

# DYNAMAX Data Center Suspension System

## Assembly and Installation Instructions

### Hardware That Needs to be Purchased Separately

- 3/8"-16 Threaded Rod for Connections to Structure
- #8 Pan Head Screws

**DO NOT REMOVE SUSPENSION SYSTEM FROM THE CARTON UNTIL YOU READ THESE INSTRUCTIONS IN THEIR ENTIRETY.**



### 1. SYSTEM OVERVIEW

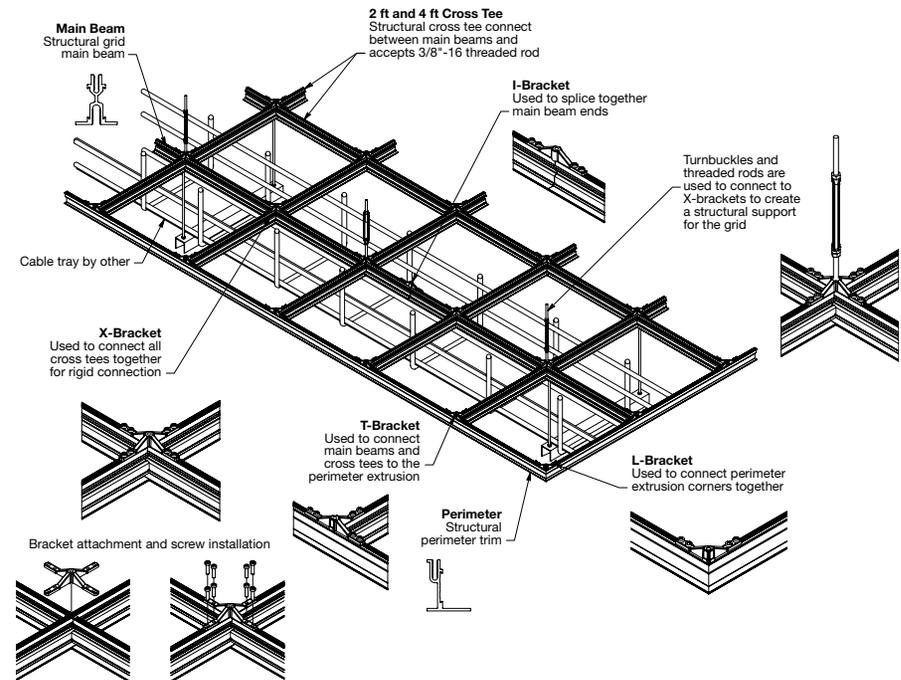
DYNAMAX Structural Aluminum Data Center Suspension System is designed to offer flexible and reconfigurable support of heavy duty data center components like bus bars, hot and cold aisle containment, and other hanging elements via 3/8"-16 threaded rod connections to structure. This system combines the ceiling system with a structural component, and integrates seamlessly with Armstrong Aluminum Data Center ceiling panels.

The diagram in (Fig 1) provides an overview of the suspension system components, clips, and accessories.

**NOTE:** These panels are specially sized and engineered for Aluminum Data Center Suspension System and must be used with the system. These panels do not fit in other suspension systems.

**IMPORTANT:** The DYNAMAX brackets are designed to be used with DYNAMAX only. They are designed for specific duty loads that are specified in the load charts provided on the last page of this document. When hanging heavy loads greater than those specified in the load charts, consultation by a local engineer is required. Also, please be sure to review the installation and securing recommendations for any load that will be supported by the suspension system. Armstrong is not liable for improper use or improper installation of DYNAMAX or its components.

Please refer to the load charts for specific information on the allowable loads for the suspension system.



(Fig 1)

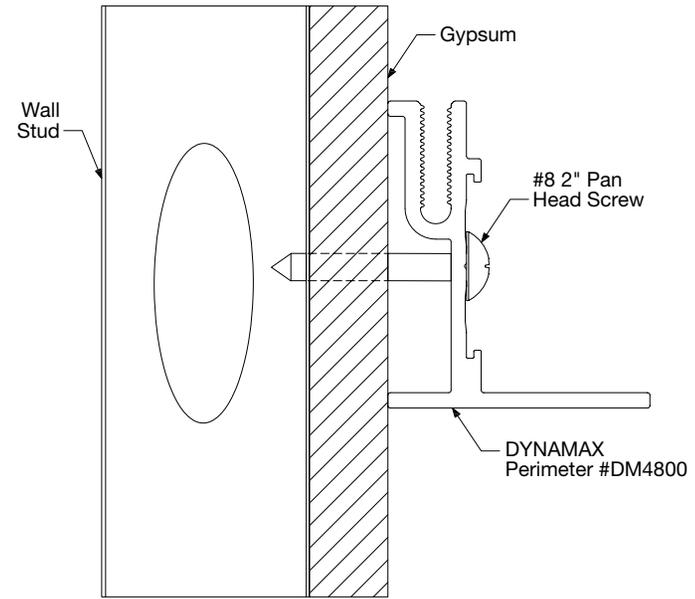
## 2. INSTALLATION CONSIDERATIONS

The DYNAMAX Structural Aluminum Data Center Suspension System is designed to be installed with 3/8"-16 threaded rod from structure.

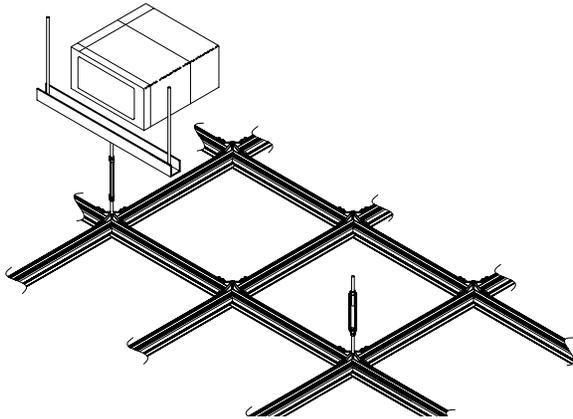
**2.1** Lay out the space, marking the locations of the hanger rods, main beams, and cross tees, and note any mechanicals that will be supported overhead. Be sure to follow the locations and direction of the threaded rod, hangers, main beams, cross tees of the engineering drawing if working from a Reflected Ceiling Plan from a specifying architect/engineer. If plumb threaded rod drops are not possible, then a trapeze or sub framing may be required. **(Fig 2)** This sub or trapeze framing must be engineered to support the designed loads.

### 2.2 Perimeter Options

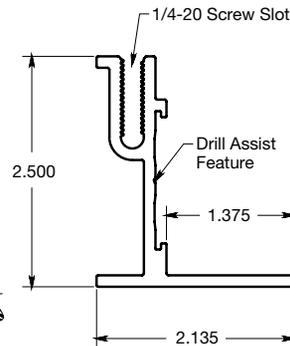
Install the DYNAMAX Wall Molding #DM4800. **(Fig 3)** It is recommended to predrill holes in the perimeter 16" or maximum 24" on center to allow screws to pass through and secure the perimeter to studs or structure. **OPTION A (Fig 4)** The wall angle can be attached to studs or structure using screws. A slot is present on the perimeter to assist in drilling. Wall molding needs to have threaded rods (4' O.C. max) if loads are applied. If not, screws are acceptable. **(Fig 5)**



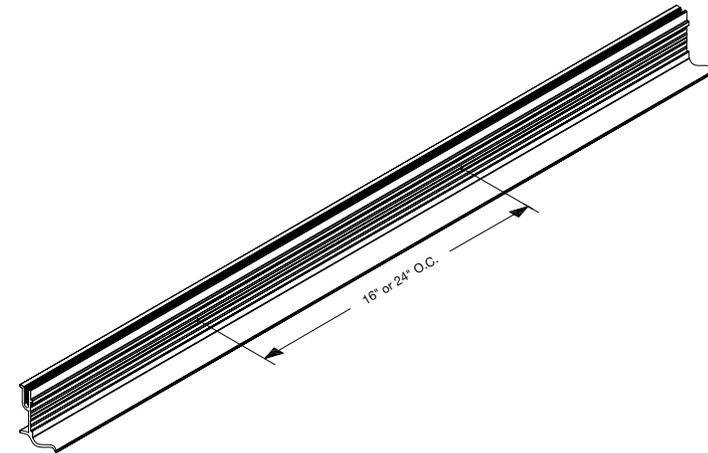
OPTION A (Fig 4)



(Fig 2)



(Fig 3)



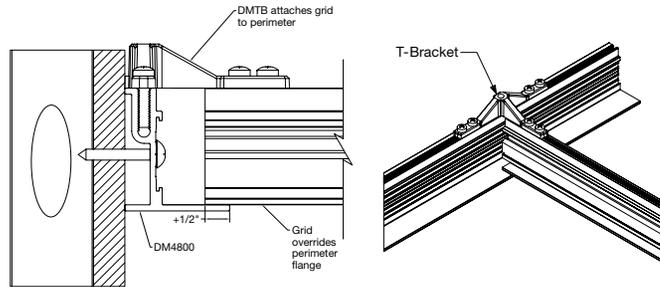
(Fig 5)

**2.2.1** All cross tees and main beams are to be connected to the structural wall angle with a DYNAMAX T-Bracket #DMTB, using the provided 1/4-20 SST screws. **(Fig 6)** Perimeter moldings should be butt cut and joined together using a DYNAMAX I-Bracket #DMIB in the middle of the wall. NOTE: perimeter cross tees will sit on top of perimeter molding with the override. Gasketing may be required. At corners, perimeter should be mitered and joined together using a DYNAMAX L-Bracket #DMLB. **(Fig 7)**

**2.2.2** With some layouts, a full modular system can be possible with factory sized tees and mains at the perimeter. In this application, 7/8" wall molding is used to allow for any imperfections in the walls with added tolerance. **OPTION B (Fig 8)**

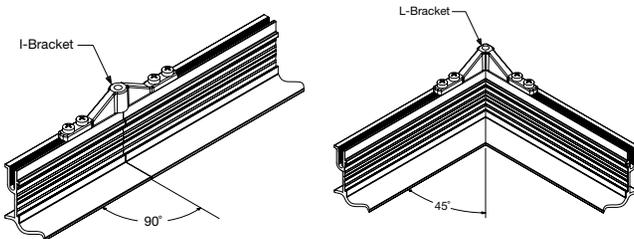
**2.2.3** For areas where you have a floating perimeter condition and a threaded rod drop, Option C **(Fig 9)** is possible. Recommend having greater than 1/2" between the wall and structural perimeter molding to allow for proper adjusting of the turnbuckle.

3. Install 3/8"-16 threaded rod hangers into the deck per the recommendations from the deck anchor manufacturer. Threaded hanger rods must be installed plumb with the DYNAMAX X-Bracket #DMXB in all main beam-to-cross tee intersections 4' O.C., unless otherwise specified.

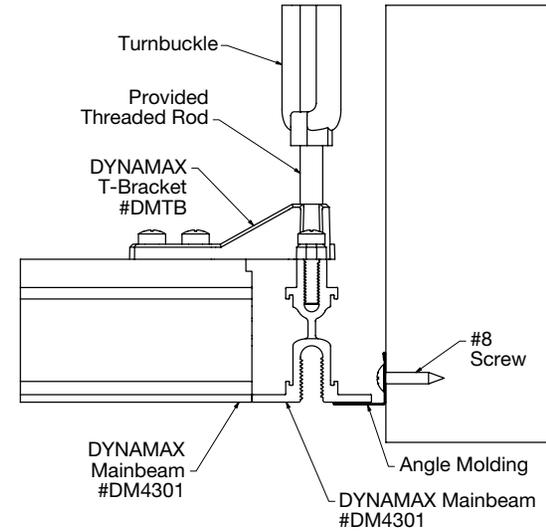


**(Fig 6)**

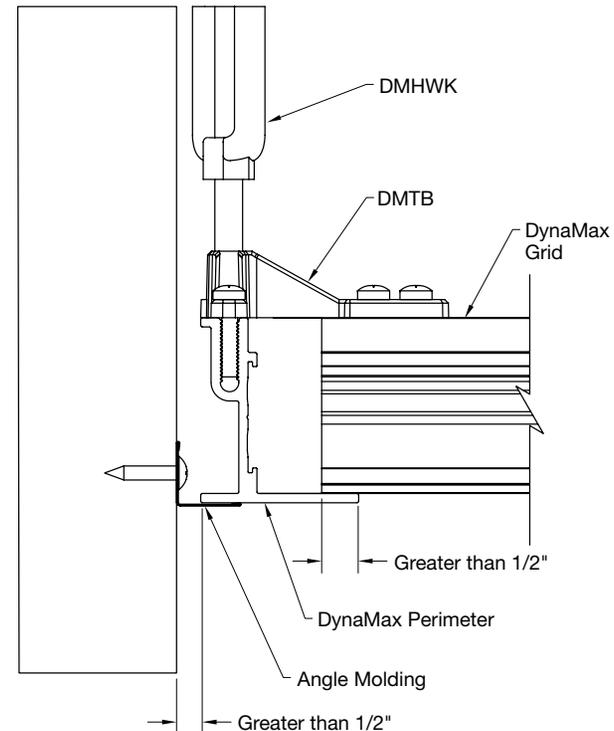
NOTE: Perimeter cross tees will sit on top of perimeter angle with the override. Gasketing may be required.



**(Fig 7)**



**OPTION B (Fig 8)**



**OPTION C (Fig 9)**

**4.** Constructing the ceiling suspension system can be pre-fabbed into 4' x 12' modules with a jig table or template. A jig can be used to align and square the main beams and the cross tees of the modules. The X-Bracket (DMXB) & I-Bracket (DMIB) have nubs at the bottom to help self-square.

**4.1** For each module, mainbeams are spaced 4' O.C. (Fig 10)

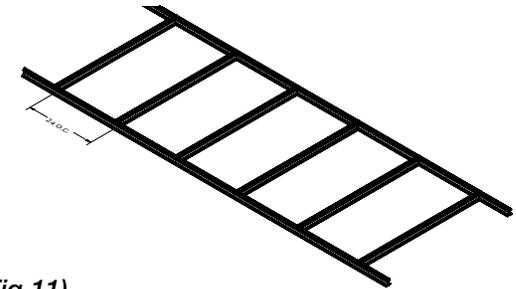
**NOTE:** The mainbeams are symmetric. The 4' cross-tees are placed 2' O.C. (Fig 11) and are aligned to the notches located in the top of the main beams. The main beams are notched every 2' O.C. starting at 1' from the end to aid in a faster installation, preventing jobsite layout measuring and marking.

**4.2** Insert DYNAMAX X-Bracket #DMXB at every intersection between main beam and cross-tee. The DYNAMAX X-Bracket #DMXB is secured to the main beam and cross-tee using the provided 1/4-20 SST screws. (Fig 12)

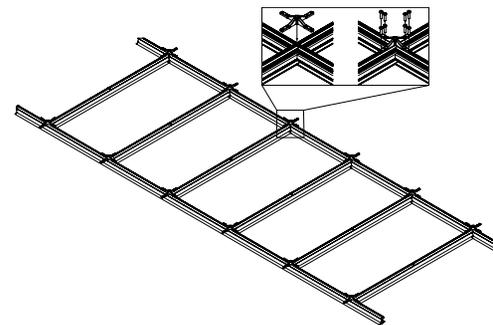
**4.3** Depending on layout, it may be required to install 2' cross-tee in between each 4' cross tee. Insert the 2' cross tee in between the 4' cross tee on its side. Rotate the 2' cross tee until it is aligned with the notches on the top of the 4' cross tee. Twist the 2' cross tee upright. (Fig 13)



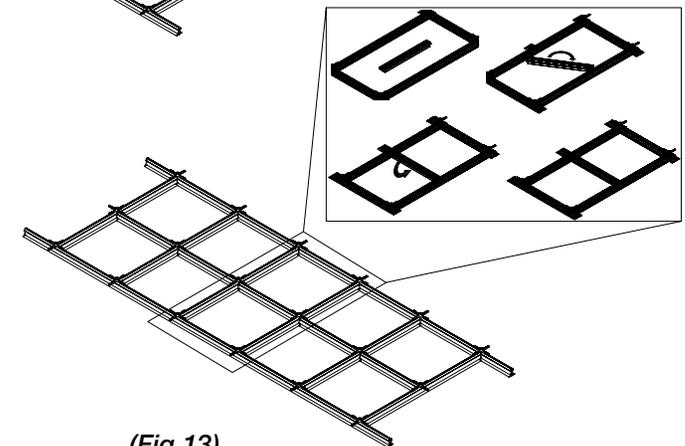
(Fig 10)



(Fig 11)



(Fig 12)

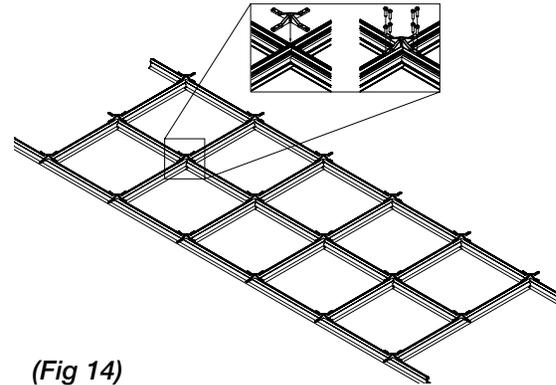


(Fig 13)

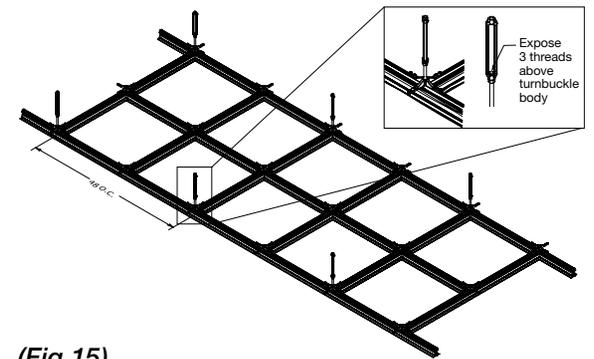
**4.3.1** Twisting the cross tee into place requires the cross tee to be held on its side, then rotated perpendicular to the 4' cross tee, then rolled upright and slid into position. Secure the 2' cross tee to the 4' cross tee at every intersection using an DYNAMAX X-Bracket #DMXB and the provided 1/4-20 SST screws. **(Fig 14)**

**4.3.2** Cut threaded rod hanging from the deck 11" up from the finished ceiling height

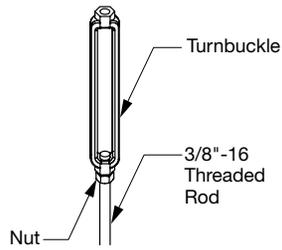
**4.4** Threaded rods, nuts, and turnbuckles are installed into the DYNAMAX X-Bracket #DMXB every 4' O.C. The threaded rods must be fully engaged with the DYNAMAX X-Bracket #DMXB and it is recommended that 3 threads are exposed in the turnbuckle. **(Fig 15)**



**(Fig 14)**



**(Fig 15)**

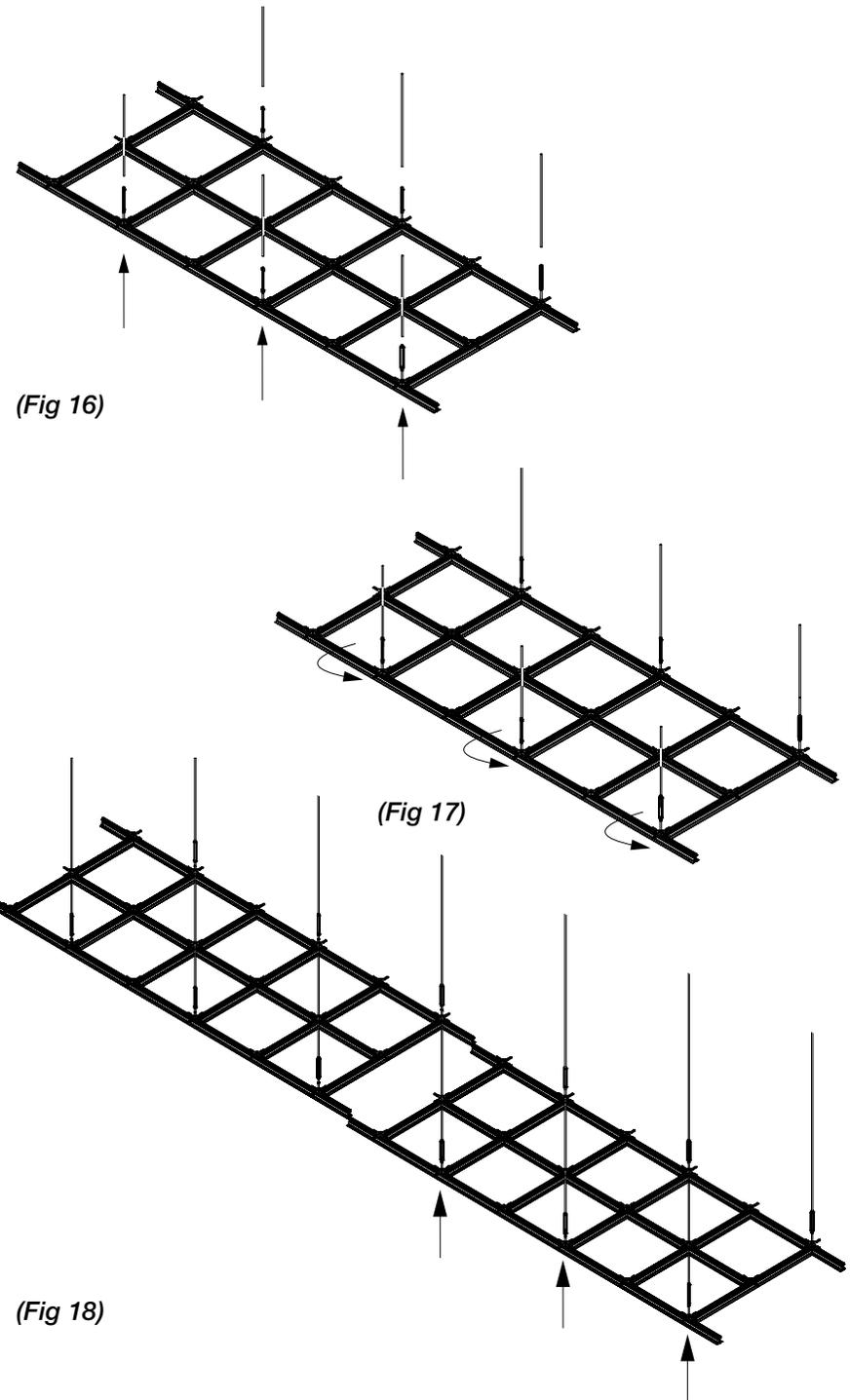


**NOTE:** Threaded Rods are directional with 1" of RH threads that will be inserted into the DYNAMAX X-Bracket and 3" of LH threads that will be inserted into the turnbuckle. An LH jam nut is provided and should be installed onto the threaded rod before attaching to turnbuckle.

5. Raise each module to the threaded rod drops and attach using the turnbuckles. (Fig 16) Ensure 3 threads are exposed inside the turnbuckle from the ceiling rod drop. Failure to do so can compromise the integrity of the system. The ceiling height can be adjusted by twisting the turnbuckles. (Fig 17) After ceiling height is set and leveled, lock the turnbuckle in place using the nut attached to the threaded rod.

**NOTE:** The 12' x 4' modules are directional. One end of the module will have the turnbuckles and the other ends will not. Ensure the modules are the correct direction before suspending.

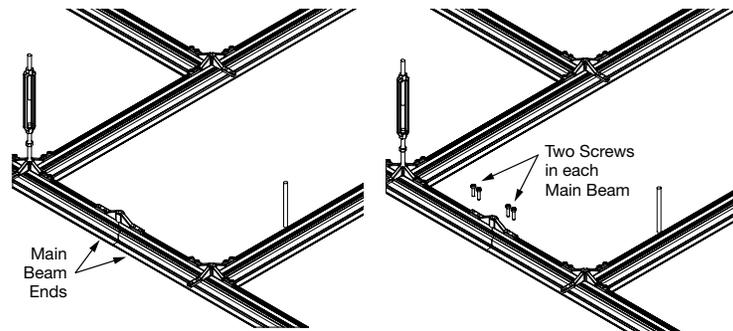
6. Suspend the other modules in the same row adjusting the height and level of each module. (Fig 18) At locations where the main beam ends butt against each other, install the DYNAMAX I-Bracket #DMIB onto the top of the main beam using 1/4-20 SST screws. Ensure the DYNAMAX I-Bracket #DMIB is roughly centered and 2 screws are installed into each main beam. (Fig 19)



(Fig 16)

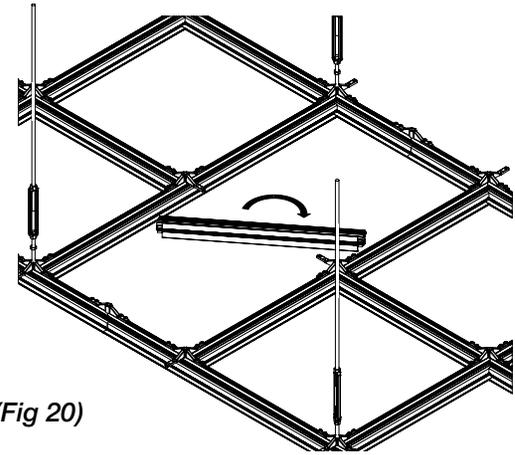
(Fig 17)

(Fig 18)

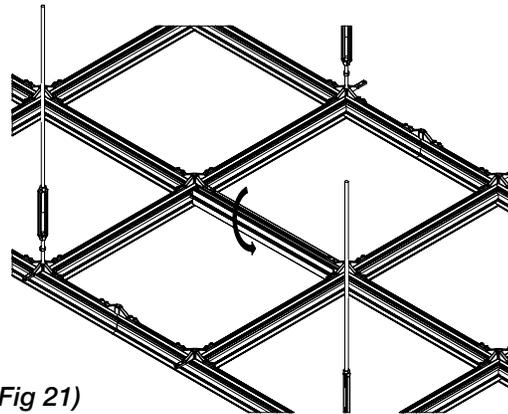


(Fig 19)

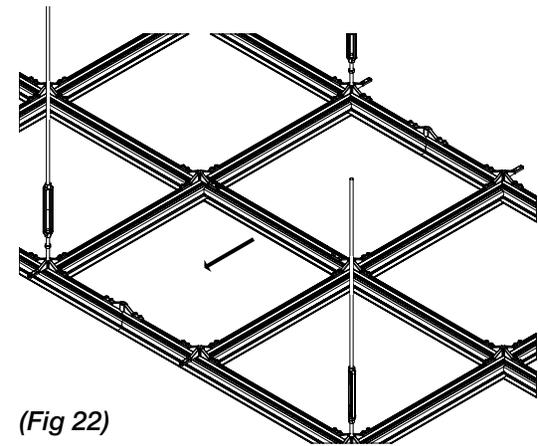
7. Depending on layout, it may be required to install 2' cross-tee in between each module. Insert the 2' cross tee in between the 4' cross tee on its side. Rotate the 2' cross tee until it is aligned with the notches on the top of the 4' cross tee. **(Fig 20)** Twist the 2' cross tee upright **(Fig 21)** and slide underneath the DYNAMAX X-Bracket #DMXB. **(Fig 22)** Secure the 2' cross tee to the 4' cross tee at every intersection using an DYNAMAX X-Bracket #DMXB and the provided 1/4-20 SST screws. Ensure a threaded rod is within 12 inches of the DYNAMAX I-Bracket #DMIB for conditions where plumb threaded rod drops are not possible. **(Fig 23)**



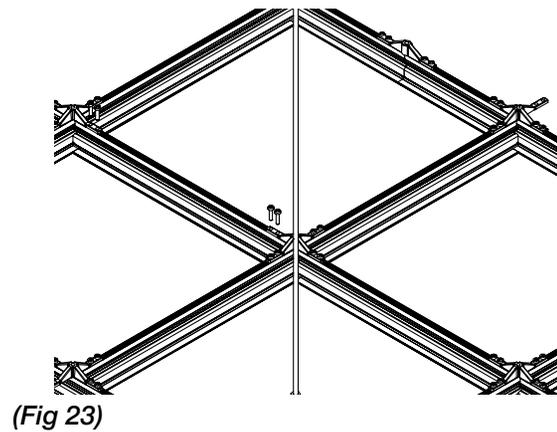
(Fig 20)



(Fig 21)

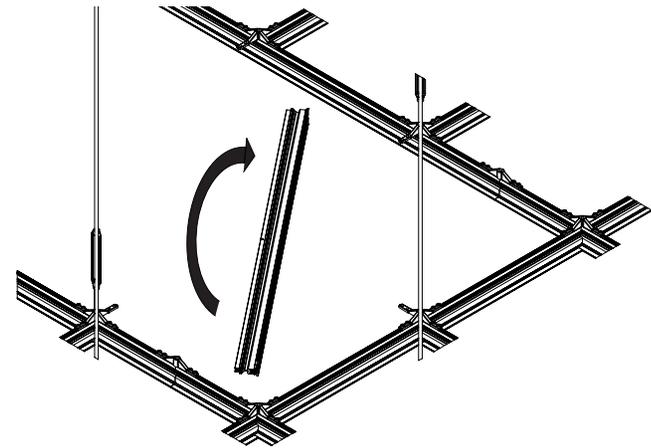


(Fig 22)

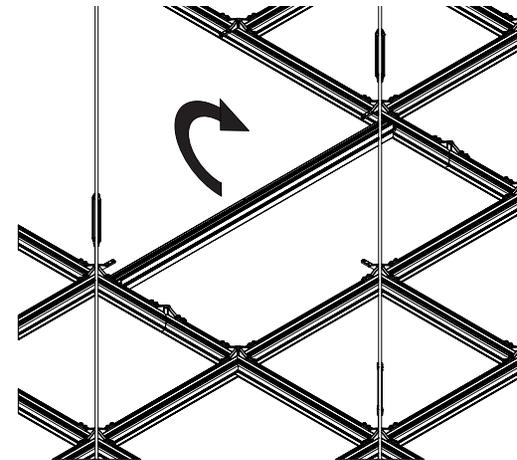


(Fig 23)

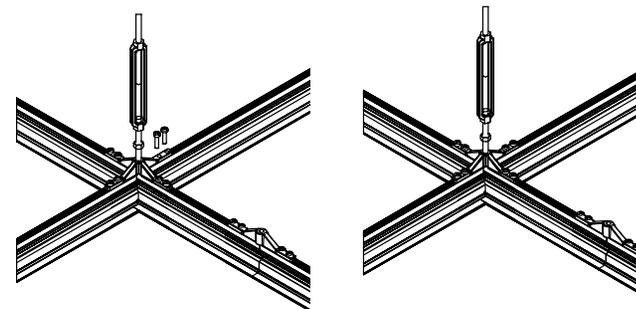
8. Each run of modules are installed 4' apart from each other with 4' cross tee connecting each run. Insert the 4' cross tee in between the modules on its side. Rotate the 4' cross tee until it is aligned with the notches on the top of the main beams. (Fig 24) Twist the 4' cross tee upright and slide underneath the DYNAMAX X-Bracket #DMXB. (Fig 25) Secure the 4' cross tee to the main beam at every intersection using an DYNAMAX X-Bracket #DMXB and the provided 1/4-20 SST screws. (Fig 26)



(Fig 24)

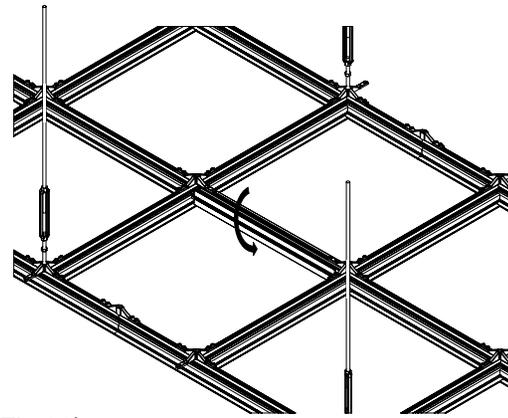


(Fig 25)

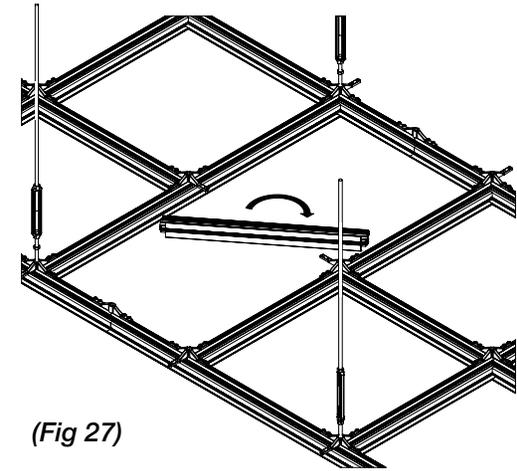


(Fig 26)

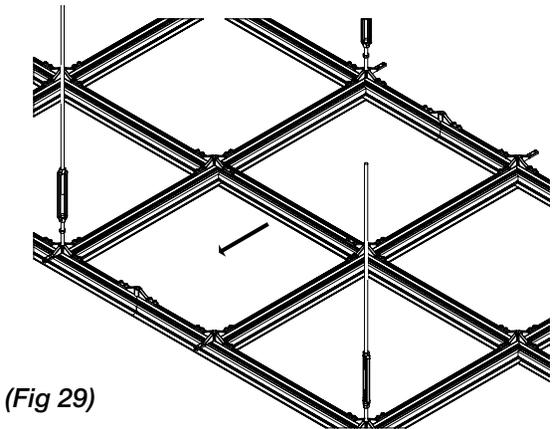
9. Depending on the layout of each run of modules, it may be required to install 2' cross-tee in between each module. Insert the 2' cross tee in between the 4' cross tee on its side. Rotate the 2' cross tee until it is aligned with the notches (Fig 27) on the top of the 4' cross tee. Twist the 2' cross tee upright (Fig 28) and slide underneath the DYNAMAX X-Bracket #DMXB. (Fig 29) Secure the 2' cross tee to the 4' cross tee at every intersection using an DYNAMAX X-Bracket #DMXB and the provided 1/4-20 SST screws. (Fig 30)



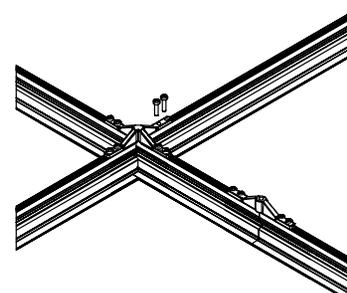
(Fig 28)



(Fig 27)



(Fig 29)



(Fig 30)

## 10. DYNAMAX LOAD CHARTS

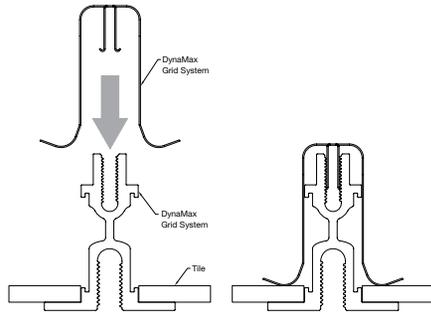
Structural Aluminum Grid Supports up to a 900 lb. point load rating using 3/8"-16 threaded rod at 4' x 4' connection points, assuming loads applied under threaded rod support brackets. For all structural load data please refer to the DynaMax Technical Guide <https://www.armstrongceilings.com/commercial/en-us/suspension-systems/dynamax-structural-aluminum-data-center-grid.html>

## 11. SEISMIC CONSIDERATIONS

These are options/suggestions if lateral bracing is needed. Cable trays need to be independently designed & braced for seismic zone areas. (Figs 31, 32, & 33)

## 12. HOLD DOWN CLIPS

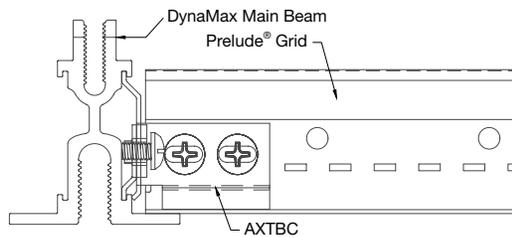
Depending on the tile thickness being installed, spreading the DMHDC slightly on either side will help the clip engage on the bulb of the grid. (Fig 34)



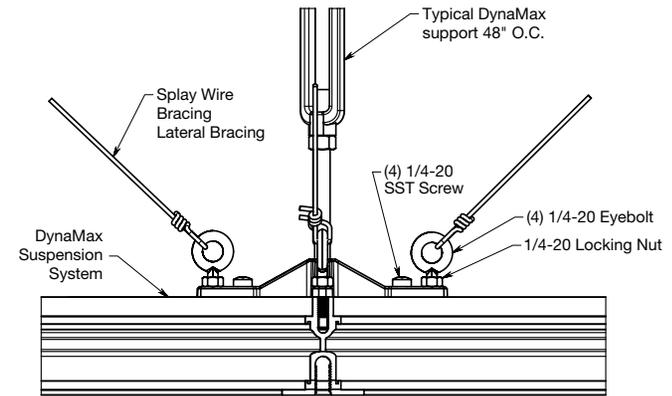
(Fig 34)

## 13. T-BAR CONNECTOR CLIPS

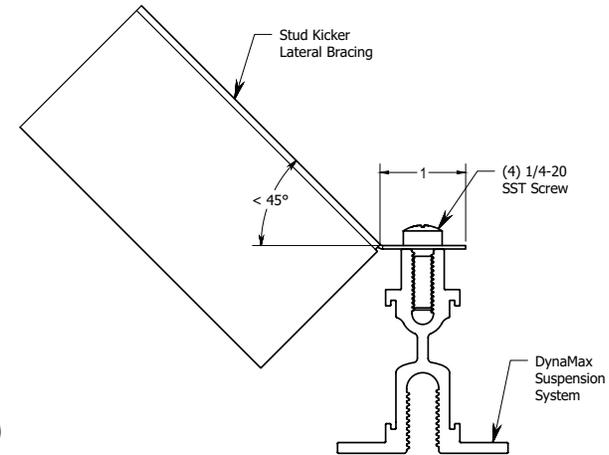
The AXTBC (Axiom T-Bar Connector Clip) is used in installations where the DYNAMAX suspension system is used in conjunction with PRELUDE XL suspension system. The AXTBC serves as the transition between the two suspension systems and fits into the attachment feature on the DYNAMAX profile. (Fig 35)



(Fig 35)

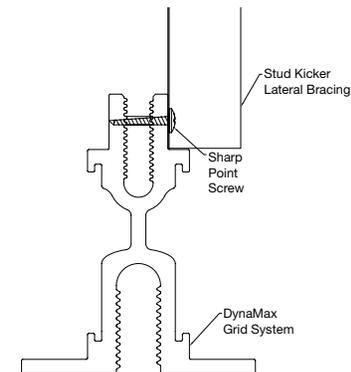


(Fig 31)



(Fig 32)

*Note: Contact local engineer for job specific load and/or seismic requirements.*



(Fig 33)

## 14. INSTALLING COMPATIBLE LIGHT FIXTURES

### Step 1: Assemble Clips

Assemble the clips that are provided by the lighting manufacturer. Please refer to the lighting manufacturer's specific installation instructions for details on light installation, as shown in (Fig 30).

### Step 2: Install Clip to DynaMax

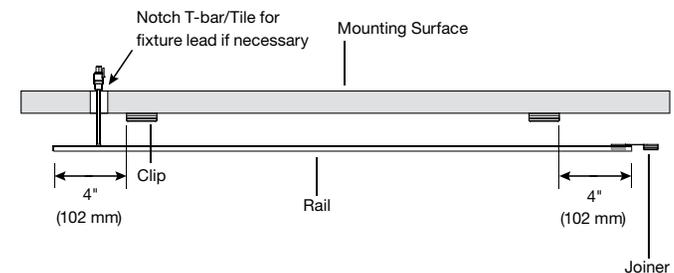
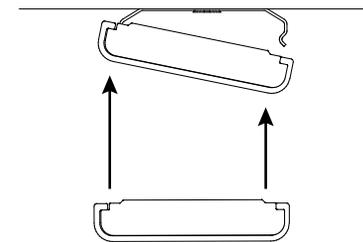
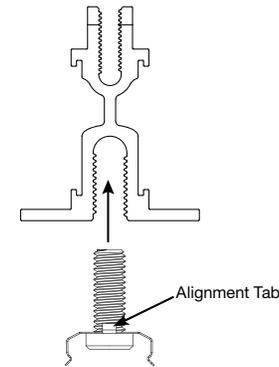
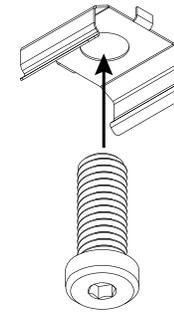
Using a 3/16" hex key, install all clips to installed suspended ceiling system. **DO NOT** over tighten as this could deform the clip and not allow for installation.

Fixtures will be supplied with two clips for rails under 48", four clips for rails 48" to 72" and six clips for 96" rails. Position two clips 4" (102mm) from each end of the fixture and evenly space the remaining clips.

**NOTE:** Clip is supplied with alignment tabs to ensure a proper installation. Clip must be installed as shown in (Fig 31).

### Step 3: Install light fixture provided by lighting manufacturer

Please refer to the lighting manufacturer's specific installation instructions for details on light installation.



## **MORE INFORMATION**

For more information, or for an Armstrong Ceilings representative, call 1 877 276 7876.

For complete technical information, detail drawings, CAD design assistance, installation information, and many other technical services, call TechLine customer support at 1 877 276 7876 or FAX 1 800 572 TECH.

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