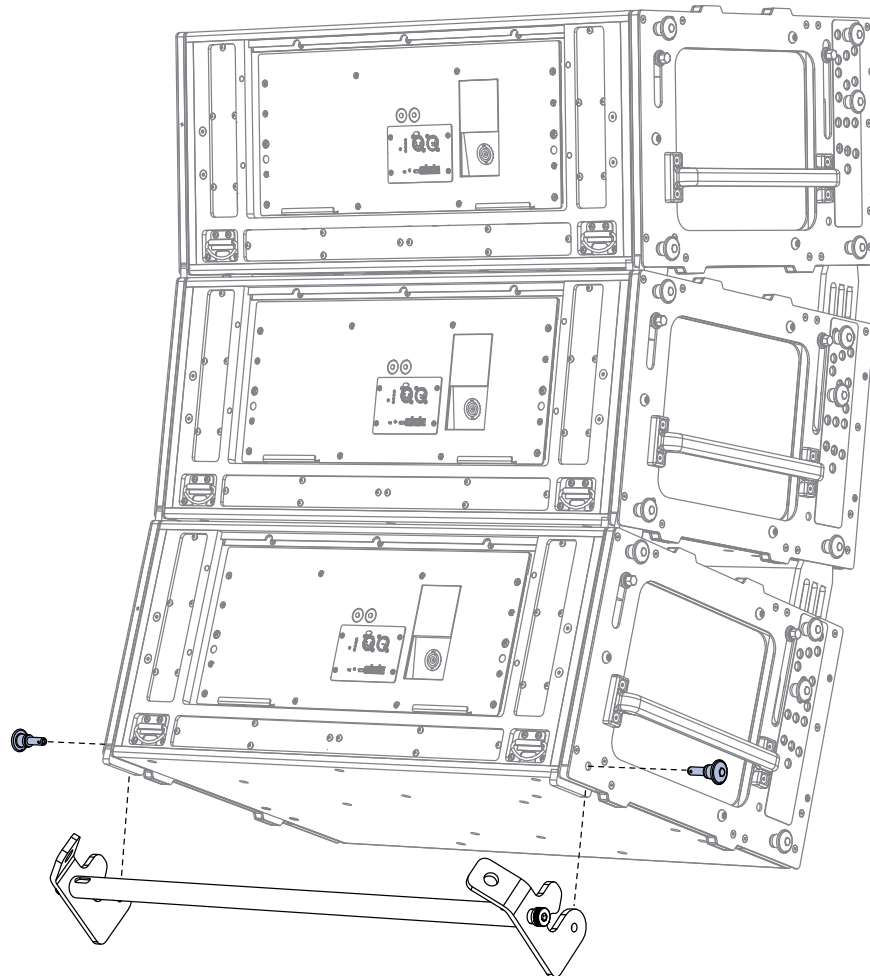


## Pull Back Rigging



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Pull Back Rigging Operating Instructions, PN 05.083.008.01 Rev A

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## CHAPTER 1: INTRODUCTION

### HOW TO USE THIS ASSEMBLY GUIDE

Make sure to read this assembly guide in its entirety before configuring a loudspeaker system using pull-back.

In particular, pay close attention to material related to safety issues. As you read this assembly guide, you will encounter the following icons for notes, tips, and cautions:

As you read these instructions, you will encounter the following icons for notes, tips, and cautions:



**NOTE:** A note identifies an important or useful piece of information relating to the topic under discussion.



**TIP:** A tip offers a helpful tip relevant to the topic at hand.



**CAUTION:** A caution gives notice that an action may have serious consequences and could cause harm to equipment or personnel, or could cause delays or other problems.

Information and specifications are subject to change. Updates and supplementary information are available at [www.meyersound.com](http://www.meyersound.com).

Meyer Sound Technical Support is available at:

- **Tel:** +1 510 486.1166
- **Tel:** +1 510 486.0657 (after hours support)
- **Web:** [www.meyersound.com/support](http://www.meyersound.com/support)
- **Email:** [techsupport@meyersound.com](mailto:techsupport@meyersound.com)

### FACTOR OF SAFETY DISCLAIMER

#### Important: Read Carefully

Rated load capacities of the Meyer Sound rigging assembly for different splay angle settings are based on testing performed by an independent testing agency, and on 5 to 1 safety limit analysis to ultimate load performed by an independent structural engineering firm. The ratings apply to the Meyer Sound rigging only. You are responsible for the safety factor required by local law for your installation, and for determining the adequacy of supporting structure "above the hook." **PERMANENT INSTALLATIONS MUST BE CERTIFIED BY THE ENGINEER OF RECORD FOR WIND AND SEISMIC LOADING.**

MAPP assumes the top grid is picked up by a front and rear motor along the perimeter of the grid, either directly to the middle pickup points or bridled at 45 degrees or greater to the grid's outermost pickup points. Other rigging configurations may have reduced load capacity. These cases should be reviewed by proper personnel to verify load capacities for alternate configurations.

Bridle angles are measured between the bridle cable and top grid plane.

#### Center Bar Pickup Points

MAPP Factor of Safety calculations are made for peripheral top grid points -- either corner or middle -- depending on the top grid configuration. Using the center bar pickup points will result in reduced load capacity. These cases should be reviewed by proper personnel to validate the configuration.

#### Pull-Back Load Status

MAPP Load Status -- when using Pull-Back -- additionally takes into account the Pull-Back Load Status as an additional pass/fail criteria to determine the overall Load Status condition. The Vertical Pull-Back Load Status is the pass/fail criteria. The  $-10^{\circ}/+10^{\circ}$  status indicators provide the user of the tolerance that exists to each side of the vertical. For all purposes Pull-Back should be as close to vertical as possible as loads will vary. Deviations from a vertical Pull-Back should be reviewed by proper personnel to verify load capacities for alternate configurations.

## **Rig Point Spacing**

When using Pull-Back, Rig Point Spacing values are calculated with reference to the front of grid position, which is the Reference Point Position value for the array at its final resting configuration.

## **LIMITATIONS AND DISCLAIMER**

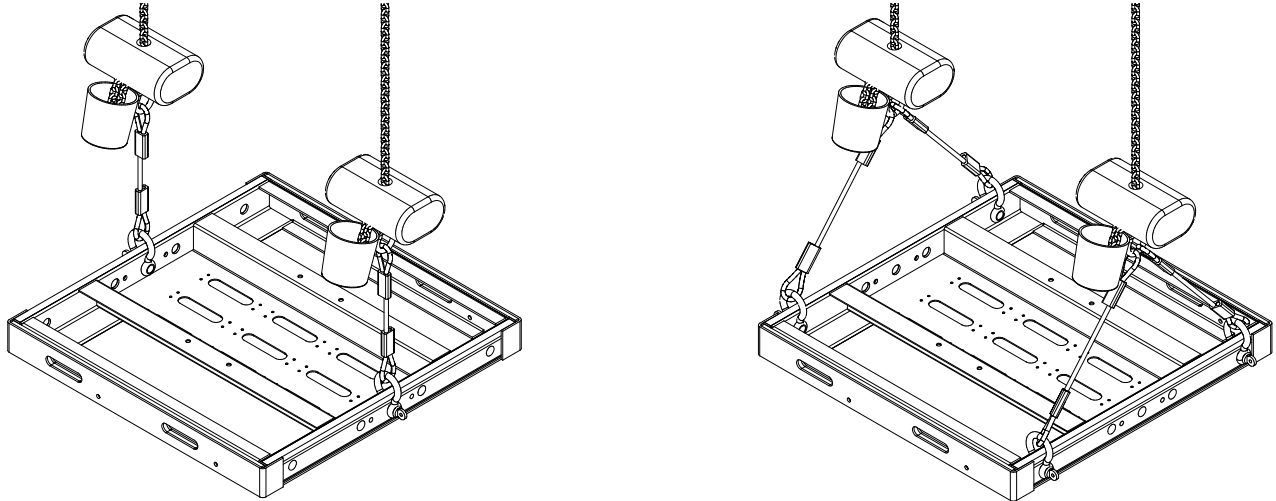
The safety limit analysis provided by this program does not apply, and may not be relied upon, if your loudspeaker system (1) has been improperly installed or maintained, (2) the rigging or loudspeakers of your system have been damaged prior to installation, (3) your indicated configuration of the system has been altered, (4) any weight has been added to your indicated configuration, or (5) your system is in an outdoor venue and remains installed during strong wind conditions. MEYER SOUND ASSUMES NO RESPONSIBILITY FOR ANY PART OF AN INSTALLATION "ABOVE THE HOOK" OR WHERE ANY OF THE FOREGOING LIMITATIONS APPLY.

## CHAPTER 2: PULL BACK RIGGING INSTRUCTIONS

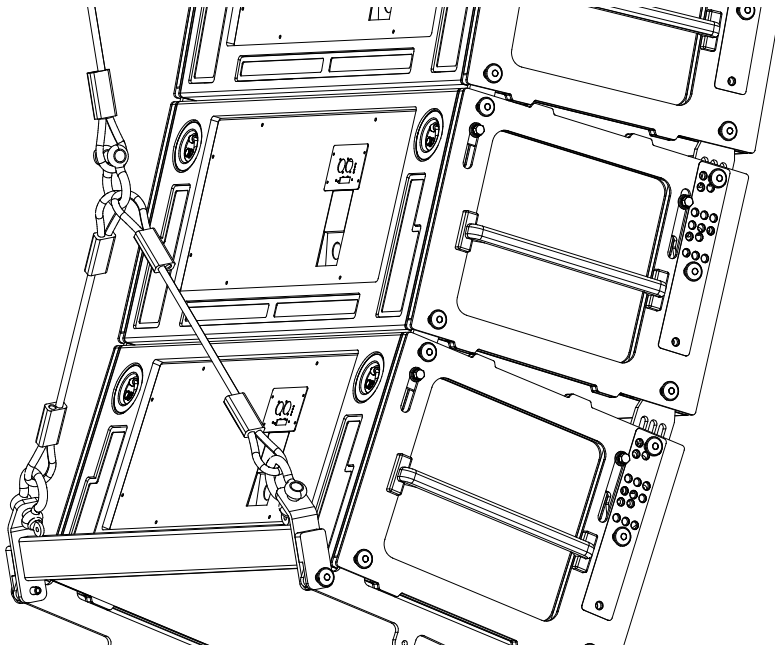
Executing a *pull back* requires balancing the loads of suspended arrays. By altering the momentary load on each motor to achieve a new stable configuration, this dynamically shifts the array's *center of gravity*. These procedures ensure a safe transition from *top grid suspension* to *full pull back*.

### NOMENCLATURE

The following figures define the rigging points used in these instructions.



Top Front and Rear of Array Center Rigging Points (left); Top Front and Rear of Array Bridled Rigging Points (right)



Rear View of Bridled Pull-Back Points

## TOP GRID TO PULL BACK RIGGING ARRANGEMENT

### Assemble the Array

Before you can achieve a *pull back rigging* configuration, the full array must first be set up as a regular *top grid rigging* system.

1. Maneuver the top grid motors to assemble the full array with the intended splay angles.
2. Fasten any locking pins in place when appropriate.



**NOTE:** Refer to each product's rigging manual/operating instructions for specific rigging instructions and procedures.

### Get the System Off the Ground

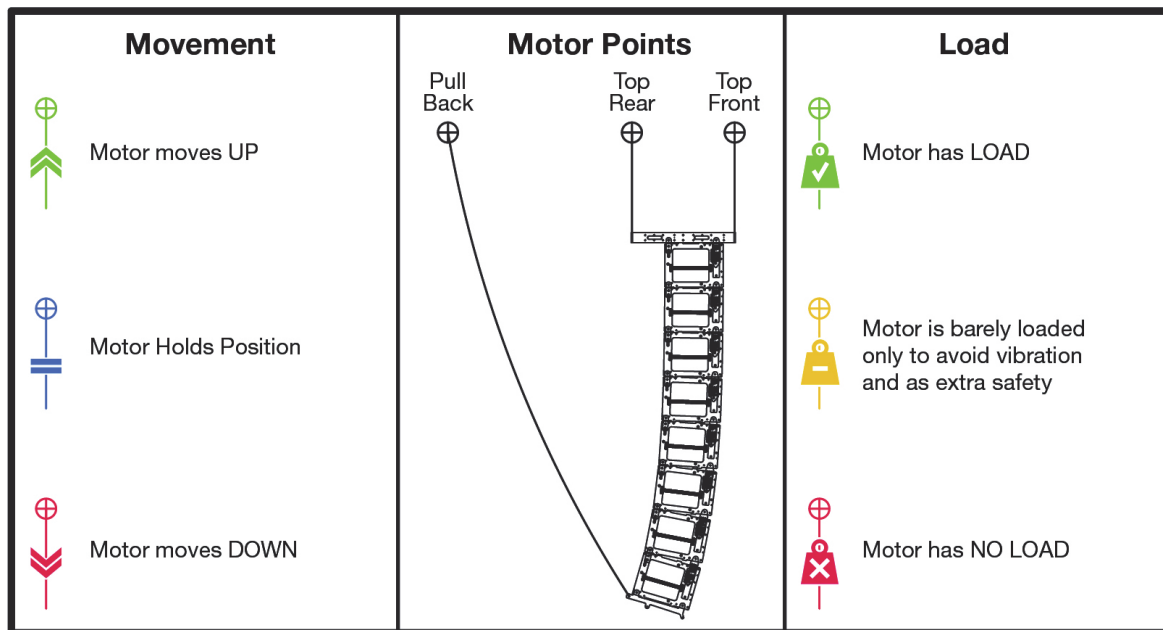
When the array is fully assembled including the *pull back bar*:

3. Raise the array slightly above the ground.
4. Inspect all links, pins, and rigging accessories.
5. Raise the array to *trim height* (resting height of array).

During the transition, only the *top rear of array rigging points* will remain at a constant height. It is therefore essential to measure and set the trim height for these reference points.

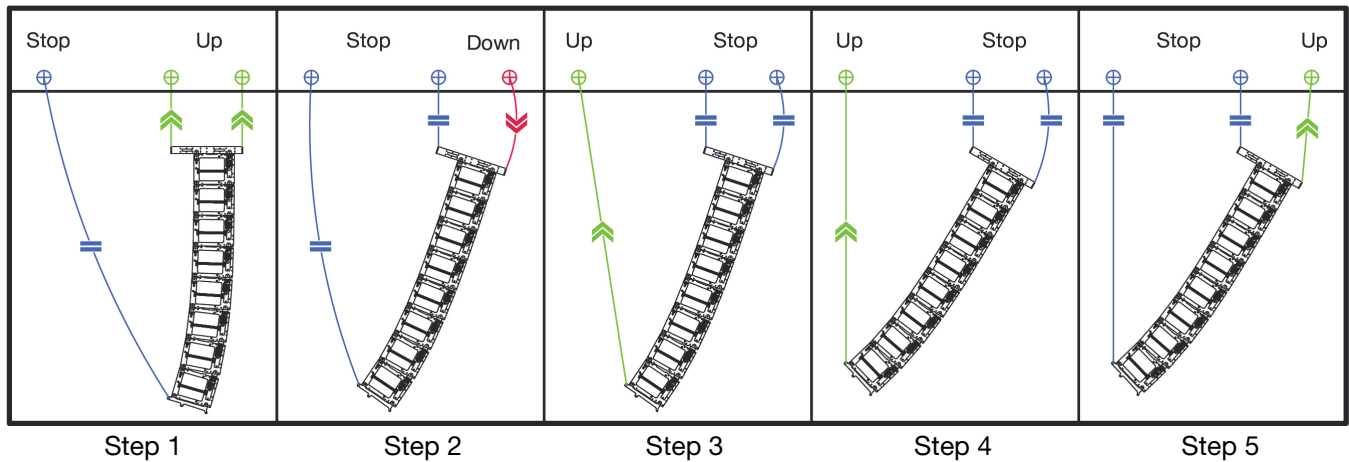
## TRANSITIONING

*Transitioning* can be divided into *movement* and *load* procedures. The symbols used are shown below.



*Symbols used for movement and load procedures*

## Movement



*Movement to transition from top grid to pull back*

To transition from *top grid* to *pull back*:

1. Use the top grid motors to raise the array to trim height.
2. Slack the front motor until achieving the maximum natural downward tilt.

Make sure there is enough slack in the *top front of array motor(s)* to allow the added rotation introduced by the pull back.

3. Pick up the slack of the pull back motor until it is under tension.
4. Without exceeding the rated pull back load, take the pull back motor up to the desired downward tilt angle.



**NOTE:** Make sure the downward tilt angle does not exceed the simulated configuration in MAPP XT. This may result in an unstable array or exceed the maximum rated pull back load.

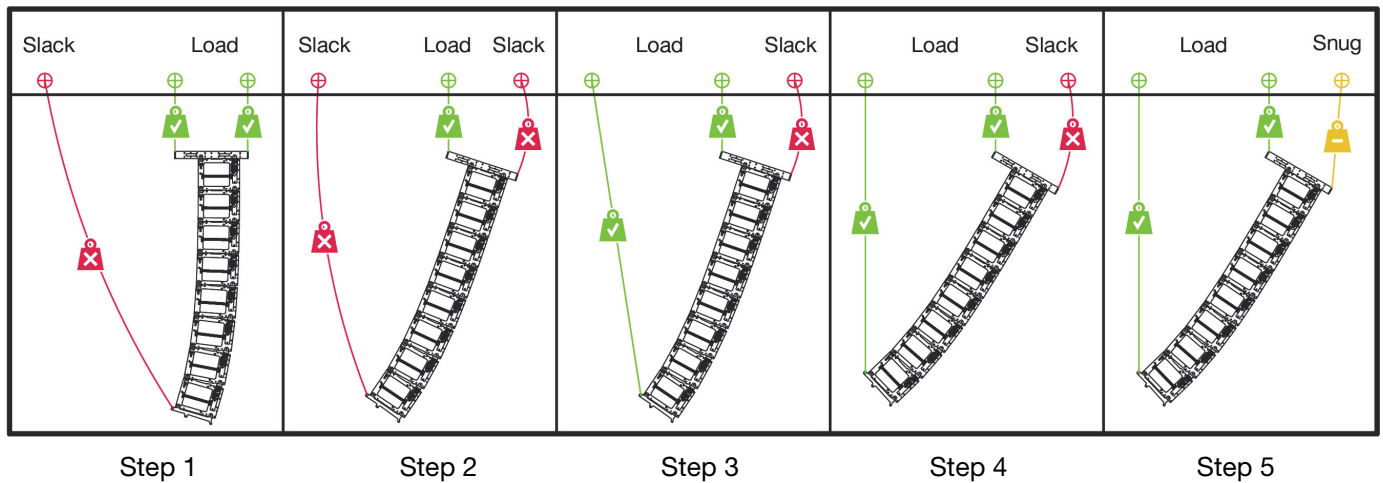
5. Pick up the slack of the *top front of array motor points*.

Do not use the *top front of array motors* to pick up the top grid, change the trim height, or change the angle as that will alter the MAPP XT calculated loads.



**NOTE:** Removing the slack is only to ensure that any failure of the *top rear of array motor* will result in the load being picked up by the *top front of array motor points*.

## Load



### Load transition

1. Engage both top grid motors to take the complete load of the array.
2. When at trim height (*top rear of array motor point* reference), the load is fully transitioned to the *top rear of array motor point(s)*.
3. Total array load is distributed between the *top rear of array motor point(s)* and the *pull back rigging point*.
4. The *pull back rigging motor point* load increases until it reaches the desired array downward tilt angle.
5. The *top front of array motor point(s)* should be tensioned with minimal load to avoid rattling and provide an extra safety rigging point.

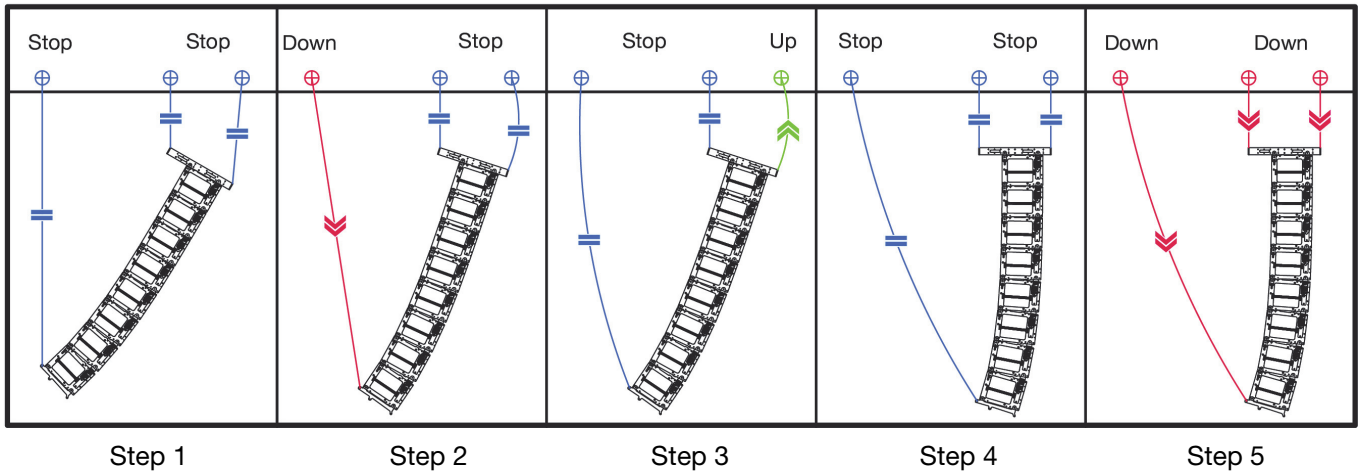


**NOTE:** Changing the top of array pickup point from the rear to the front increases the pull back rigging motor point load and reduces array stability.



## TRANSITIONING FROM PULL BACK TO TOP GRID RIGGING

### Movement



*Pull back to top grid rigging*

To transition from a *pull back* to standard *top grid rigging* configuration:

1. The array is resting at the pull back position.
2. From the pull back position, slack the pull back motor until the array is hanging only from the *top rear of array motor points*.  
Make sure there is enough slack in the pull back motor so this motor will never be under tension.
3. Pick up the slack of the *top front of array motor points* until the weight is distributed by all *top grid motor points*.
4. Lower all top grid and pull back motors at the same time.  
Make sure there is enough slack in the pull back motor so it will never be under tension.  
If necessary stop the downward motion on all motors and increase the slack of the pull back motor.
5. When the array is close to the ground, disconnect the pull back and disassemble the array.



**CAUTION:** To minimize potentially dangerous situations and prevent accidents, you must maintain all rigging gear and follow all safety procedures and local regulations. Replace worn or damaged parts and accessories immediately.



**CAUTION:** Factor of Safety Intermediate Data calculations provided by the MAPP XT program for Meyer Sound rigging configurations depend on the proper installation, maintenance, and use of the rigging. Read all rigging instructions provided by Meyer Sound. Failure to follow these Operating Instructions, or failure to inspect, maintain, and repair all rigging parts and accessories will void Factor of Safety calculations.



**NOTE:** Local rigging regulations may require *dead hanging* all loads or providing safety links that bypass all motors. A *dead hang* uses a steel wire or chain to remove all load from the motor unit used to take the load to its dead hung position.



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