

ALTITUDES™ Torsion Spring

Assembly and Installation Instructions

1. GENERAL

These installation instructions are intended as a supplemental document to the Record Set shop drawings. In the event of any conflict between the Record Set and these installation instructions, the Record Set drawings take precedence.

1.1 Product Description

Altitudes Torsion Spring Ceiling System consists of panels that are downward accessible, and are designed to be installed on an Armstrong Prelude® XL® Heavy-duty 15/16" wide T-bar suspension system with field-attached hardware to panels. Panels without penetrations can be removed and reinstalled for plenum access. Panels are supported from the suspension system by metal brackets and springs that are screw attached through pre-drilled holes to the panel frame.

1.2 Material

Altitudes panels consist of standard 1-1/8" thick 6-7 pcf fiberglass and 16-20 pcf impact-resistant molded fiberglass with an aluminum frame. Panels are available in custom sizes up to 48" x 96".

1.2.1 Working with Fiberglass Products

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.

1.2.2 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.

1.2.3 First Aid Measures

If contact occurs, flush eyes and skin irritation with 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.

1.3 Storage and Handling

The ceiling panel components 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 panels to avoid damage and soiling. **Clean white gloves must be worn whenever handling ceiling panels.**

1.4 Site Conditions

The product can be installed where the temperature is between 32°F (0°C) and 86°F (30°C). It cannot be used in exterior applications, where standing water is present, or where moisture will come in direct contact with the panel.

1.5 HVAC Design and 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.

1.6 Maintenance

For painted finishes, general maintenance for dust removal is light brushing or vacuuming. Fingerprints and light soiling can often be removed using a dry chemical sponge or an art gum eraser.

1.7 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.

1.8 Installation Considerations

- Altitudes Torsion Spring panels hang below the suspension system to which they are attached. The face of the installed panels will be 1-1/2" below the face of the suspension system from which they are supported.
- This system requires 4" of clearance above the suspension system for spring clearance. Springs need to fully engage for proper visual and structural installation.
- Altitudes panels weigh 1.25 lbs/sf
- Large panels (48" x 96" tested) may be subject to deflection of up to .250" in the center of the panel.
- These installation instructions are intended as a supplemental document to the Record Set shop drawings. In the event of any conflict between the Record Set and these installation instructions, the Record Set drawings take precedence.

2. SUSPENSION SYSTEM FOR WALL-TO-WALL INSTALLATION

2.1 General

This system installs similarly to conventional acoustical ceiling panel suspension systems and must be installed in accordance with ASTM C636. The installation shall, in all cases, conform to the requirements of the International Building Code and its referenced standards.

- The suspension system shall be Heavy-duty Prelude® XL® 15/16" exposed tee grid (item 7301).
- The suspension system must be leveled to within 1/4" in 10' and must be square to within 1/16" in 2'.

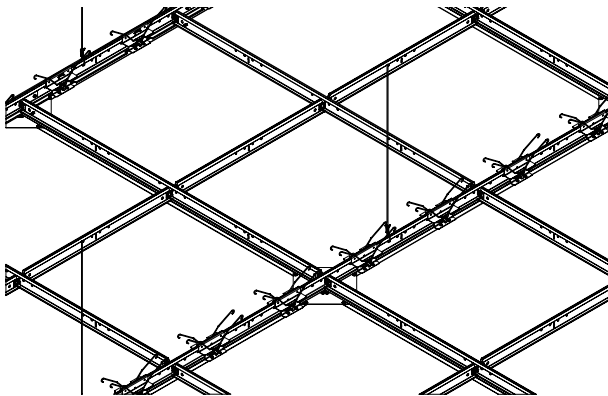
The requirements listed here represent the manufacturer's minimum acceptable installation recommendations, and may be subject to additional requirements established by the local authority having jurisdiction.

2.2 Load Capacity

Altitudes™ panels weigh 1.25 lbs/SF. Heavy-duty main beams are required regardless of seismic category.

2.3 Suspension System Installation

For your required suspension system layout, refer to your custom record set.



Detail 2.3

2.3.1 Wall Angle Molding

2" Wall Angle (item 7807) is recommended for this installation, however, the panels will hang below the wall angle. The system is designed to have a 1" reveal between the border panels and the walls (see Detail 2.3.3). This will help to account for variation in the straightness of the walls.

2.3.2 Hanging Points

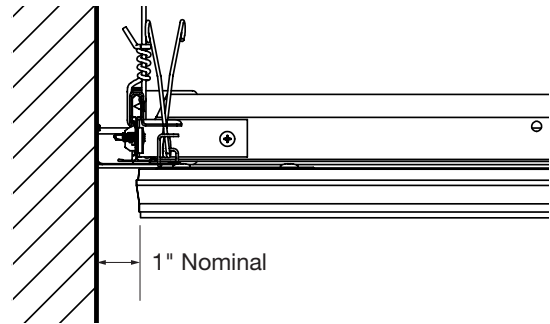
Secure hanger wires to the structure above to support the main beams. Wire spacing should be within 24" of the perimeter wall and then 48" OC.

Before setting hanging points, review the record set for spring mounting saddle locations, as these may interfere with hanging wires. Note all saddle locations before tying off any hanger wire to the suspension system. This will eliminate rehanging wires that are found to interfere with saddle placement.

2.3.3 Main Beams

For your required suspension system layout, refer to your custom record set. Center lines on each wall should be marked and used as a reference for measuring main beam placement. Using center lines as a reference will balance any variations within the dimensions of the space.

Walls that run parallel with the main beams will have a main beam located approximately 1" O.C. from the wall, resting on the 2" wall angle (see Detail 2.3.3). These will later be referred to as "perimeter main beams."



Detail 2.3.3

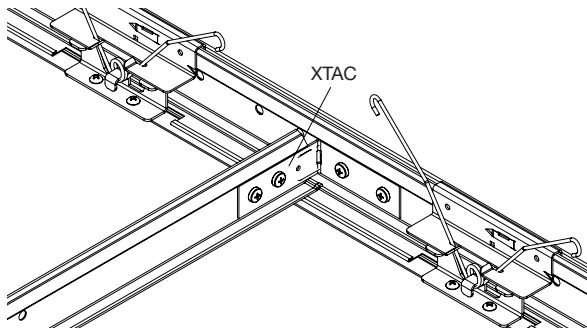
The 1" O.C. measurement from the wall may vary according to the record set vs. field measurements but should be balanced on all walls when center lines are used as a reference for the layout. The spacing of the remaining main beams is determined by the record set drawings.

Cut the main beam length to position a route hole between each panel. Make sure to take the perimeter reveal into account. Custom main beams may be required to accomplish this task.

2.3.4 Cross Tees

All of the necessary cross tee components will be detailed in the Record Set. This will include cross tee dimensions and placement. Depending on your layout, the Record Set may list custom size cross tees (FastSize), or call for cross tees to be field modified to size.

- Altitudes requires all cross tees to be full height (1-11/16")
- Any cross tees where saddles are placed to support panels must have load carrying capacity equal to or greater than the main beams (16lbs./lin. ft.).
- All single tee connections must be reinforced. The XTAC (Cross Tee Adapter Clip, see detail 2.3.4) can be used for cut or uncut cross tees. Single tee connections that retain the XL end detail (uncut) can use the STAC (Single Tee Adapter Clip).



Detail 2.3.4

2.3.5 Perimeter Attachment

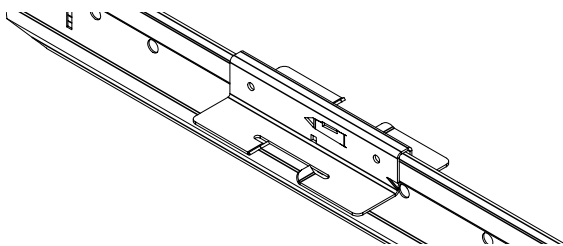
Once the system layout is centered and squared, pop rivet one of the perimeter main beams (main beams resting parallel on the wall angle) to the wall angle every 24". The opposite perimeter main will rest parallel on top of the wall angle but remain unattached.

On one of the walls with the main beams running perpendicular to the wall angle, BERC2 clips will be used with the screw in the top hole at every main beam and cross tee connection to the wall (attached wall). At the opposite wall, BERC2 clips will be used at every main beam and cross tee connection to the wall with the screw in the slot (unattached wall).

Per Section 2.3.4, all cross tee connections to the perimeter main beams must be attached with XTAC clips (see Detail 2.3.4)

2.4 Install Suspension System Accessories

Install all spring mounting saddles along the suspension system at each spring location per the Record Set.



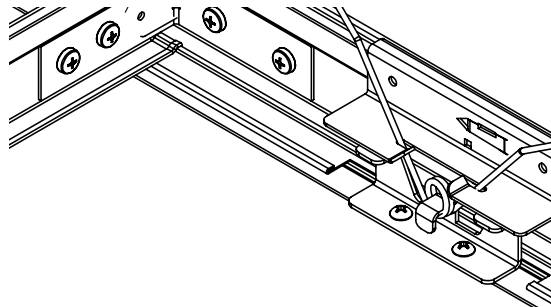
Detail 2.4.A

Saddles will snap over the bulb of the grid and can slide into position until final attachment. There are two methods to secure the saddles to the grid:

- Using pliers to crimp the integrated barb into the grid, or
- Securing with two 1/2" screws through the pre-drilled holes

Any half saddle or saddle that will only have a spring attachment on one side will have to be screw attached to the grid. This is necessary due to the unbalanced load placed on the grid.

Note: The wall angle may have to be notched to allow for the spring to pull the mounting bracket up tight to the bottom of the saddle (see Detail 2.3.4). Each notch will need to be at least 3" wide and cut back to the flange of the perimeter main beam. The depth of this notch into the wall angle will depend on the perimeter main beam distance from the wall.



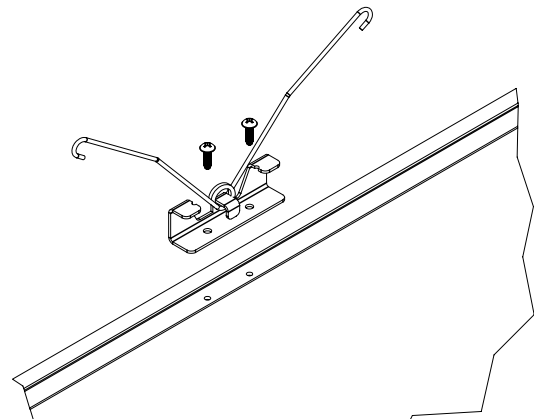
Detail 2.4.B

3. PANEL INSTALLATION

3.1 Attach Brackets and Springs

Place the panel face down on a clean, smooth work surface. Attach a mounting bracket at each set of factory drilled pilot holes on each panel. Two screws (item BP8146) are required in each mounting bracket. Then, insert a spring into each mounting bracket and rotate the spring so that it stands in a vertical position.

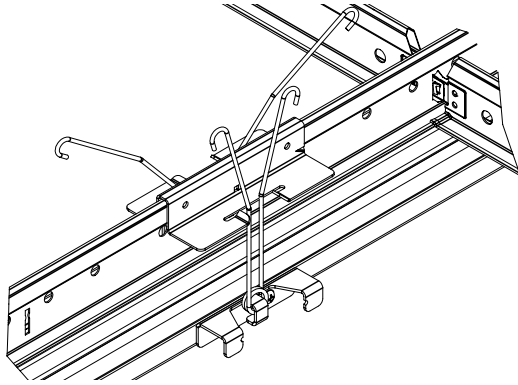
Location and quantity of mounting brackets and springs will be based on panel size and will be detailed in the record set of drawings.



Detail 3.1

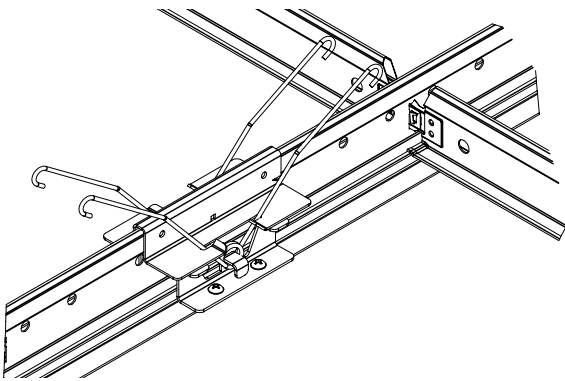
3.2 Panel Installation

Hold the panel in the vertical position and align the springs on one side with the slots in the saddles on the main beam.



Detail 3.2.A

Compress the springs and insert them into the corresponding slots.



Detail 3.2.B

Swing the panel up to the horizontal position and engage the remaining springs into the saddles. When all springs are engaged in saddles, gently press the panel up into place with the palm of the hand.

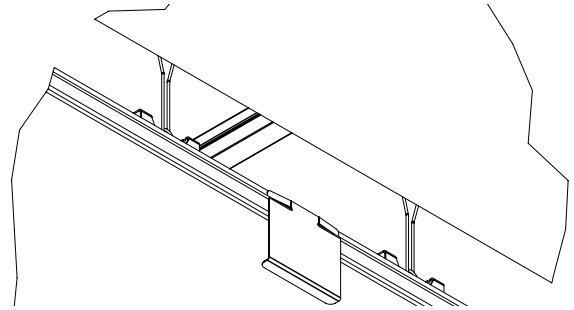
Note: If misalignment of the panels is noted, ensure proper alignment of the springs inside of the saddles to correct any visual issues.

3.3 Panel Penetrations

Penetrations are handled similar to most suspended ceiling applications. Use escutcheon plates where appropriate for penetrations.

4. PANEL REMOVAL

Insert the removal tool in between two panels and pull down.



Detail 4

5. SEISMIC

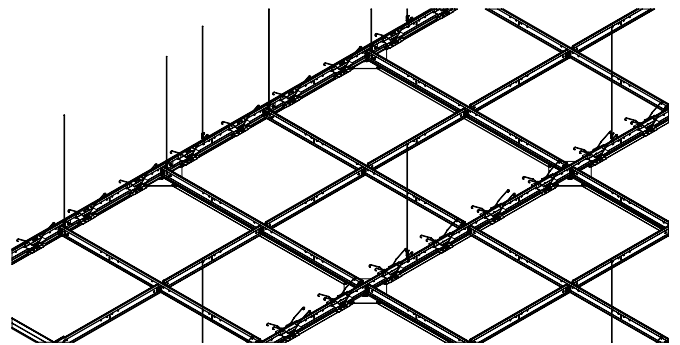
All installations must conform to the IBC requirements based on the seismic category of the building and the size of the installation. The following requirements are necessary for Seismic Category C, D, E, and F.

5.1 Perimeters

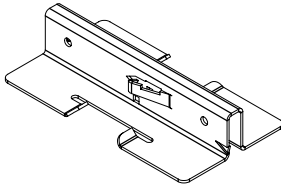
- Refer to the perimeter instructions in section 2.3.5, as these requirements for perimeter attachment are the same for seismic installations (two attached, two unattached walls).
- Hanger wires must be placed on each cross tee or main beam within 4-8" of the wall.

5.2 Panel Attachment

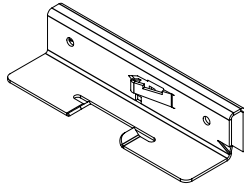
- Saddles must be screw attached to the suspension system through the provided holes.



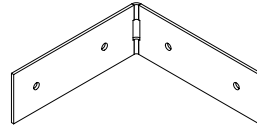
Seismic Detail



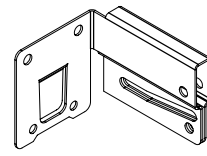
Spring Mounting Saddle
(Item BP7104)



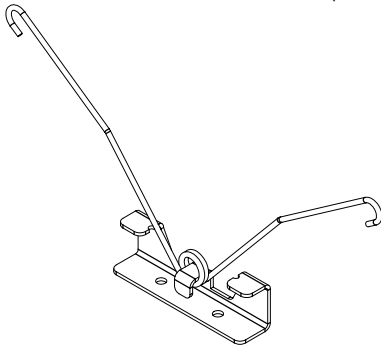
Spring Mounting
1/2" Saddle
(Item BP7232)



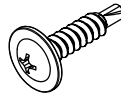
Cross Tee Adapter
(Item XTAC)



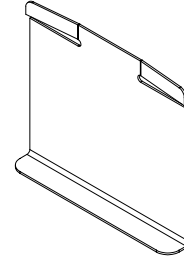
2" Beam End
Retaining Clip
(Item BERC2)



Spring Mounting Bracket (Item BP7233)
Spring (Item BP7234)



Bracket Installation
8-18-3/4" Wafer Head
Drill Point Screw
(Item BP8146)



Altitudes™ Panel
Removal Tool
(Item BP7179)

MORE INFORMATION

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

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

For the latest product selection and specification data, visit armstrongceilings.com/altitudes.

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