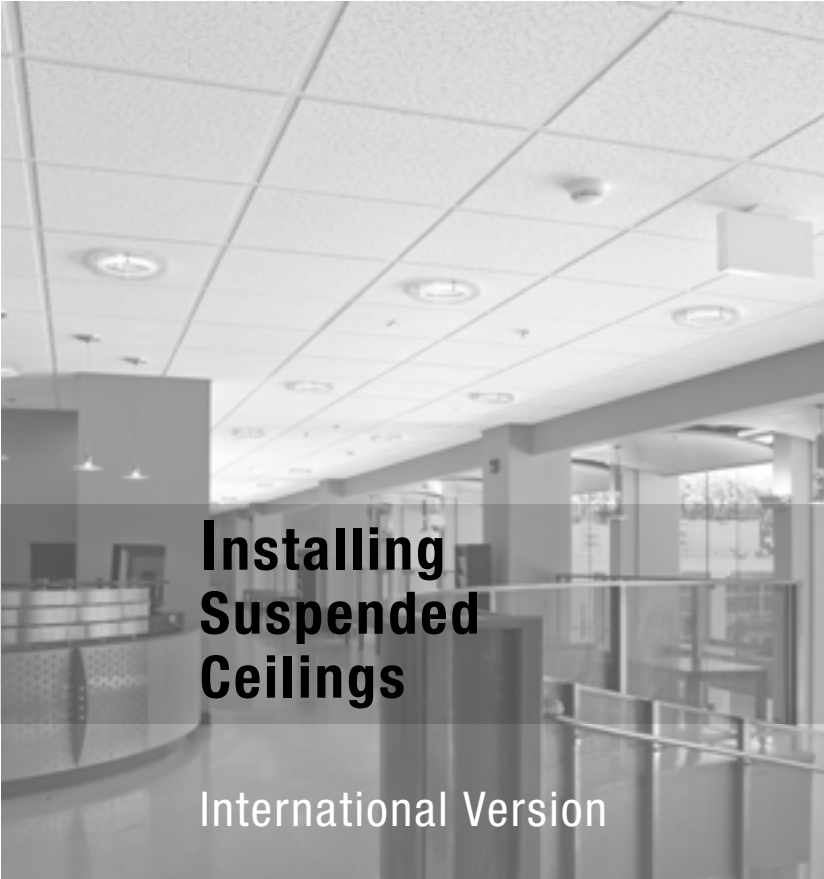


CEILING SYSTEMS

Between us, ideas become reality™



**Installing
Suspended
Ceilings**

International Version



Installing Armstrong Suspended Ceilings

An Armstrong suspended mineral fiber ceiling is functional, attractive and provides easy access to the plenum. This ceiling system installation brochure is intended as a general application overview, covering essential steps of a basic suspended ceiling installation.

The ceiling system is made up of Armstrong panels (either 2' x 4' or 2' x 2') which are supported by a suspension system (main beams, cross tees and hangers), and perimeter molding. The integrity of the entire suspended ceiling depends on the hangers – commonly wires – which are used to support the



Armstrong Ceiling System

suspension system main beams. Sections of main beams are spliced together and are connected by cross tees. The ends of the main beams and cross tees rest on the wall molding which runs around the perimeter of the space.

Before You Start

Although temperature and humidity recommendations vary by product, the space must be cleared of debris and, in general, should be enclosed.

- The ceiling panels should be kept clean, dry, and protected from the elements. Panels should be removed from cartons 24 hours before installation to allow them to adjust to interior conditions.
- The tools you will need will vary depending on the type of hangers used, but generally, you will need: ladders or scaffolding; a tape measure; pencil; chalk line; hammer; powder-actuated fastener; awl; pop-rivet gun; screw driver or drill; sheet metal punch; aviation snips; wire cutting pliers; utility knife; level (water level or laser); string; key hole saw; and compass or dividers. Most jobsites also require some safety equipment like a hard hat or safety glasses.

Determine Panel Direction

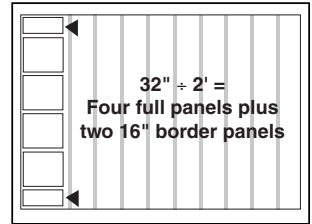
- Ceiling panels can run in the direction that yields the most pleasing finished appearance.
- In spaces with bar or wood joists, main beams must be oriented perpendicular to the joists. (You must locate and mark all joists if they have been covered with a drywall ceiling.)



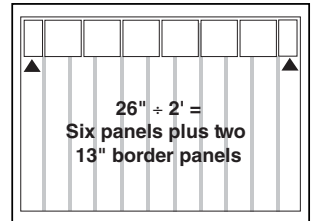
Main beams must be oriented perpendicular to bar or wood joists

Determine Border Panel Sizes (2' X 2' panels)

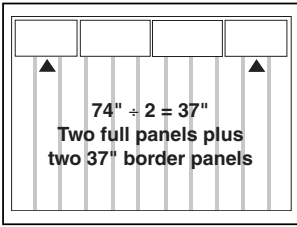
- To determine the border panel sizes, divide one dimension of the space by 2' (600 mm).
- Our example shows a space that is 10' 8" by 14' 2" (3251.2 mm by 4318 mm) and the deck joists run in the 10' 8" (3251.2 mm) direction. $10' 8" \div 2' (3251.2 \div 600) =$ five full panels + remaining 8" (251.2 mm).
- You can't start with a full panel against one wall and leave one 8" border on the other side; it will look unbalanced (and two border panels of 4" would be too small). So, add 24" to the 8" dimension (add 600 mm to 251.2 mm), which equals 32" (851.2 mm). Divide that number by 2 to equal 16" (425.6 mm).
- The room would be divided into four full panels, plus two 16" (425.6 mm) border panels.
- In the other direction: $14' 2" \div 2' (4318 \div 600) =$ seven panels + remaining 2" (118 mm).
- Add 24" to the 2" dimension (add 600 mm to 118 mm) which equals 26" (718 mm). Divide that number by 2 to equal 13" (359 mm).
- This side of the room would have six full panels and two 13" (359 mm) border panels.



Determine width of border panels (2' x 2' panels)



Determine width of border panels (2' x 2' panels)



Determine width of border panels (2' x 4' panels)

Determine Border Panel Sizes (2' X 4' panels)

- For 2' x 4' panels, divide one room dimension by 2' (600 mm) as stated above.
- Divide the other room dimension by 4' (1200 mm) and add 48" (1200 mm) to remaining dimensions to avoid unsightly small border panels.

Install Perimeter Trim

- Allow at least three inches below the old ceiling, ducts, pipes or wiring as clearance to maneuver a lay-in panel into the opening of the grid.
- Mark the desired height for the new ceiling, adding the height of the wall molding. Mark a level line around all three walls and snap a connecting chalk line on the fourth wall.
- Attach the molding securely. Screws or 6d (1-1/2") nails work well for wood; use screws for metal; use powder-actuated fasteners or expanding anchors for concrete and stone walls. Joints between inside and outside corners of molding must be tight.

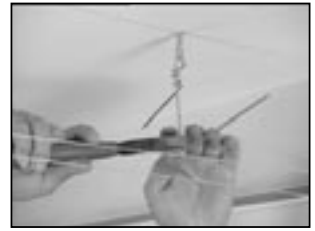


Mark desired height for new ceiling

Install Hangers and Fasteners

- Hangers need to be installed above the main beams typically every four feet.
- Snap a chalk line for each of the main beams. Attach hangers and wires to the deck above the first row of main beams at four-foot intervals.
- Stretch a guide string from one end of the room to the other, below the molding where the first main beam will hang.

- Stretch a leveling string from one side to the other 7/8" above the bottom of the wall molding.
- Bend the wires at the height of the string so that the main beam is held at the correct height.
- Wrap hanger wire securely around itself three times.



Bend hanger wires at height of guide string

The most commonly used hangers are galvanized steel wires, minimum #12 gauge. Other types of hangers that may be appropriate in some instances are:

- Strap Hangers – bands of sheet steel typically attached to the structure by forming a 90 degree bend at the upper end. The lower end is attached to the grid with a machine screw and nut.
 - Rod Hangers – typically 1/4" diameter steel threaded rods, screwed into studs or expanding bolts in the deck and hooked through a route hole in the main beam.
 - Quick Hangers – hangers which hook through a screw eye or similar attachment device
 - Nonius Hangers – hangers typically screwed, bolted or attached to the deck with powder-activated fasteners and clip attachment to the main beam for easy length adjustment.
- Fasteners also vary – screw eyes are best for wood joists, special fasteners for steel, and expanding anchors or powder-actuated fasteners for concrete.



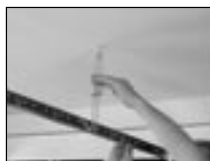
Strap hangers



Rod with hook



Rod with clip for bulb



Quick hanger



Nonius hanger

Install the First Main Beam

- Install the first section of main beam. (Cut the end so that a cross tee route hole is located the border distance in from the end wall.)
- Insert a hanger wire into a hanger wire hole near the other end of the main beam. Bend the wire up and wrap it around itself three times. Continue to insert all other hanger wires.



Install first main beam



Install border cross tees

Install Border Cross Tees

- Find the location of the first border cross tee.
- Place the end of the white face of the cross tee against the edge of the wall molding at the side, and cut the cross tee where it crosses the guide string.
- Insert the uncut end of the cross tee into the main beam, and rest the cut end of the cross tee on the molding. (The far edge of the main beam should be directly above the string.)
- Repeat the process for the next cross tee.
- Temporarily fasten the cross tees to the wall molding so they do not move.



Join sections of main beam

Square the Grid

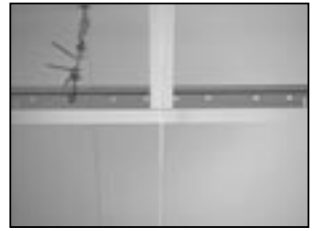
- Join additional sections of main beam as required to reach the other end wall. Attach hangers and check level as the installation proceeds.
- Use leftover piece of main beam from the first row to start the next row.
- Install two four-foot cross tees between the two main beams, in line with the first two border cross tees.
- Measure across the diagonals of the 2' x 4' opening. The measurements will be the same if the grid is square. If the grid is not square, shorten one of the main beams until the diagonals are equal.



Square the grid by measuring across the diagonal of the grid opening

Install Remaining Main Beams and Cross Tees

- Complete the installation of rows of main beams.
- Note: If you have additional rows of main beams to install, stretch a second string from one side of the room to the other, aligning it with the first four-foot cross tee as shown.
- This second string will be your guide for cutting the remaining rows of main beams. Just measure from the end wall to the string to determine the distance for the first cross tee slot you will use.
- You must line up all cross tee slots for the grid to be square.



Align second guide string with first four-foot cross tee

Install Panels

- Slightly tilt panels, lift above framework, and gently rest on cross tee and main beam edges.
- Measure and cut border panels individually. Using a leftover cross tee or main beam section as a straight edge, cut panels face up with a very sharp utility knife. Border panels may require field cutting of Tegular edge details. All field cut edges “exposed to view” should be colored to match the factory finish. **Armstrong SuperCoat™ Ceiling Panel Touch-up Paint is recommended.**



Tilt panels above frame and drop into place



Tegular-edge border panels may require field cutting. Cut border panels face up

Lighting and Other Fixtures

Lighting and other fixtures must be supported by the grid, not by the ceiling panels. Depending on the size and weight of the fixtures, extra hangers may be required.

For more information and details about installing Armstrong Suspended Ceilings, call your local Armstrong representative or visit armstrong.com/ceilings.



Grid may require extra hangers to support weight of lighting fixtures

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