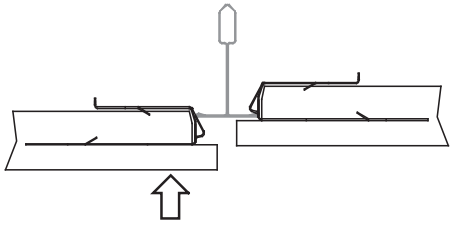
2. Raise the opposite edge up into the grid opening.



3. Slide the panel back onto the grid flange. Make sure that the first edge drops into position as shown.

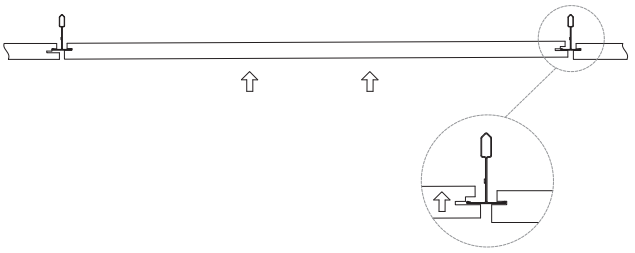


4. Gently push up on the two non-supporting edges at the location of the Mid-Point Clip to engage the clip on the grid flange.

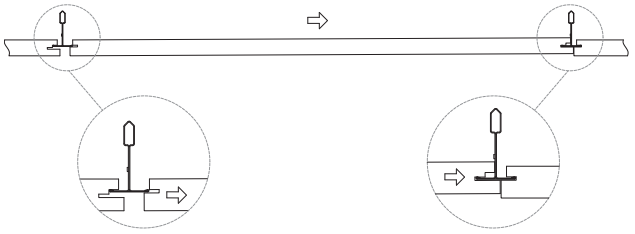


HOW TO REMOVE
a Vector® Panel

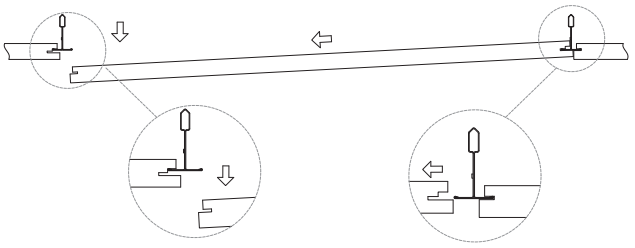
1. Push the panel up against the grid flanges and find the one direction it will move.



2. Slide the panel until it contacts the adjacent panel.



3. Lower the opposite edge out of the grid opening. Next gently pull or snap down on this edge to disengage the Mid-Point Clips on the adjacent edges. Slide the panel off of the flange. Do not allow the panel to hinge or hang on the grid flange, as this may cause damage to the kerf.



MORE INFORMATION

For more information, or for an Armstrong representative, call 1 877 ARMSTRONG.

For complete technical information, detail drawings, CAD design assistance, installation information and many other technical services, call TechLine℠ services at 1 877 ARMSTRONG or FAX 1 800 572 TECH.

For the latest product selection and specification data, visit armstrong.com/ceilings.

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