OPTIMA® Vector® ULTIMA® Vector®

Assembly and Installation Instructions

CEILING PANEL ITEMS:

OPTIMA: 3900, 3900PB, 3901, 3902, 3903, 3904, 3905, 3906, 3907, 3908, 3908PB, 3909

ULTIMA: 1920, 1921

ULTIMA Create!™: Z1920UC1

OPTIMA Create!: Z3901OC1

CEILING PANEL ACCESSORIES:

440 – Ultima Vector Border Clip

441 – Optima Vector Border Clip

442A – Vector Hold Down Clip

7425 – 2' Stabilizer Bar

7445 – 4' Stabilizer Bar

7870 – Spring Border Clip

522 – Mid-Point Clip

1. GENERAL

Installed in standard Prelude® XL® 15/16" suspension system, Vector panels have a unique edge detail providing a 1/4" reveal. When installed properly, they offer an upscale, almost monolithic appearance.

1.1. Product Description

The Vector products referenced in these instructions are made from fiberglass or mineral fiber. Both are 100% downward accessible and all full panels can be removed and reinstalled without entering the plenum.

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 suspension system flange and then moved out of position. The other two sides have reverse Tegular edges, which center the panel in the suspension system.

IMPORTANT NOTE: Walls or bulkheads surrounding the ceiling installation must be constructed and braced to limit lateral movement at the elevation of the ceiling to less than 1/4" under the loads anticipated. Where bracing is not possible, the perimeter closure element is to be detached from the wall surface and mechanically fastened to the ceiling suspension system (diaphram). Additional support to structure will be needed to replace support which would have been provided through wall attachment.

1.1.1. Working with Fiberglass & Mineral Fiber Products

1.1.2. 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.

1.1.3. First Aid Measures: If contact occurs, flush eyes and skin irritation with plenty of water for at least 15 minutes and remove contaminated clothing. Wash work clothes with warm water and mild soap.

Refer to Armstrong MSDS (which includes information on established occupational exposure limits), which are available from Armstrong.

1.1.4. Installation Accessories

Clips are not supplied with the panels and must be ordered separately.

These clips are packaged in cartons of 50 pieces.

- **Ultima Vector Border Clips** (item 440)
- **Optima Vector Border Clips** (item 441) – Required whenever two edges must be removed from a panel, most commonly for corner panel installation. These clips are used on projects using perimeter option B.
- **Vector Hold Down Clips** (item 442A) – Required for use for all installations of Ultima and Optima Vector, regardless of Seismic Design Category. The hold down clip will keep the panel tight in the suspension system, help maintain proper panel alignment, and prevent the panel from disengaging due to system movement or vibrations.
- **Mid-Point Clips** (item 522) – Required to support the “C” and “D” edges of panels longer than 30".

This clip is packaged in cartons of 1000 pieces.

- **Spring Border Clips** (item 7870) – Used on installations with the panel resting on the wall molding, perimeter option A.

1.2. Surface Finish

The Armstrong DuraBrite® surface of these panels is scratch- and soil-resistant and washable. The panel edges are finished with a factory-applied paint. Optima panels have square edges. Ultima panels have beveled edges. Optima items 3901, 3903, and 3905 have CAC foil backing.

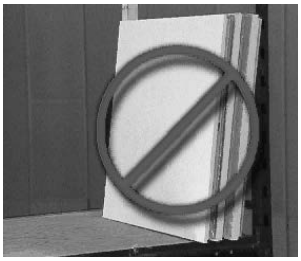
1.3. Storage and Handling

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

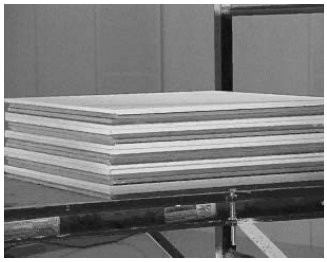
See BPLA-297842 for additional instructions on handling Create! items.

NOTE: Vector® panel edges are exposed when installed. Exercise care to avoid unnecessary contact with the panel edges. Suspension system flanges will not conceal panel edge damage, as the panel face extends below the face of the suspension system.

Protect Finished Edges

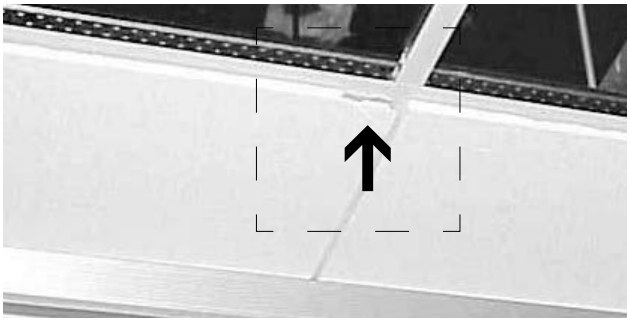


Do not stand the panels on edge.



Keep them face-to-face, back-to-back and flat on the work surface.

Avoid Damaging Finished Edges



1.4. Site Conditions

Areas of installation 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 3" of space in the plenum to install the hanger wires for the suspension system. **NOTE:** Light fixtures and air handling systems require more space and will determine the minimum plenum height for the installation.

1.6. Installation Rate

Field panels install at approximately the same rate as Tegular panels. Borders are 2 to 3 times slower than Tegular borders.

1.7. Maintenance

Dust and loose dirt may easily be removed by brushing or with a vacuum cleaner. Vacuum cleaner brush attachments such as those designed for cleaning upholstery or walls do the best job. Be certain to clean in one direction only. This will prevent rubbing dust into the surface of the ceiling. Use a clean, dry, soft, white cloth to wipe off any dirt or greasy fingerprints. If this does not clean the panel, use a damp, clean, soft, white cloth or sponge with a mild detergent to wipe the panel. Remove any remaining moisture with a dry cloth.

1.8. Field Painting Precautions

Armstrong cannot guarantee that the published surface burning characteristics, fire resistance ratings, acoustical performance, dimensional stability/sag, or light reflectance will remain the same after repainting. Field painting panels upon installation will void the warranty.

1.9. Armstrong SuperCoat™ Ceiling Panel Touch-up Paint – Items 5760 and 5761 White Latex Paint

SuperCoat Ceiling Panel Touch-up Paint is intended to hide minor scratches and nicks in the surface.

1.10. For Surface Scratch or Edge Damage

Use a small brush to apply paint to the affected area. Only apply paint to the damaged area with a dabbing motion to prevent getting excess paint on the finished area. Blend or feather the paint edges to the existing panel surface.

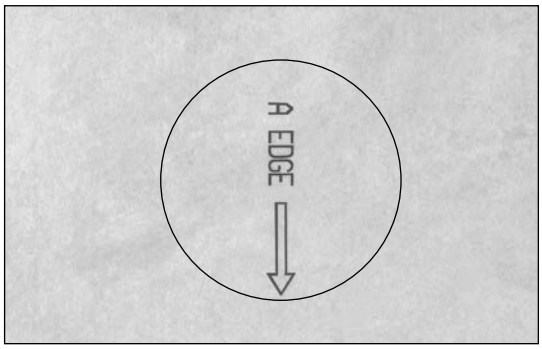
1.11. Directions for Applying #5761 Touch-up Paint

1. Remove loose dust from the material with a brush or vacuum cleaner attachment
2. Stir paint before and occasionally during use
3. Apply to damaged areas – avoid filling in scrim perforations
4. Quickly wipe off excess paint
5. Drying timing is approximately 30 minutes

2. GENERAL EXPLANATION OF EDGE DETAILS

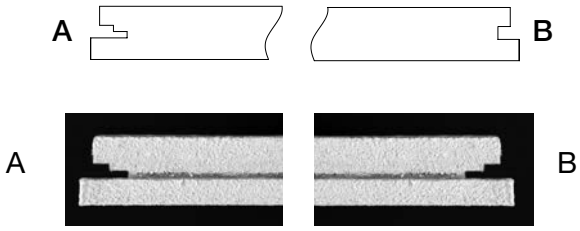
2.1. Access Vector Kerf Edge ("A" Kerf)

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.



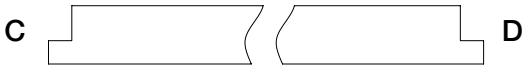
2.2. Registration Kerf ("B" Kerf)

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."



2.3. Reverse Tegular Edges

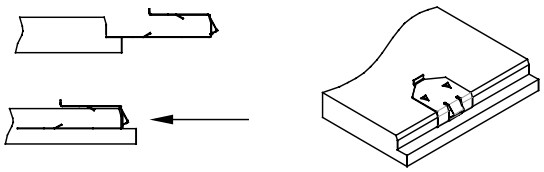
The two remaining panel edges center the panel in the “C - D” direction and are called reverse Tegular edges.



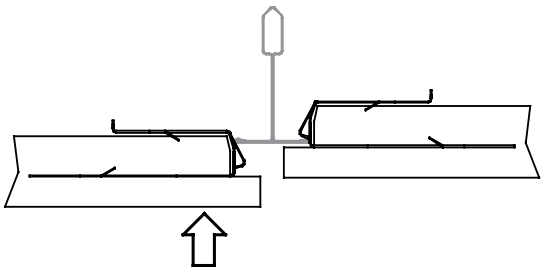
2.3.1. Mid-Point Clips (MPC) Required for “C” and “D” edges of Vector® Panels Over 30" Length:

- Item 3909 – 48" x 48"

Use a Mid-Point Clip at the middle of both “C” and “D” edges to support the panel on the suspension system flange. Rest the bottom of the clip on top of the “C” or “D” edge and gently push the clip into the edge as shown.



Gently push up on the “C” and “D” edges at the location of the Mid-Point Clip to engage the clip on the suspension system flange.



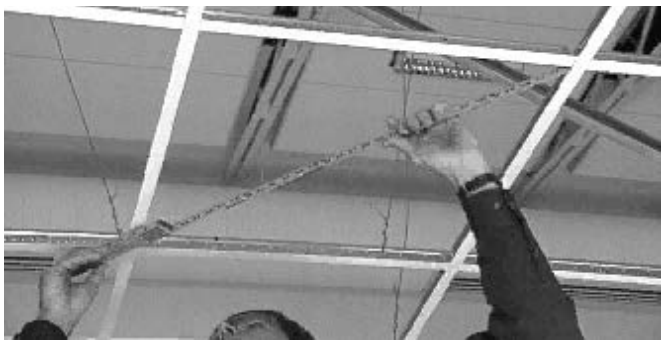
3. SUSPENSION SYSTEM

3.1. General

The suspension system shall be Prelude® XL® or existing 15/16" intermediate-duty or heavy-duty, installed using not less than 12 gauge galvanized steel hanger wire (item 7891). Suspension system installation shall conform to ASTM C636 requirements.

3.2. Leveling Suspension System

The suspension system, whether new or existing, must be leveled to within 1/4" in 10' and must be square to within 1/16" in 2'. **Installation on suspension systems that do not meet this tolerance will produce unacceptable Vector panel alignment.**



Do not attempt to install Vector panels until the suspension system is properly squared.

3.3. Stabilizer Bars – Perimeter Clips

- Item 7425 – 2' Stabilizer Bar
- Item 7445 – 4' Stabilizer Bar
- BERC – Beam End Retaining Clip
- BERC2 – Beam End Retaining Clip
- GCWA – Grip Clip Wall Attachment

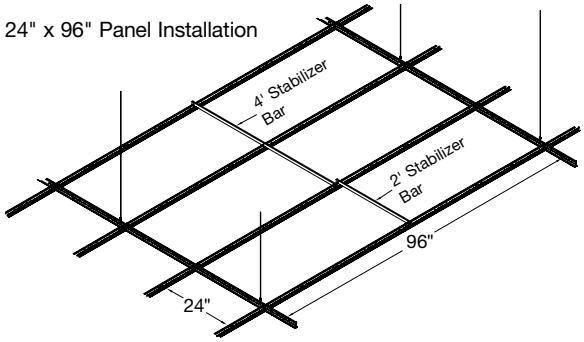
3.4. Stabilizer Bars at Perimeter

Stabilizer bars or BERC/BERC2/GCWA Clips are recommended at the perimeters of all installations to stabilize cross tees and maintain proper panel alignment. Their use greatly improves ease of installation and removal of border panels.

3.5. Stabilizer Bars in the Field (item 3907)

Stabilizer bars are required at the midpoint of 24" x 96" panels (item 3907) for the entire installation, and can be installed during suspension system installation. 24" or 48" size can be used depending on project conditions.

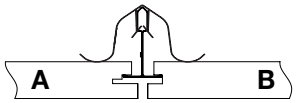
24" x 96" Panel Installation



3.6. Vector Hold Down Clip Application

One Vector Hold Down Clip (item 442A) is required for each panel. Clips should be applied to the suspension system before the installation of panels and should be located near the center of the kerfed edges.

All “A” edges must have Vector Hold Down Clips. Clips do not interfere with panel installation or removal.

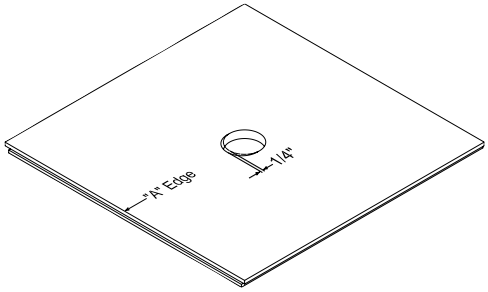


Snap the clips onto the suspension system so they will press down on the “A” edge of all panels. A single clip at the midpoint is used for panels up to 48" long. Panels greater than 48" long use a clip 12" from each end.

Do not install Vector Hold Down Clips on “C” or “D” edges. These edges are unsupported, and the pressure of the hold down clip will deform the plank and create a poor visual.

3.7. 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.

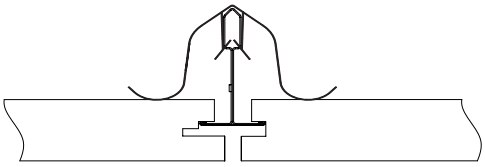


PENETRATIONS THROUGH VECTOR® CEILINGS

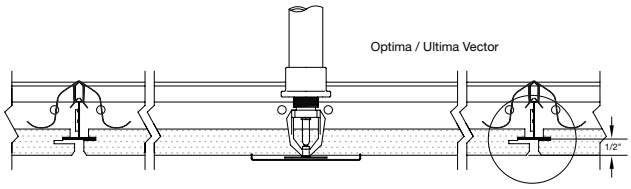
Most Vector ceilings will be installed with penetrations through the panels such as sprinklers or “can” lights. Because the ceiling panels may not be in place when these penetrations are installed, the suspension system flange will be the installers’ primary reference for ceiling plane height. The installers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

PANEL FACE OFFSET

The face of Optima® and Ultima® Vector panels extend 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.

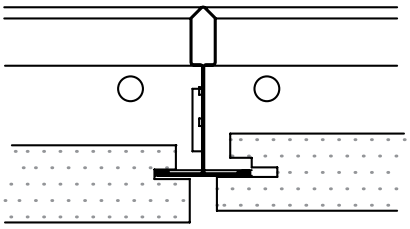


3.7.1 Proper Penetration Installation



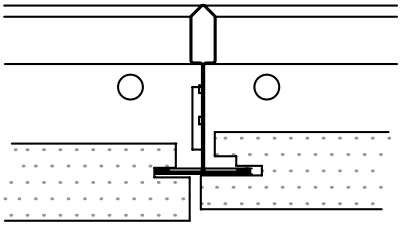
3.8. Potential Penetration Issues

3.8.1. Creating an Uneven Visual



Vector panels should maintain a 1/4" reveal between panels in all directions.

3.8.2. Shift Creating Misaligned Reveal



These are usually panels that receive sprinkler heads and high hat fixtures. **The holes for penetrations must be large enough to allow the panel to be properly aligned.**

4. PANEL INSTALLATION & REMOVAL

4.1. 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.

NOTE: The use of two installers is recommended for 24" x 96" panels. This will ease the installation of the long kerfed edges and proper fit into the suspension system.

4.2. Installing and Removing Full-size Panels

See page 8.

4.3. Orientation of Full-sized Panels

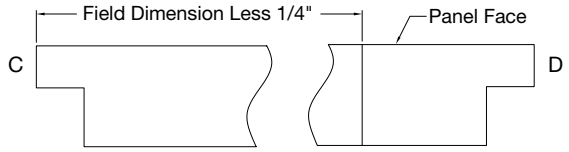
Install all full-size panels with the “A” edge facing in the same direction to provide access consistency. Border panels may be quarter turned to avoid losing kerfed edges due to cuts. Align panels as you proceed to ensure a uniform reveal width in both directions. **Pay attention to this alignment process. Minor variations in placement can be difficult to see from the scaffold, but will become obvious when looking down long runs of panels.**

4.4. Odd-size Panels

Panels that are less than full size must be cut to replicate factory edges or ordered from Armstrong as a special. Example: Odd-sized panels next to a linear air diffuser.

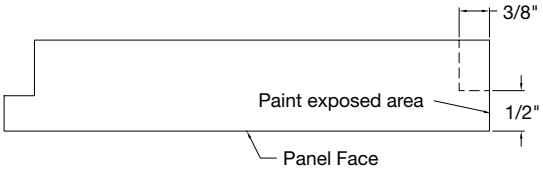
4.4.1. Measuring Odd-sized Panels

Measure, mark, and cut the panel 1/4" smaller than the dimension required. For example, if the panel is to fit into an 18" x 24" on center opening, it would be cut 17-3/4" wide.



4.4.2. 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.



4.4.3. Treating Field Cut Edges

All field cut edges “exposed to view” should be painted to match the factory finish. **Armstrong SuperCoat™ Ceiling Panel Touch-up Paint is recommended (items 5760 and 5761).** Allow the paint to skin over before installing the panels.

Use a larger 1" wide brush to apply the touch-up paint to the cut edge. Apply a liberal amount of paint to the brush and coat several inches of the cut edge. For best results, use as few strokes as possible to cover the area. Avoid getting paint on the face of the panel and wipe off any excess as soon as possible. Paint will dry in approximately 30 minutes.

5. VECTOR FIXTURE TRIM

VECTOR – FIXTURE TRIMS

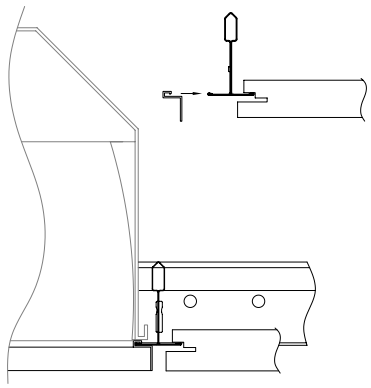
Item No.	Length	Color	Substrate
5790	12"	White	Extruded PVC
5791	24"	White	Extruded PVC
5792	30"	White	Extruded PVC
5793	48"	White	Extruded PVC

5.1. General

The design of the Vector edge details creates a gap between the face of the suspension system and the kerf 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 suspension system at the location of lay-in light fixtures or other accessories that sit in the suspension system. Trim elements may be installed before or after the placement of the ceiling panels.



6. PERIMETER DETAILS

6.1. "A/B" General

There are two options for perimeter detailing:

A) Panel face resting on molding
B) Suspension flange resting on molding

Follow the instructions appropriate for the job conditions.

OPTION A

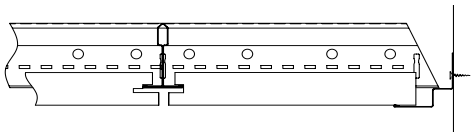
RECOMMENDED FOR SQUARE, NON-DIRECTIONAL PANELS

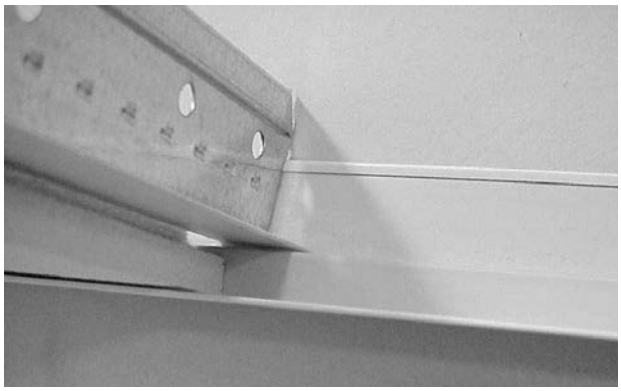
CEILING PANEL ITEMS
OPTIMA®: 3900, 3900PB, 3901, 3904, 3905, 3909
ULTIMA®: 1920

6.2.A. Panel Face Resting on Molding. Molding items and accessories:

- Item 7808 – 2" "L" Wall Molding
- Item 7800 – 7/8" "L" Wall Molding
- Item 7875 – Shadow Molding
- Item 7897 – Seismic Shadow Molding for Vector®
- Item 7870 – Spring Border Clip
- Item BERC2 – Beam End Retaining Clip

The suspension system is raised above the molding by 1/2". This clearance will allow the face of the panel to pass over and rest upon the support leg of the shadow molding, while the suspension system rests on the "step" of the shadow molding (item 7875 or seismic item 7897). An alternate option would be to use a standard "L" angle molding but hold the suspension system 1/2" above the horizontal flange.





Correct shadow molding installation

This method will create "mouse holes" where the suspension system passes over the molding flange, but it eliminates field cut panel edges that may be exposed to view.

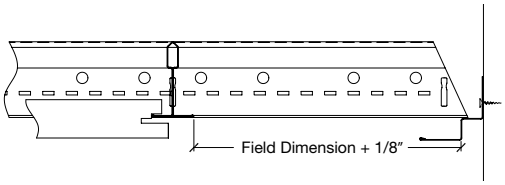
Option A: Shadow molding is the most user-friendly; items #7875 or #7897 are recommended

6.2.1.A. Corner Panel Installation

Preparation of the corner panel will require the removal of two edges. Install the panel from above the suspension system and align the "B" edge with the suspension system flange. It may be necessary to swing a cross tee to the side to ease installation. Spring Border Clips (item 7870) must be used on two sides to maintain the location of the panel.

6.2.2.A. Measuring Border Panels

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



6.2.3.A. Cutting Border Panels

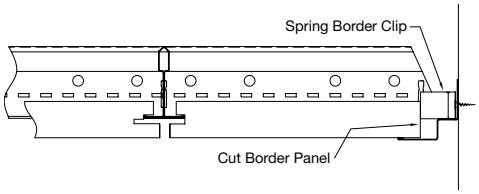
Mark and cut the panel to retain a portion of the "B" edge. Cut from the face side of the panel with a sharp knife and a straight edge.

6.2.4.A. Installing Border Panels

Install this panel much like you would a full-size panel. Use Mid-Point Clips on "C" or "D" edges if the border panel is greater than 30" wide. 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 suspension system flange.

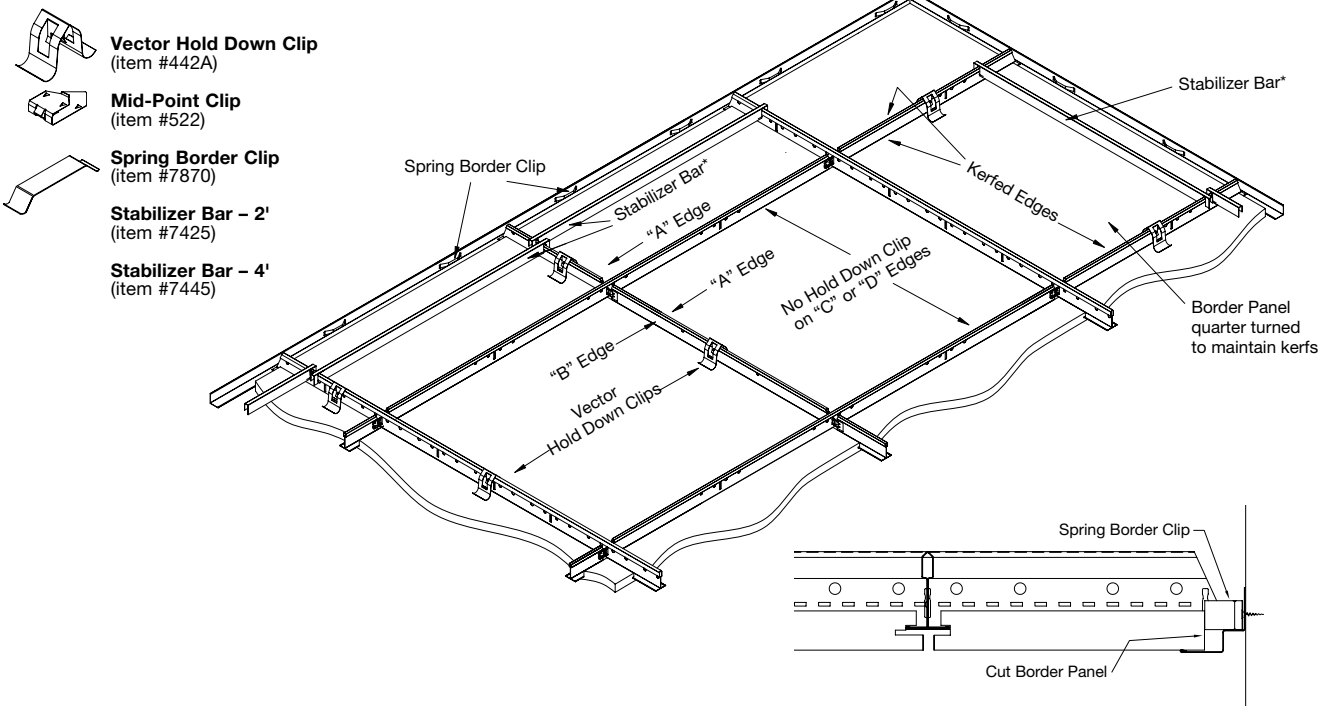
6.2.5.A. Shimming Border Panels

Insert a Spring Border Clip between the edge of the panel and the molding. This step is required to prevent the border panel from disengaging the suspension system flange and falling from the ceiling.

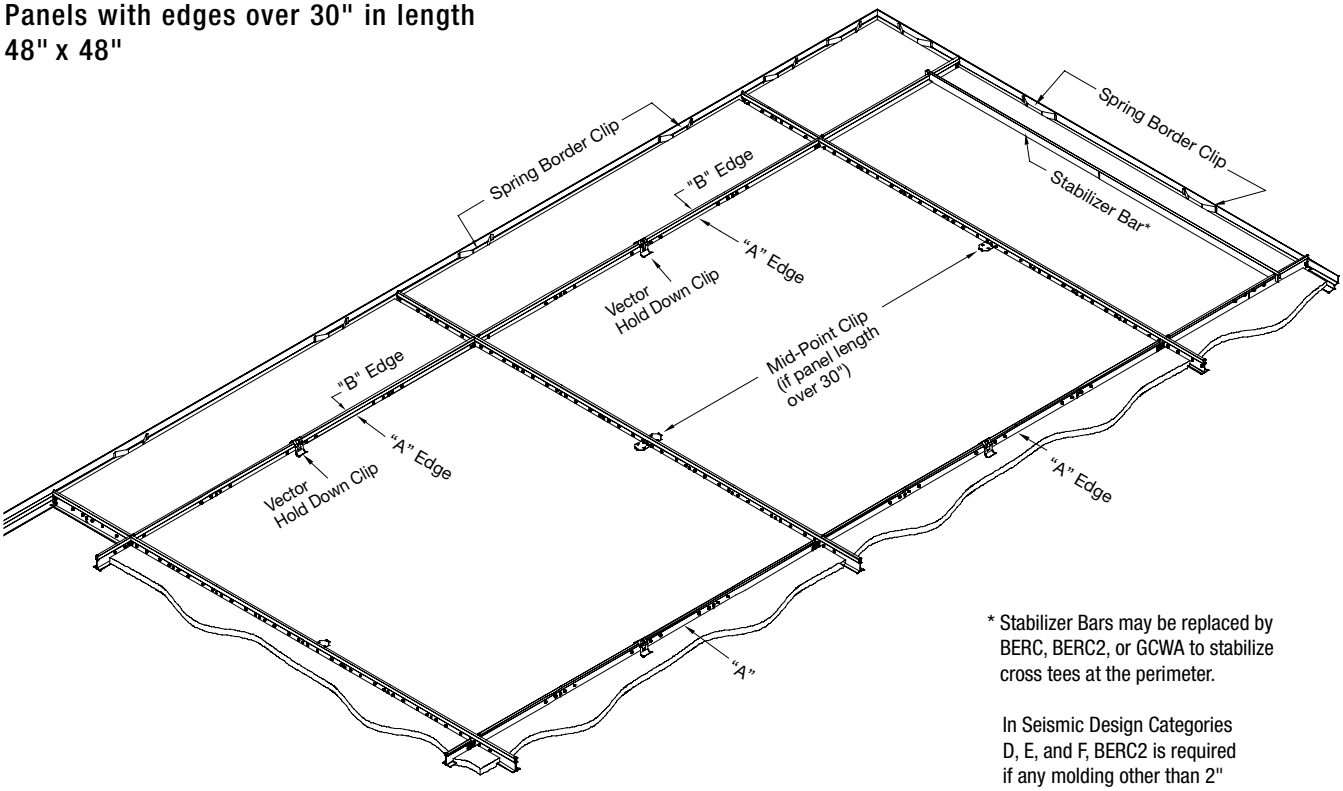


OPTION A

Panel Face Resting on Molding
24" x 24"
30" x 30"



Panels with edges over 30" in length
48" x 48"



* Stabilizer Bars may be replaced by BERC, BERC2, or GCWA to stabilize cross tees at the perimeter.

In Seismic Design Categories D, E, and F, BERC2 is required if any molding other than 2" "L" angle (item #7808) molding is used.

OPTION B

RECOMMENDED FOR RECTANGULAR AND DIRECTIONAL PANELS

CEILING PANEL ITEMS
OPTIMA®: 3906, 3907, 3908, 3908PB
ULTIMA® Create!™: Z1920UC1
OPTIMA Create!: Z3901OC1

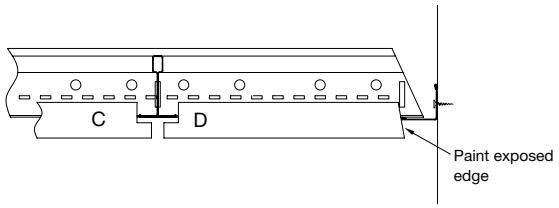
6.2.B. Suspension System Resting on Molding

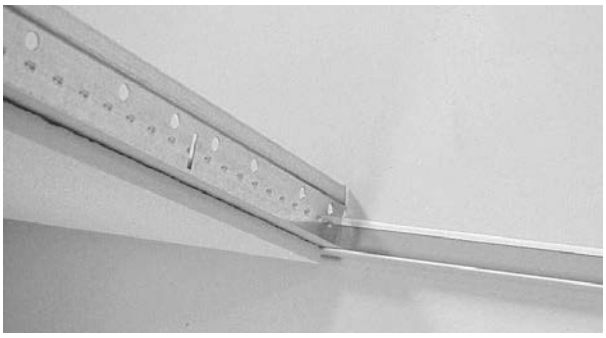
- Item 7808 - 2" "L" Wall Molding
- Item 7800 - 7/8" "L" Wall Molding
- Item BERC2 - Beam End Retaining Clips

When the suspension system rests directly on the molding flange, the border panels are field cut against the molding.

6.2.1.B. "C/D" Edge along the Perimeter

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. White, non-plank panels may be rotated as you move around the walls to retain the kerfed edges on two opposite sides of each panel; directional and plank panels cannot.

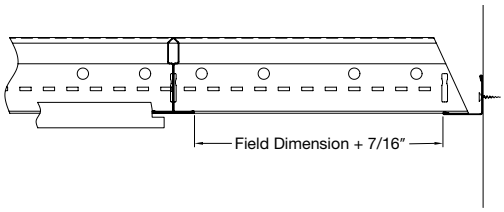




Correct "L" wall molding installation with suspension resting on molding.

6.2.2.B. Measuring Border Panels

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

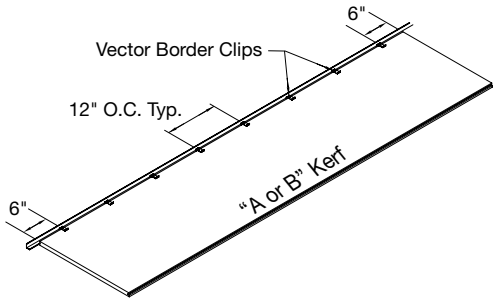


6.3.B. Border Panel Orientation – Plank, Create!

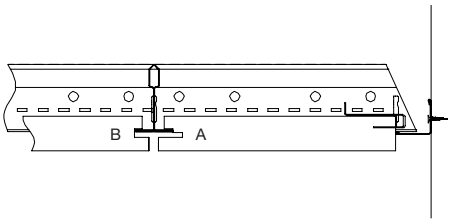
Because plank panels are rectangular, and Create! panels are directional, different perimeter procedures are required when a long "A/B" kerf meets the wall molding.

6.4.B. "A" Kerf along the Perimeter

When this option is used, the cut is made parallel to the kerfed edge of the panel. For ease of installation and panel accessibility, retain the "A" kerf and cut off the "B" kerf if possible. Support the cut side of the panel by inserting Vector® Border Clips. Clips must be within 6" of the end and spaced 12" along the cut edge.

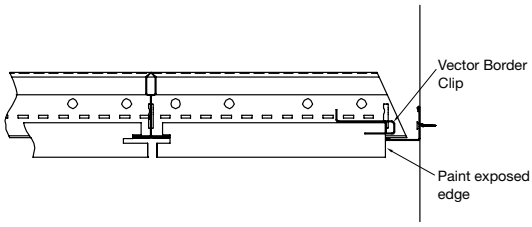


To install this panel, fully engage the "A" kerf on the suspension system. Raise the cut edge up until the border clips are above the wall molding. Slide the panel towards the wall until the access kerf of "A" edge drops down into the correct position. The Vector Border Clips will support the cut edge along the wall molding.



6.5.B. "B" Kerf along the Perimeter

This option may be used when required but makes the panel non-accessible. The cut is made parallel to the "B" kerf. To install this panel, engage the "B" kerf on the suspension system and raise the cut edge up until it is above the wall molding. From above the suspension system, insert a Vector Border Clip along the cut edge. Clips must be within 6" of the end and spaced 12" along the cut edge.



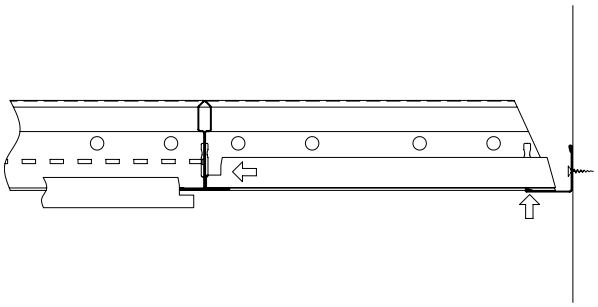
6.6.B. Cutting and Installing the Panel

Cut from the face side using a sharp knife and a straight edge. Install the same as a full-size panel.

6.6.1.B. 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 panel large enough to rest on the suspension system and wall molding as shown.

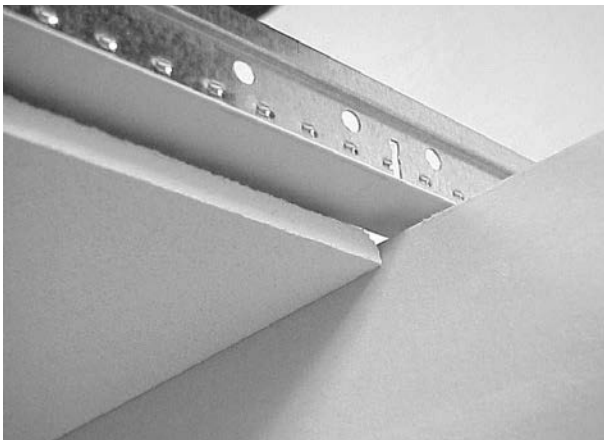
Slide the panel away from the wall until it touches the web of the suspension system. Scribe and cut the panel to the edge of the flexible wall molding. Use Vector® Border Clips to support the edge if needed.



6.6.2.B. 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. Install clips 6" from the edge and then every 12" O.C. Follow section 6.5.B., if the “B” kerf is retained.

6.6.3.B. Ceiling Height Partitions Walls

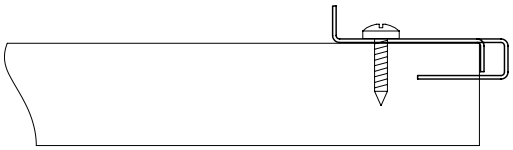


For ceiling height partitions, field scribe the panel against the wall.

7. SEISMIC CONSIDERATIONS

7.1. Border Clips (Screw Attachment)

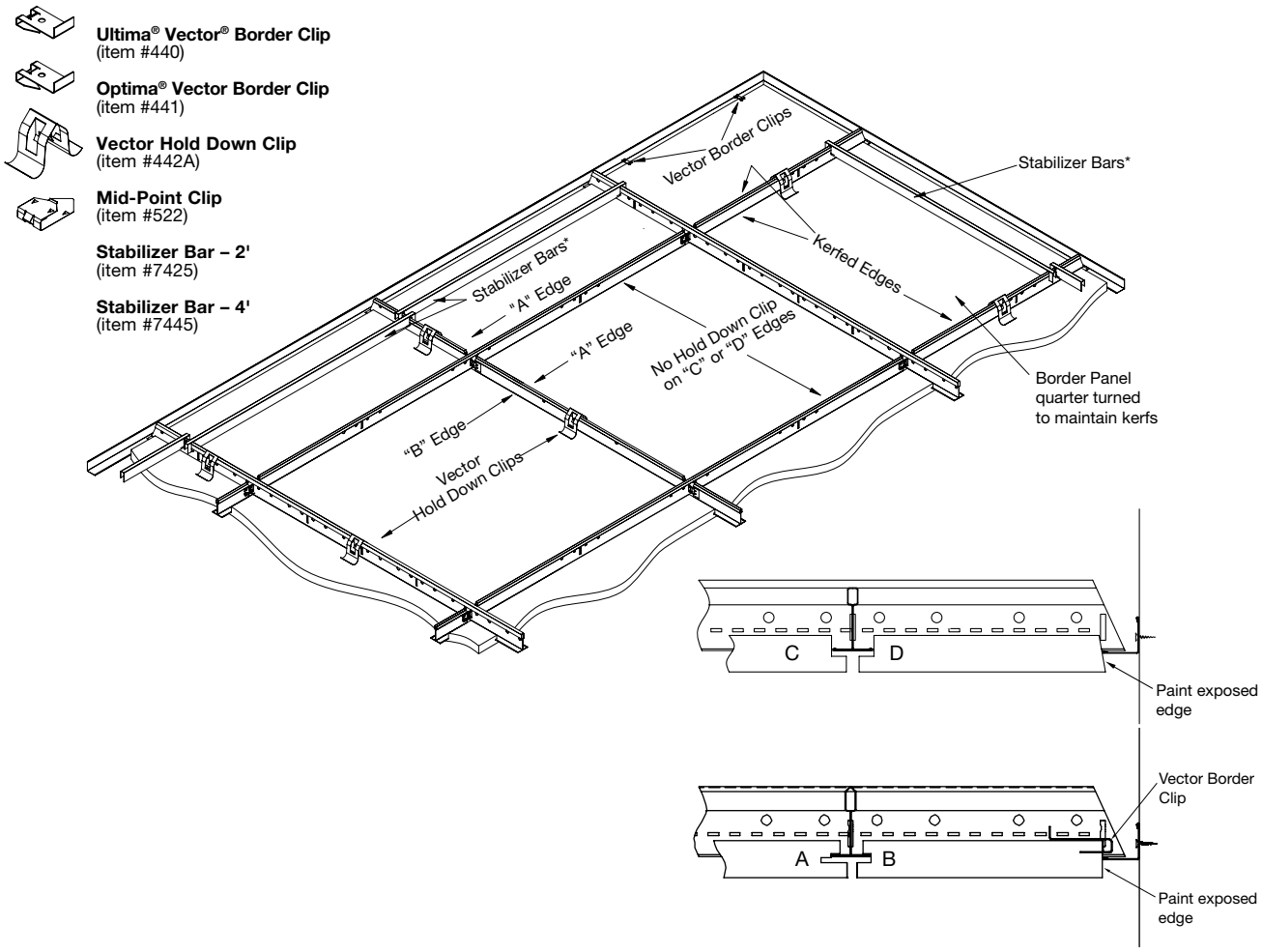
The following modification to the Vector Border Clip is required for Optima® Vector large size items 48" x 48", 24" x 72", and 24" x 96" in Seismic Design Categories C, D, E, and F.



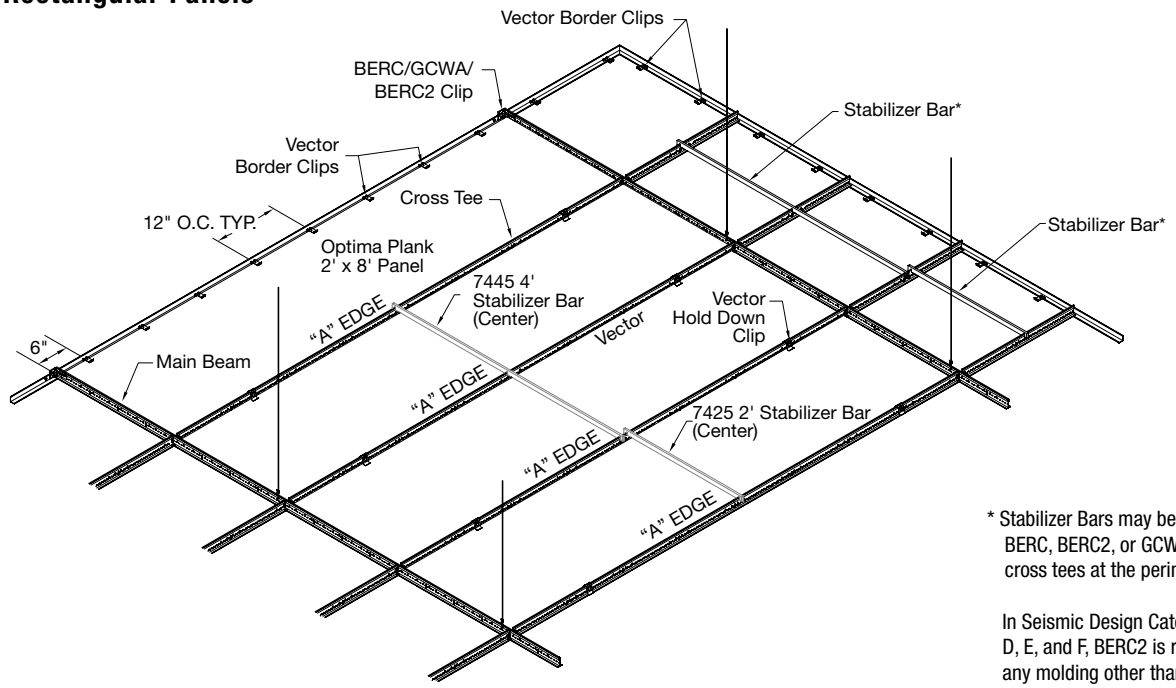
Insert the Vector Border Clip on the panel. Push an 8 x 9/16 sheet metal screw (or equivalent) through the clip into the plank to secure the border clip to the panel.

OPTION B

Suspension System Resting on Molding 24" x 24"



Rectangular Panels

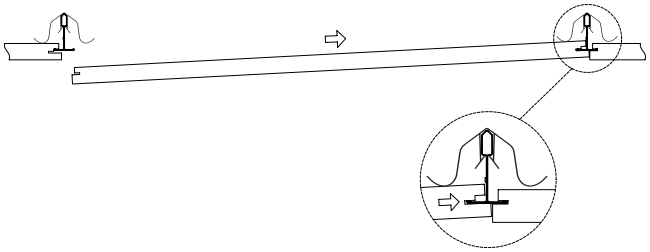


* Stabilizer Bars may be replaced by BERC, BERC2, or GCWA to stabilize cross tees at the perimeter.

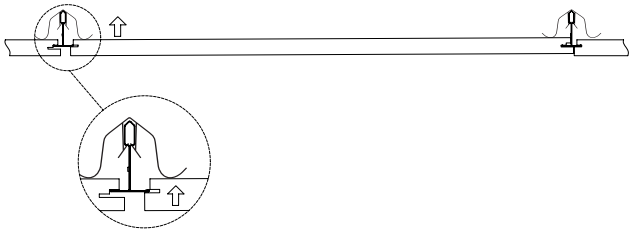
In Seismic Design Categories D, E, and F, BERC2 is required if any molding other than 2" "L" angle (item #7808) molding is used.

HOW TO INSTALL a Vector® Panel

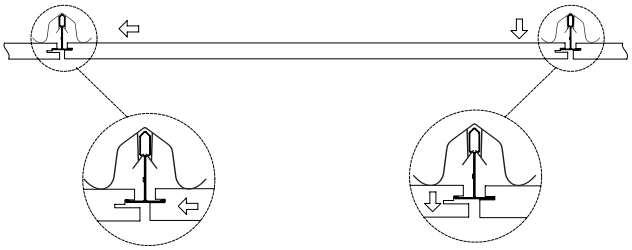
1. Place the deepest portion of the “A” kerfed edge onto the suspension system flange.



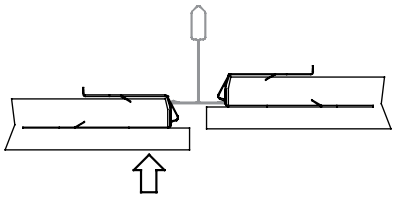
2. Raise the opposite “B” kerfed edge up into the suspension system opening.



3. Slide the panel back onto the suspension system flange. Make sure that the “A” edge drops into position as shown.

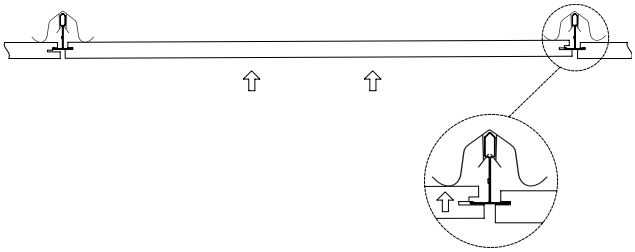


4. **Required for panels over 30" in length.** Gently push up on the “C” and “D” edges at the location of the Mid-Point Clip to engage the clip on the suspension system flange.

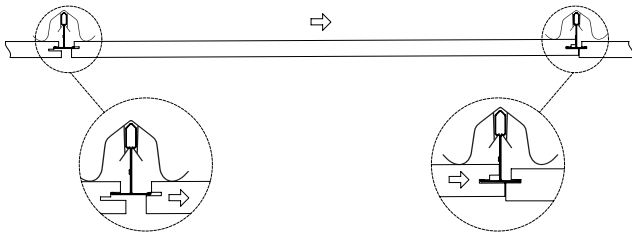


HOW TO REMOVE a Vector Panel

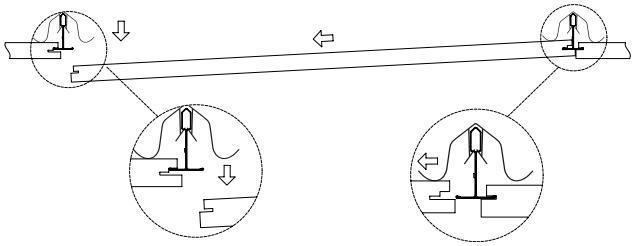
1. Push the panel up against the suspension system flanges and find the one direction it will move.



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



3. Lower the opposite edge out of the suspension system opening. Slide the panel off of the flange. Do not allow the panel to hinge or hang on the suspension system flange, as this may cause damage to the kerf, resulting in poor alignment when the panel is reinstalled.



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