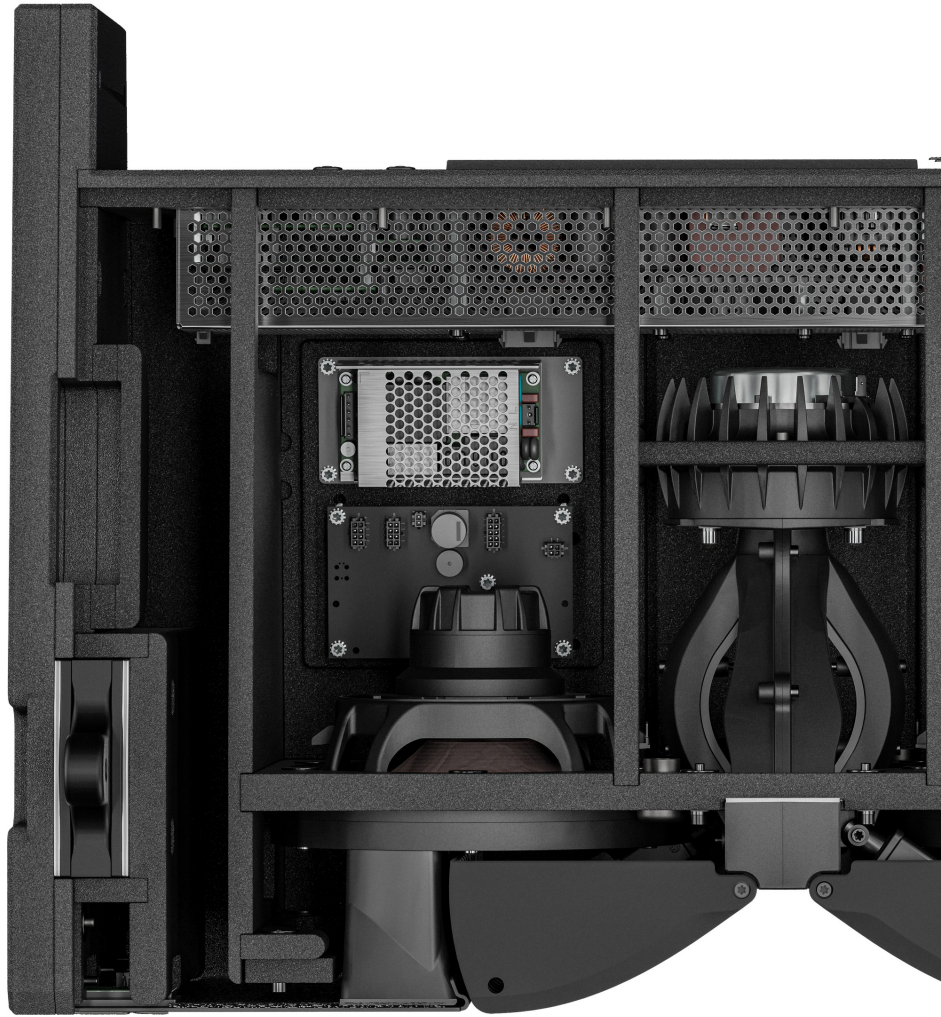


PKSOUND™
T8
Robotic Line Source



USER MANUAL
v1.0

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1. Important Safety Information

1. Read all instructions thoroughly and keep this manual close at hand.
2. Do not use this module near water.
3. Clean only with a dry cloth.
4. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions and local authority having jurisdiction.
5. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
6. Use a proper polarized or grounding-type plug. If the provided plug does not fit into your outlet, consult an electrician.
7. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
8. Only use attachments/accessories specified by the manufacturer.
9. Use only with the Cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the module. When using a Cart, use caution when moving the Cart/module combination to avoid injury from tip-over.
10. Unplug this module during lightning storms or when unused for long periods of time.
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged; liquid has been spilled or objects have fallen into the apparatus; the apparatus has been exposed to rain or moisture; does not operate normally; or has been dropped.
12. The means of disconnection from the live power source is the chassis power connector or main plug. One of these devices must remain accessible when the apparatus is in use.



CAUTION: Do not open the back shell of amplifier assembly. No user-serviceable parts inside. Refer servicing to qualified service personnel. Email support@pksound.ca for service.



WARNING: Failure to follow the instructions in their entirety could result in serious injury or death. Follow all local safety practices and due diligence in ensuring safe working conditions while using the T8.



WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.



1.1 Additional Power Safety Instructions

The unit must be powered exclusively by an earth-connected mains socket within an electrical network compliant with IEC 364 or similar local regulations. The user must verify this fundamental safety requirement. If in doubt, consult qualified personnel to inspect the installation before use.

The means of disconnection from the mains is the mains plug. We strongly recommend that you power the unit from a professionally installed mains supply with an easily accessible on/off switch or circuit breaker.

Before powering the unit via the Neutrik® powerCON TRUE1 connector, make sure that the unit is supplied with the correct mains operating voltage:

100 – 240 VAC, 50 – 60 Hz, minimum 12.5 A capacity.

Only power the unit using an input supply cable rated as follows:

- 110-130 VAC: 15 A or higher rated cable
- 200-240 VAC: 20 A or higher rated cable

Only power the unit using a circuit with sufficient load capacity:

- 110-130 VAC: 15 A or higher rated circuit
- 200-240 VAC: 20 A or higher rated circuit

The power section is protected by two non-user serviceable fuses:

- Type 5HT 10 A 250 V Slow Blow

Power Consumption for 1 Unit, No Passthrough Devices Connected: 220 W

Do not exceed 1220 W on passthrough connector @ 120 VAC.

Do not exceed 2276 W on passthrough connector @ 208 – 240 VAC.



CAUTION: Do not block or restrict airflow from the front of the module, doing so will negatively impact performance of the unit.



WARNING: Do not use this unit if the electrical power cord is frayed or broken.



WARNING: Never spray water directly into the front of the module, doing so will expose electronic components to moisture and damage the internal equipment.

2. Approvals

Safety & Compliance:

CSA22.2 No. 62368-1:14

UL 62368-1

IEC 62368-1

EN 61000-4-2 - Electrostatic Discharge EN 61000-4-3 - Radiated Immunity EN 61000-4-4 - EFT EN 61000-4-5 - Surge EN 61000-4-6 - Conducted Immunity EN 61000-4-8- Power Line Magnetic Fields EN 61000-4-11- Voltage dips, short interrupts EN 61000-3-2/3 - Current Harmonics & Voltage Fluctuations FCC18/ICES-001/BSMI/VCCI/EN 55011 - Class A Conducted Emissions FCC18/ICES-001/BSMI/VCCI/EN 55011 - Class A Radiated Emissions Reports: BSMI, VCCI, FCC15, ICES-001, BS/EN55011 & EN61326-1

Environmental:

IP54

Mechanical Strength:

The T8 rigging system complies with structural standards EN 1993, EN 1999, and has been designed following the regulations of DGUV V17 (BGV-C1).

European Machinery Directive 2006/42/EC

DIN EN 1993-1 Eurocode 3

DIN EN 1999-1 Eurocode 9

Risk Assessment:

DIN EN 12100

Country of Origin:

Canada

This is a Class A product. In a domestic environment, this product may generate electromagnetic interference (EMI) in other products, requiring the user to take mitigative efforts.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2.1 EU Declaration of Conformity & CE Marking:

This declaration applies to the following products manufactured by PK Sound Corp. and includes all types listed below.

Product Name:

- T8 (901-0005)

We herewith declare that said products are in conformity with the provisions of the following EU directives, including all applicable amendments:

2014/35/EU, LVD Directive

- EN 62368-1 2014

2014/30/EU, EMC Directive

- EN 55103-1:2009 +A1:2012
- EN 55103-2:2009

2011/65/EU, RoHS Directive

- EN 63000:2018

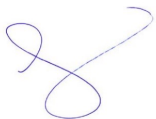
2006/42/EC, European Machinery Directive

- T8 / T18 Suspension Frame (921-0007)
- T8 Downtilt Adapter (923-0002)
- Delta Plate (922-0001)

Manufacturer:

PK Sound Corp.
235075 Ryan Rd.
Rocky View, Alberta, Canada
T1X 0K3
www.pksound.live

All production versions of these types are included, provided they correspond to the original technical version and have not been subject to any later design or electromechanical modifications. PK Sound Corp. accepts responsibility for this declaration.



Jeremy Bridge P.Eng
CEO

Signed Jan. 1, 2024, in Rocky View, Canada

3. Power Requirements

3.1 Voltage & Current Requirements

The T8 operates safely and continuously with a supplied mains input between 100-240 VAC at 50 or 60 Hz. The loudspeaker allows any combination of voltage to ground (neutral-line-ground or line-line-ground). If the voltage rises above 275 V, the power supply could become damaged.



CAUTION: To ensure that T8 performs as specified, without interruption, and without damage to its power supply, its power source must operate within the required voltage window (100–240 VAC) and its AC cable length and gauge must be such that peak voltage drops do not exceed 5 percent of its voltage.

When T8 modules are powered from a three-phase power source, it is very important to keep a good balance in the load of each phase of the AC power. It is also necessary to include subwoofers, array sources, and other loudspeakers in any power distribution calculations.

In an under-voltage condition (brown-out), the loudspeaker's robotics power supply may not have sufficient power to articulate the robotic actuators. In this scenario, attempt to perform robotic articulation when audio is muted and there is less draw on available power, or only articulate the robotics of one module at a time.

3.2 AC Input Connectors

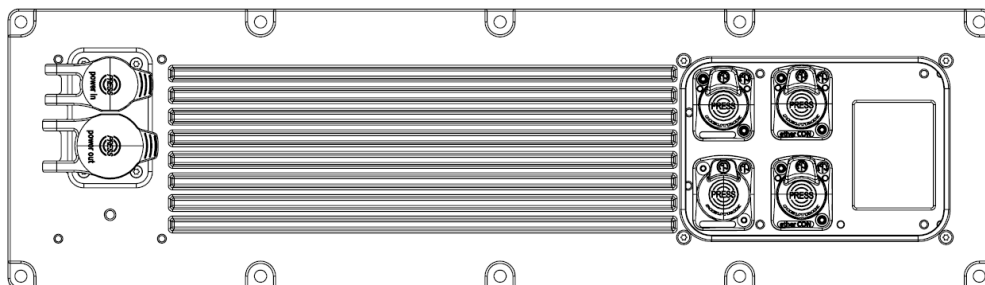
Each T8 module is provided with a Neutrik powerCON TRUE1 NAC3PX inlet-outlet to supply power and daisy chain other modules. The NAC3PX is rated for 16A.

The maximum recommended number of Modules per circuit are as follows:

- 240 VAC, 20 A circuit: 12 Modules
- 208 VAC, 20 A circuit: 8 Modules
- 120 VAC, 20 A circuit: 4 Modules

Exceeding this limit may engage circuit breakers in high-output use cases.

powerCON TRUE1powerCON TRUE1powerCON TRUE1powerCON TRUE1The Neutrik powerCON TRUE1 connector is rated at IP65 when mated. Unmated connections are not rated.



3.3 Electrical Safety

Pay close attention to these important electrical and safety guidelines.

1. T8 requires a grounded outlet. Ensure the presence and functionality of the ground in connected circuits, as well as in all outlets and cables used.
2. Do not use a ground-lifting adapter or cut the AC cable ground pin.
3. Make sure the AC power cable for the loudspeaker has the appropriate power plug (on the other end) for the area in which you will operate the loudspeaker.
4. Do not operate the module if the power cable is frayed or broken.
5. Keep all liquids away from T8 modules to avoid hazards from electrical shock

3.4 Environmental Constraints



WARNING: Never spray water directly into the front of the module, doing so will expose electronic components to moisture and damage the internal equipment.



WARNING: Never disconnect, attach or interconnect cables when the cable or module is wet. In the event that the module becomes wet, the user must ensure all power has been removed prior to disconnecting or reconnecting.

NOTE: For any permanent installation the user must consult the manufacturer. Support@pksound.ca

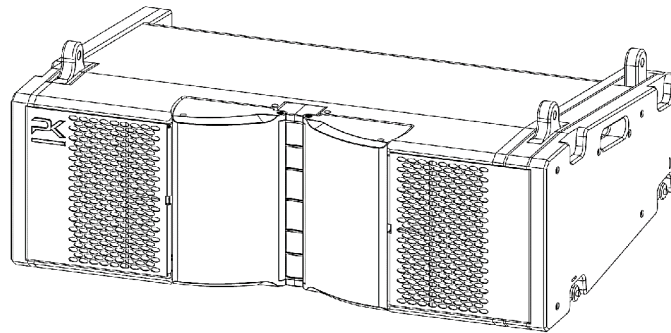
4. Rigging

4.1 Rigging Overview

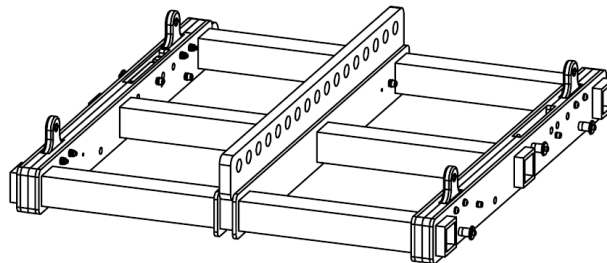
T8's rigging system operates using the T8 / T18 Suspension Frame which is designed to reduce setup time and improve the safety of workers. T8 modules are flown straight and only curved after the array has been suspended.

T8's rigging system consists of the following elements:

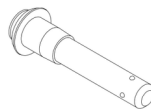
1. T8 Module



2. T8 / T18 Suspension Frame Assembly



3. 10mm Quick-Release Pins (QRPs)



CAUTION: Use only the quick-release pins supplied with T8 or the exact replacement part from PK Sound. Failure to do so will compromise the integrity of the system.



CAUTION: Use only mounting and rigging hardware that has been rated to meet or exceed the total weight of the system being hung and which meets local laws/regulations.

4.2 Mechanical Limits

The T8 rigging system complies with CSA C22.2#62368-1:2014Ed.2 and has been designed following the guidelines of BGV-C1. The limits specified in the table below correspond to those safety factors or higher for flown deployments. Refer to **.dynamics** for the safety factor of a specific deployment.

The **safe limit** gives the maximum number of elements for which the safety factor is always compliant with CSA C22.2#62368-1:2014Ed.2, regardless of the other deployment parameters (Suspension Frame angles, inter-module spacing, etc.)

The **Maximum Limit** in the table below detail the maximum number of modules for which the safety factor can be compliant with CSA C22.2#62368-1:2014Ed.2. The safe limit columns detail the deployment parameters that provide the best mechanical conditions. The maximum limit is not based around **.dynamics**. All configurations must be verified by safety calculations within **.dynamics**. It is the responsibility of the user to ensure safe rigging conditions.

Array Configuration	Safe Limit	Maximum Possible Limit (must consult .dynamics)
Flown (Any Angular Configuration)	8	22
Ground Stacked (On Suspension Frame)	6	8
Ground Stacked (On T18 with Suspension Frame)	2	**
Ground Stacked (On T18 with/without Downtilt Adapter)	2	2
Cart Stacked*	6	N/A

* Cart stacked modules are for transport only.

** Consult **.dynamics** for safe limits of mixed T8 / T18 arrays.



CAUTION: To deploy more elements than the specified safe limits or to utilize a combination of different elements, always model the system in **.dynamics** before installation and check the "Mechanical Data" section for any stress or stability warnings.



CAUTION: Use only mounting and rigging hardware that has been rated to meet or exceed local laws/regulations for mechanical design and total suspended weight.

4.3 Assessing Mechanical Safety

Rated Working Load Limit (WLL) Alone Is Insufficient

The rated WLL is an indication of the element resistance to tensile stress. For complex mechanical systems such as loudspeaker arrays, WLLs cannot necessarily be used to determine the maximum number of enclosures within an array or to assess the safety of a specific array configuration.

Mechanical Modeling with .dynamics

The working load applied to each linking point, along with the corresponding safety factor, will depend on numerous variables linked to the composition of the array (type and number of enclosures, splay angles) and the implementation of the flying or stacking structure (number and location of flying points, site angle). This cannot be determined without the complex mechanical modeling and calculation offered by **.dynamics**.

Assessing the Safety with .dynamics

The overall safety factor of a specific mechanical configuration always corresponds to the lowest safety factor among all the linking points. Always model the system configuration with the **.dynamics** software and check the Mechanical Data section to identify the weakest link and its corresponding working load. By default, a *stress warning* will appear when the mechanical safety goes beyond the recommended safety level.

Safety of Ground-Stacked Arrays in .dynamics

For ground-stacked arrays, a distinct *stability warning* is implemented in **.dynamics**. It indicates a tipping hazard when the array is not secured to the ground, stage or platform. It is the user's responsibility to secure the array and to ignore this warning.

Consideration Must Be Given to Unusual Conditions

.dynamics calculations are based on typical standard environmental conditions. A higher safety factor is recommended environmental conditions such as extreme high or low temperatures, strong wind, prolonged exposure to salt water, etc. Always consult a rigging specialist to implement safety practices adapted for such situations.

4.4 Flying a T8 Module Array

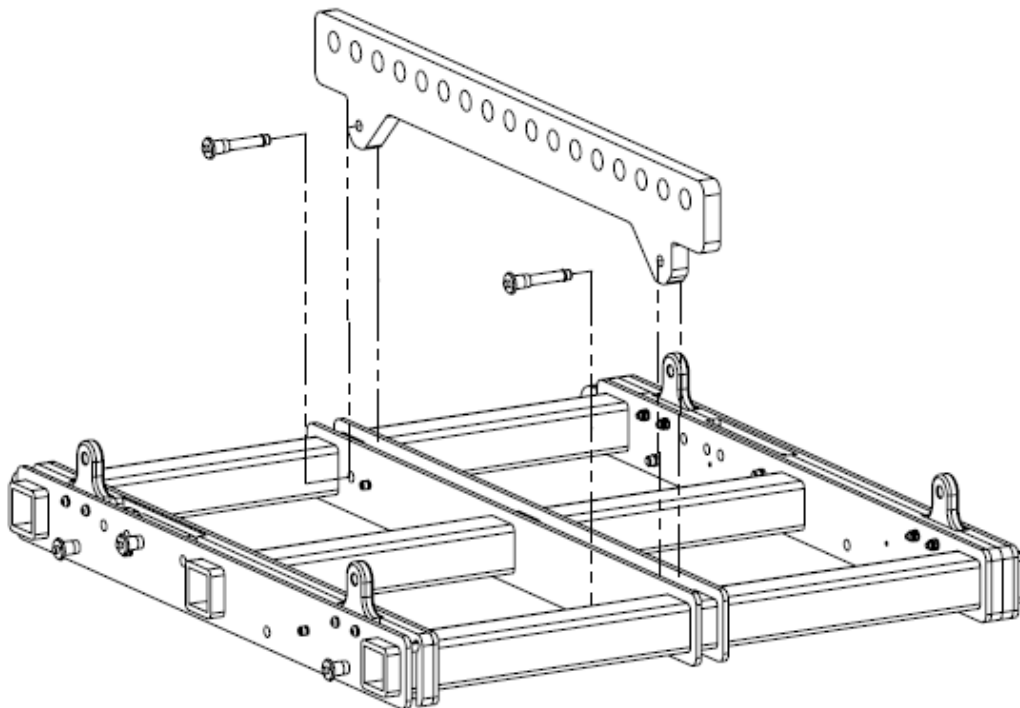
Although it is possible to safely hang up to 24 modules using the T8 / T18 Suspension Frame, not all arrangements are physically possible to achieve. Always verify the desired configuration of the line array hang with .dynamics before flying the array.

Rigging Connections Should ALWAYS Be Made by a Qualified Person.

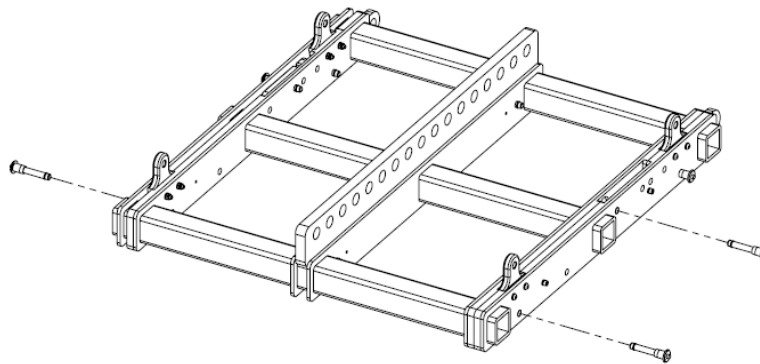
4.4.1 Mounting the T8 / T18 Suspension Frame

The T8 / T18 Suspension Frame can be mounted to either the top or bottom of T8 modules depending on the desired configuration. When flying an array, the T8 / T18 Suspension Frame is mounted to the top module. In pull-up or ground-stacked configurations a T8 / T18 Suspension Frame is mounted to the bottom module of the array.

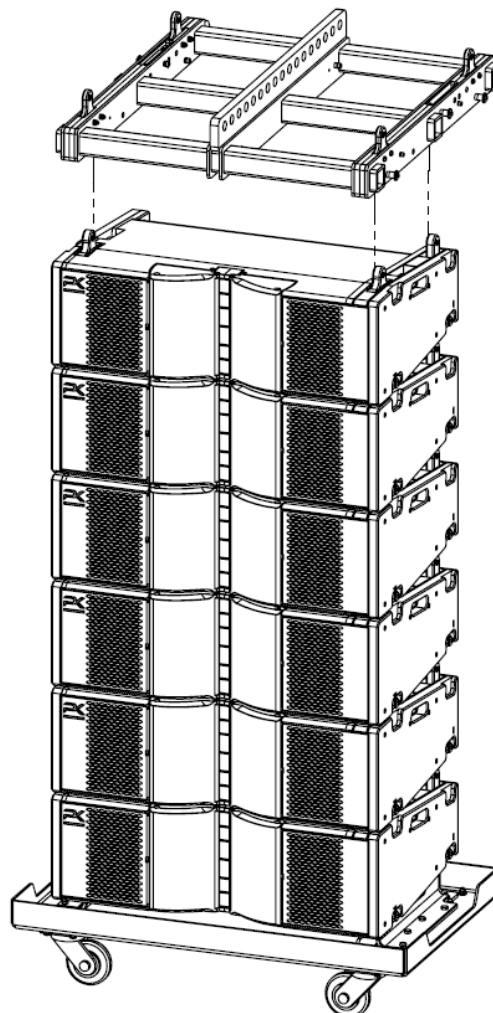
1. Depress the push pins on the 2 x Quick-Release Pins (QRPs) shown below and remove them from T8 / T18 Suspension Frame. Place the rigging bar in the respective slot and replace the 2x QRPs through the corresponding holes in the T8 / T18 Suspension Frame and the rigging bar. Ensure the QRPs are fully inserted.

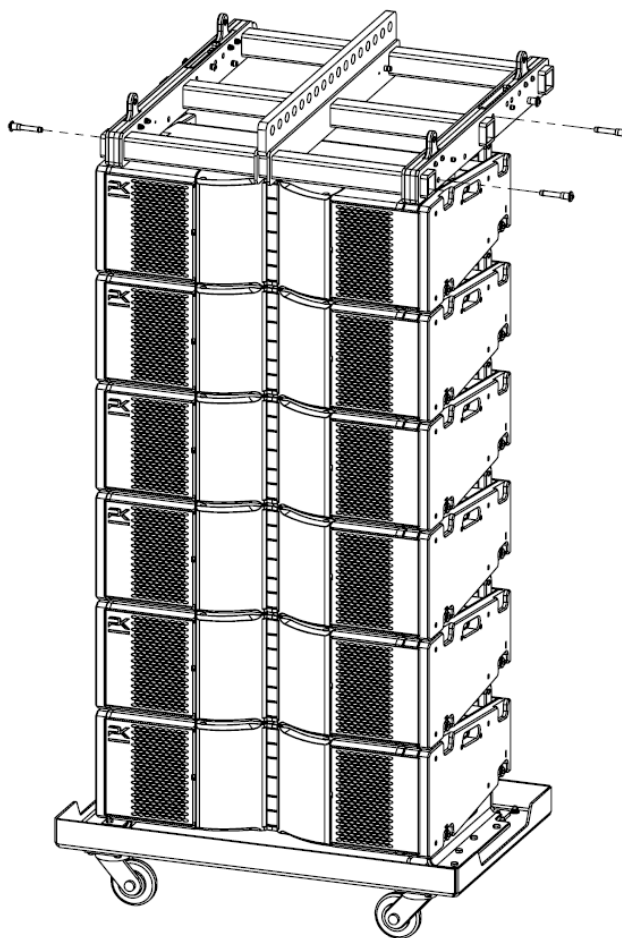


2. Depress the push pins on the 3 x QRPs shown below and remove them from T8 / T18 Suspension Frame.



3. Place the T8 / T18 Suspension Frame on top of the first T8 module stack, ensuring that the rear rigging link of the top T8 module is upright and is seated into the corresponding recesses on the bottom of the T8 / T18 Suspension Frame.
4. Insert the 3 x QRPs through the T8 / T18 Suspension Frame and rigging links of the top T8 module.





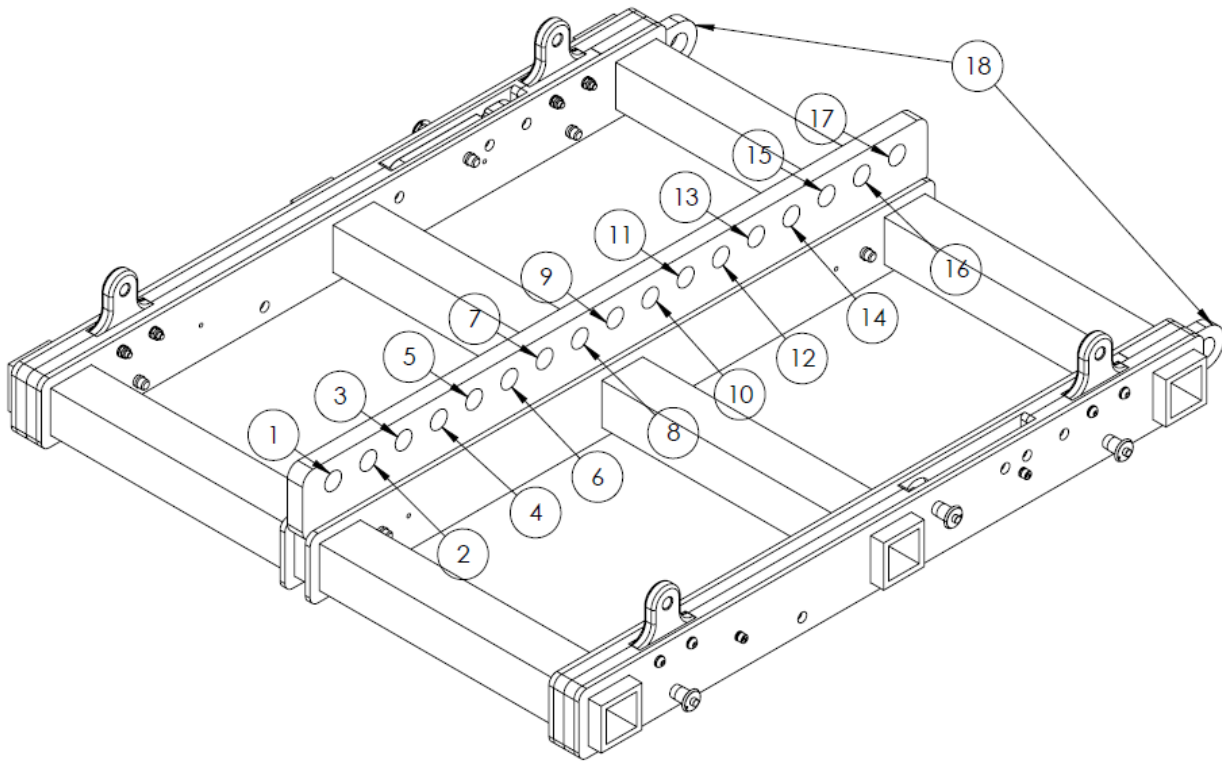
WARNING: Keep fingers and hands clear of all possible pinch hazards when mounting the T8 Suspension Frame.



CAUTION: Check that the ball locks on the QRPs are completely inserted through all rigging links, pulling on the QRP to check that it cannot unintentionally slide out. ALWAYS double check the QRPs for a positive lock.

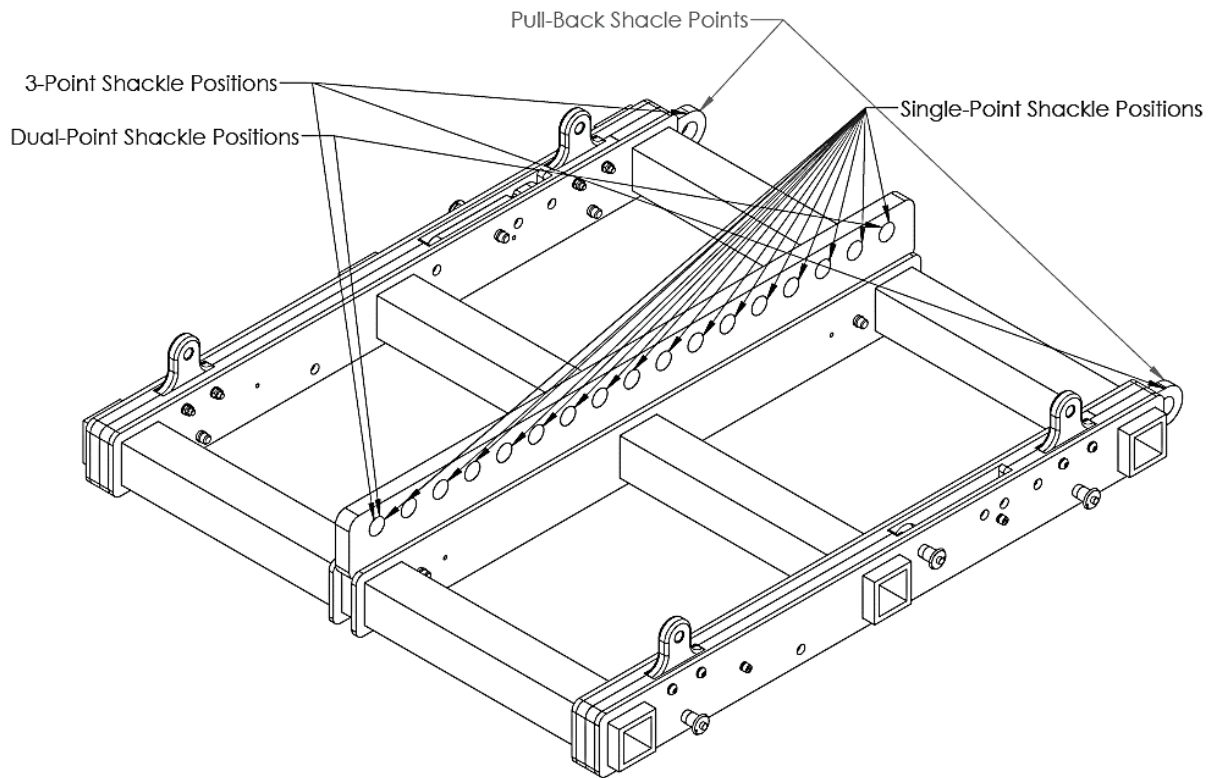
4.4.2 Hoist Connections

The T8 / T18 Suspension Frame is equipped with holes for 5/8" shackles (Shackles not provided). The shackle hole positions are referenced using the numbering system shown below. When chain hoists are used as the primary supporting means, connect the shackles to the outermost holes (1 and 17).



For single-point hangs, first verify your desired configuration in the .dynamics software and use the hole dictated by the software (1-17). Maximum load for single point hangs is of 525 kg. Maximum load for dual or triple-point hangs is 750 kg. Reference holes 18 are used for triple-point hangs.

Always verify the desired configuration of the line array hang with .dynamics before flying the array when using a single point. After verifying the desired configuration with .dynamics mount the T8 / T18 Suspension Frame following the instructions in the previous section.



WARNING: Never bridle the 2 installed shackles in the T8 / T18 Suspension Frame together to create a single point hang.

4.4.3 Connecting T8 Module Stacks



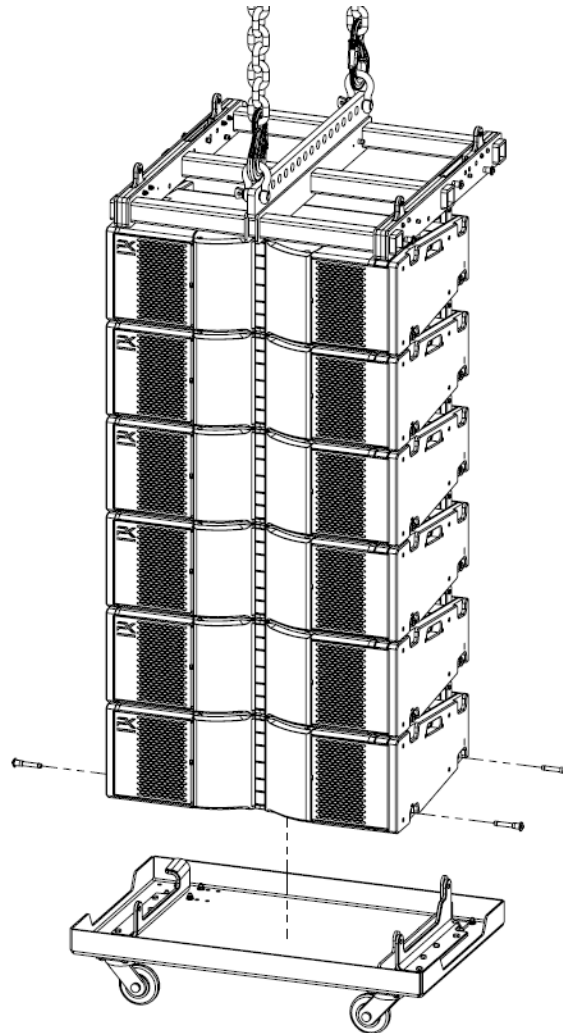
CAUTION: When using a chain climbing hoist ensure that the slack chain and/or chain bag does not come into contact with any part of the T8 / T18 Suspension Frame or any of the T8 modules.



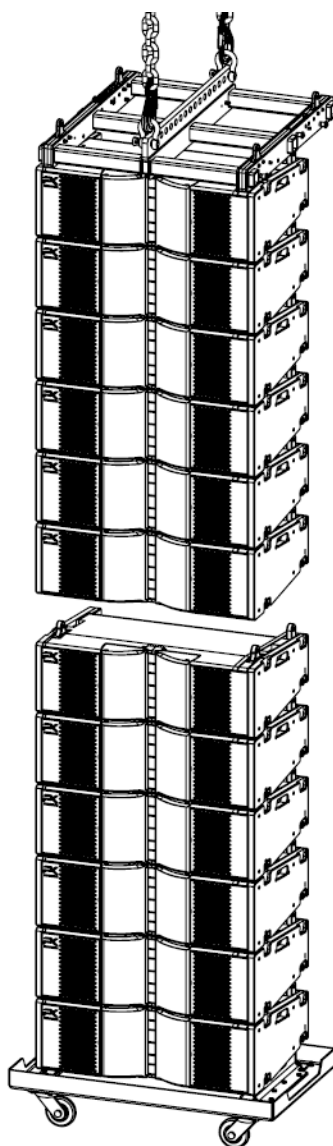
WARNING: Keep fingers and hands clear of all possible pinch hazards when stacking and unstacking clusters of T8 loudspeakers.

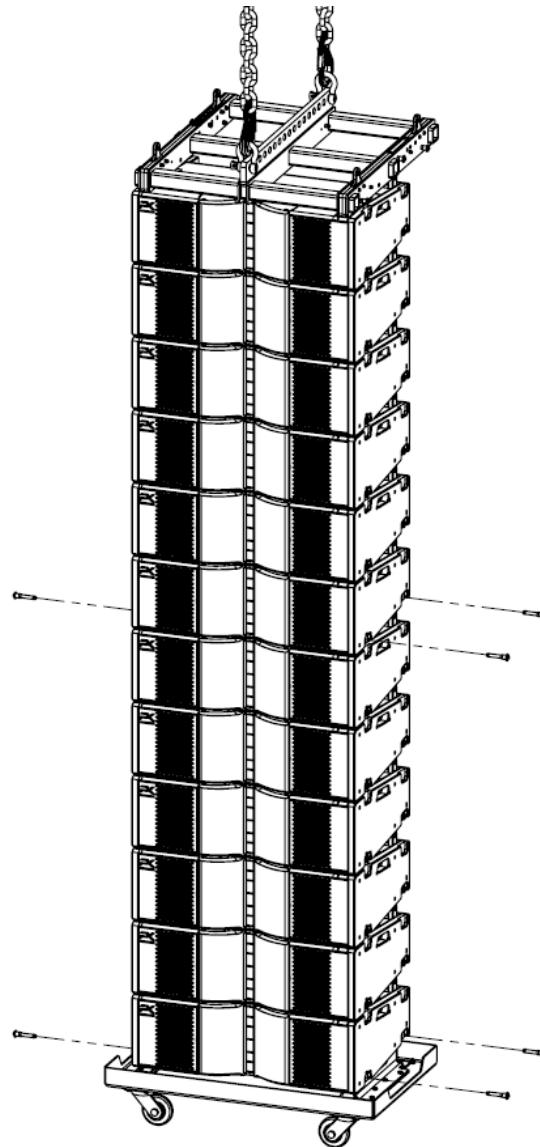
1. Remove the 3 x QRPs connecting the T8 Cart to the bottom T8 Module.
2. Raise the suspended T8 module stack until it is free of the T8 Cart.

3. Remove the empty T8 Cart from beneath the suspended stack of T8 modules and store appropriately.
4. Raise the suspended T8 module stack high enough to provide sufficient clearance for the next T8 module stack to be placed directly underneath.



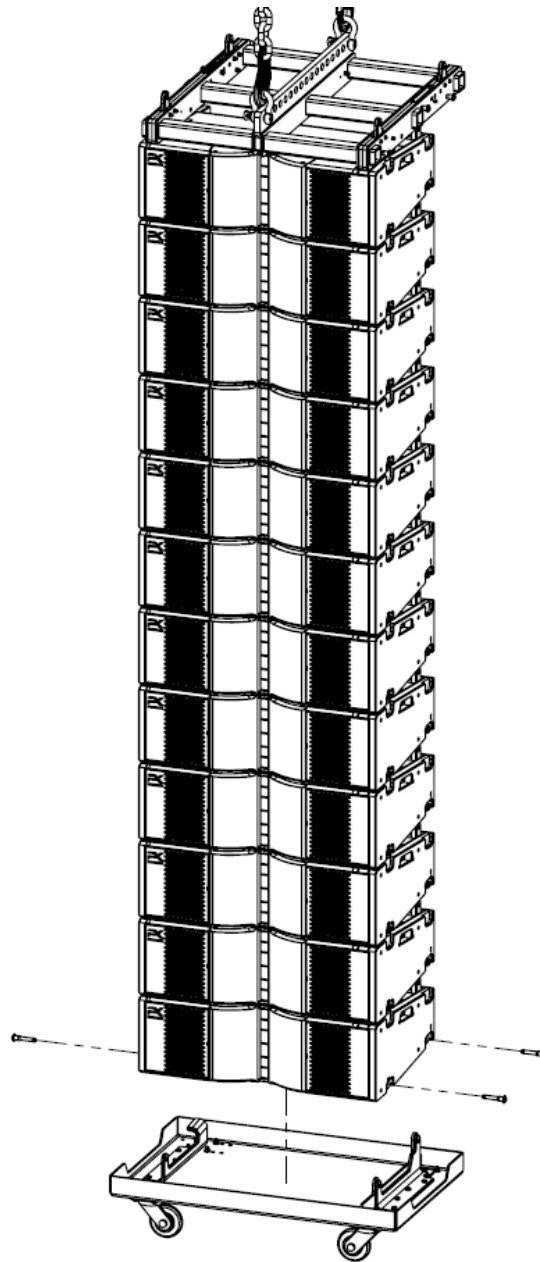
5. Move the next T8 module stack to be flown to the rigging location underneath the suspended stack of T8 modules.
6. Slowly lower the suspended T8 module stack onto the next T8 stack to be flown until the rigging links are seated in the recesses of the bottom flown T8 module.
7. Reinsert the 3 x QRPs removed in step 1 through the rigging links at the connection between the two T8 stacks.
8. Check that the ball locks on the QRPs are completely inserted through all rigging links by pulling on the QRPs. **ALWAYS double check the QRPs for a positive lock.**





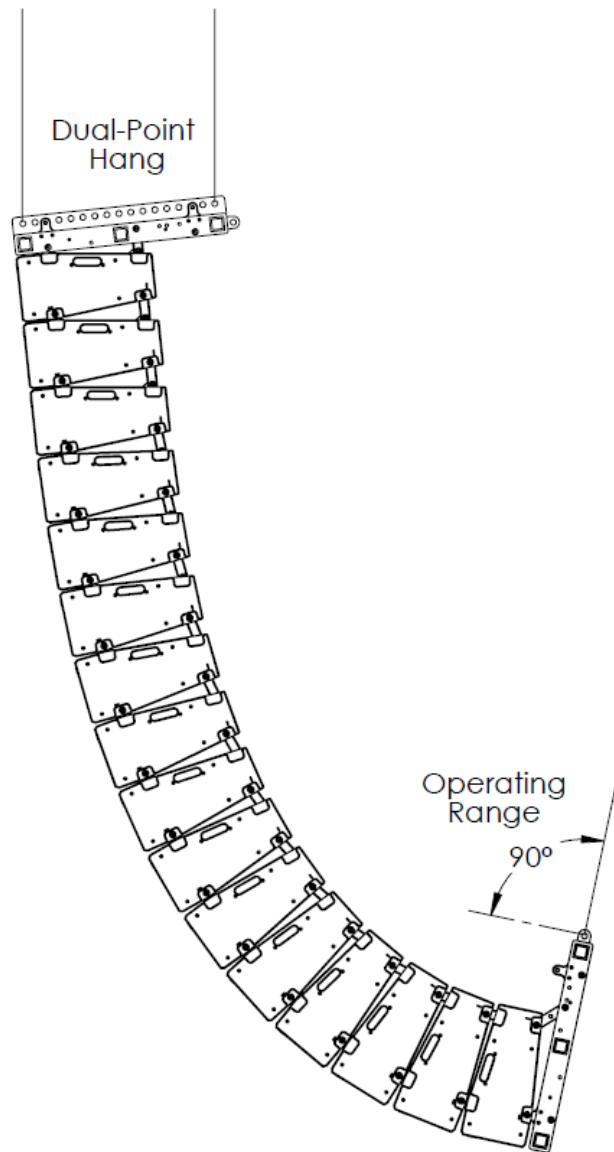
CAUTION: To prevent the stack of modules tipping over or the T8 Cart collapsing, some tension should remain on the lifting hoist. Do not allow the hoisting lines to go completely slack.

9. Repeat steps 1 through 8 until all modules to be flown are connected.
10. Repeat steps 2 and 3

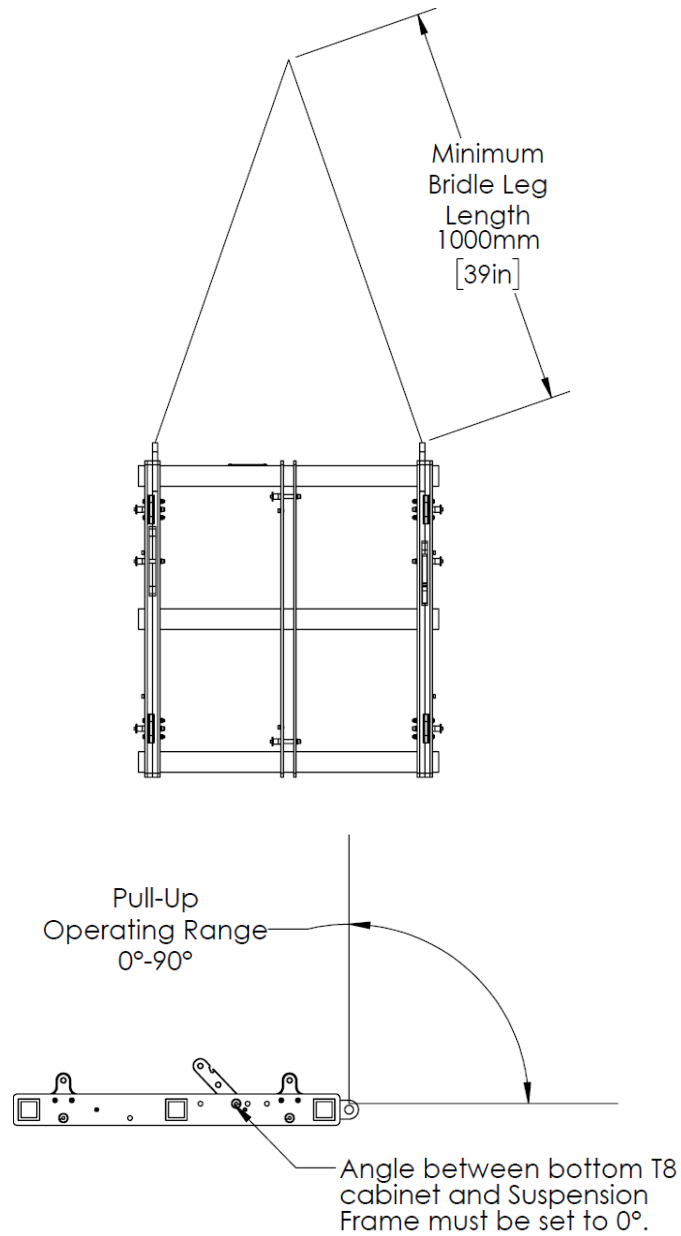


11. Replace the 3x QRPs in the last T8 module of the array.
12. Raise hoist(s) to trim height and set desired angle of the T8 / T18 Suspension Frame.
13. Once the array is at trim height the inter-module spacing can be adjusted using the .dynamics software.

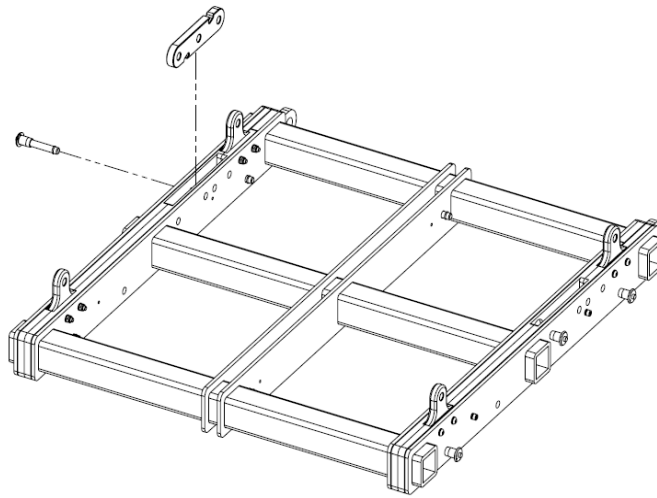
4.4.4 Pull-back Configuration (Optional)



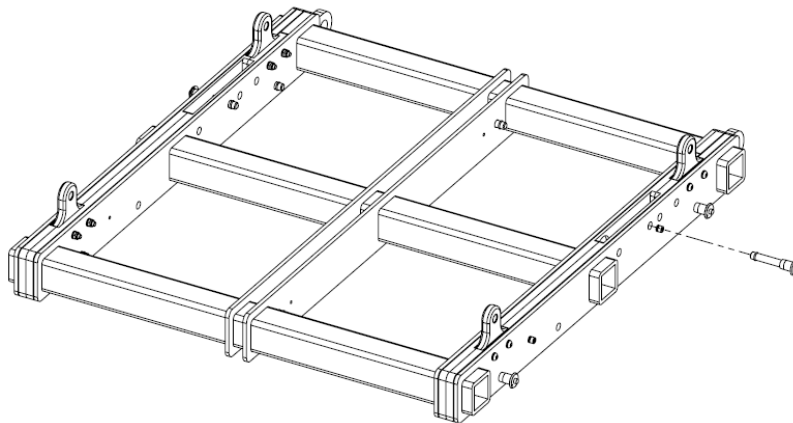
To utilize a pull-back array configuration, mount a secondary T8 / T18 Suspension Frame to the bottom of the flown array. See the *Hoist Connections* section for appropriate shackling points for the secondary T8 / T18 Suspension Frame used in the pull-back configuration.



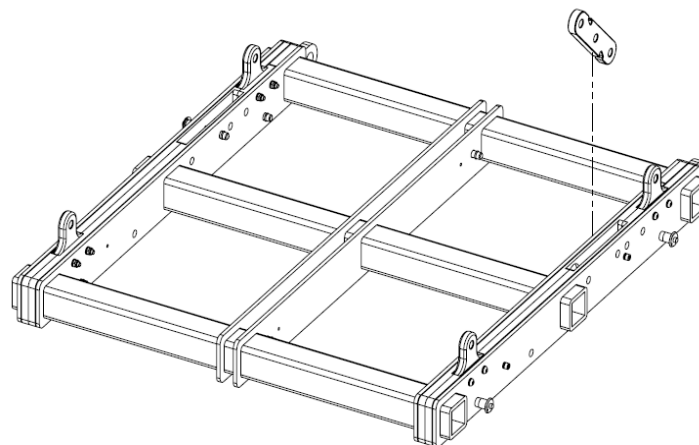
1. Remove the 1x QRP shown to release the ground stack link and remove it from the slot in the T8 / T18 Suspension Frame.



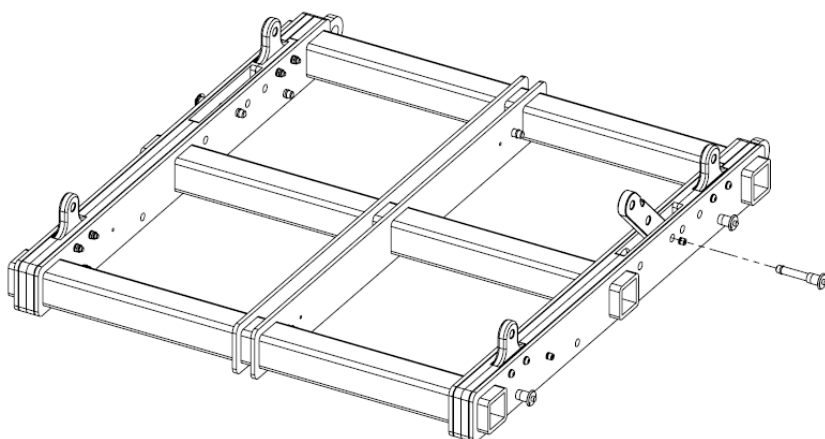
2. Remove the 1x QRP in the Suspension Frame as shown.



3. Place the ground stack link into the corresponding slot on the other side of the T8 / T18 Suspension Frame.

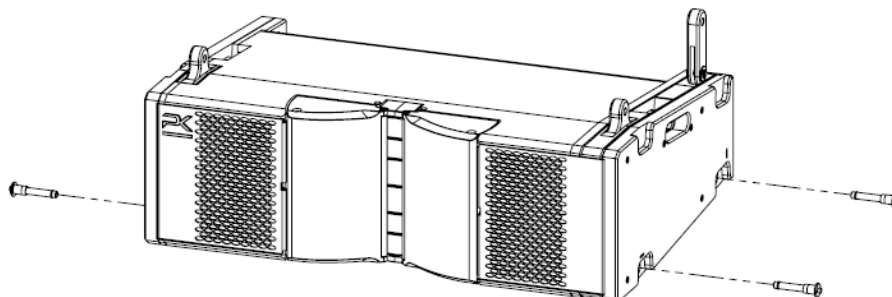


4. Replace the 1x QRP in the Suspension Frame as shown to lock the rigging pivot in place.

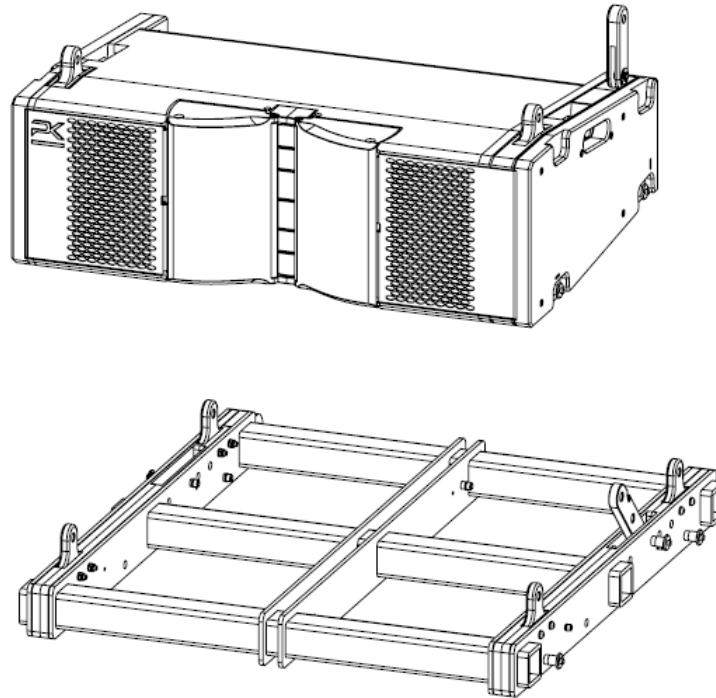


CAUTION: Check that the ball locks on the QRPs are completely inserted through all rigging links, pulling on the QRP to check that it cannot unintentionally slide out. ALWAYS double check the QRPs for a positive lock.

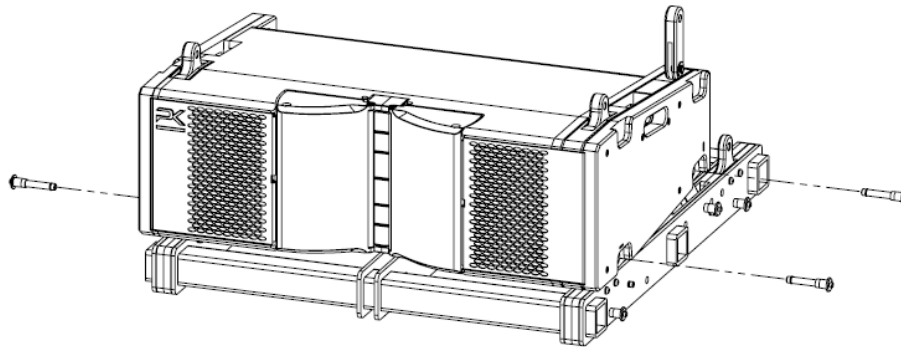
5. Remove the 3 x QRPs shown from the last T8 module in the flown array.



6. Insert the rigging links of the T8 / T18 Suspension Frame into the corresponding recesses of the T8 module.



7. Replace the 3 x QRPs removed in step 5 as shown.

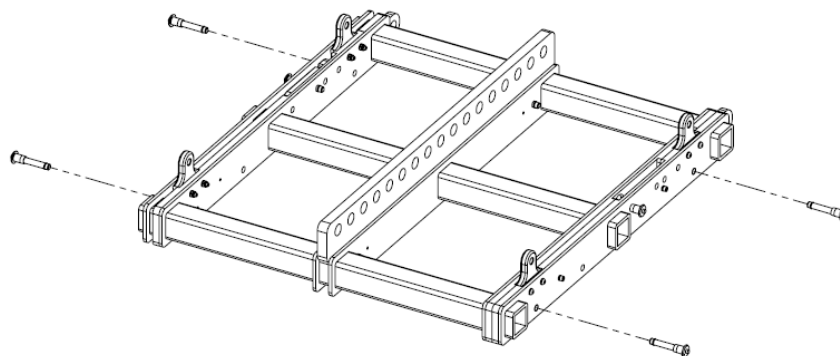


4.5 Flying a Mixed T8 / T18 Array

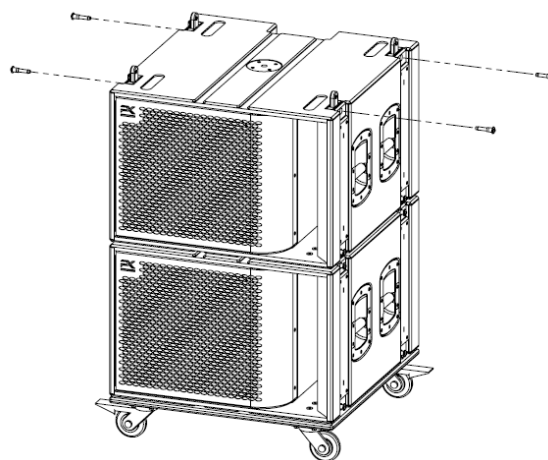
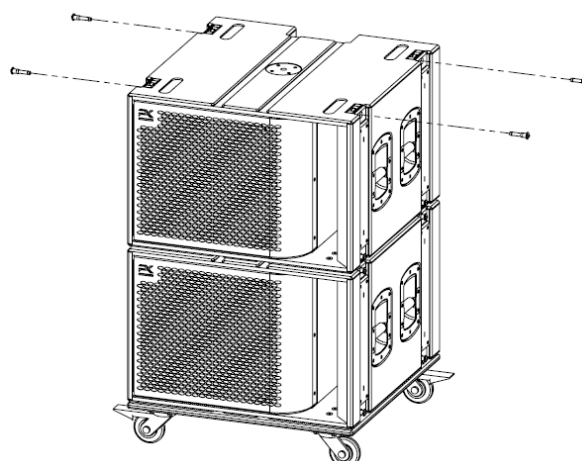
Flying a mixed T8 / T18 array utilizes the same procedure as flying a T8 array but includes additional steps for the T18 stack.

4.5.1 Mounting the T8 / T18 Suspension Frame to a T18 Stack

1. Depress the push pins on the 4 x Quick-Release Pins (QRPs) shown and remove them from T8 / T18 Suspension Frame.



2. Remove the 4 x QRPs from the top T18 module of the stack as shown, releasing the rigging links from the contracted position.
3. Replace the 4 x QRPs to lock the T18 module rigging links in the extended position.



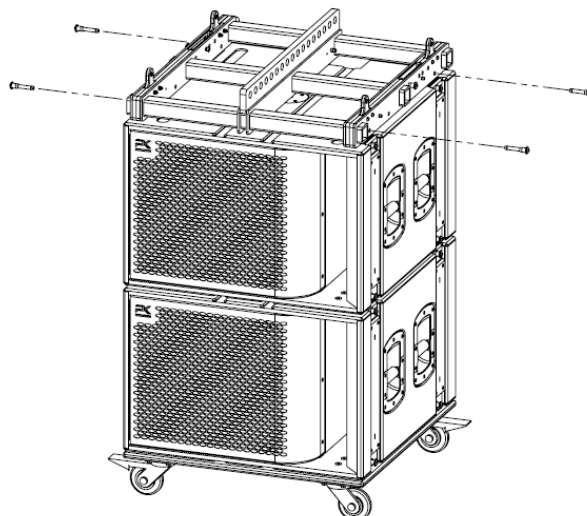
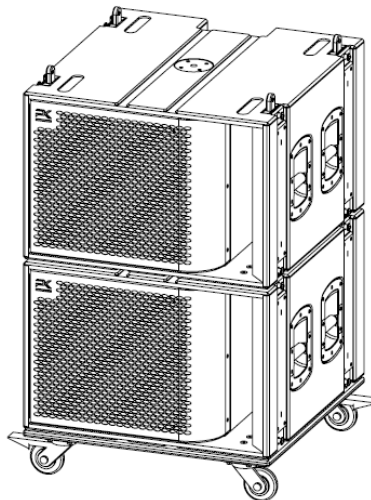
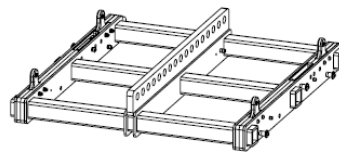
4. Place the T8 / T18 Suspension Frame on top of the first T18 module stack, ensuring that the rigging links of insert into the corresponding recesses on the bottom of the T8 / T18 Suspension Frame.

5. Insert the 4 x QRPs removed in step 1 through the T8 / T18 Suspension Frame and rigging links of the top T18 module.

Check that the ball locks on the QRPs are completely inserted through all rigging links by pulling on the QRPs.
ALWAYS double check the QRPs for a positive lock.



WARNING: Keep fingers and hands clear of all possible pinch hazards when mounting the T8 Suspension Frame.



6. See the *Hoist Connections* section for appropriate shackle attachment locations on the T8 / T18 Suspension Frame.

4.5.2 Connecting T18 Modules to T18 Stack

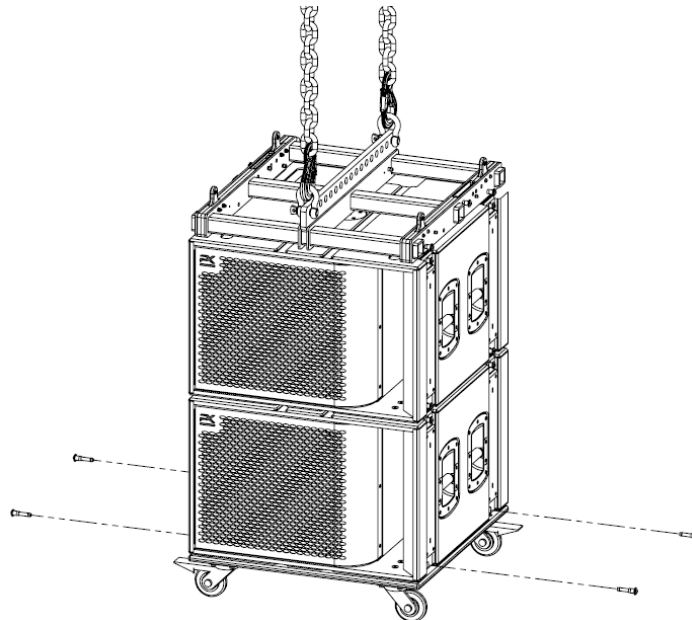


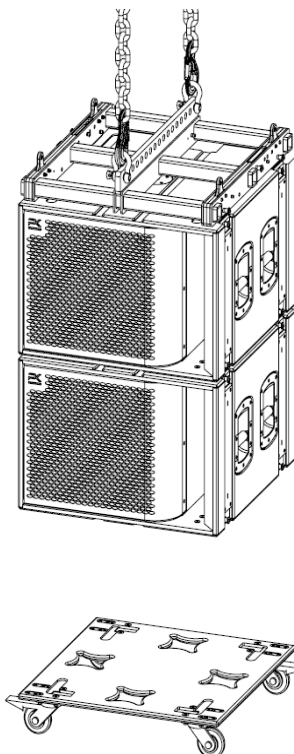
CAUTION: When using a chain climbing hoist ensure that the slack chain and/or chain bag does not come into contact with any part of the T8 / T18 Suspension Frame or any of the T18 modules.



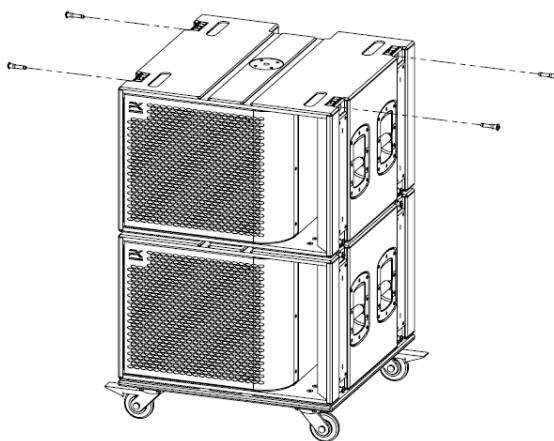
WARNING: Keep fingers and hands clear of all possible pinch hazards when stacking and unstacking clusters of T18 loudspeakers.

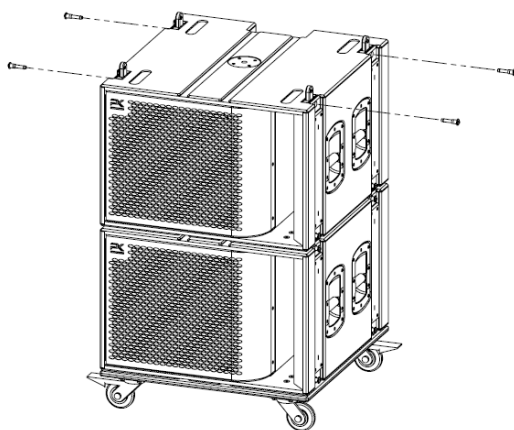
1. Remove the 4 x QRPs shown from the bottom T18 module of the stack.
2. Raise the suspended T18 module stack until it is free of the T18 Caster Board.
3. Remove the empty T18 Caster Board from beneath the suspended stack of T18 modules and store appropriately.
4. Raise the suspended T18 module stack high enough to provide sufficient clearance for the next T18 module stack to be placed directly underneath.



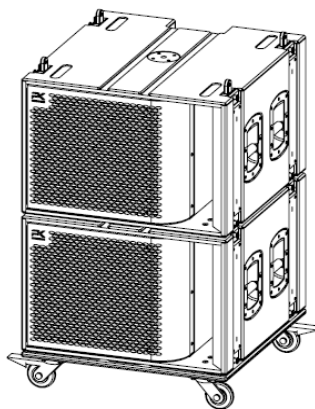
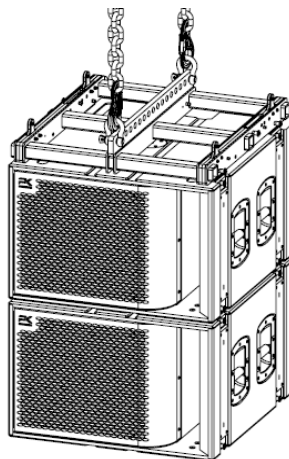


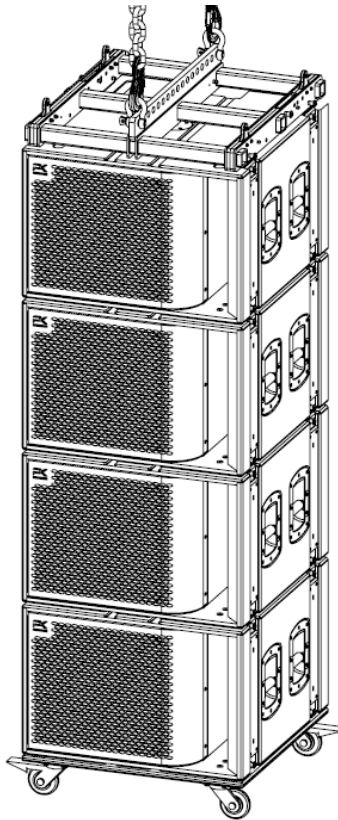
5. Remove the 4 x QRPs from the top T18 module of the next stack as shown, releasing the rigging links from the contracted position.
6. Replace the 4 x QRPs to lock the T18 module rigging links in the extended position.



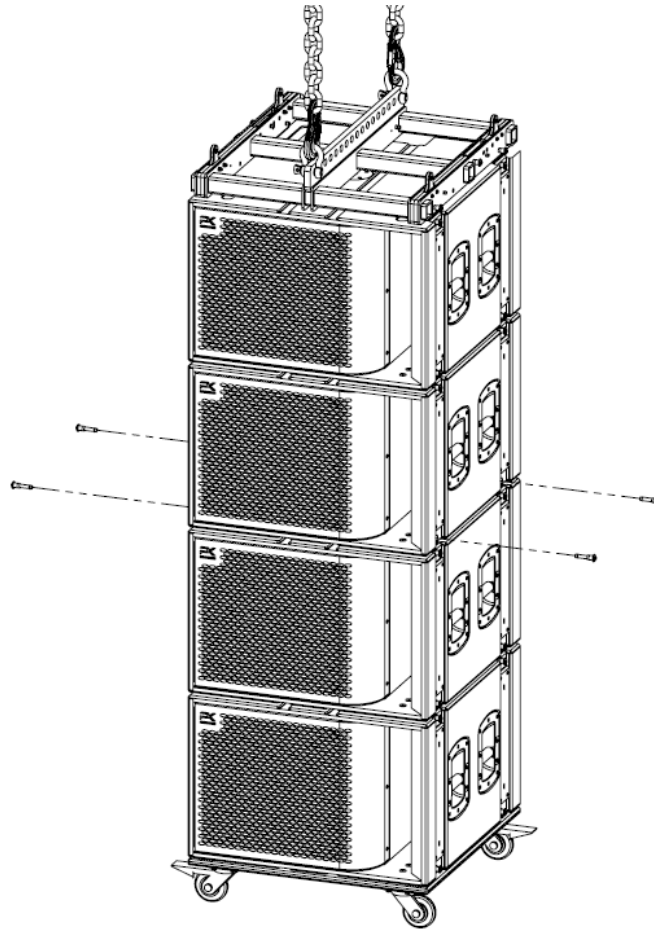


7. Move the next T18 module stack to be flown to the rigging location underneath the suspended stack of T18 modules.
8. Slowly lower the suspended T18 module stack onto the next T18 stack to be flown until the rigging links are seated in the recesses of the bottom flown T18 module.





9. Reinsert the 4 x QRPs removed in step 1 through the rigging links at the connection between the two T18 stacks.
10. Check that the ball locks on the QRPs are completely inserted through all rigging links by pulling on the QRPs. **ALWAYS double check the QRPs for a positive lock.**



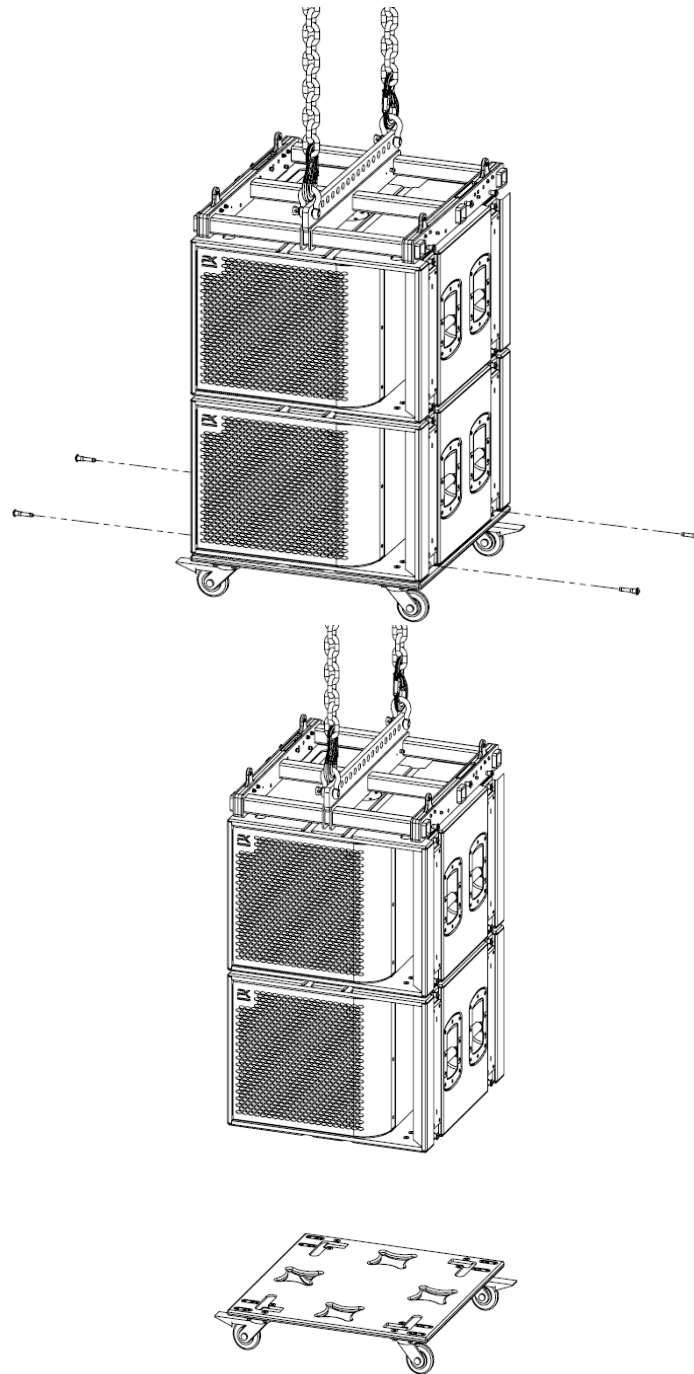
11. Repeat steps 1 through 10 until all T18 modules to be flown are connected.

4.5.3 Connecting T8 Modules to T18 Stack

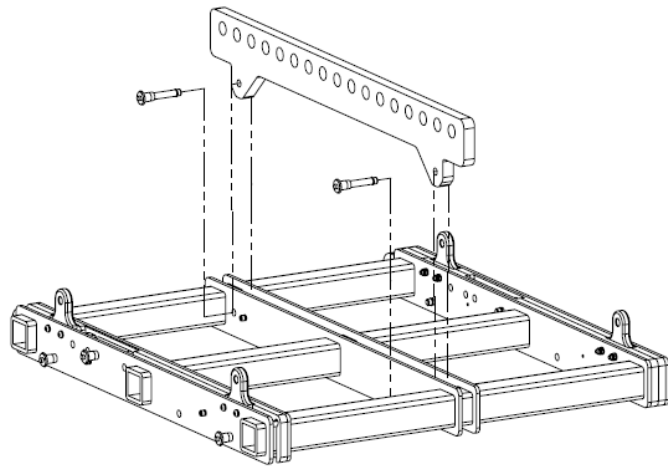


CAUTION: When using a chain climbing hoist ensure that the slack chain and/or chain bag does not come into contact with any part of the T8 / T18 Suspension Frame or any of the T8 / T18 modules.

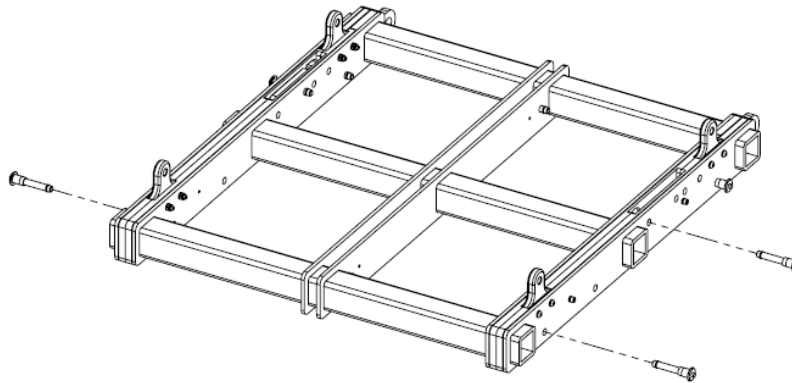
1. Remove the 4 x QRPs shown from the bottom T18 module of the stack.
2. Raise the suspended T18 module stack until it is free of the T18 Caster Board.
3. Remove the empty T18 Caster Board from beneath the suspended stack of T18 modules and store appropriately.



4. Raise the suspended T18 module stack high enough to provide sufficient clearance for the T8 module stack to be placed directly underneath.
5. Remove the 2 x QRPs securing the rigging bar to the T8 / T18 Suspension Frame shown and remove the rigging bar from T8 / T18 Suspension Frame.



6. Depress the push pins on the 3 x QRPs shown below and remove them from T8 / T18 Suspension Frame.



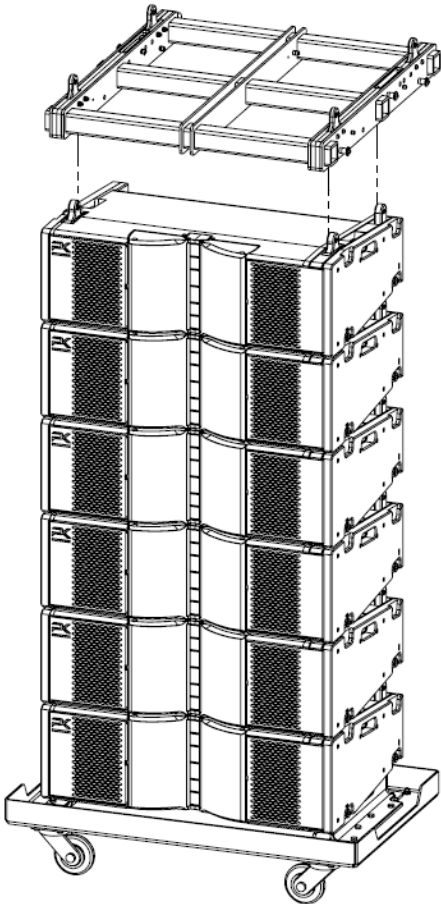
7. Place the T8 / T18 Suspension Frame on top of the T8 module stack to be flown, ensuring that the rigging links of insert into the corresponding recesses on the bottom of the T8 / T18 Suspension Frame.
8. Insert the 3 x QRPs removed in step 6 through the T8 / T18 Suspension Frame and rigging links of the top T8 module.

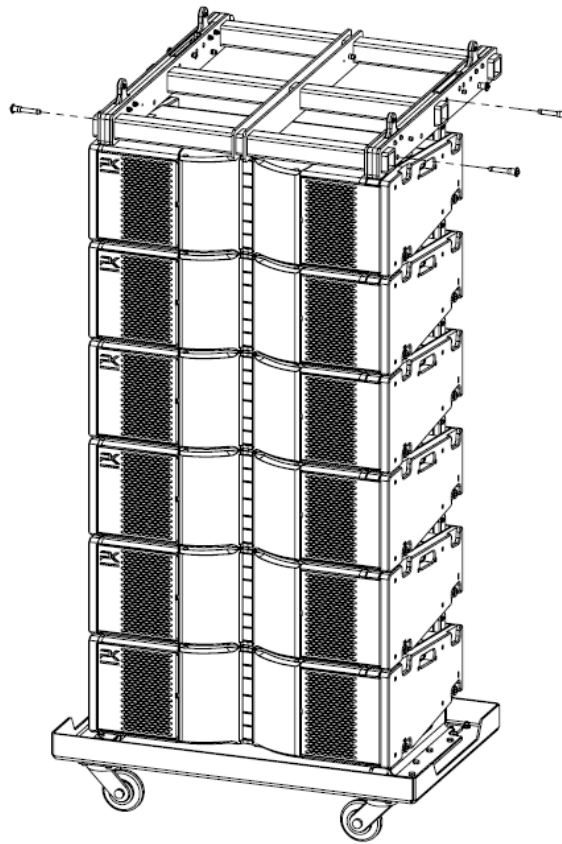


WARNING: Keep fingers and hands clear of all possible pinch hazards when mounting the T8 Suspension Frame.



CAUTION: Check that the ball locks on the QRPs are completely inserted through all rigging links, pulling on the QRP to check that it cannot unintentionally slide out. ALWAYS double check the QRPs for a positive lock.



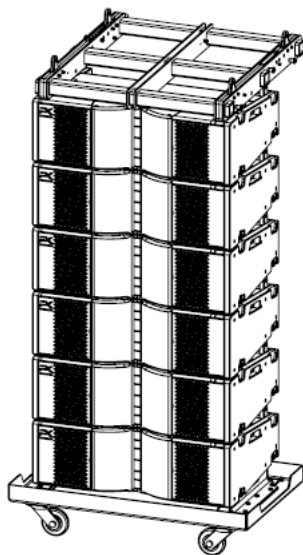
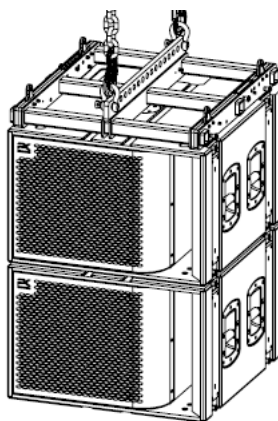


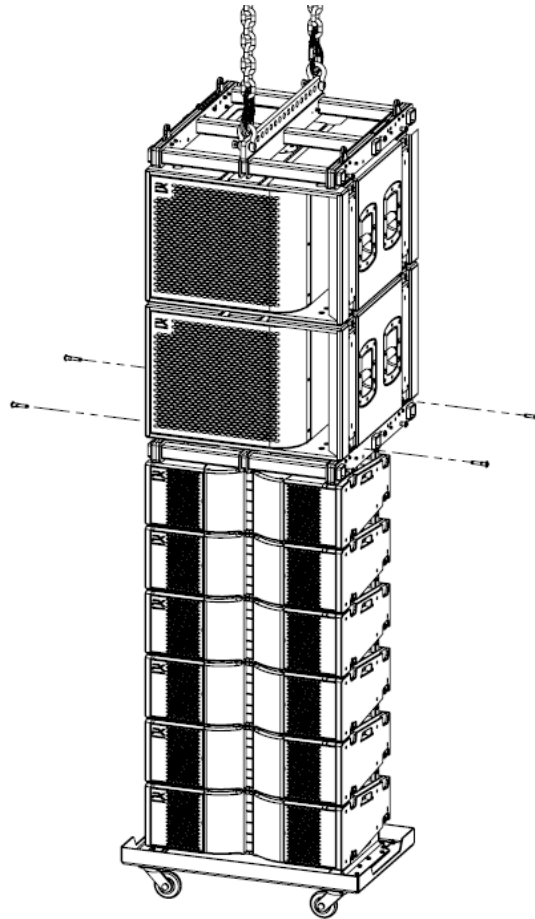
9. Move the T8 module stack to be flown to the rigging location underneath the suspended stack of T18 modules.
10. Slowly lower the suspended T18 module stack onto the T8 stack until the rigging links are seated in the recesses of the bottom flown T8 module.



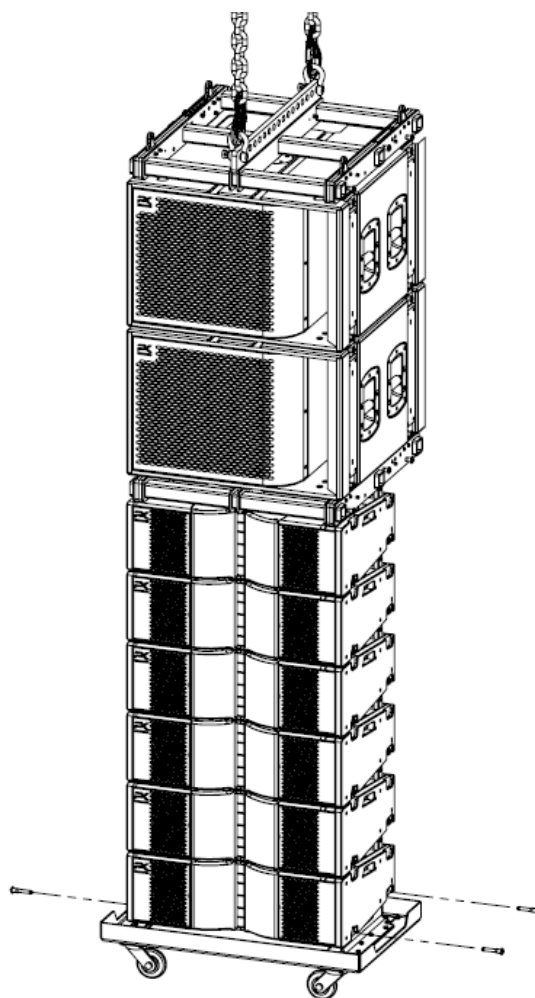
CAUTION: To prevent the stack of modules tipping over or the T8 Cart collapsing, some tension should remain on the lifting hoist. Do not allow the hoisting lines to go completely slack.

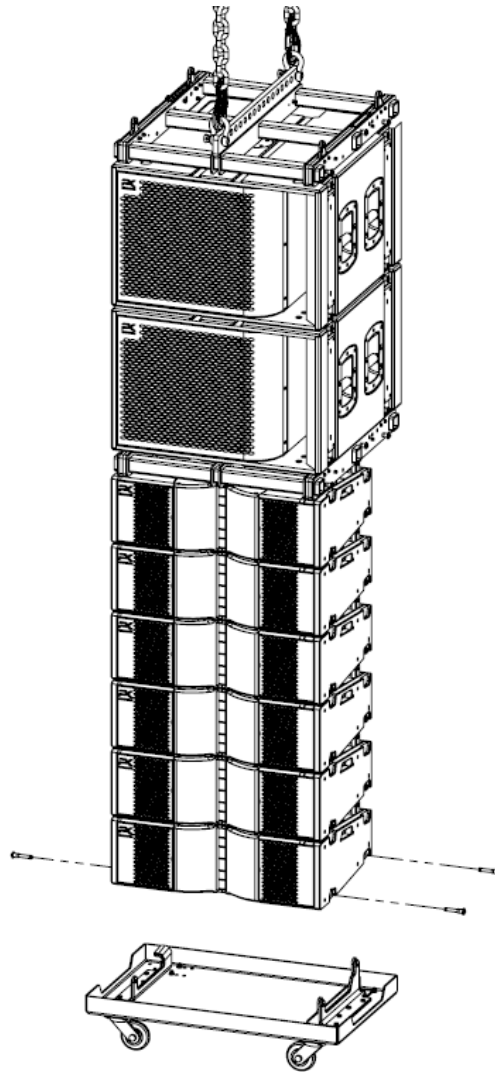
11. Reinsert the 4 x QRPs removed in step 1 through the rigging links at the connection between the T18 and T8 stacks.





12. Check that the ball locks on the QRPs are completely inserted through all rigging links by pulling on the QRPs. **ALWAYS double check the QRPs for a positive lock.**
13. Remove the three QRPs connecting the T8 Cart to the bottom T8 Module.
14. Raise the suspended T8 module stack until it is free of the T8 Cart.
15. Remove the empty T8 Cart from beneath the suspended stack of T8 modules and store appropriately.





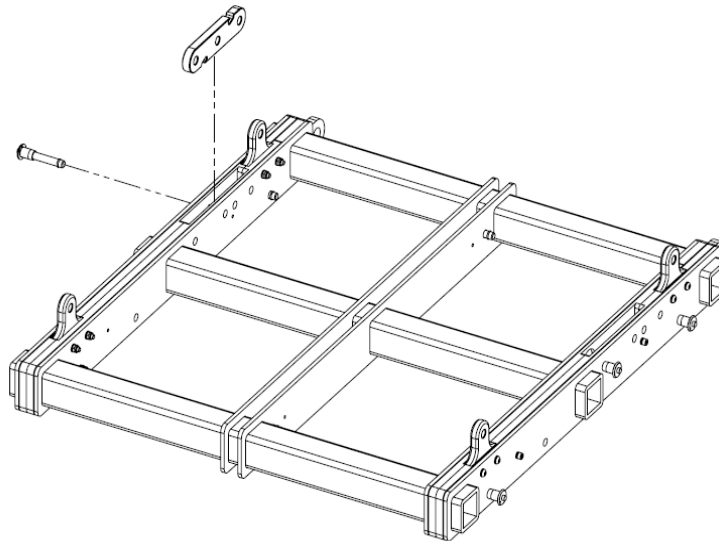
16. Raise hoist(s) to trim height and set desired angle of the T8 / T18 Suspension Frame.
17. Only once the array is at trim height the inter-module spacing can be adjusted using the .dynamics software.

5. Ground Stacking Modules

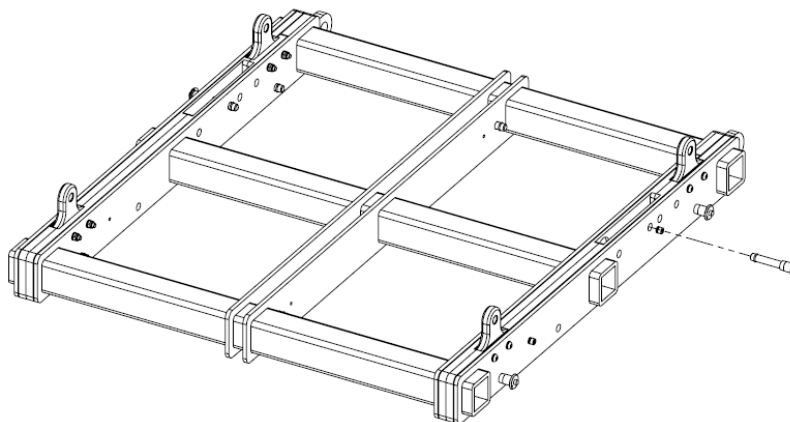
For added flexibility T8 Modules can be ground stacked directly on the T8 / T18 Suspension Frame or attached to ground-stacked T18s. Always consult the .dynamics software to ensure the configuration is stable. Do not attempt to stack more than 8 modules in any situation. PK Sound is not responsible for any damages resulting from unsafe storage or movement of products.

5.1 T8 / T18 Suspension Frame Ground Stacking Procedure

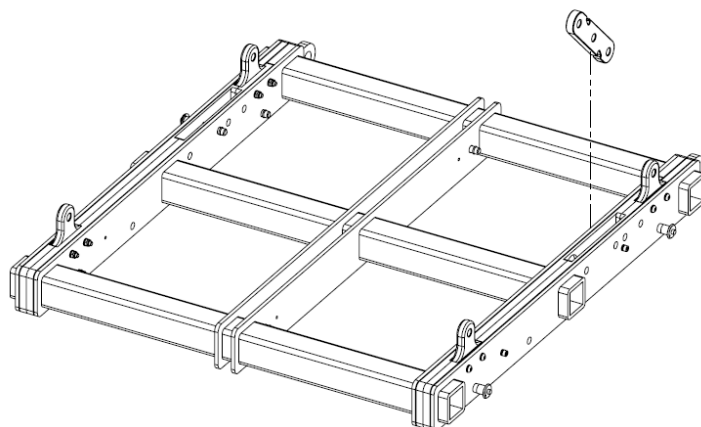
1. Place the T8 / T18 Suspension Frame on the ground in the desired location of the ground stack.
2. Remove the 1x QRP shown to release the ground stack link and remove it from the slot in the T8 / T18 Suspension Frame.



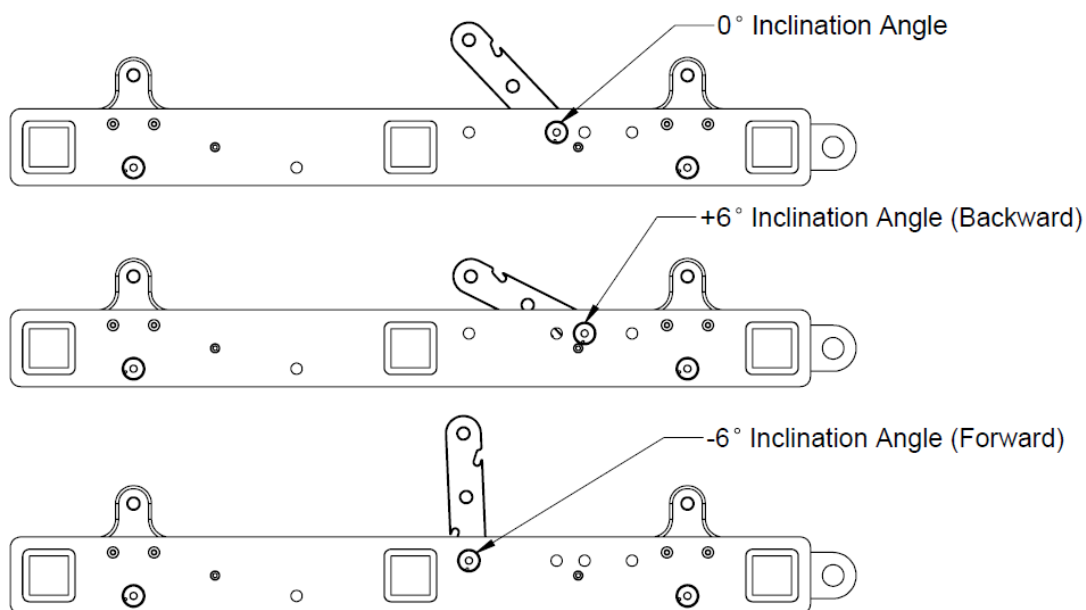
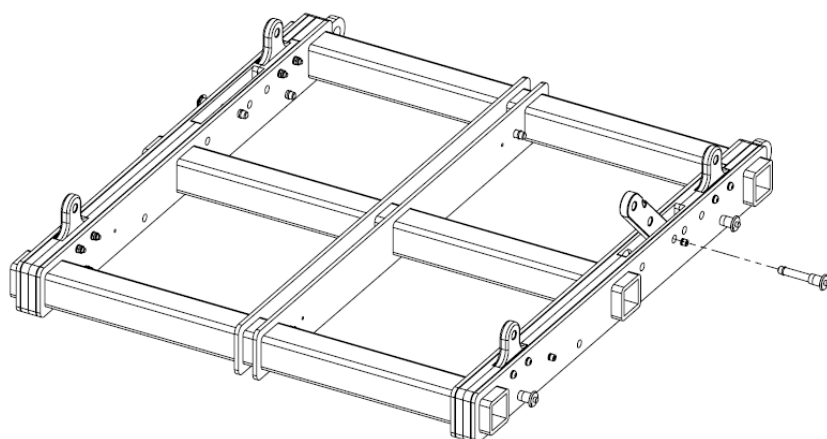
3. Remove the 1x QRP in the Suspension Frame as shown.



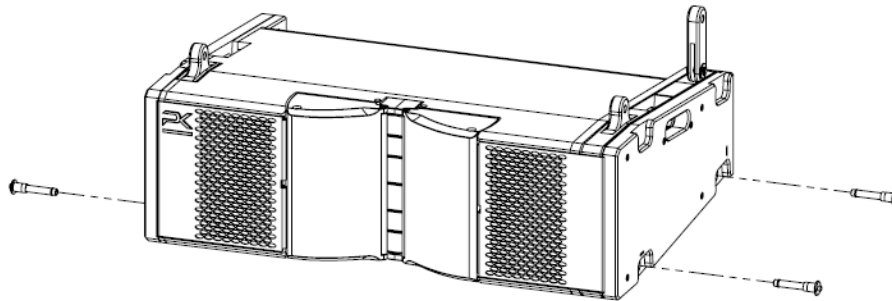
4. Place the ground stack link into the corresponding slot on the other side of the T8 / T18 Suspension Frame.



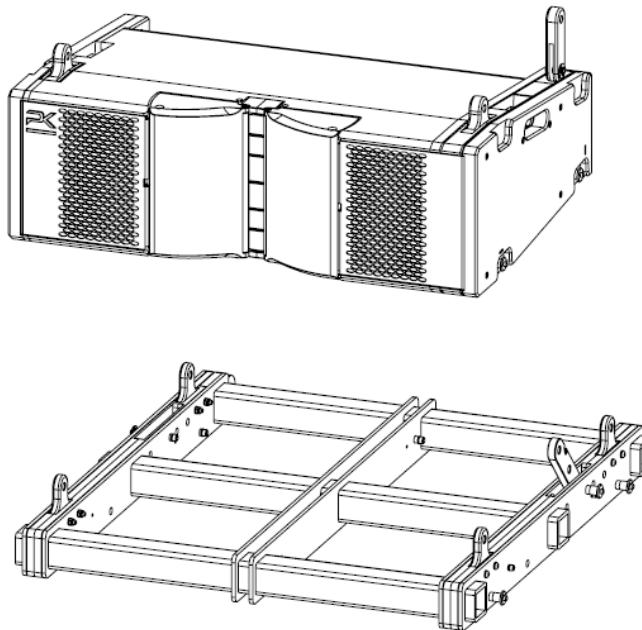
5. Replace the 1x QRP in the Suspension Frame as shown to lock the rigging pivot in place. Three different ground stack inclination angle configurations are shown below.



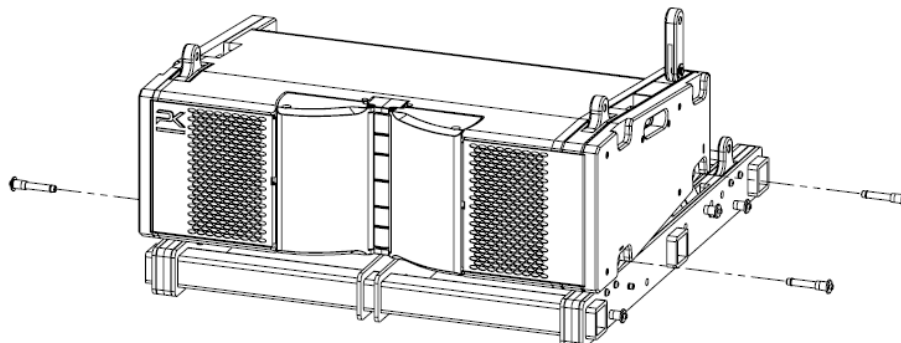
6. Remove the 3 x QRPs shown from the first T8 module on the T8 stack.



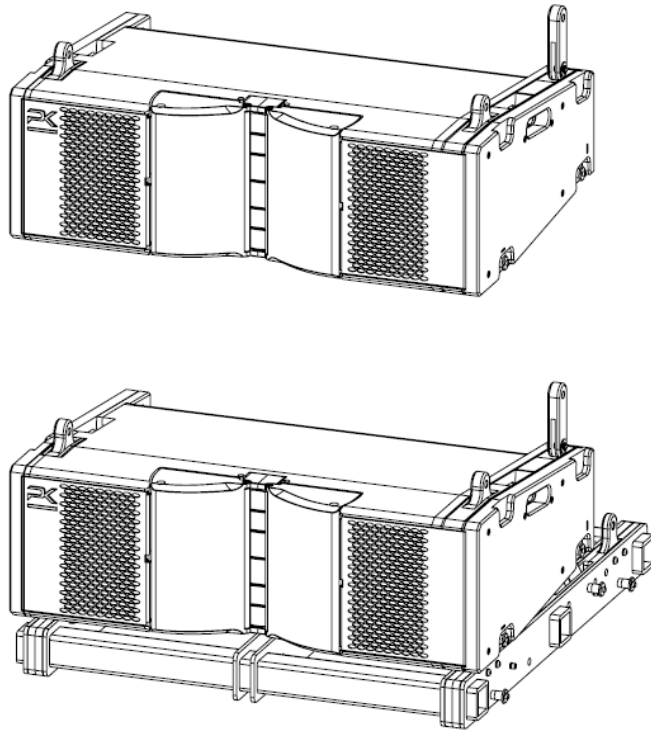
7. Place the T8 module on top of the T8 / T18 Suspension Frame. Ensure the rigging links of the T8 / T18 Suspension Frame are seated in the corresponding recesses of the T8 module.



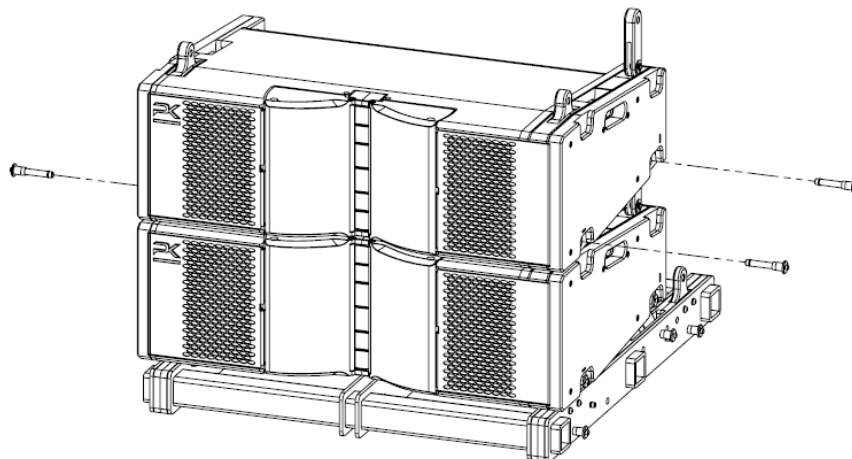
8. Replace the 3 x QRPs removed in step 6.



9. Remove the 3 x QRPs from the next T8 module to be stacked.
10. Place the T8 module on top of the previous T8 module and ensure the rigging links are seated in the corresponding recesses of the T8 module.

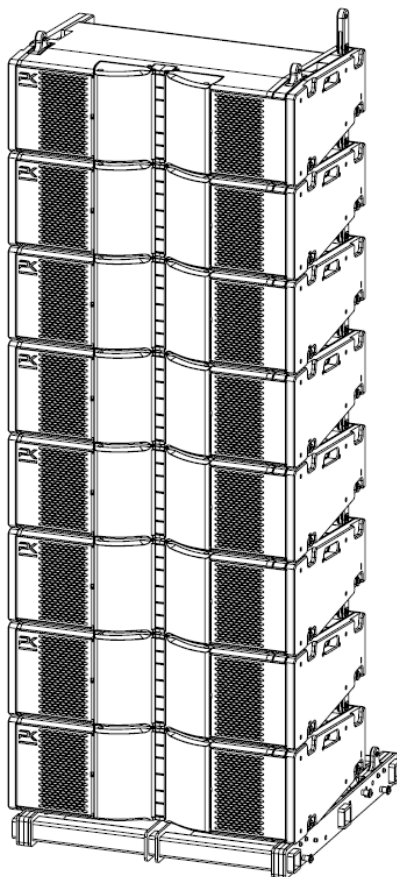


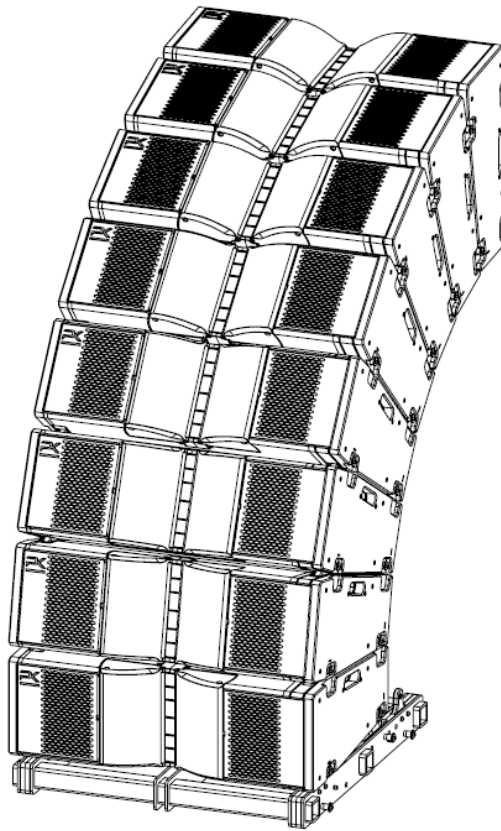
11. Replace the 3 x QRPs removed in step 9 as shown. Check that the ball locks on the QRPs are completely inserted through all rigging links, pulling on the QRP to check that it cannot unintentionally slide out.



12. Repeat steps 9 through 11 until the desired number of T8 modules are stacked.
13. Remove the empty T8 Cart and store appropriately.

14. Adjust the inter-module spacing using the .dynamics software or local controls.



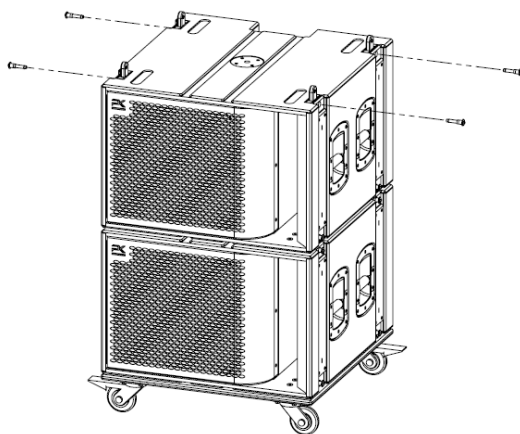
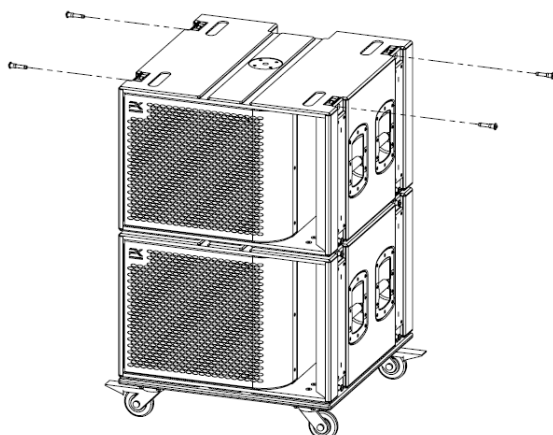


5.2 T8 / T18 Mixed Array Ground Stacking Procedure

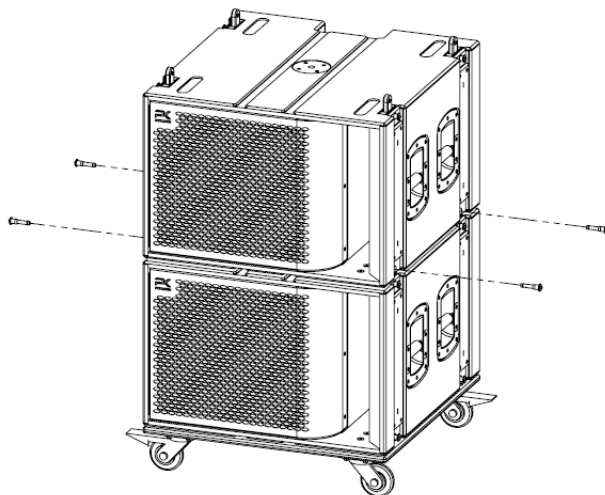


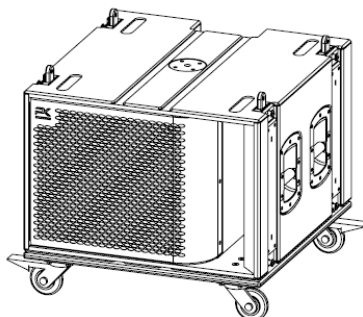
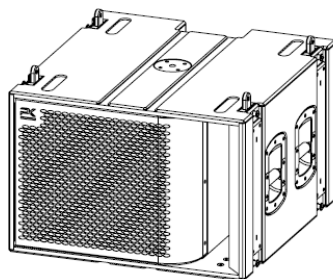
CAUTION: When utilizing a combination of different elements, always model the system in .dynamics before installation and check the “Mechanical Data” section for any stress or stability warnings.

1. Remove the 4 x QRPs from the top T18 module of the stack as shown, releasing the rigging links from the contracted position.
2. Replace the 4 x QRPs to lock the T18 module rigging links in the extended position.

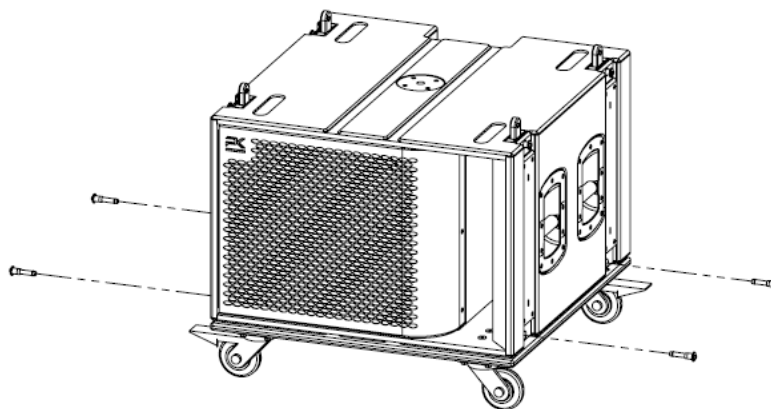


3. Remove the 4 x QRPs linking the top T18 module to the T18 stack as shown.
4. Remove the top T18 module from the stack and place on the ground in the desired location.

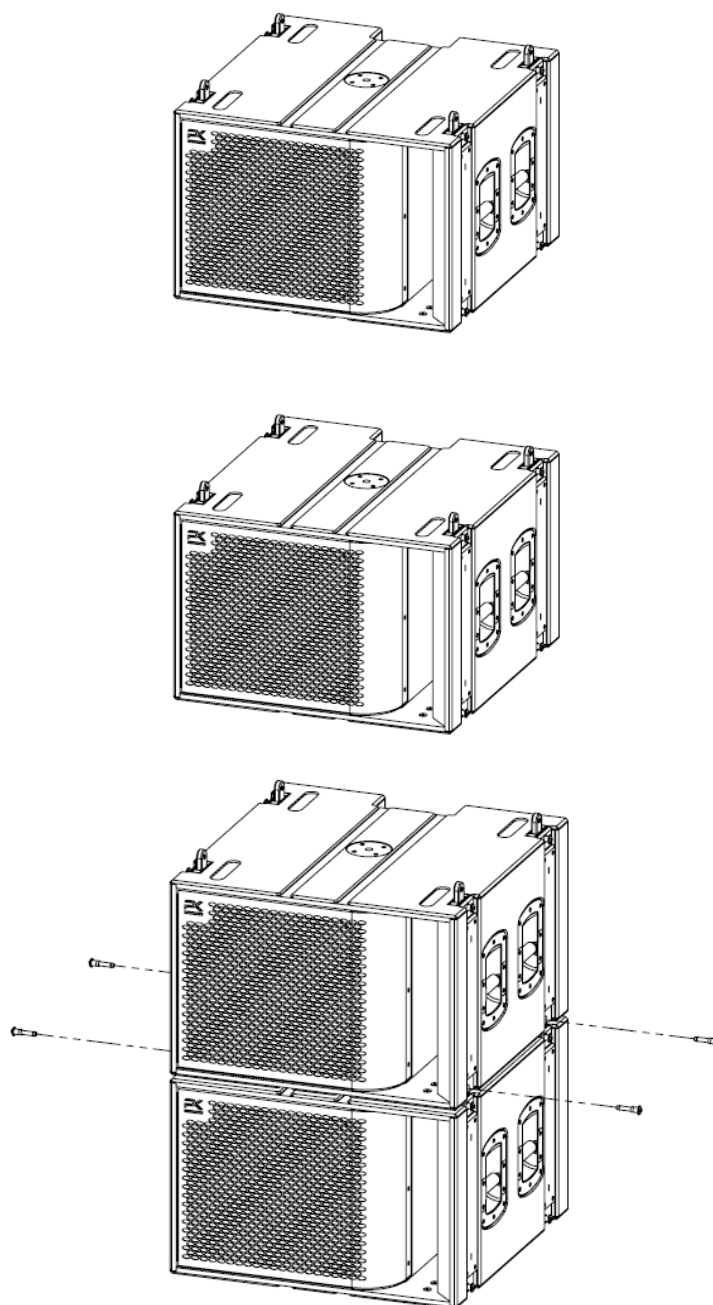




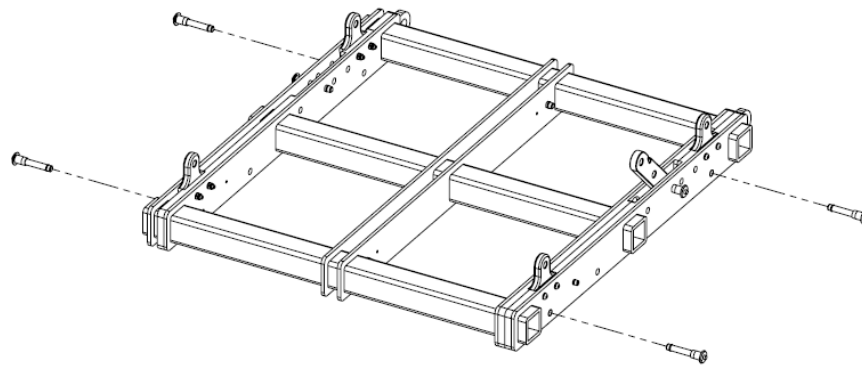
5. Replace the 4 x QRPs removed in step 3.
6. Remove the 4 x QRPs from the bottom of the next T18 module in the stack.



7. Place the next T18 module on top of the ground stacked T18 module.
8. Replace the 4 x QRPs removed in step 6 as shown



9. Remove the empty T18 Caster Board and store appropriately.
10. Depress the push pins on the 4 x QRPs shown and remove them from T8 / T18 Suspension Frame.

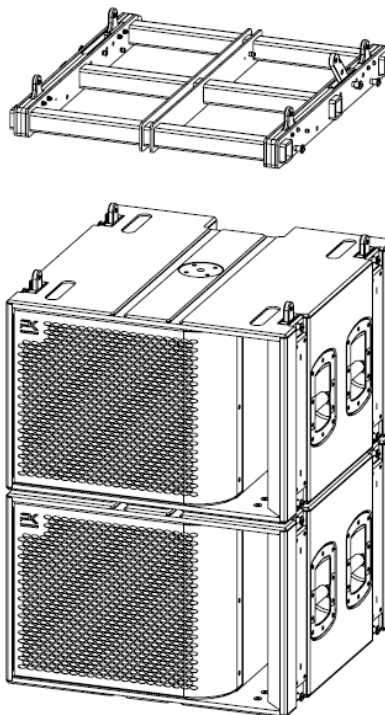


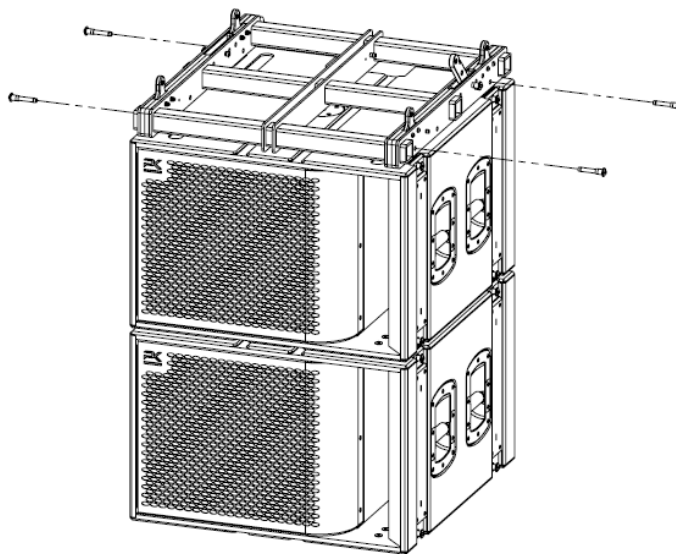
11. Place the T8 / T18 Suspension Frame on top of the first T18 module stack, ensuring that the rigging links of insert into the corresponding recesses on the bottom of the T8 / T18 Suspension Frame.



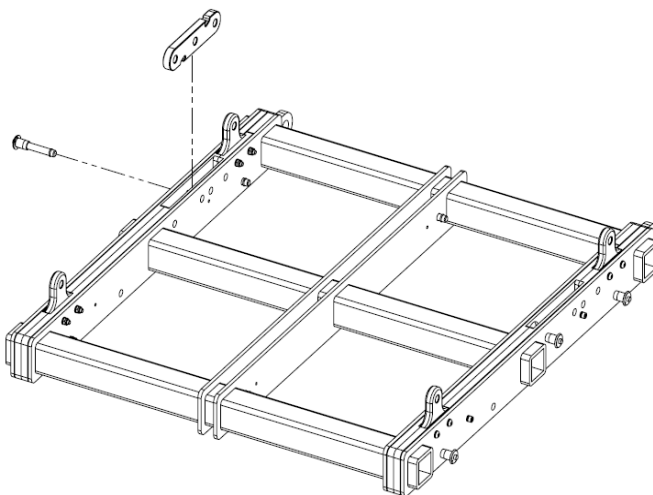
WARNING: Keep fingers and hands clear of all possible pinch hazards when mounting the T8 Suspension Frame.

12. Insert the 4 x QRPs removed in step 10 through the T8 / T18 Suspension Frame and rigging links of the top T18 module. Check that the ball locks on the QRPs are completely inserted through all rigging links by pulling on the QRPs. **ALWAYS double check the QRPs for a positive lock.**

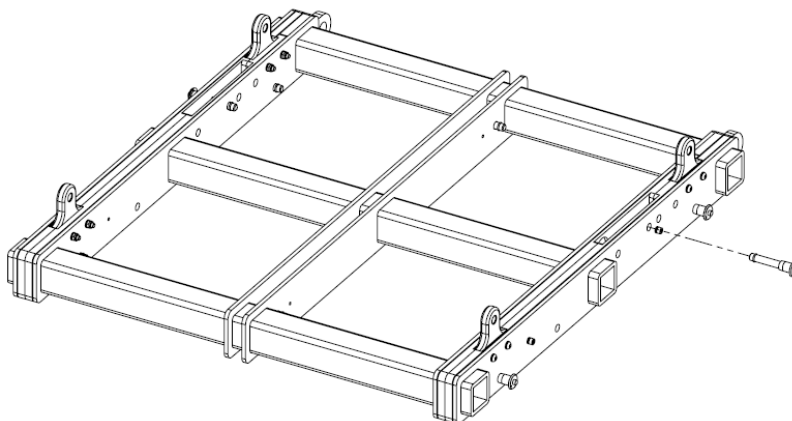




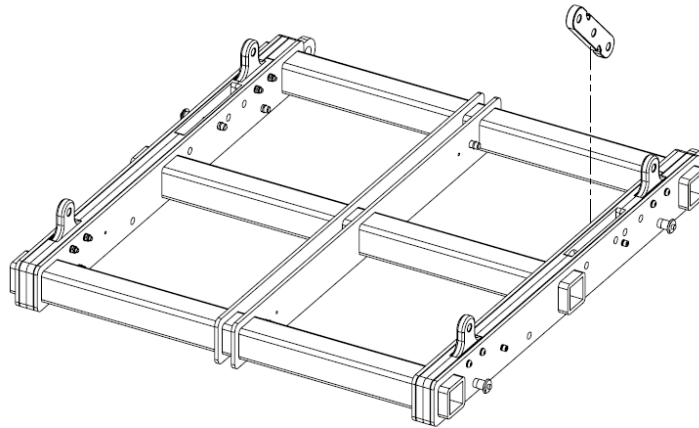
13. Remove the 1x QRP shown to release the ground stack link and remove it from the slot in the T8 / T18 Suspension Frame.



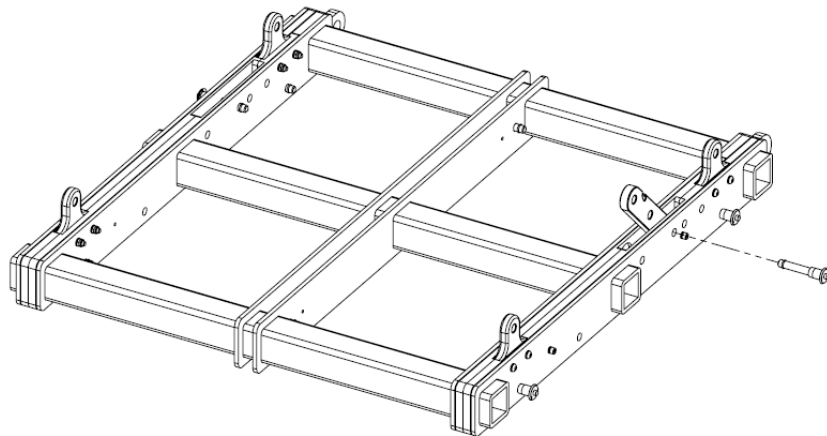
14. Remove the 1x QRP in the Suspension Frame as shown.

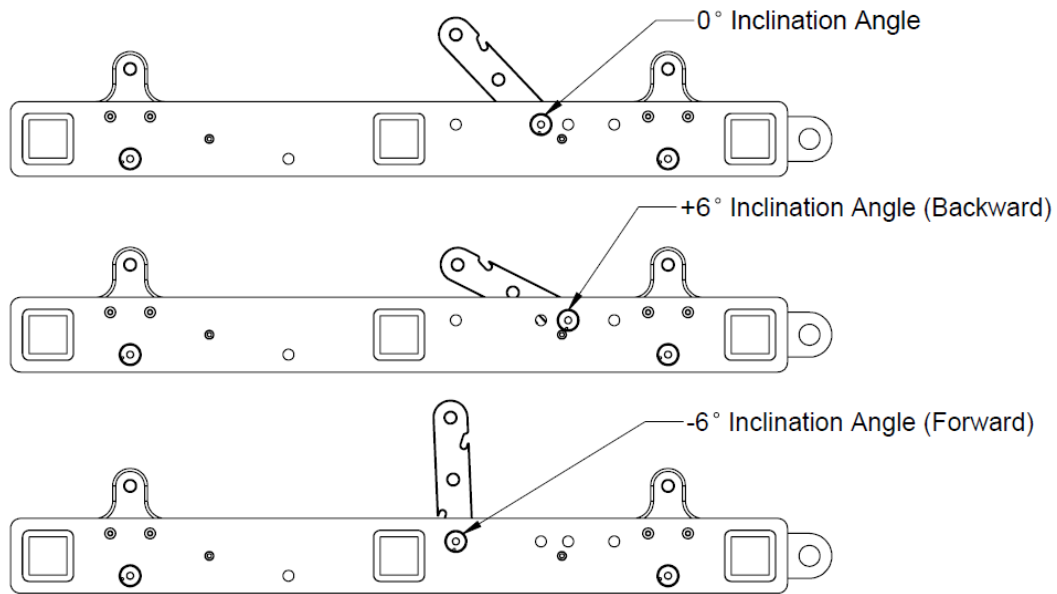


15. Place the ground stack link into the corresponding slot on the other side of the T8 / T18 Suspension Frame.



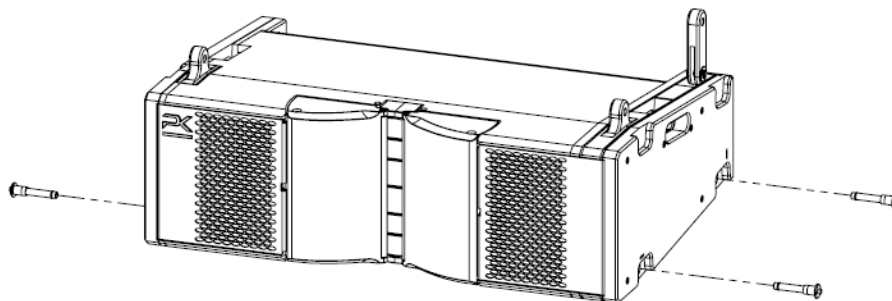
16. Replace the 1x QRP in the Suspension Frame as shown to lock the rigging pivot in place. Three different ground stack inclination angle configurations are shown below.



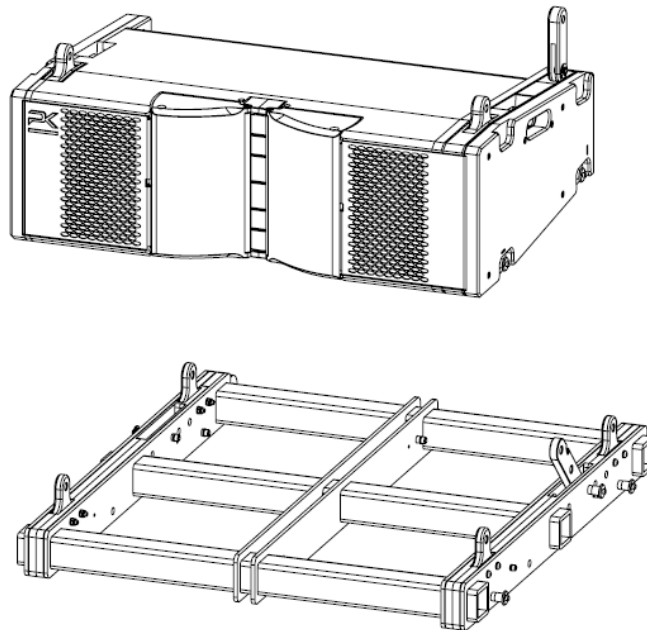


CAUTION: Check that the ball locks on the QRPs are completely inserted through all rigging links, pulling on the QRP to check that it cannot unintentionally slide out. ALWAYS double check the QRPs for a positive lock.

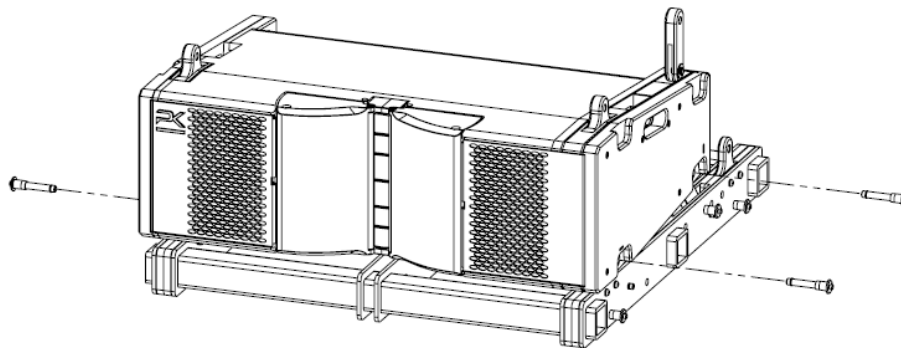
17. Remove the 3 x QRPs shown from the first T8 module on the T8 stack.



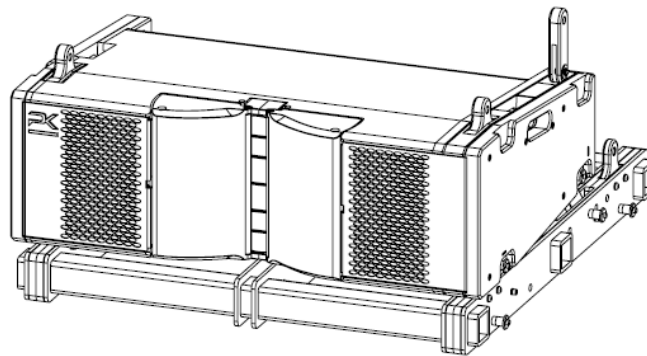
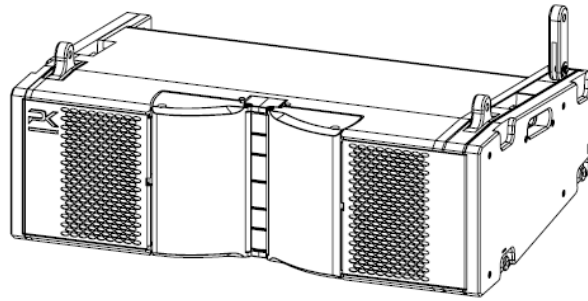
18. Place the T8 module on top of the T8 / T18 Suspension Frame. Ensure the rigging links of the T8 / T18 Suspension Frame are seated in the corresponding recesses of the T8 module.



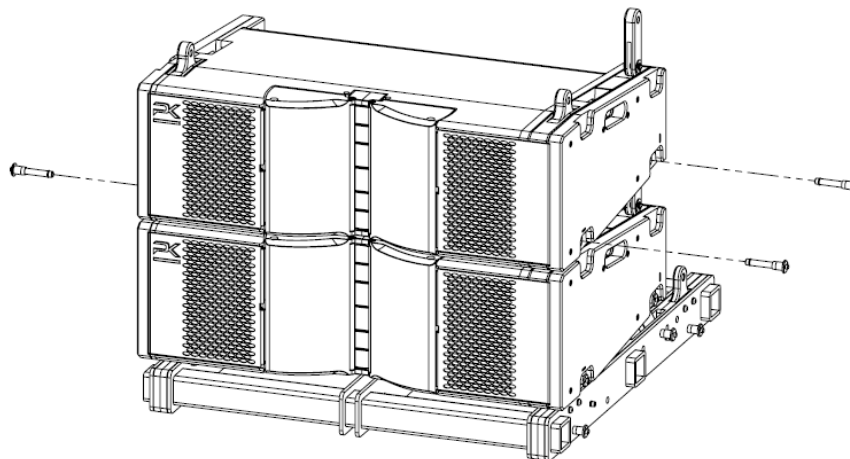
19. Replace the 3 x QRPs removed in step 17 as shown.
20. Check that the ball locks on the QRPs are completely inserted through all rigging links, pulling on the QRP to check that it cannot unintentionally slide out. ALWAYS double check the QRPs for a positive lock.



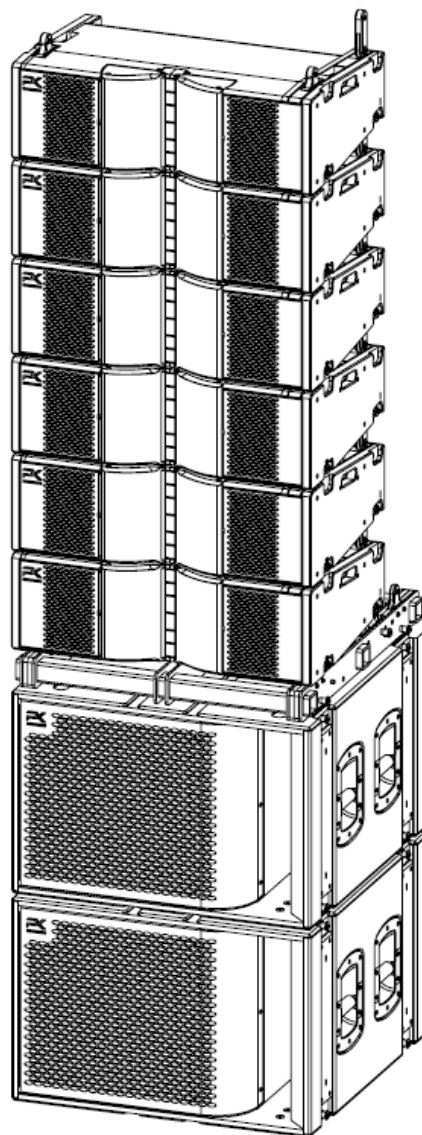
21. Remove the 3 x QRPs from the next T8 module to be stacked.
22. Place the T8 module on top of the previous T8 module and ensure the rigging links are seated in the corresponding recesses of the T8 module.

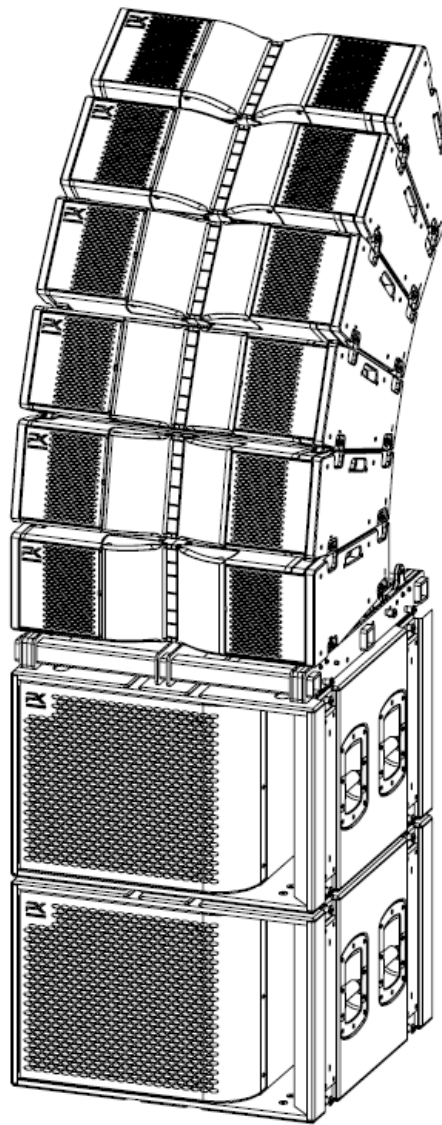


23. Replace the 3 x QRPs removed in step 21 as shown. Check that the ball locks on the QRPs are completely inserted through all rigging links, pulling on the QRP to check that it cannot unintentionally slide out.



24. Repeat steps 21 through 23 until the desired number of T8 modules are stacked.
25. Remove the empty T8 Cart and store appropriately.
26. Adjust the inter-module spacing using the .dynamics software or local controls.

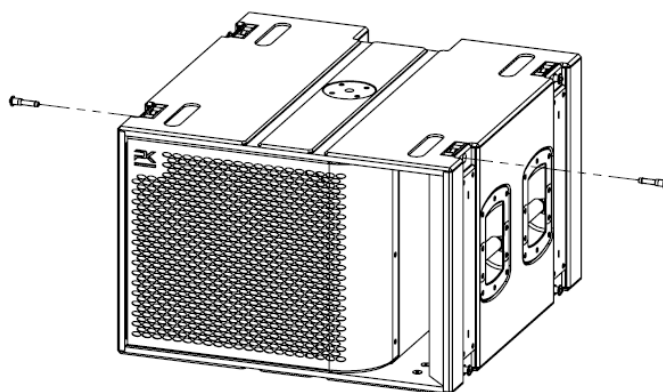




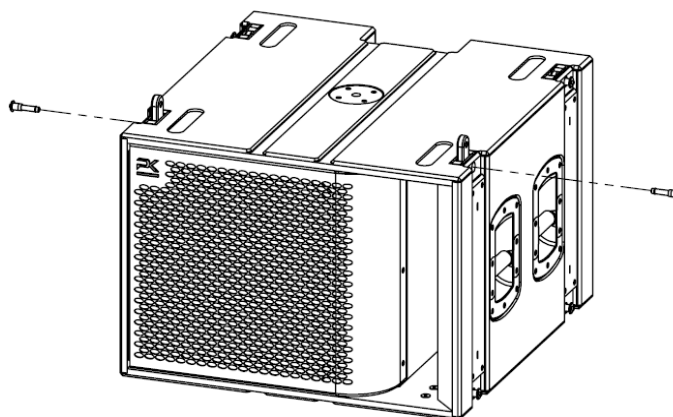
5.3 T8 Downtilt Adapter Ground Stacking Procedure

For added flexibility T8 Modules can be used as front fill when stacked on top of T18s. The T8 Downtilt Adapter allows for inclination angles of -5, 0 and +5 degrees. **Do not attempt to stack more than 2 modules in any situation when using the T8-DTA.**

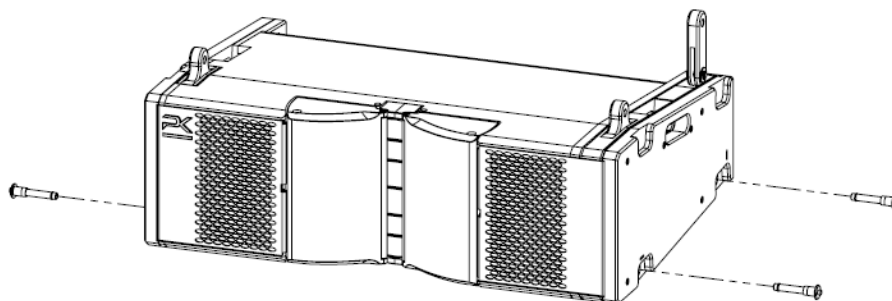
1. Remove the 2 x QRPs from the front of the top T18 module of the stack, releasing the rigging links from the contracted position.



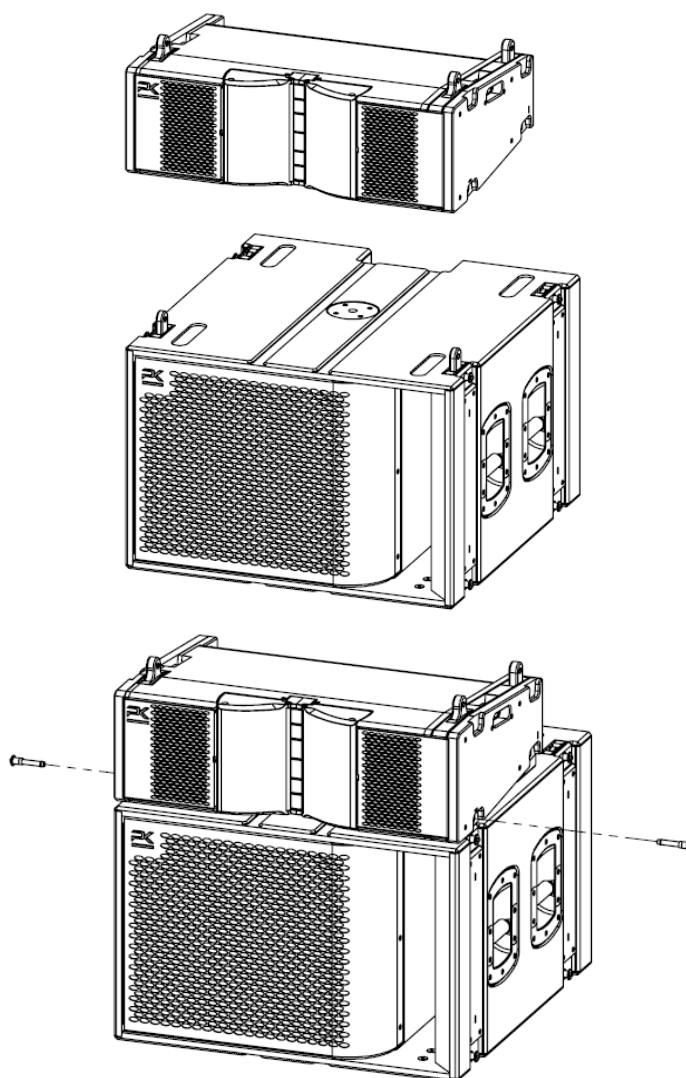
2. Replace the 2 x QRPs to lock the T8 module rigging links in the extended position.



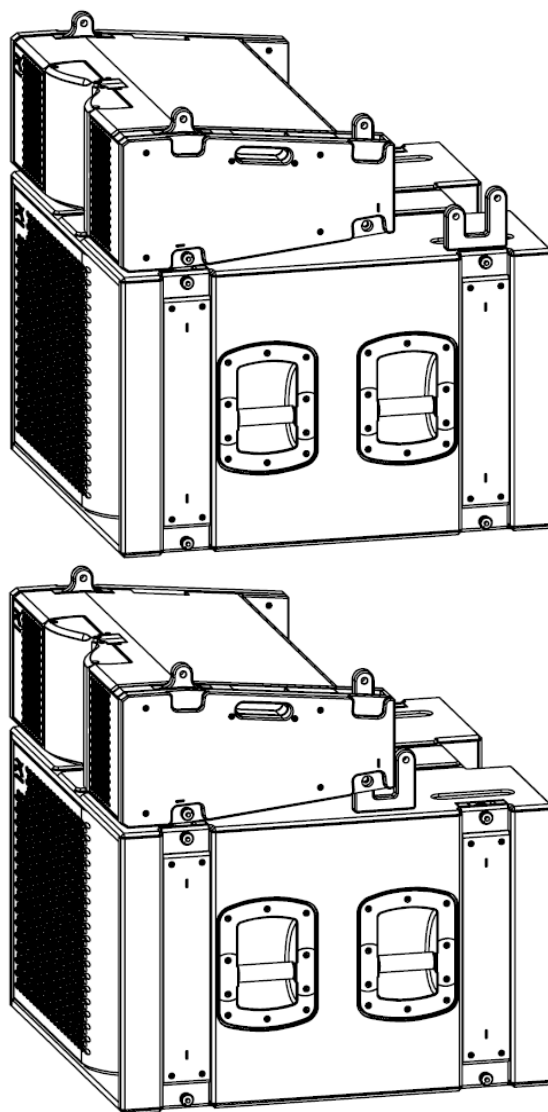
3. Remove the 3 x QRPs from the T8 module.



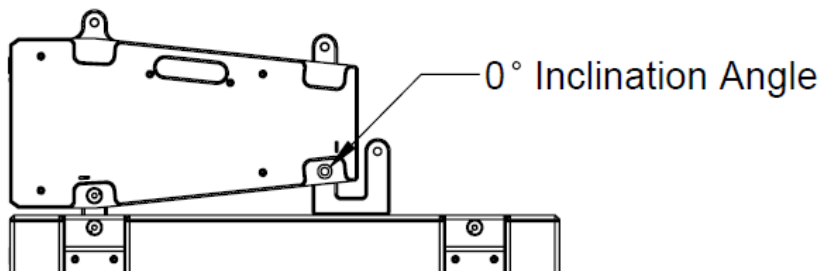
4. Place the T8 module on top of the T18 stack and replace the 2x front QRPs to secure the front of the T8.

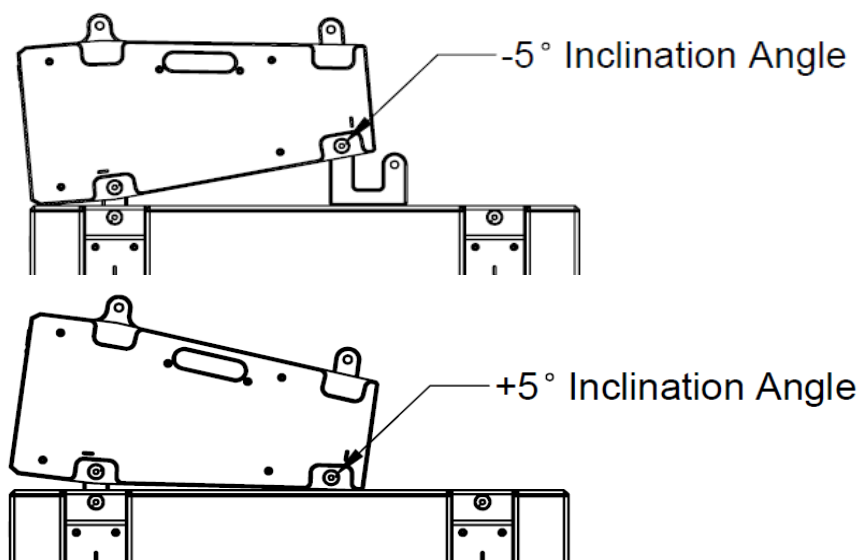


5. Lift the back of the T8 module and move the T8-DTA into the corresponding position of the T8 rear rigging.

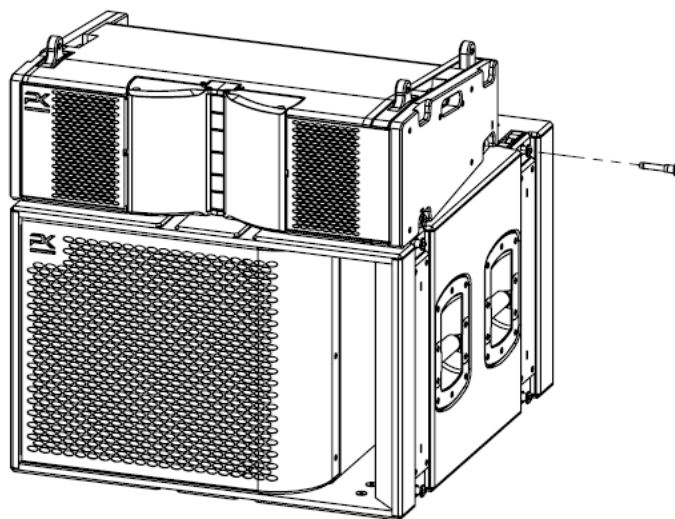


6. The following configurations can be used to achieve inclination angles of -5, 0 and +5 degrees.





7. Replace the 1x QRP in the rear rigging of the T8 to lock the T8-DTA into place.



6. .dynamics Remote Software



WARNING: Never adjust the system while playing music or with any person or object within 2m of the loudspeaker.

6.1 Prerequisites

The .dynamics software is required to remotely manage your T8 modules and access the full range of its functionality.

6.2 Installation Procedure

The latest release of the .dynamics software can be downloaded at:

<https://pksound.live/product/dynamics>

6.3 Updates

.dynamics will automatically prompt the user to update to the latest released version if there is an internet connection available. Follow the in-app prompts to complete the update. The new version will be available upon relaunching the software.

6.4 User Manual

The **.dynamics** User Guide is included in every release of the software. To access it, download and install **.dynamics**, then select File > User Guide.

7. Local Control

If a computer with .dynamics is not available, or in case of a network error, it is possible to operate each T8 module through the LCD touch screen user interface on the back of each module. Swiping left, right, up, down, or tapping the screen allows for navigation through the local control menu options.

7.1 T8 Menu Map

- DSP
 - Input Trim
 - Gain
 - [0.0 dB - 10.0 dB] $\pm$ 0.1 dB
 - Delay
 - [0 ms – 1000 ms] $\pm$ 50 ms
 - Mute
 - On
 - Off
 - Input
 - AES
 - Milan
 - Analog
- Robotics
 - Move Verticals
 - [0.0° - 12.0°] $\pm$ 0.5°
 - Run In
 - Run Out
 - Start
 - Back
 - Move Horizontals
 - L: [30° - 60°] $\pm$ 5°
 - Symmetrical: [60° - 120°] $\pm$ 5°
 - R: [30° - 60°] $\pm$ 5°
 - Run In
 - Run Out
 - Start
 - Back
 - Actuator Status

- Back
- Actuator Angles
 - Back
- Device Inclination
 - Refresh
 - Back
- Actuator Recalibration
 - Vertical
 - Run In
 - Run Out
 - Horizontal
 - Run In
 - Run Out
 - Back
- Manual Recovery
- Settings
 - Network
 - Back
 - Service Note
 - Back
 - Set/Clear
 - Edit
 - Back
 - LED Logo
 - Colour
 - [White, Red, Green, Blue, Orange, Yellow, Lime, Cyan, Purple, Pink, Glacial, Navy]
 - State
 - [On, Off, Blink]
 - Back
 - Screen
 - Backlight
 - On
 - Off
 - Audio
 - Dark Mode
 - On

- Off
- Portrait
 - On
 - Off
- Back
- About

7.2 DSP Adjustments

DSP adjustments can be made using the local controls by selecting the *DSP* tab. The settings which can be adjusted are:

- Muting or unmuting the T8 module
- Adjusting gain from 0.0 dB to 10.0 dB in increments of 0.1 dB
- Adjusting delay from 0 to 1000 ms in increments of 50 ms
- Changing the input type to AES, Milan, or analog

7.3 Module Angle Adjustments

Module angles can be adjusted using the local controls by selecting the *Robotics* tab and selecting either *Move Verticals* or *Move Horizontals* as shown below.



WARNING: Never adjust the actuation system while playing music or with any person or object within 2m of the loudspeaker array.

Selecting *Move Verticals*, a list of available angles will be shown on the screen. Swiping up or down will scroll through the list of available angles. The currently selected angle is highlighted in the list. Touch and hold the start button on the screen for the duration of the movement until a success screen is displayed.

As a safety feature, the module will immediately cease moving if the user releases the button, and a failure message will be displayed on the LCD.

After selecting *Move Horizontals*, a list of available angles separated into three columns will be shown on the screen. Swiping up or down will scroll through the list of available angles with the currently selected angle being highlighted. Touch and hold the start button on the screen for the duration of the movement until a success screen is displayed.

For asymmetrical horizontal angles, the individual left and right angles can be specified by scrolling in the corresponding column. The total asymmetrical horizontal angle will be displayed in the center column. Symmetrical angles can be selected by scrolling through the values in the center column (total horizontal angle), which will set the left and right angles equal.

7.4 T8 Settings Descriptions

Menu Item	Sub-Menu Item	Description
Network	-	Displays the current IP address, net mask, gateway, and MAC addresses
LED Logo	State	Allows the user to change the PK logo light on the front of the Modulet to either ON, OFF, or BLINK
	Colour	Allows the user to change the colour of the PK logo light on the front of the Modulet
Screen	Backlight	Allows the user to select the mode of the LCD backlight to OFF/ON/Audio Status
	Dark Mode	Allows the user to change the display dark mode of the LCD to ON or OFF
	Portrait	Allows the user to change the display the LCD to portrait or landscape orientation
Service Note	-	Previously added service notes can be viewed and cleared. If a module is malfunctioning, the service flag can be set (and correspondingly cleared) through this menu. If the service flag is set, the LCD will display a yellow backlight to let the user know that box was flagged.
About	-	Displays the current product, firmware versions, component serial numbers, and component MAC addresses for the T8 module.

7.5 Operation Status Alerts

During operation the LED display will change colour depending on the status of the T8 module. The following table summarizes the statuses associated with specific display colours ordered from lowest to highest display priority.

Display Colour	Module Status
Purple	Idle
Blue	.dynamics Connected
Green	Playing Audio
Yellow	Service Flag
Red	System Failure

8. Amplification & Audio

Powerful signal processing tools are employed to optimize acoustic performance, including high-quality equalizers, limiters, delays, and FIR filters. The amplifier is also equipped with extensive protection circuitry: power limiters, thermal shutdown, short circuit and overload protection and a clip limiter.

8.1 Overview

The T8 loudspeaker is powered by an integrated Class-D amplifier specifically designed for multi-way loudspeakers and asymmetric loads. It can deliver up to 1500 W granting the highest power available for drivers. This amplifier features dual-mode active cooling via fans and routed port flow to maximize thermal dissipation. As a result, the T8 delivers unparalleled transients and consistent output.

Patented built-in PFC (Power Factor Correction) allows the amplifier to achieve optimal, consistent performance in all operating conditions worldwide. Intelligent rail management technology maximizes the efficiency of the system and drastically reduces power consumption at any load condition.

8.2 .dynamics Audio Functions

The T8 features a complete suite of onboard DSP functionality, configurable through the .dynamics software. This includes loudspeaker presets, gain, delay, and filters.

Please refer to section the .dynamics software's user manual (accessible from the .dynamics software interface) for further detail.

8.3 Status Monitoring

Status monitoring is similarly performed using .dynamics. Module input levels, output levels, gain reduction, limiting, and protections are all provided per-speaker. Additionally, the color of the LED logo may be changed (or turned off entirely) to aid in module identification.

Loudspeaker service notes and "Service Required" flags may also be saved to the amplifier to indicate service history or a need for immediate service. Please refer the .dynamics software's user manual.

8.4 Thermal & Electrical Protections

Temperature Warning – When the T8 module heats up to 65°C, a yellow warning light will flash in on that module's workspace visual representation in .dynamics to indicate to the technician that the module is 15°C away from a thermal protect scenario.

Thermal Protect – When the T8 amplifier internal temperature exceeds 60 C, a temperature-controlled fan is engaged. When the amplifier reaches 70°C, the amplifier engages a progressive thermal limiter that increases gain reduction with higher temperatures. At 85°C the system shuts off completely to prevent damage. The yellow warning indicator will be replaced with a red indicator in the .dynamics workspace visual.

Output Loading Error – The amplifier will automatically detect problematic loading scenarios, such as damaged voice coils or a missing driver. Upon detection of such a load, the output amplification is immediately disabled. .dynamics functionality is unaffected by this shutdown, and the amplifier will restart if the condition clears.

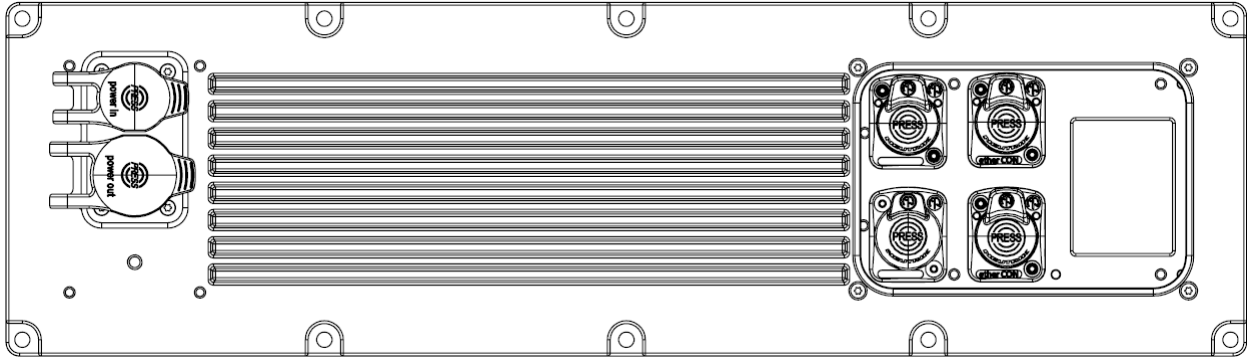
Output Protection – The amplifier outputs are monitored, and limiters will engage to prevent overloading of mains voltage inputs and damage to the loudspeaker.

Clipping – Limiters are used to prevent signals from exceeding rated limits.

Input Overvoltage and Overcurrent Protection – if AC mains inputs exceed 280 VRMS, the loudspeaker will automatically shut down and periodically attempt to restart.

9. Connectivity

The T8 rear panel utilizes PK Sound's VE15 amplifier which provides analog, digital AES3, and ethernet connectivity and allows configuration of the loudspeaker via PK's .dynamics software. Both configurations include 3-pin XLR input and pass through for analog audio.



9.1 Audio Connectors

etherCON Input – The etherCON cable provides a CAT-5 input into the T8 via the EtherCon connector. The CAT-5 ethernet input allows for connection to the .dynamics software network while also accommodating Milan/AVB. The etherCON cable can also provide AES3 input in certain configurations. In order to maintain the IP rating of the connector, mate with only Nuetrik TOP or DR series connectors. Ensure the Cover is in place when not in use.

Audio Input (XLR 3-Pin Female) – The audio input is a three pin XLR female connector which accepts balanced audio signals with an input impedance of 10 k Ω . It uses the following wiring:

Pin 1 – 220 k Ω to chassis and earth ground

Pin 2 – Positive polarity signal (+)

Pin 3 – Negative polarity signal (-)

Case – Earth (AC) ground and chassis

Note: Analog input signals over 16 dBu (4.8 Vpk) will engage limiters or clip.

Digital Input AES (AES 3-Pin Female) – A secondary digital audio input is provided as a redundancy. This is a 3-pin XLR female which accepts digital AES data. AES uses 110 Ω shielded twisted pair (STP) cable with XLR connectors up to a distance of 100m. It uses the following wiring:

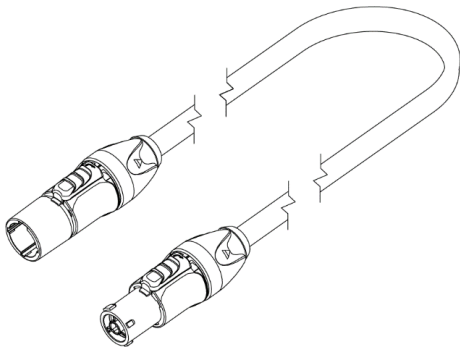
Pin 1 – 220 k Ω to chassis and earth ground

Pin 2 – Positive polarity signal (+)

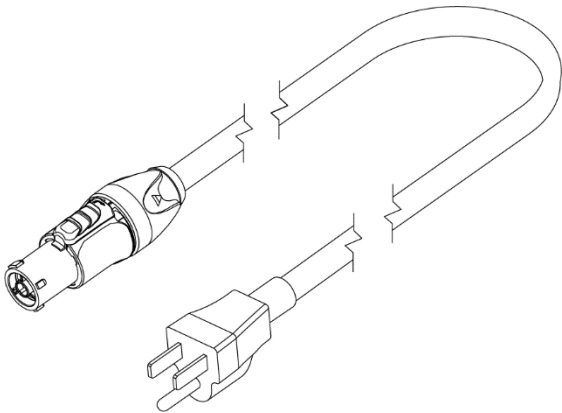
Pin 3 – Negative polarity signal (-)

powerCON TRUE1 Jumper – Used to daisy-chain T8 boxes via the parallel powerCON TRUE1 AC inputs. Ten modules can be daisy-chained on a single 20 A circuit at 208 VAC, while six modules can be daisy-chained on a

single 20 A circuit at 120 VAC.



powerCON Edison Cable – To power a single T8 module, a powerCON TRUE1 to standard IEC/Edison is available.



9.2 Cabling Recommendations

It is recommended that ferrites be added to all input power and signal cables for T8 modules to reduce the effects of EMI (electromagnetic interference).

Maximum Cable Lengths

Cable Type	Max Supported Distance (m)	Max Supported Distance (ft)
XLR	91	300
AES3	91	300
Ethernet	91	300

Recommended Connection Cable Lengths

Connection Type	Recommended Cable Length (m)	Recommended Cable Length (ft)
T8-T8	0.6	2
T8-T18	1.5	5

Connection Type	Recommended Cable Length (m)	Recommended Cable Length (ft)
Home Run	15/30/45	50/100/150

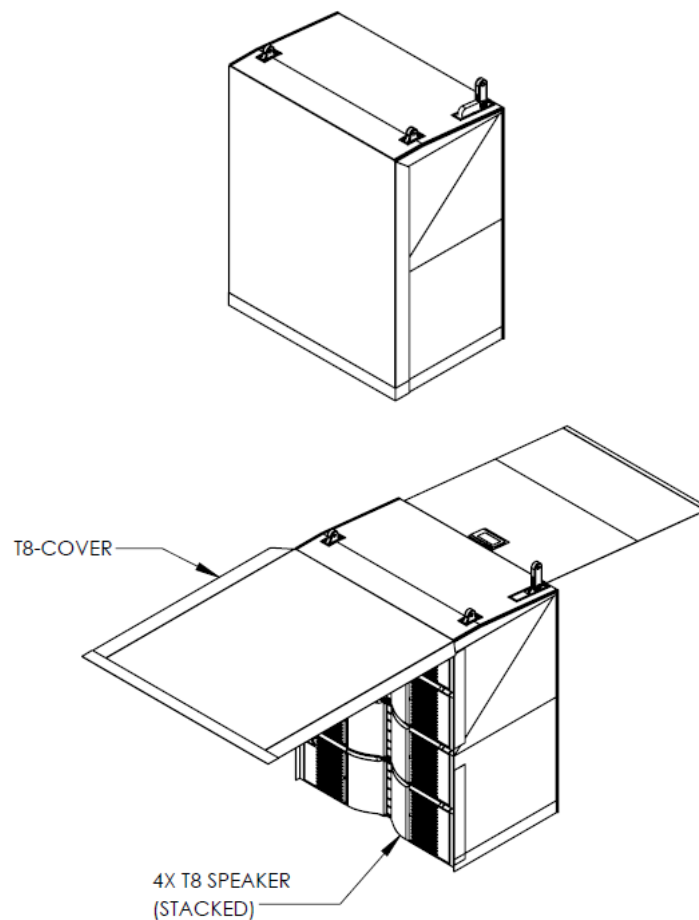
Recommended Cable Connectors

Cable Type	Male Connector	Female Connector
XLR	Neutrik NC3MX1-TOP	Neutrik NC3FX1-TOP
AES3	Neutrik NC3MX1-TOP	Neutrik NC3FX1-TOP
Ethernet	Neutrik NE8MX-B-TOP/14	Neutrik NE8MX-B-TOP/14

10. Transportation

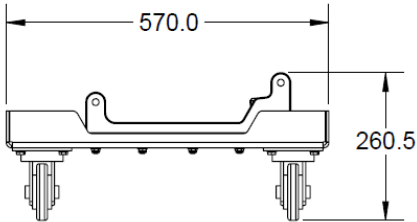
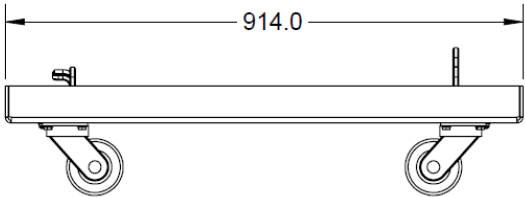
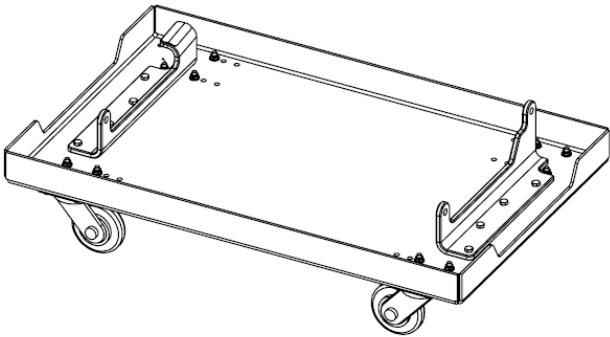
10.1 Covers

Covers are intended to protect a stack of four T8s from dust, abrasion, and light impacts during transportation. Removal and application of the Cover is quick due to the use of Velcro and the folding pattern design while also providing access to critical areas such as handles, rigging hardware, and IO.



10.2 Carts

The T8 Cart is designed to transport a maximum of six modules without a Suspension Frame on top. Ensure that stacked modules are secured together using their supplied QRPs. Jumper cables may remain connected to the T8 units during transportation. The T8 Cart is intended for **use only during transportation**.



11. Care & Cleaning

T8 loudspeakers are coated with a resilient, tour-proven modified polyurea coating. It may be cleaned with a mild soapy damp microfiber cloth and wiped with a dry cloth. To reduce the risk of electrical shock, ensure the system is unplugged from AC power before cleaning. To clean dust off the speaker cone, use a can of compressed air such as commercial air dusters. Do not blow dust into the horn flare, it may damage the high frequency compression driver.

12. Specifications

Output Capacity		
Frequency Response	50 Hz – 20 kHz (±10 Hz)	
Peak SPL	143.5 dB	
Acoustic Properties		
Horizontal Adjustment	60° - 120° Robotic Directivity	
Horizontal Resolution	5° Symmetric & Asymmetric	
Vertical Adjustment	0 – 12° Robotic Directivity	
Vertical Resolution	0.1°	
Robotic Actuators		
Horizontal Thrust	750 N	
Vertical Thrust	2500 N	
Actuation Lifetime	80 000 Actuations (109 Years)	
Transducers		
High-Frequency Drivers	1 x 3"/2" Coaxial Compression Driver	
Low-Frequency Drivers	2 x 8"	
Amplification		
Amplifier	2-Channel Class-D	
Amplifier Output Power	1400 Wrms	
Operating Voltage	Auto-switching 100-240 V, 50/60 Hz	
Power Consumption	220 W	
Input Impedance	10 kΩ Balanced	
Nominal Input Sensitivity	0 dBu	
Network Control	AES70	
Input/Output Connections		
Audio/Network	Balanced XLR / 14 pin Amphenol IP65	Balanced XLR / Ethernet IP65
Input Selection	Analog/AES3/Milan	Analog/AES3/Milan
Module Auto-Array	Network only	
AC Power Input	powerCON TRUE1	
Local Control		
Touch Screen	2.4" TFT	
Robotics Control	Horizontal and Vertical	
DSP Control	Gain, Delay, Mute, Preset	

Physical Properties	
Module Construction	Void-Free, High-Grade Baltic Birch
Rigging Construction	6061-T6 Aluminum
Finish	Tour-Grade High-Impact EXL Polyurea
Grill	Powder Coated Aluminum
Dimensions (W x H x D)	755 mm x 240 mm x 494 mm 29.7" x 9.4" x 19.4"
Weight	31.4 kg (69.2 lbs)
Max Line Length	24

13. Dimensions

