MetalWorks™ Torsion Spring Large Format Panels

Assembly & Installation Instructions

1. GENERAL

1.1 Product Description

MetalWorks™ Torsion Spring Large Format Panels are designed for full downward accessibility and are available in standard sizes of 4' x 8' and 5' x 10'." The panels install on a 15/16" Prelude® suspension system, which comes pre-slotted to accommodate the factory-applied panel springs. All full-size, uncut panels are 100% downward accessible.

Panel are offered in both perforated and unperforated options. Perforated panels include an acoustical fleece backing to enhance sound absorption. Additional infill panels can be added to further improve acoustic performance.

1.2. Surface Finish

MetalWorks Large Format panels are constructed of aluminum and have a factory-applied powder-coated, post-production finish. Panels are available in three standard finishes.

1.3. Storage and Handling

Ceiling panels shall be stored in a dry interior location and shall remain in crates prior to installation to avoid damage. The crates shall be stored in a flat, horizontal position. The panels should not be removed from the crate until the suspension system is installed. Proper care should be taken when handling to avoid damage or soiling.

NOTE: Panels may be packaged with the face of the panel toward the outside of the crates. Exercise care in moving and opening crates to prevent damage to the panel face.

1.4. Site Conditions

Areas to receive ceilings shall be free of construction dust and debris. Panels should only be installed in closed and acclimatized buildings. Interior systems cannot be used in exterior applications.

1.4.1. HVAC Design & Operation

Proper design for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure air supply is properly filtered and the building interior is free of construction dust.

NOTE: Interior systems cannot be used where standing water is present or where moisture will come in direct contact with the ceiling.

1.5. Fire Performance and Sprinklers

MetalWorks Large Format panels have Class A fire performance based on ASTM E-84 testing. Panels may obstruct or skew the existing of planned fire sprinkler water distribution pattern or possibly delay the activation of the fire sprinkler or fire detection system. Designers and installers are advised to consult a fire protection engineer, NFPA 13, and their local codes for guidance on the proper installation techniques where fire detection or suppression systems are present. A hole may be cut through the panels to allow for sprinkler head and other penetrations.

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1.6. Safety Considerations

Product arrives in a crate – make arrangements for safe handling.

When cutting panels, exposed raw edges of metal can be a safety hazard. Edges of metal parts can be sharp. Handle metal carefully to avoid injury. Always wear safety glasses and cut-resistant gloves when handling or cutting metal. If a project requires special size panels, consult Architectural Specialties.

To ensure safe and efficient installation, MetalWorks™ Large Format panels must be handled by a minimum of two people. Likewise, a minimum of two people is required for the installation process to maintain control and prevent damage. Extra care and attention to safety are essential when working with large panels throughout handling and installation to minimize the risk of injury and damaging the panels.

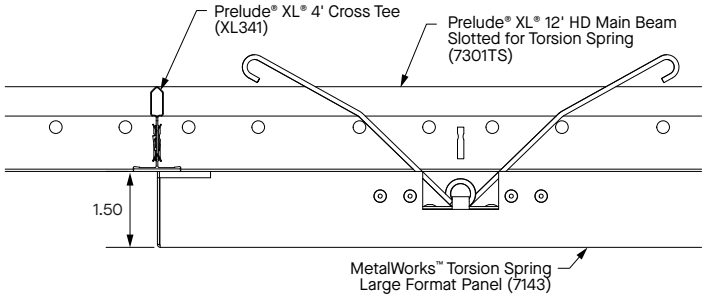
1.7. Cleaning Recommendations

DO NOT USE an abrasive or strong chemical detergent. A mild detergent diluted in warm water, applied with a soft cloth and rinsed, will keep the panels in good condition.

2. DESIGN AND INSTALLATION CONSIDERATION

2.1. Panel Offset

MetalWorks Large Format panels hang below the suspension system to which they are attached. The face of the installed panel will be 1-1/2" below the face of the suspension system from which they are supported. All MEP integration will need to consider this panel-to-grid offset for proper height adjustments ***(Fig 1)***.



(Fig 1)

2.2. Plenum

MetalWorks Large Format panels install from below and never travel into the plenum; it requires a minimum of 6" clearance above the suspension system. This allows panel springs to travel into the plenum without obstructions.

NOTE: Light fixtures and air handling systems require more space and will usually determine the minimum plenum height for the installation. It is required that MEP be independently supported. There must not be weight from any lights, diffusers, speakers, or similar devices supported by the panels or the suspension system.

2.3. Exterior/Sloped Installations

MetalWorks Large Format panels are not intended for exterior use or for sloped installations.

2.4. Directionality

MetalWorks Large Format panels are directional. Panel length runs parallel to main beam, with panel springs installing to main beams only.

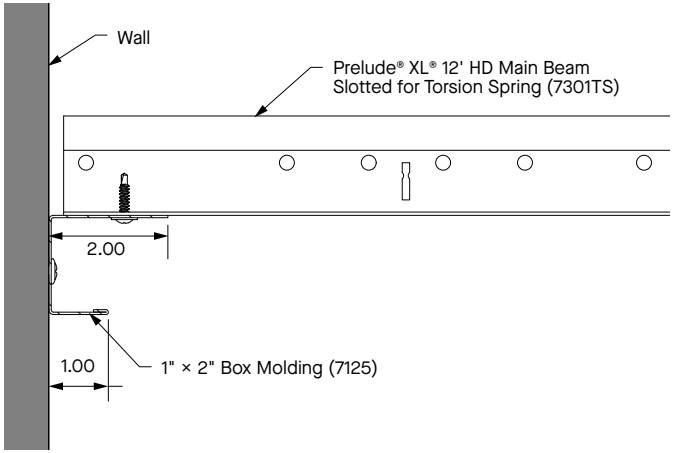
3. SUSPENSION SYSTEM (WALL-TO-WALL)

The requirements listed here represent the manufacturer's minimum acceptable installation recommendations and may be subject to additional requirements established by the local authority having jurisdiction. All installations should follow ASTM C636. All references to suspension component duty ratings are per ASTM C636. Hangers and bracing are to comply with all local code requirements. The suspension system must be properly installed and leveled using not less than 12-gauge galvanized steel wire. The suspension system must be leveled to within 1/4" in 10' and must be square to within 1/16" in 4'. 90° alignment clips (Item M315710) can be used to ensure the grid system meets the squareness requirement.

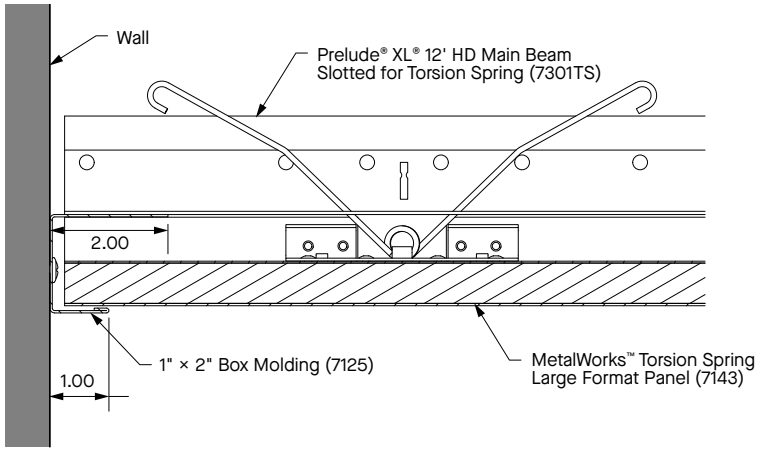
3.1. Perimeter Solution

Perimeters are trimmed with Box Molding (Item 7125) attached with appropriate fasteners at 16" to a max of 24" O.C. to structure. The suspension system will rest on the upper 2" flange of the box molding and the panel edges will rest on the bottom 1" flange ***(Fig 2)***.

Cut edges do not require any hold down clips. Panel edges (field-cut or factory-finished) will rest directly on the lower 1" flange of the box molding as shown ***(Fig 3)***.



(Fig 2)



(Fig 3)

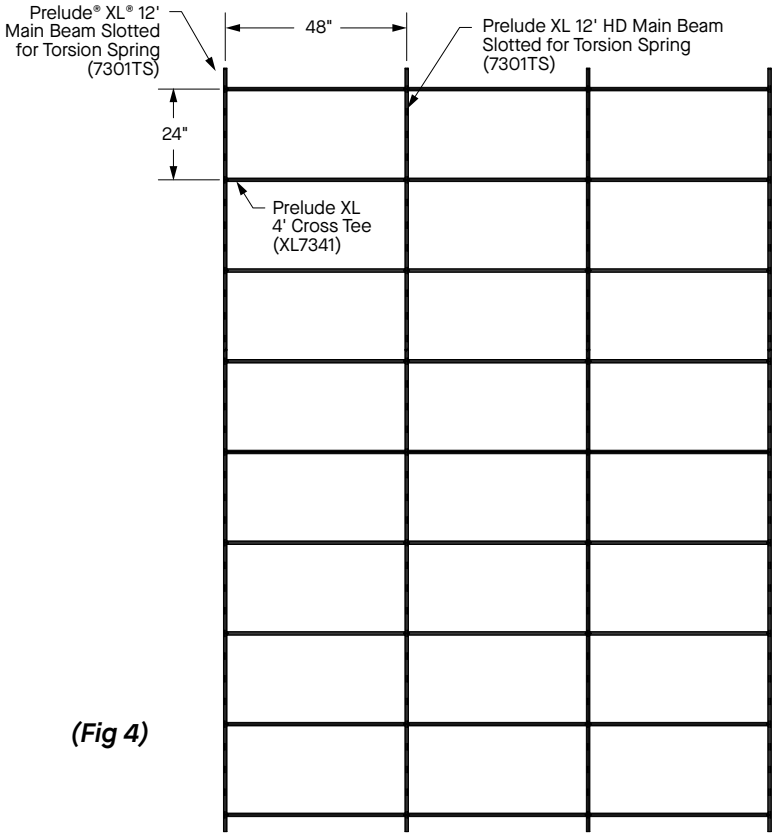
3.2. Suspension System Layout

3.2.1. Main Beam & Cross Tees

Location of the first main beam shall be as detailed on the reflected ceiling plan or to provide borders that are equal in size and greater than 1/2 of the full panel width. Pay close attention when cutting the first main beam to length; make sure that the slots in the main beam are in the correct position to accept the springs attached to the panel size being installed.

4' × 8' panels

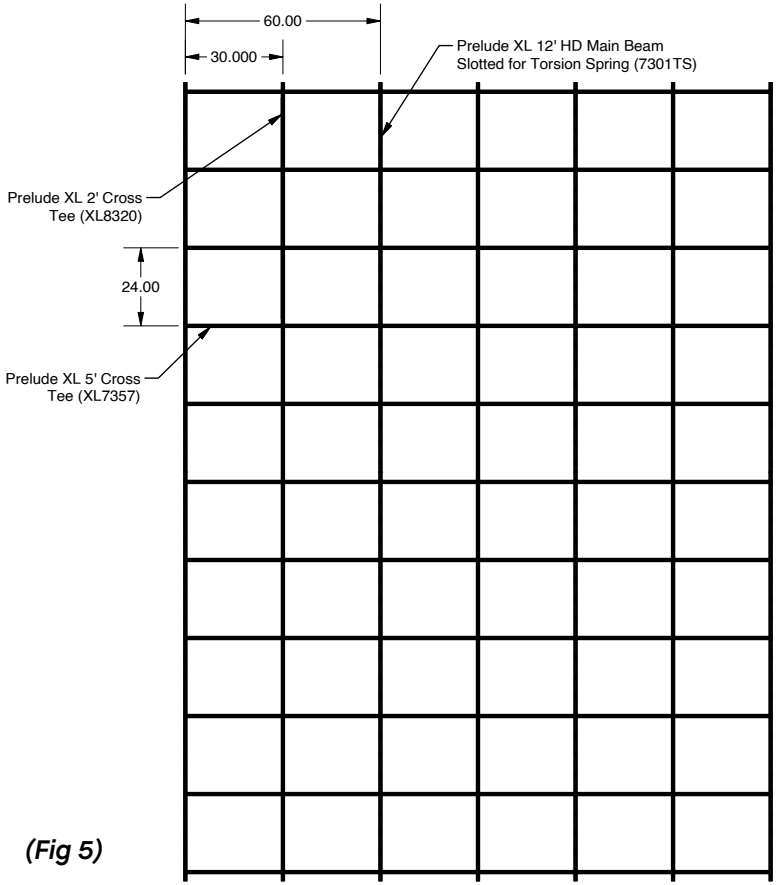
Prelude® XL® HD main beams that are pre-slotted 6" O.C. (Item 7301TS) are installed every 48" O.C. Then 48" Prelude® cross tees (Item XL7341) must intersect the main beams at 90° every 24" O.C. creating a 24" × 48" grid module. Springs on the panel will be inserted into main beams only. Panel length will run parallel to the main beams ***(Fig 4)***.



(Fig 4)

5' × 10' panels

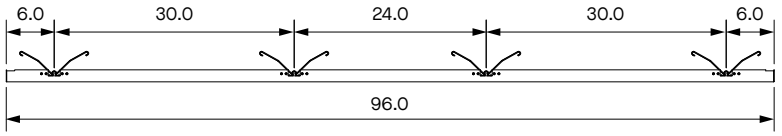
Install Prelude XL HD main beams that are pre-slotted at 6" O.C. (Item 7301TS) at 60" O.C. Next, install 60" Prelude cross tees (Item XL7357) perpendicular to the main beams every 24" O.C. Then, install 24" Prelude cross tees (Item XL8320) perpendicular to the 60" cross tees every 30" O.C., forming a 24" × 30" grid module. Springs on the panel will be inserted into main beams only. Panel Length will run parallel to the main beams ***(Fig 5)***.



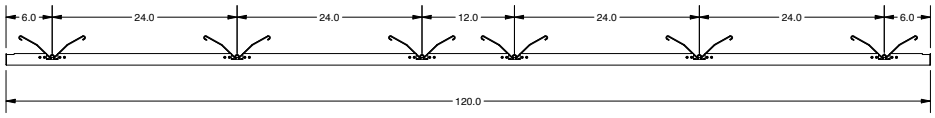
(Fig 5)

4. PANEL INSTALLATION

Panels are mechanically directional. Two opposite sides feature a set number of springs that engage the main beam and retain the panel ***(Fig 6 & 7)***.



(Fig 6)

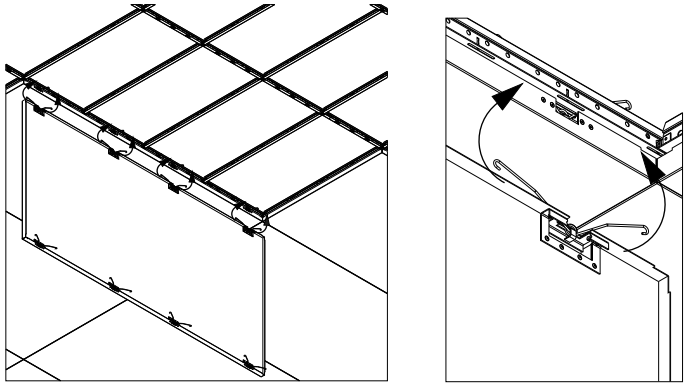


(Fig 7)

Installation Steps

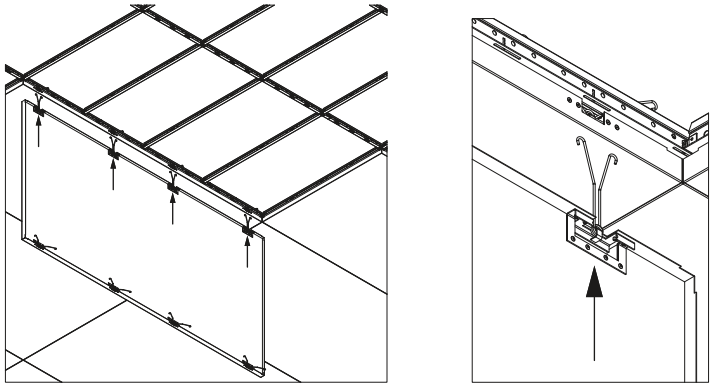
IMPORTANT NOTE: Installers should coordinate closely during this step. Springs should be engaged progressively along the main beam to ensure proper alignment and prevent damage to the springs.

1. Align the springs with the slots in the flange of the main beam only ***(Fig 8)***.

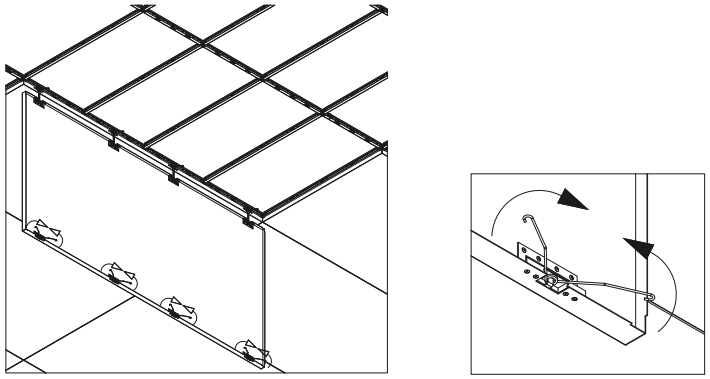


(Fig 8)

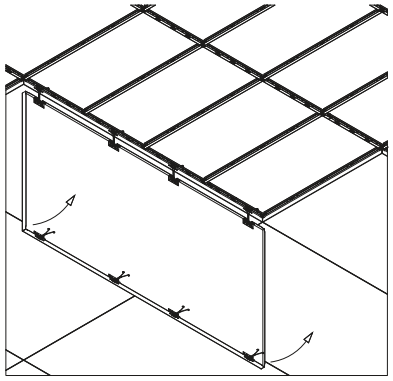
2. Starting on one side of the panel, compress each spring and insert it into the proper slot on the main beam. Swing the other side of the panel into position and repeat this process for all springs on the panel ***(Figs 9 - 11)***.



(Fig 9)



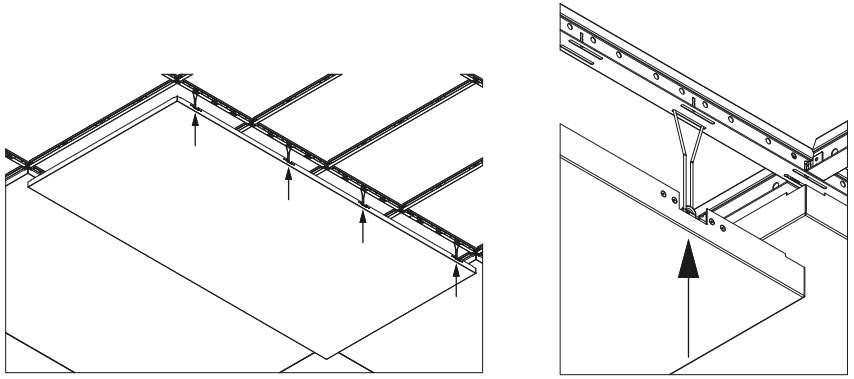
(Fig 10)



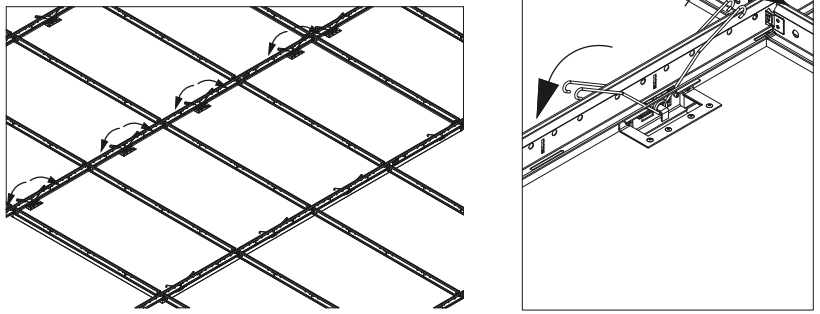
(Fig 11)

3. Push upward on the panel using the palm of your hand. As you do this, the springs will spread within the grid slots, allowing the panel to sit securely into place ***(Figs 12 & 13)***.

   NOTE: During this step, you may need to gently shift the panel side-to-side while pushing upward. This helps prevent the springs from catching on the bulb of the grid, which could cause damage. This movement also ensures the panel is properly aligned and securely installed.



(Fig 12)



(Fig 13)

4.1. Cutting Recommendations

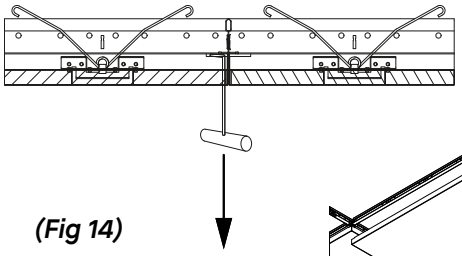
Cut panels should never occur within the field of the ceiling. All ceiling mounted services install into a hole that is cut into a panel or be mounted through the face of a panel. Cuts should be made no less than 3" from panel spring location. MetalWorks™ Large Format panels can be cut to size at the perimeters using standard tools and methods for aluminum panels.

- For straight cuts, it is recommended to use a metal cutting circular saw with a nonferrous metal cutting blade (consult blade manufacturer for specific recommendation).
- For curved cuts, it is recommended to use a jig saw with an aluminum cutting blade. The quality of the cut can impact the flatness of the cut edge.

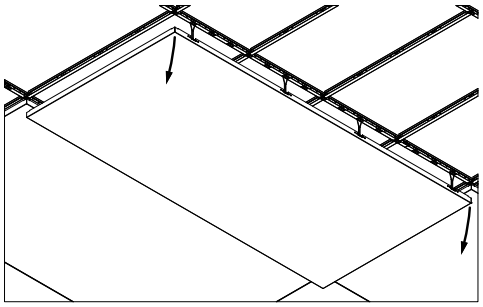
When fiberglass (Item 8200T10) infill is used, and it must be cut to size, this is best done with a large pair of scissors or utility knife. Reseal the poly bag with packing tape prior to installation.

4.2. Panel Removal

All panels are removable without moving up into the plenum. Panel removal will need to be done in a progressive manner to avoid damaging the panels and springs. The Hook Panel Removal Tool (Item 7129) for perforated or unperforated panels, is inserted into the joint between two panels. Make sure to insert the tool within 1" from a panel intersection, on the spring side of the panel, to grab the correct part of the panel. Twist the tool 90 degrees to hook the top of the panel ***(Fig 14)***. Then pull the tool downward, slowly, until the spring catches on the flange of the grid and can be seen ***(Fig 15)***.

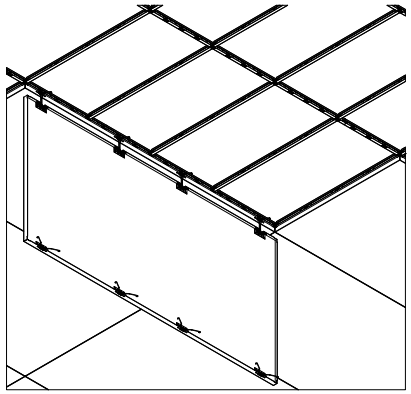


(Fig 14)

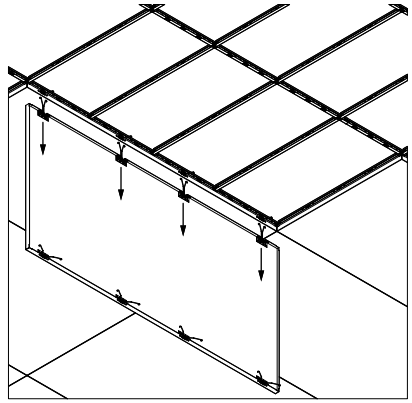


(Fig 15)

Starting on one side of the panel first, now that the springs have become accessible, compress the springs together, then slide them down through the slot, and pull down gently to release the panel from the main beam. Swing the panel down slowly and repeat the process to the other side of the panel releasing the panel from the grid completely ***(Figs 16 & 17)***.



(Fig 16)



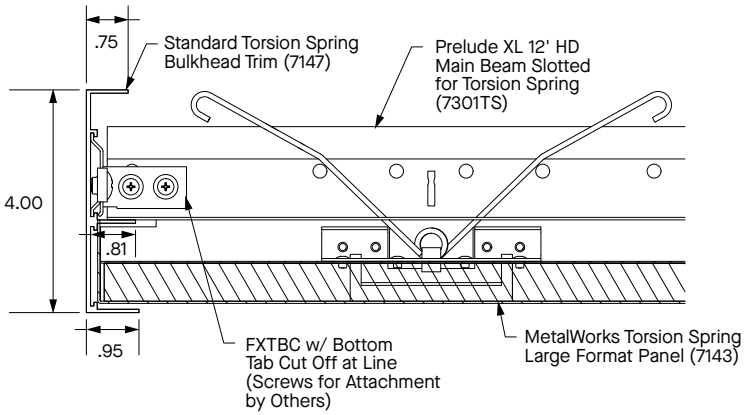
(Fig 17)

The Suction Panel Removal Tool (Item 7130) is for unperforated panels only. Place the device on the corner edge of the panel and gently pull down until the spring is accessible. Push the spring together and pull down gently to release the panel from the main beam as noted above.

IMPORTANT NOTE: For MetalWorks Large Format Torsion Spring panels, the swing down feature on the panels is only intended to aid with installation and removal. The product is not designed to be left hanging in the swing-down position and should always be fully removed from the space for access.

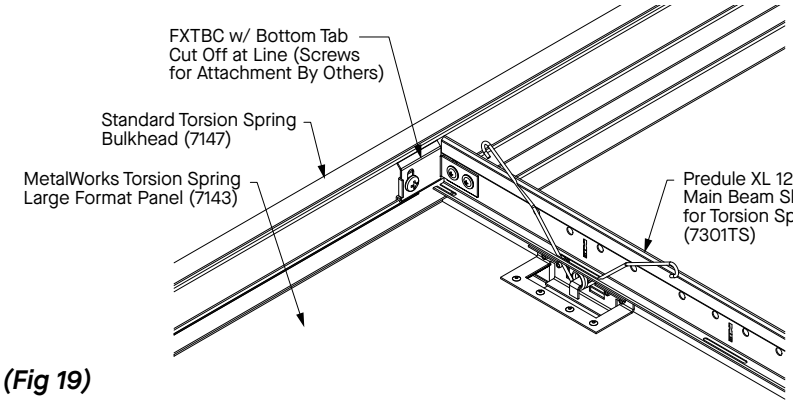
5. FLOATING/DISCONTINOUS INSTALLATION

The suspension layout for floating perimeters or cloud applications should be the same as what is detailed in Section 3.2. Main beams and cross tees need to be in place around the entire perimeter so trim can be attached to the suspension system. Item 7147 is an extruded perimeter trim available in White, Silver, Gun Metal, and Black ***(Figs 18 – 20)***.

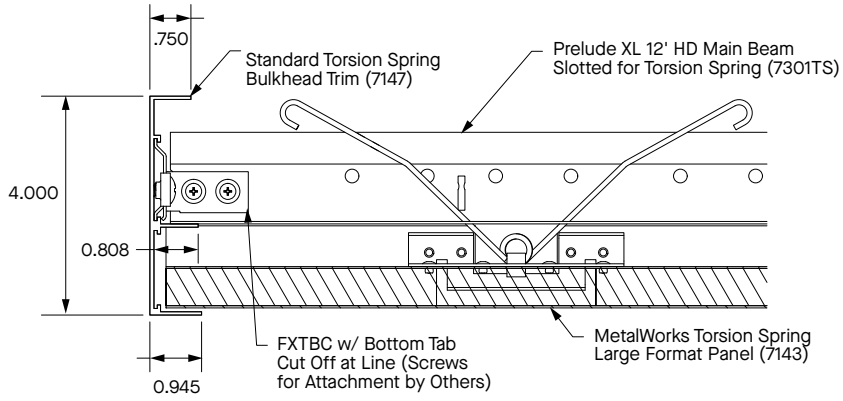


(Fig 18)

Extruded Perimeter Trim (Item #7147)
Detail for Full Size Panels



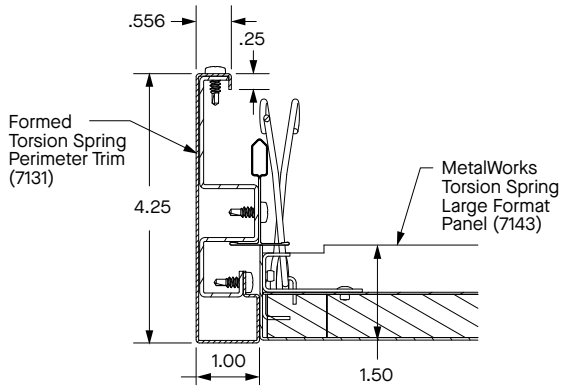
(Fig 19)



(Fig 20)

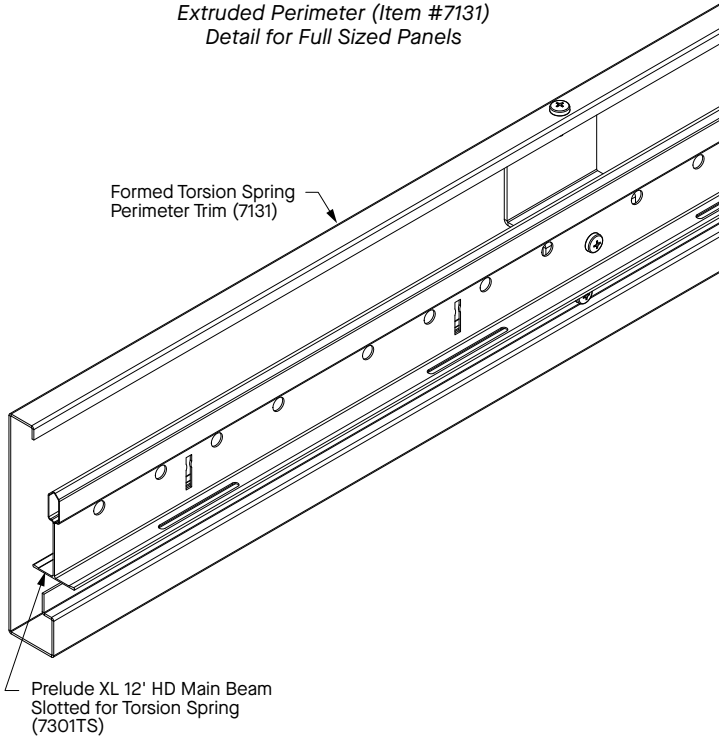
Detail for Field Cut Panels

Item 7131 is a formed perimeter trim available in Lacquer Mill, Satin Anodized, and Brushalume finishes. The perimeter trim is designed for straight perimeters and should not be curved ***(Figs 21 & 22)***.



(Fig 21)

Extruded Perimeter (Item #7131)
Detail for Full Sized Panels

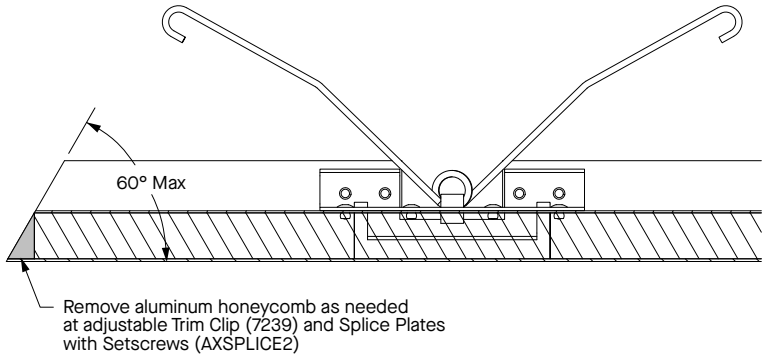


7131, Formed Torsion Spring Perimeter Trim –
Attached to Grid Main Beam

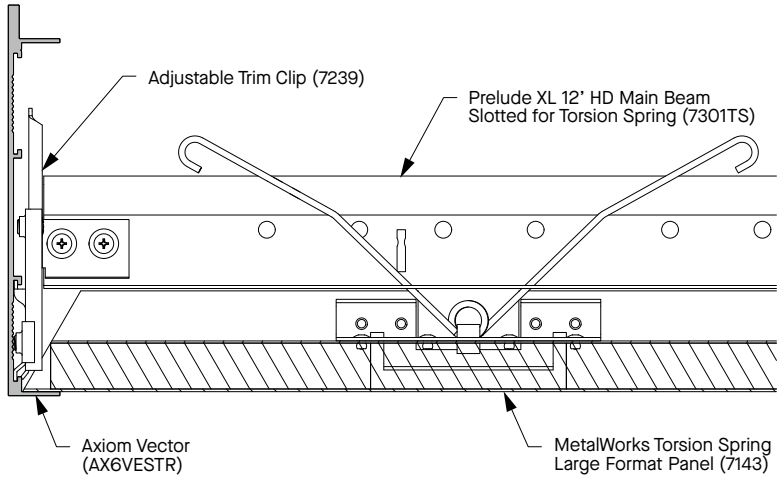
(Fig 22)

Axiom® Vector (inverted) is an extruded aluminum perimeter trim. When installing MetalWorks Large Format panels with this trim, the Adjustable Trim Clip (Item 7239) is required to properly set the panel height so that the panel face rests on the Axiom flange.

To ensure a proper fit and avoid interference at the locations of the Adjustable Trim Clip (Item 7239) and splice plates with screws (Item AXSPLICE2), the panels must be angle-cut, and sections of the honeycomb backing removed as needed ***(Figs 23 & 24)***.



(Fig 23)



(Fig 24)

6. SEISMIC INSTALLATION

MetalWorks Large Format panels have been engineered and tested for application in all seismic areas based on these installation procedures. The following installation guidelines are required in areas where anticipated seismic activity will be moderate to severe (IBC Seismic Design Categories C, D, E, and F). Consult the local building department to ensure compliance with their unique requirements. For more details on seismic installations please see our Seismic Design: What You Need to Know brochure.

6.1. Suspension System

The following requirements are in addition to the interior installation sections of this guide, ASTM – E580, and the Armstrong® Seismic Ceiling Installation Guide BPCS-4141 requirement for a ceiling system. MetalWorks Large Format has only been tested for a flat installation in IBC Seismic Categories (C, D, E, and F).

6.2. Panel

MetalWorks Large Format panels sizes 4' x 8' and 5' x 10' are approved for seismic categories C, D, E, and F.

6.3. Seismic Rx® Suspension System Cat C

- Ceiling installation should conform to basic minimums established in ASTM C636
- Minimum 7/8" wall molding
- Suspension system may be cut tight on two adjoining walls
- Minimum 3/8" clearance on two unattached walls
- BERC2 on all main beams and cross tees
- BERC2 maintains main beam and cross tee spacing; stabilizer bars not required
- Safety wires required on light fixtures
- Maximum ceiling weight of 2.5 LBS/SF

6.4. Seismic Rx Suspension System Cat D, E and F

- Ceiling installation should conform to basic minimums established in ASTM C636
- Minimum 7/8" wall molding
- Suspension system must be attached on two adjacent walls – opposite walls require BERC2 with 3/4" clearance
- BERC2 maintains main beam and cross tee spacing; no other components required

- Heavy-duty systems as identified in ICC-ESR-1308
- Safety wires required on light fixtures
- Perimeter support wires within 8"
- Ceiling areas over 1,000 SF must have horizontal restraint wire or rigid bracing
- Ceiling areas over 2,500 SF must have seismic separation joints or full height partitions
- Ceilings without rigid bracing must have 2" oversized trim rings for sprinklers and other penetrations
- Changes in ceiling planes must have positive bracing

6.5. Suspension Layouts

The suspension layouts are the same as described in Section 3.

6.6. Connection to Wall

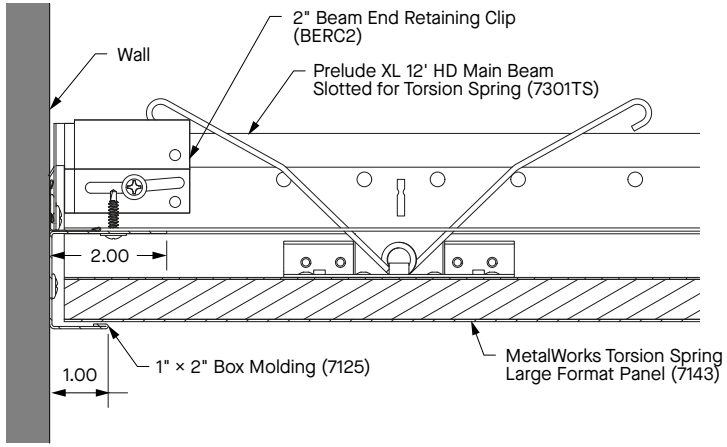
Using Angle Molding (Item 7800), which will rest on upper leg of Box Molding (Item 7125) secure the ends of the suspension system to the wall using the BERC2 (Item BERC2). At the two adjacent attached walls, insert one screw through the pre-drilled hole. At the two adjacent unattached walls, insert one screw through the center of the slot ***(Figs 25 & 26)***.

See BPCS-4141 Seismic Design: What You Need to Know – Code Requirements Seismic Rx Suspension System Tested Solutions – Seismic Rx Suspension System Approaches To Category C and D, E, & F Installations.

6.7. Special Bracing Required

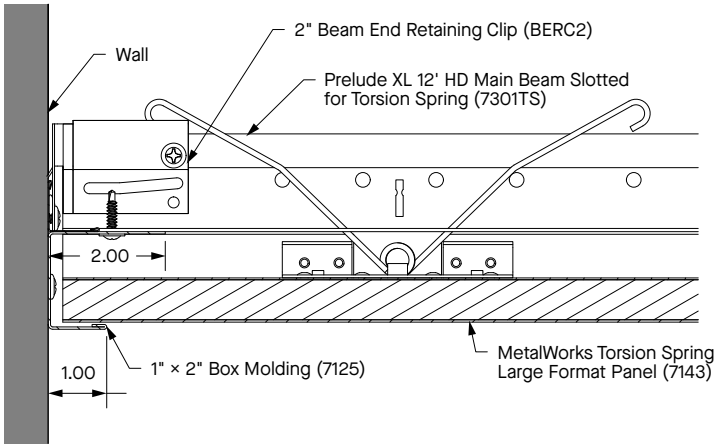
See BPCS-4141 Seismic Design: What You Need to Know – Code Requirements Seismic Rx Suspension System Tested Solutions – Bracing and Restraint for Seismic Installations Seismic Separation Joints.

See BPCS-4141 Seismic Design: What You Need to Know – Code Requirements Seismic Rx Suspension System Tested Solutions – Seismic Separation Joints.



Attached Wall

(Fig 25)



Unattached Wall

(Fig 26)

METALWORKS TORSION SPRING LARGE FORMAT

Item No.	Description	Required for Install	Order Separately	Sold By the	Pcs/Ctn
7143D408_ _ _ _ _ _	48" x 96" x 1-1/2" Metalworks Torsion Spring Large Format	Based on Design	x	Pc	BULK
7143D510_ _ _ _ _ _	60" x 120" x 1-1/2" Metalworks Torsion Spring Large Format	Based on Design	x	Pc	BULK

SUSPENSION SYSTEM & ACCESSORIES

Item No.	Description	Required for Install	Order Separately	Sold By the	Pcs/Ctn
SUSPENSION SYSTEM					
7301TS	Prelude XL 12' HD Main Beam – Slotted	Yes	Yes	Ctn	20
XL7341	Prelude XL 4' Cross Tee	Based on Design	Yes	Ctn	60
XL7357	Prelude XL 5' Cross Tee	Based on Design	Yes	Ctn	60
XL8320	Prelude XL 2' Cross Tee	Based on Design	Yes	Ctn	60
7891	12-gauge Hanger Wire	Yes	Yes	Bundle	-
PERIMETER SYSTEM					
7125	Box Molding	Based on Design	Yes	Ctn	10
AX6VESTR	Axiom® Vector® Trim – 6" Straight	Based on Design	Yes	Pc	10LF
AX6VECUR	Axiom Vector Trim – 6" Curved	Based on Design	Yes	Pc	10LF
7147	Torsion Spring Perimeter trim (Extruded)	Based on Design	Yes	Ctn	6
7131	Torsion Spring Perimeter Trim (Formed)	Based on Design	Yes	Ctn	6
ACCESSORIES					
7239	Adjustable Trim Clip	Based on Design	Yes	Ctn	50
7129	Torsion Spring Hook Access Tool	For Access	Yes	Pc	1
7130	Torsion Spring Suction Access Tool	For Access	Yes	Pc	1
BERC2	Beam End Retaining Clip	Based on Design	Yes	Ctn	250
8200T10	1" Fiberglass Infill Bag	Based on Design	Yes	Ctn	12

MORE INFORMATION

For more information, or for an Armstrong Ceilings representative, call 877 276-7876.
For complete technical information, detail drawings, CAD design assistance, installation information, and many other technical services, call TechLine customer support at 877 276-7876.

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