DP2537-08B-CM

GEO M6 – MSUB12

GEO M620 & GEOM6B
Tangent Array Modules

MSUB12 Subwoofer

System manual

CONTENTS

PLEASE READ CAREFULLY BEFORE PROCEEDING 5

1 INTRODUCTION 7

2 GEO M6 GENERAL SET-UP INSTRUCTIONS 8

2.1 GEO M620, GEO M6B AND MSUB12 CONNECTIONS 8

2.1.1 GEO M620 connectors 8

2.1.2 GEO M6B connectors 8

2.1.3 MSUB12 connectors 8

2.1.4 MSUB12-I connectors 9

2.2 CABLING 11

2.3 GEO M620, GEO M6B AND MSUB12 RECOMMENDED AMPLIFICATION 11

2.4 GEO M6 AND MSUB12 SETUPS ON NEXO TD CONTROLLERS 11

3 CONNECTION DIAGRAMS 12

3.1 GEO M620 & MSUB12 / DTDCONTROLLER & DTDAMP4X0.7 12

3.2 GEO M620 & MSUB12 / DTDCONTROLLER & DTDAMP4X1.3 13

3.3 GEO M620 / NXAMP4X1MK2 (4 CHANNELS MODE) 14

3.4 GEO M620 & GEO M6B / NXAMP4X1MK2 (4 CHANNELS MODE) 15

3.5 MSUB12 OMNI MODE / NXAMP4X1MK2 (4 CHANNELS MODE) 16

3.6 MSUB12 CARDIO MODE / NXAMP4X1MK2 (4 CHANNELS MODE) 17

3.7 GEO M620 & MSUB12 / NXAMP4X1MK2 (4 CHANNELS MODE) 18

3.8 GEO M620 / NXAMP4X2MK2 (4 CHANNELS MODE) 19

3.9 GEO M620 & GEO M6B / NXAMP4X2MK2 (4 CHANNELS MODE) 20

3.10 MSUB12 OMNI MODE / NXAMP4X2MK2 (4 CHANNELS MODE) 21

3.11 GEO M620 & MSUB12 / NXAMP4X2MK2 (4 CHANNELS MODE) 22

4 NS-1 SIMULATION SOFTWARE 23

5 CONFIGURABLE DIRECTIVITY DEVICE 24

5.1 INSTALLING & REMOVING GEO'S CONFIGURABLE DIRECTIVITY FLANGES 24

5.2 WHEN & WHERE TO USE CONFIGURABLE DIRECTIVITY FLANGES 24

6 GEO M6 HARDWARE SETUP PROCEDURE 25

6.1 SAFETY FIRST 25

6.1.1 Flown systems safety 25

6.1.2 Ground stacking safety 26

6.1.3 Contacts 26

6.2 GENERAL DESCRIPTION 27

6.2.1 GEO M6 "Left" and "Right" configuration 27

6.2.2 GEO M6 modules rigging system 27

6.2.3 MSUB12 and MSUB12-I rigging system 28

6.2.4 Permanent installation variant 28

6.2.5 Accessories 29

6.2.6 Warnings on GEO M6 and MSUB12 accessories 30

6.3 GROUND STACK SETUPS 31

6.3.1 Described configurations 31

6.3.2 GEOM6 only on GMT-BUMPER 32

6.3.3 MSUB12 and GEO M6 with Ministack adaptor 33

6.3.4 MSUB12 and GEO M6 on Touring Bumper 35

6.3.5 GEO M6 stacked on LS18 38

6.3.6 1 to 3 (maximum) GEO M6 pole mounted 40

6.4 FLOWN CLUSTERS SETUPS 42

6.4.1 Described configurations 42

6.4.2 GEO M6 only flown with GMT-BUMPER 43

6.4.3 Variant with maximum 3 GEO M6 and GMT-LBUMP 47

6.4.4 GEO M6 only flown with VNT-BUMPM6 48

6.4.5 MSUB12 only flown with VNT-BUMPM6 52

6.4.6 MSUB12 and GEO M6 flown with VNT-BUMPM6 ..... *54*
6.4.7 4 to 12 (maximum) GEO M6 ceiling mounted *58*
6.4.8 1 to 3 (maximum) GEO M6 wall mounted *59*
6.4.9 1 to 3 (maximum) GEO M6 ceiling mounted *60*
6.4.10 MSUB18-I and GEO M6 flown with VNI-LNKM61018 ..... *61*
6.5 PERMANENT INSTALLATION VARIANT 65
6.6 TESTING AND MAINTENANCE OF THE SYSTEM 67

7 SYSTEM CHECK ALIGNMENT GUIDELINES 68
7.1 GEO M6 VERTICAL CLUSTER DESIGN 68
7.2 STACKED MSUB12S AND FLOWN GEO M6 68
7.3 DRIVING THE MSUB12S FROM THE AUX SEND 69
7.4 RECOMMENDED INSTALLATION TOOLS AND EQUIPMENT 69
7.5 GEO M6 – MSUB12 SYSTEM CHECK LIST 70

8 TECHNICAL SPECIFICATIONS 71
8.1 MSUB12 SUBWOOFER 71
8.1.1 System specifications *71*
8.1.2 Dimensions *72*
8.2 GEO M620 MODULE 73
8.2.1 System specifications *73*
8.2.2 Dimensions *74*
8.3 GEO M6B MODULE 75
8.3.1 System specifications *75*
8.3.2 Dimensions *76*
8.4 GEO M6 AND MSUB12 ACCESSORIES 77
8.4.1 VNT-BUMPM6 ..... *77*
8.4.2 VNT-EXBARM6 ..... *78*
8.4.3 GMT-BUMPER *79*
8.4.4 GMT-EXBAR *80*
8.4.5 GMT-LBUMP *81*
8.4.6 GMT-BPDAPT-2 ..... *82*
8.4.7 GMT-LBPADPT *83*
8.4.8 VNT-POLE *84*
8.4.9 VNT-XHBRK *85*
8.4.10 VNT-TCBRK *86*
8.4.11 VXT-BL515 ..... *87*
8.4.12 VXT-BL615 ..... *88*
8.4.13 VNT-MNSTKM6 ..... *89*
*8.4.14 **G**MT-FLG* *90*
8.4.15 VNI-WS15 ..... *91*
8.4.16 VNI-FIXBUMPM6 ..... *92*
8.4.17 GMI-BNFIX *93*
8.4.18 GMI-IPCOV *94*
8.4.19 VNI-LNKM61018 ..... *95*
8.4.20 GMT-6CASE *96*
8.4.21 MST-2CASEMSUB12 ..... *97*

9 GEO M6 & MSUB12 MODULES & ACCESSORIES LIST 98

10 USER NOTES 101

GEO Technology is radically new thinking

The GEO R&D Project has, to date, resulted in the following patent applications:

The GEO Hyperboloid Reflective Wavesource™ differs radically from the megaphone-variant type horns you know and love (or hate). “Tried and true” methods will produce entirely unexpected results. HRW technology produces precise and predictable results.

The Configurable Directivity Flange. A waveguide that allows the operator to alter its behaviour. An unprecedented NEXO development that is easy to use – once you know how and when.

The Phase Directivity Device needs no operator input to function, but it is reassuring to know that the coupling of the midrange of the system is considered as important as the high frequencies…

DSP-driven Directional Sub-bass devices are a new approach to controlling LF/VLF acoustic energy.

GEO is not hard to use when you understand how…

The technology behind GEO is revolutionary, but it is grounded in years of practical experience with the problems of delivering high quality professional sound to large audiences at high SPL levels. The GEO toolbox includes NS-1 - a simple yet powerful and highly predictive design tool. The array assembly system is keyed to the design software and will easily enable you to deploy your design with great precision. NEXO Digital TDcontroller technology provide driver protection and system optimization for the GEO M and MSUB series.

GEO is a high precision system

The GEO HRW™ controls acoustic energy more precisely than other multiple element waveguides. It also makes GEO less forgiving of mistakes. Whilst conventional horns never combine into a coherent array, they may deliver acceptable results even if the design and deployment of the system is less than optimal. This is not the case with GEO where careless installation produces catastrophic results.

A GEO Tangent Array is not a “line array”

GEO Technology is equally effective in designing and deploying tangent curved vertical arrays. For best results in a specific application the user needs to know how multi-speaker arrays interact with audience geometry, along with the benefits and drawbacks of curved vertical arrays and horizontal arrays.

Curved tangent arrays require different design techniques

In the past, sound reinforcement professionals have worked with horizontal arrays that use conventional horns to deliver [more or less] ‘equal power to equal *angles*’. Curved vertical arrays are now designed to deliver [more or less] equal power to equal *areas*’. When arrays use conventional horns, the lack of precision, overlap and interference masks errors in array design and aiming. The highly precise GEO wavesource responds accurately, consistently and predictably to the design and deployment of a curved vertical tangent array. This is why the GEO rigging system is designed to control angular splay to 0.1° precision.

GEO curved tangent arrays require different operational techniques

Over the years, system designers and operators have developed a number of signal processing techniques to disguise and partly overcome the limitations of horn design. “Frequency shading,” “amplitude shading,” “High Frequency compensation”, all of these are tools of the advanced sound system operator. NONE OF THESE TECHNIQUES ARE APPLICABLE TO GEO TANGENT ARRAYS. Instead of enhancing the array’s performance they will severely degrade it.

Take time to learn how to get great results with GEO Technology. It is an investment that will pay off in more satisfied clients, more efficient operating procedures and more recognition for your skill as a sound system designer and operator. A comprehensive understanding of GEO theory, tangent arrays, and specific features of the GEO M Series will help you to operate your system at its full potential.

PLEASE READ CAREFULLY BEFORE PROCEEDING

BASIC PRECAUTIONS

Do not open the speaker system or attempt to disassemble the internal parts or modify them in any way. The speaker system contains no user-serviceable parts. If it should appear to be malfunctioning or damaged, discontinue use immediately and have it inspected by qualified NEXO service personnel.

Water exposure: Do not expose the speaker system to direct rain, do not use it near water or in wet conditions. Do not place containers with liquid on speaker system as they might spill into openings. If any liquid such as water seeps into the speaker system, have it inspected by qualified NEXO personnel.

Sun exposure: Do not expose the speaker system to direct sun.

Operating temperature with temperate climate: 0°C to +40°C (-20°C to +60°C for storage).

SYSTEM DEPLOYMENT SAFETY RULES

Read User Manual before deployment. Before use of enclosed speaker system, please ensure that anyone involved in system deployment understands the rigging – stacking – pole mounting safety rules as described in the speaker system User Manual. Failure to do this exposes people to potential injury or death.

Please check the web site nexo-sa.com for the latest update.

Always consult qualified NEXO personnel if the device installation requires construction work and make sure to observe the following precautions:

Mounting precautions

- choose mounting hardware and an installation location that can support 4 times the weight of the speaker system;
- do not use speaker system handles for suspended installation;
- do not expose speaker system to excessive dust or vibration, or extreme cold or heat to prevent possibility of component damage;
- do not place the speaker system in an unstable position from which it might fall accidentally;
- if speaker systems uses a stand, ensure that stand specifications are adapted, and that stand height does not exceed 1.40m/55”; never move the stand while the speaker is in position.

Connection and powering precautions

- remove all connected cables before moving the speaker system;
- the connection should be performed by qualified technician;
- turn off AC power of all power amplifier units before connecting the speaker system;
- when turning on the AC power to the audio system, always turn on the power amplifier last; when turning the AC power off, always turn off the power amplifier first;
- when used in cold conditions, a gradual power ramp up should applied to the system on an 5 mn period to allow the loudspeaker components to stabilize during the very first minutes of usage.

Inspect the speaker system periodically.

HIGH SOUND PRESSURE LEVELS

Exposure to extremely high noise levels may cause permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient period of time. The U.S. Government's Occupational and Health Administration (OSHA) has specified the following permissible noise level exposures: Sound Duration Per

Day In Hours	Sound Level dBA, Slow Response
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

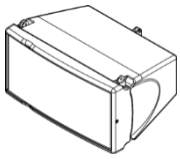
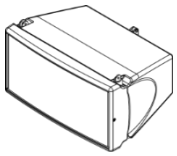
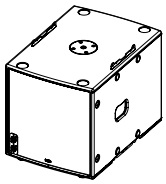
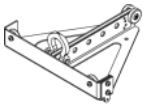
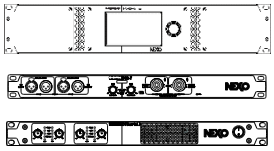
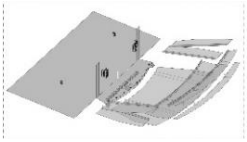
According to OSHA, any exposure in excess of the above permissible limits could result in some hearing loss. Ear plugs or protectors to the ear canals or over the ears must be worn when operating this amplification system in order to prevent permanent hearing loss, if exposure is in excess of the limits as set forth above. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels such as this amplification system be protected by hearing protectors while this unit is in operation.

DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT

This symbol on the product or on its packaging indicates that it shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequence for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

1 INTRODUCTION

Thank you for selecting a NEXO GEO M6 Series Tangent Array System. This manual is intended to provide you with necessary and useful information about your GEO M6 & MSUB12 System, which includes the following products:

	• GEO M620 is a 20° Tangent Array Module. It comprises 1x6.5” (17cm) 8 ohms LF/MF driver and 1x1.5” voice coil, 1” Throat 16 Ohm HF Driver loaded by a 15° Hyperboloid Reflective Wavesource™.
	• GEO M6B is a Bass-Mid Reinforcement module for GEO M620. It comprises 1x6.5” (17cm) 8 ohms LF/MF driver ™.
	• MSUB12 is GEOM6 companion subwoofer. It comprises 1x12" (30cm) very long excursion Neodymium driver and features very high efficiency as well as high acoustic output. MSUB12 has fittings for transporting, flying and stacking. MSUB12 is available in touring and installation versions.
	• A full range of accessories provides safe, flexible and simple means of installing GEO M6 and MSUB12 in fixed installation as well as in touring applications.
	• GEO M6 and MSUB12 are controlled, powered and monitored by NEXO TDcontrollers. For a complete description of these controllers, please refer to User Manuals. NEXO TDcontrollers DSP algorithms and parameters are fixed in software and updated regularly: Please consult the NEXO web site (nexo-sa.com) for the latest software releases.
	• NS-1 simulation software assists in the design and implementation of vertical tangent GEO arrays. Please consult the NEXO web site (nexo-sa.com) for the latest software releases.
	• Available for Mac, iPad and iPhone, NEXO NeMo provides full remote control over a digital audio network from anywhere in the venue, thanks to an intuitive and graphically attractive user interface. NeMo is available on Apple App Store.

Please devote your time and attention to reading this manual. A comprehensive understanding of GEO M6 and MSUB12 specific features will help you to operate your system at its full potential.

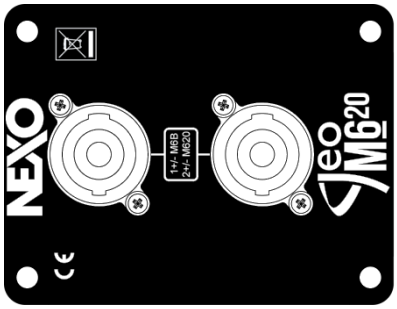
2 GEO M6 GENERAL SET-UP INSTRUCTIONS

2.1 GEO M620, GEO M6B and MSUB12 connections

GEO M620, GEO M6B and MSUB12 are connected with Speakon NL4FC plugs (not supplied). A wiring diagram is printed on the connection panel located on the back of each cabinet. The 4 pins of the Speakon sockets identified in / out are connected in parallel within the enclosure.

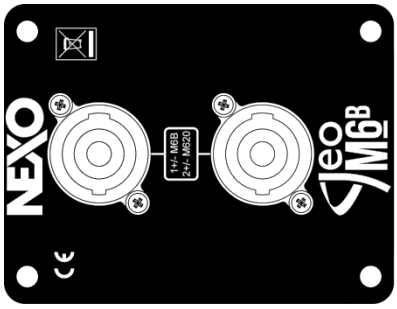
Either connector can be used to connect amplifier or to link to an additional GEO M6 cabinet or to link to an optional GEO M6B or MSUB12 (if present). Therefore, a single 4-conductor cable can connect two amplifier channels to various GEO M620s and/or GEO M6B or MSUB12.

2.1.1 GEO M620 connectors



Speakon Connector	M620
1(-)	Through
1(+)	Through
2(-)	GEO M620 (-)
2(+)	GEO M620 (+)

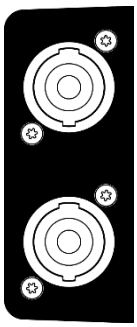
2.1.2 GEO M6B connectors



Speakon Connector	M620
1(-)	GEO M6B (-)
1(+)	GEO M6B (+)
2(-)	Through
2(+)	Through

2.1.3 MSUB12 connectors

MSUB12 features 2 connector panels with 2 Speakon NL4 each so that cabling is always done at the back independently of cabinet being set frontwards or rearwards for cardioid configurations.

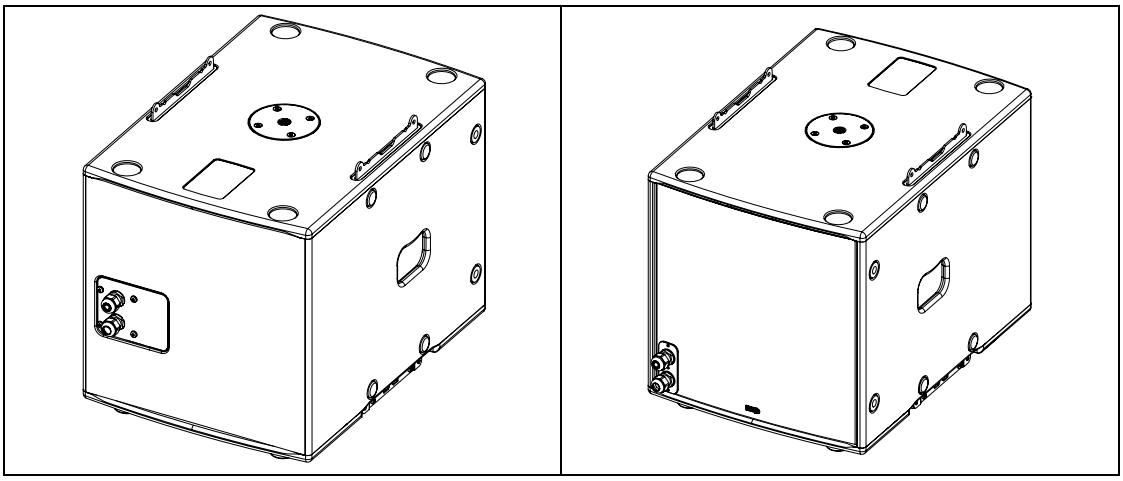


Speakon Connector	MSUB12
1(-)	MSUB12 (-)
1(+)	MSUB12 (+)
2(-)	Through
2(+)	Through

2.1.4 MSUB12-I connectors

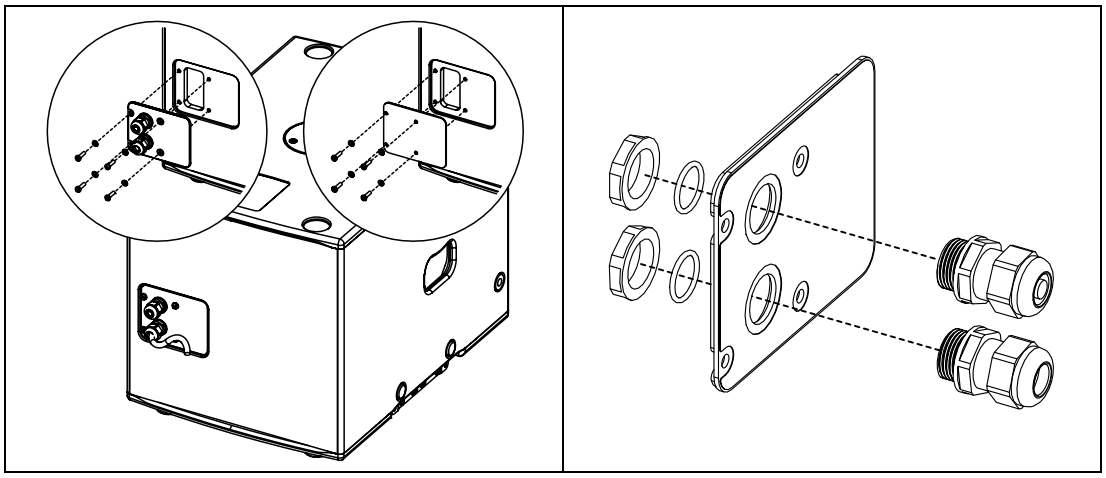
MSUB12-I is supplied with a fixed cable (HO7ZZ-F), 2x2.5mm^2 section, length 4m, outside diameter 11.5mm ±1.5mm.

MSUB12-I is delivered with the connection plate with 2 cable glands (clamping range, Ø 10 to 14mm) at the back of the subwoofer, but you can also position it at the front.

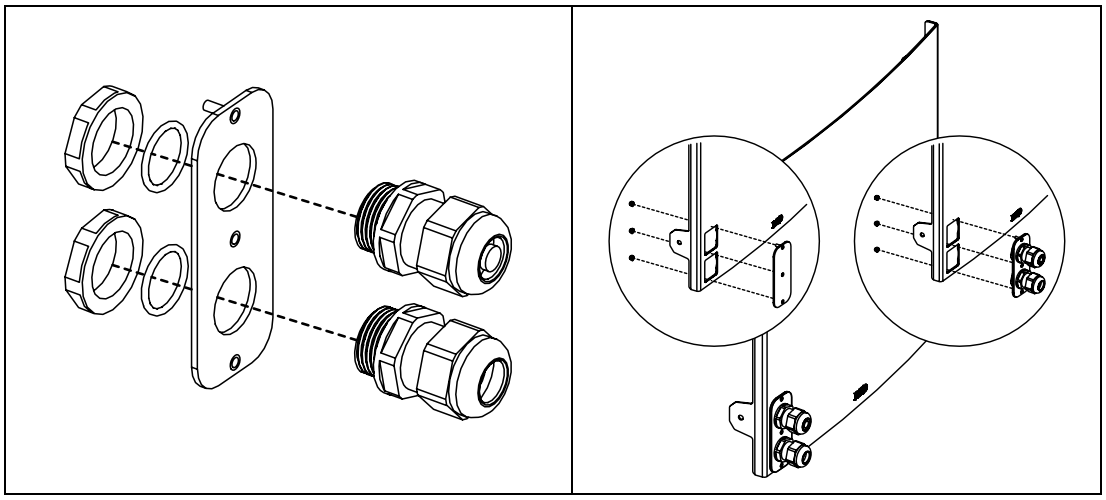


CONNECTION PLATE AT THE BACK *CONNECTION PLATE AT THE FRONT*

- Remove the back connection plate with the cable glands.
- Place the provided back plate (with no holes).
- Remove the cable glands from the back connection plate.

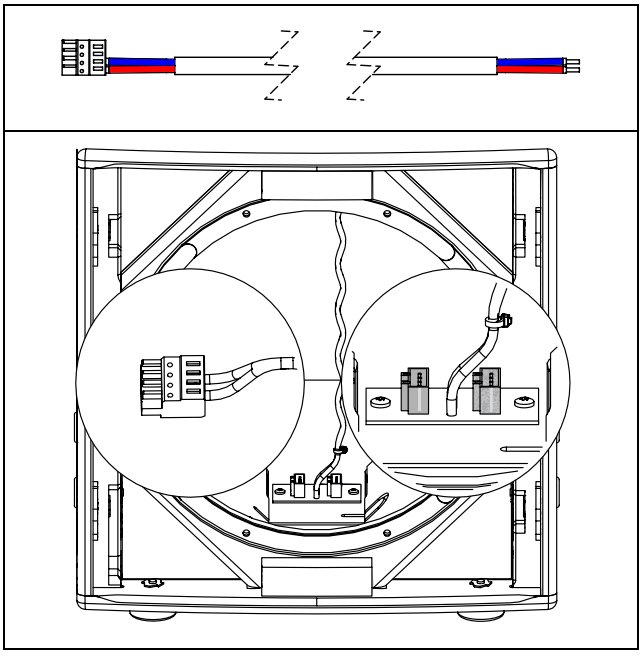


- Assemble the cable glands on the provided front connection plate.
- Remove the front grille.
- Remove the front connection plate (with no holes).
- Place the front connection plate (with cable glands) on the grille.
- Pass the cable through the lower left vent (from the WAGO connector to the cable gland).
- Reassemble the front grille.



To connect a second cable:

- Remove the front grille.
- Remove the driver.
- Wire the provided connector WAGO 4pt.
- Plug it to the free connector.
- Pass the cable through the cable-gland.
- Tight the cable-gland.
- Reassemble the driver and the front grille.



2.2 Cabling

NEXO recommends the exclusive use of multi-conductor cables to connect the system: the cable kit is compatible with all the cabinets, and there is no possible confusion between LF, MF and HF sections.

Cable choice consists mainly of selecting cables of the correct sectional dimension (size) in relation to the load resistance and the cable length. Too small a cable section will increase both its serial resistance and its capacitance; this reduces the electrical power delivered to the loudspeaker and can also induce response (damping factor) variations.

For a serial resistance less or equal to 4% of the load impedance (damping factor = 25), the recommended cable length is given by:

$$L_{max} = Z \times S \qquad S \text{ in } mm^2, Z \text{ in Ohm}, L_{max} \text{ in meters}$$

The table below indicates these values, for 3 common sizes.

Load Impedance (Ω)	2	2.6	4	5.3	8	16
Cable section	**Recommended Cable Length**					
1,5 mm² (AWG #15)	3m/10ft	3m/13ft	6m/20ft	8m/26ft	12m/39ft	24m/79ft
2,5 mm² (AWG #13)	5m/16ft	7m/23ft	10m/33ft	13m/44ft	20m/66ft	40m/131ft
4 mm² (AWG #11)	8m/26ft	10m/33ft	16m/52ft	21m/70ft	32m/105ft	64m/210ft
6 mm² (AWG #9)	12m/40ft	16m/52ft	24m/79ft	32m/104ft	48m/160ft	96m/315ft

Maximum allowed length is 4 times recommended length.

Example:

GEO M6 module has a 8 Ω nominal impedance. When connecting 4 modules in parallel, total load impedance become 2Ω.

Recommended length for 4mm2 / (AWG#10) is 8 m / 26 ft, maximum allowed length is 32 m / 105 ft.

IMPORTANT

Long speaker cables induce capacitive effects – up to hundreds of pF depending on the quality of the cable - with a low-pass effect on high frequencies. If long speaker cables must be used, ensure that they do not remain coiled while in use.

2.3 GEO M620, GEO M6B and MSUB12 recommended amplification

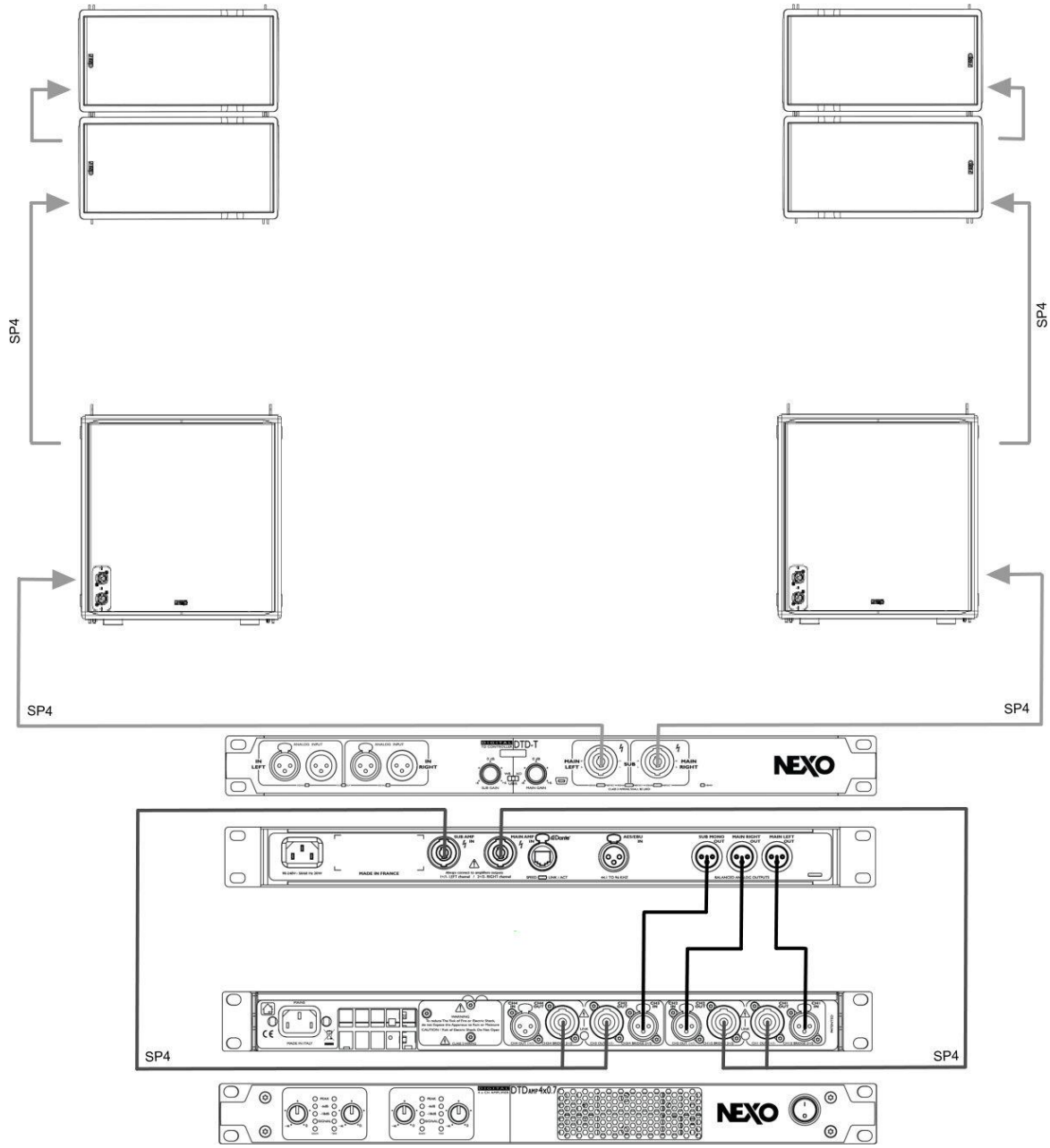
NEXO TD Controllers	Recommended amplification
DTD Controller + DTDAMP4x0.7 (4x0.7 kW/4Ω)	2 x GEO M620 per channel 2 x GEO M6B per channel 1 x MSUB12 per channel
DTD Controller + DTDAMP4x1.3 (4x1.3 kW/4Ω)	2 x GEO M620 per channel 2 x GEO M6B per channel 1 x MSUB12 per channel
NXAMP4x1mk2 Powered Controller 4 channels mode (4x1.3kW/2Ω)	3 x GEO M620 per channel 3 x GEO M6B per channel 2 x MSUB12 per channel
NXAMP4x2mk2 Powered Controller 4 channels mode (4x2.5kW/2Ω)	4 x GEO M620 per channel 4 x GEO M6B per channel 3 x MSUB12 per channel

2.4 GEO M6 and MSUB12 setups on NEXO TD Controllers

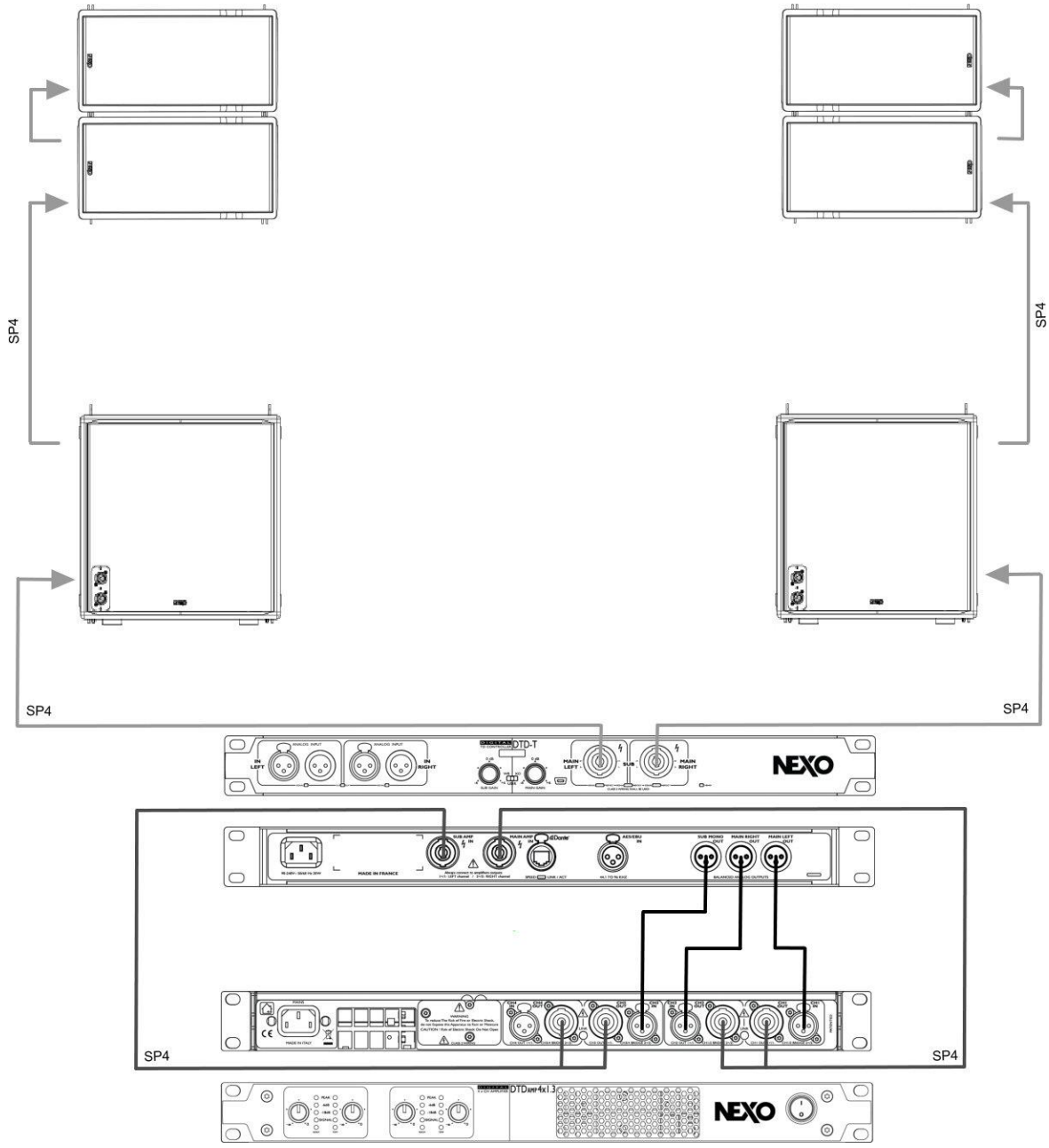
Please consult nexo-sa.com for NEXO TD Controllers firmware information.

3 CONNECTION DIAGRAMS

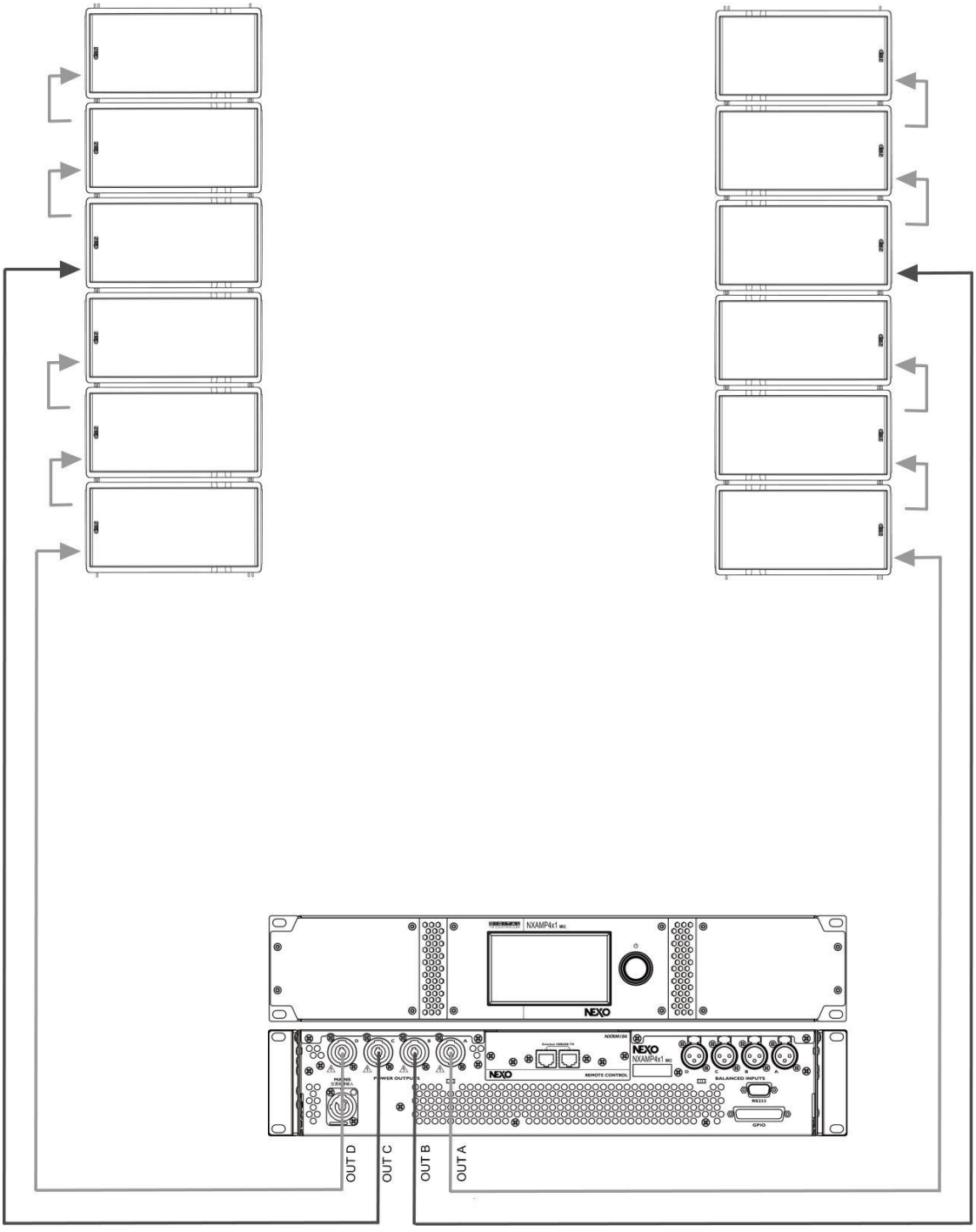
3.1 GEO M620 & MSUB12 / DTDController & DTDAMP4x0.7



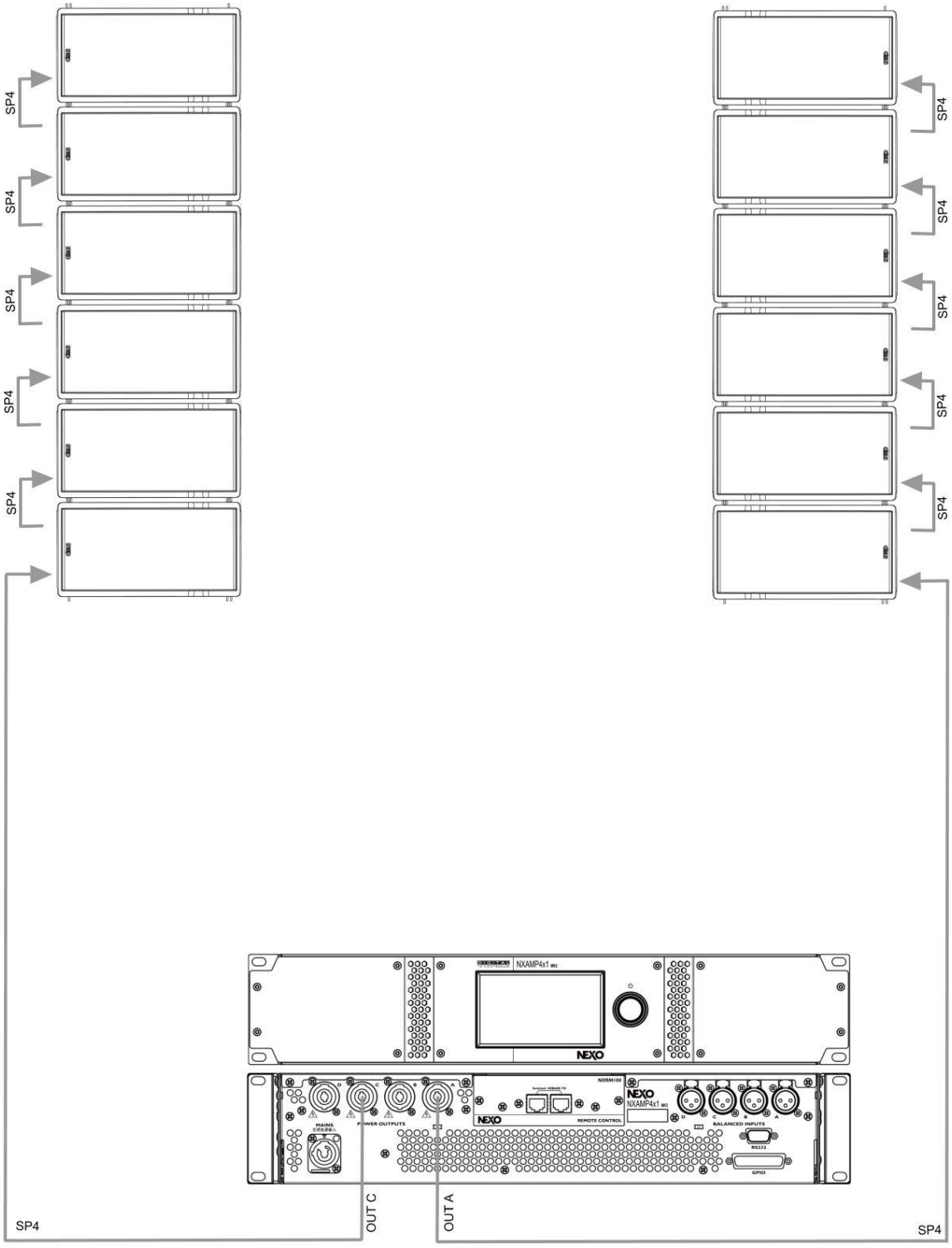
3.2 GEO M620 & MSUB12 / DTDController & DTDAMP4x1.3



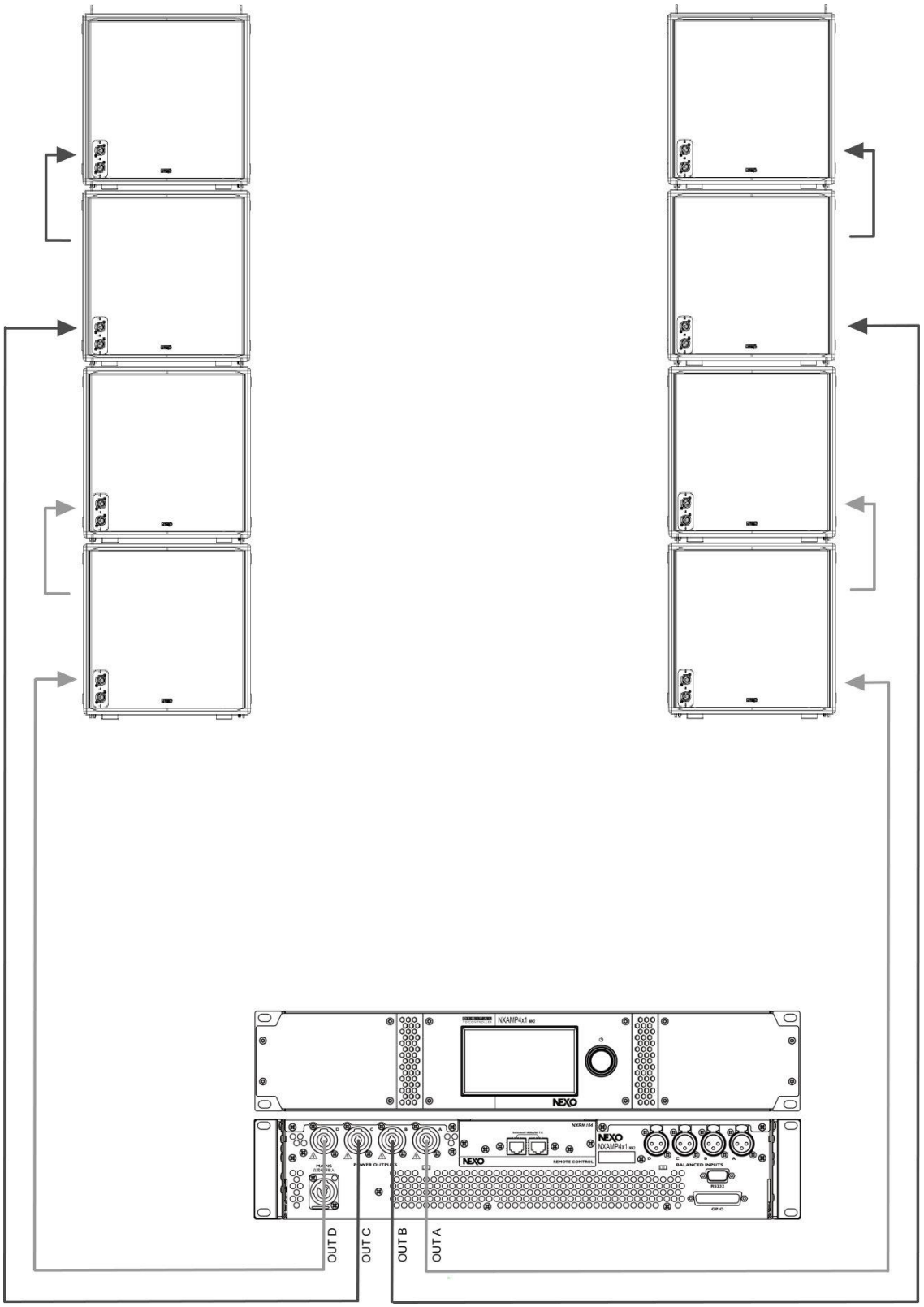
3.3 GEO M620 / NXAMP4x1mk2 (4 channels mode)



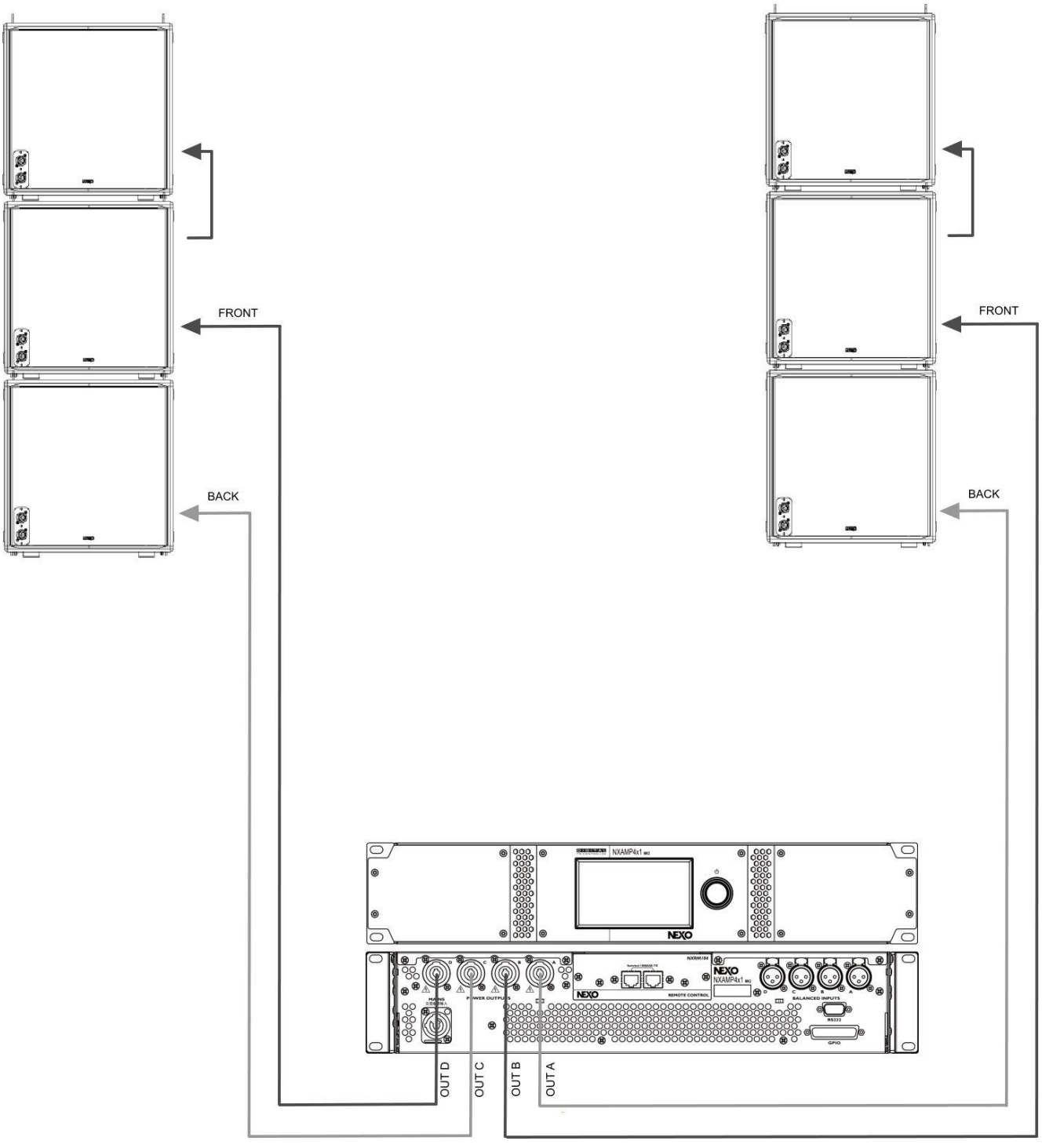
3.4 GEO M620 & GEO M6B / NXAMP4x1mk2 (4 channels mode)



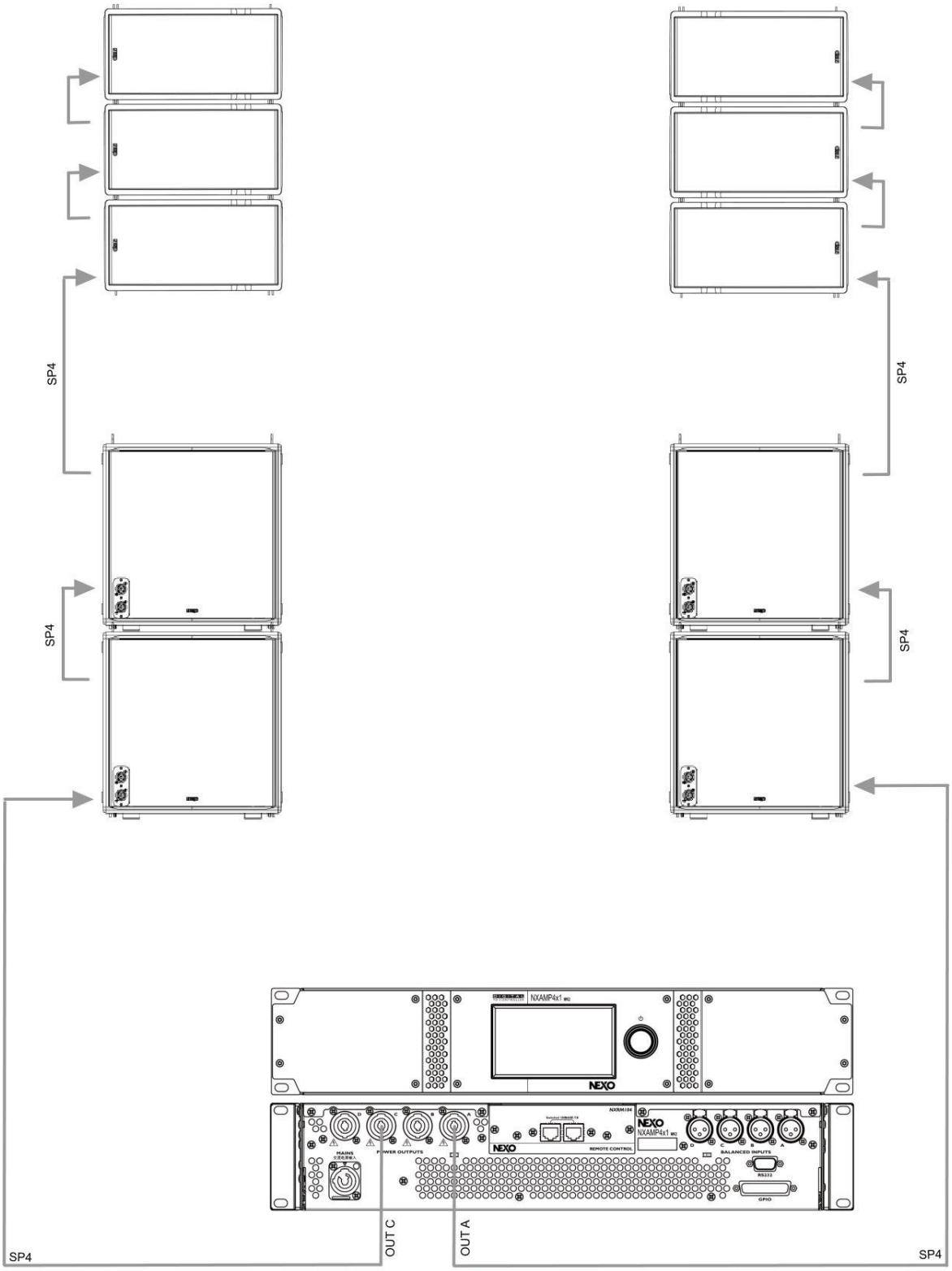
3.5 MSUB12 Omni Mode / NXAMP4x1mk2 (4 channels mode)



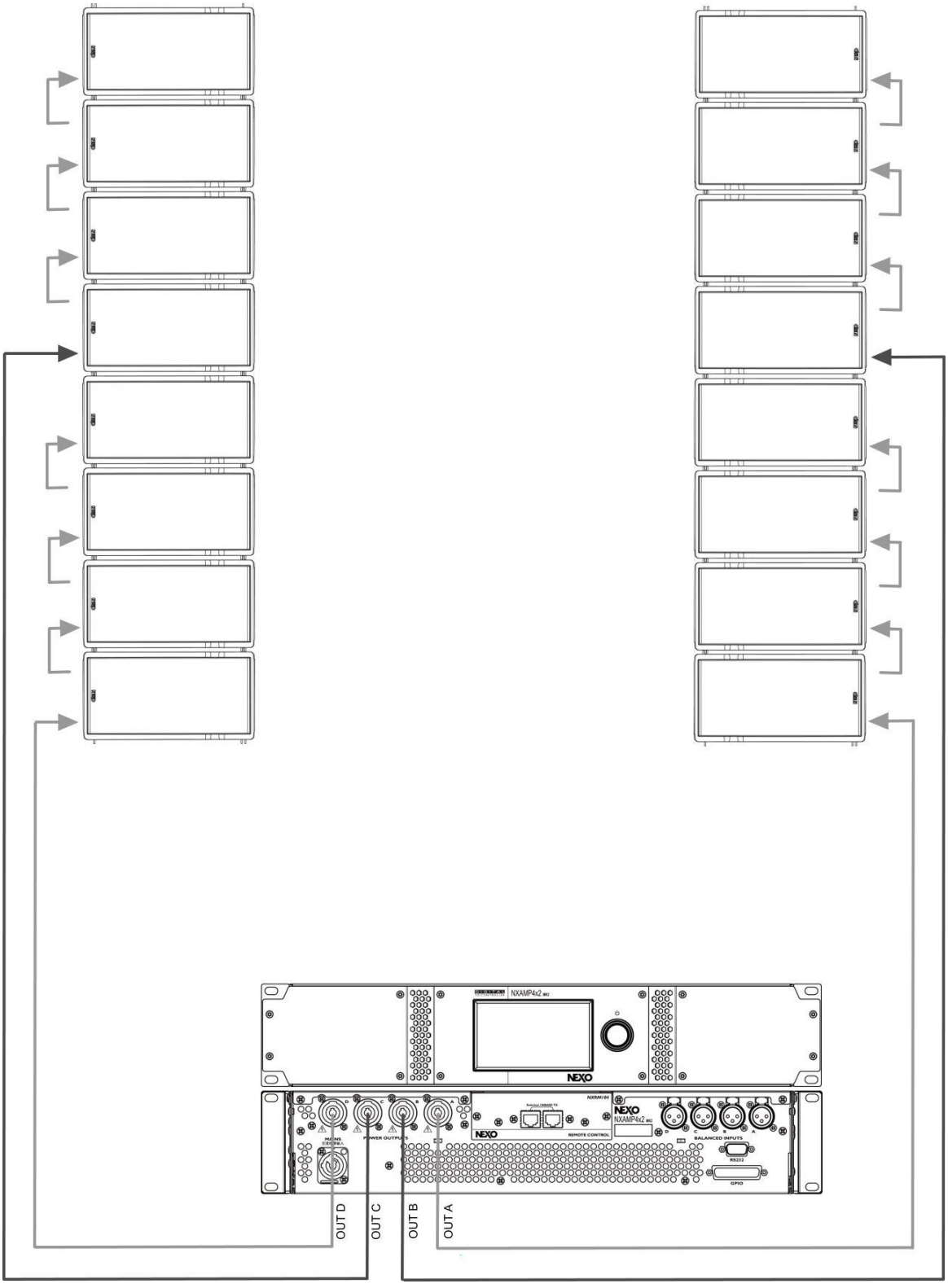
3.6 MSUB12 Cardio Mode / NXAMP4x1mk2 (4 channels mode)



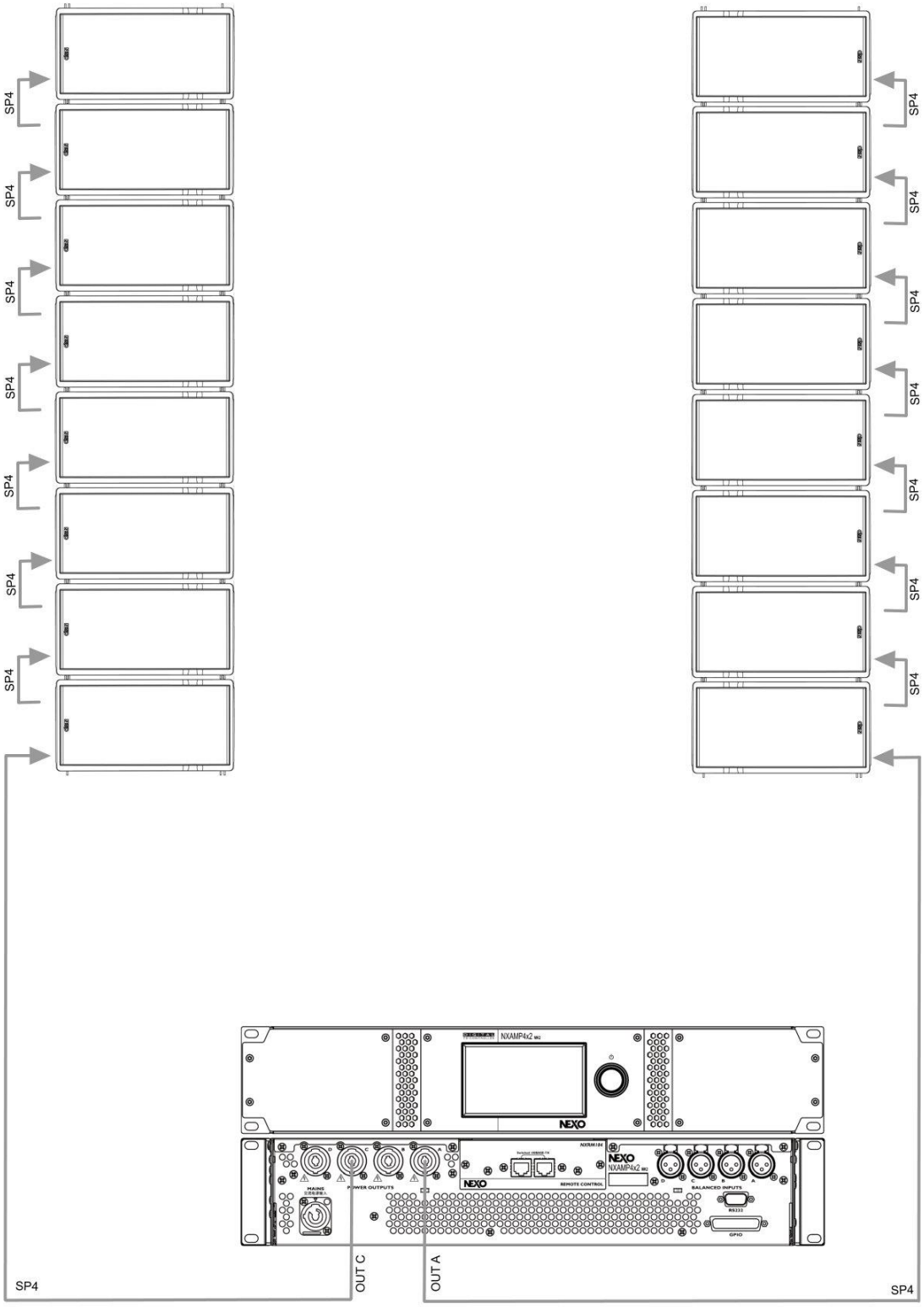
3.7 GEO M620 & MSUB12 / NXAMP4x1mk2 (4 channels mode)



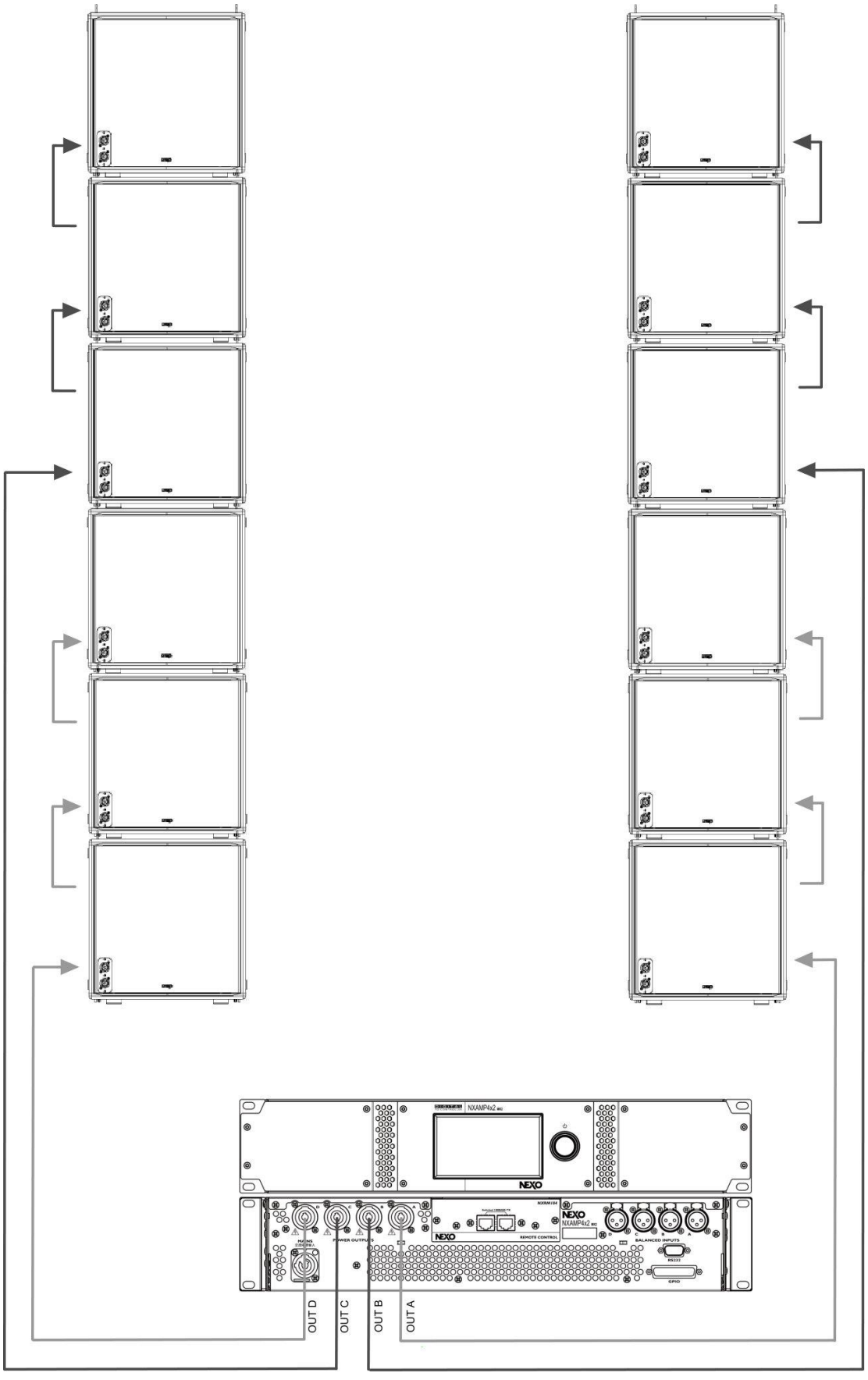
3.8 GEO M620 / NXAMP4x2mk2 (4 channels mode)



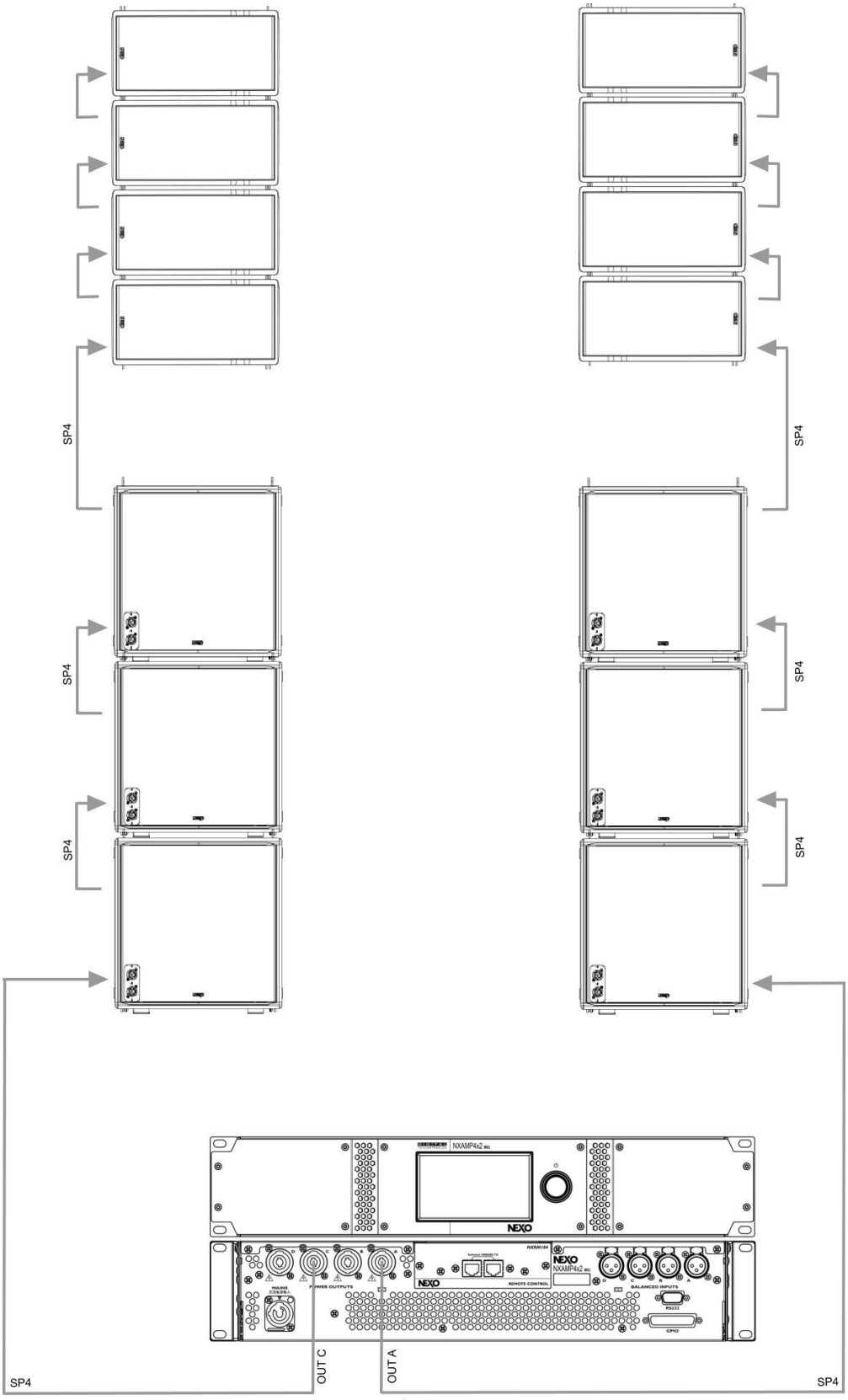
3.9 GEO M620 & GEO M6B / NXAMP4x2mk2 (4 channels mode)



3.10 MSUB12 Omni Mode / NXAMP4x2mk2 (4 channels mode)



3.11 GEO M620 & MSUB12 / NXAMP4x2mk2 (4 channels mode)



4 NS-1 SIMULATION SOFTWARE

NS-1 software is a R&D simulation tool derived application. It processes measured speaker data with complex mathematical algorithms to assist the user in optimizing system design. Due to the complexity of the interaction of multiple cabinets, it is simply not possible to reliably design curved vertical arrays without using the processing power of a computer to predict the optimum array structure for a given audience geometry. The design logic is far more complex than looking at a section drawing of the venue, measuring the overall angle needed to cover the audience from the cluster location, and dividing by 20 degrees to determine the required amount number of GEO M620 cabinets.

NS-1 is an easy to use tool that allows to shape the energy leaving the cluster to fit the audience. It predicts pressure levels radiated from the system to ensure enough cabinets are provided for the application, as well as mechanical constraints for safe flown systems.

In addition, it provides mechanical information for all clusters in agreement with Structural Analysis Reports (available in the Help section): dimensions, weight, gravity centre position, forces, moments, working load and safety factor.

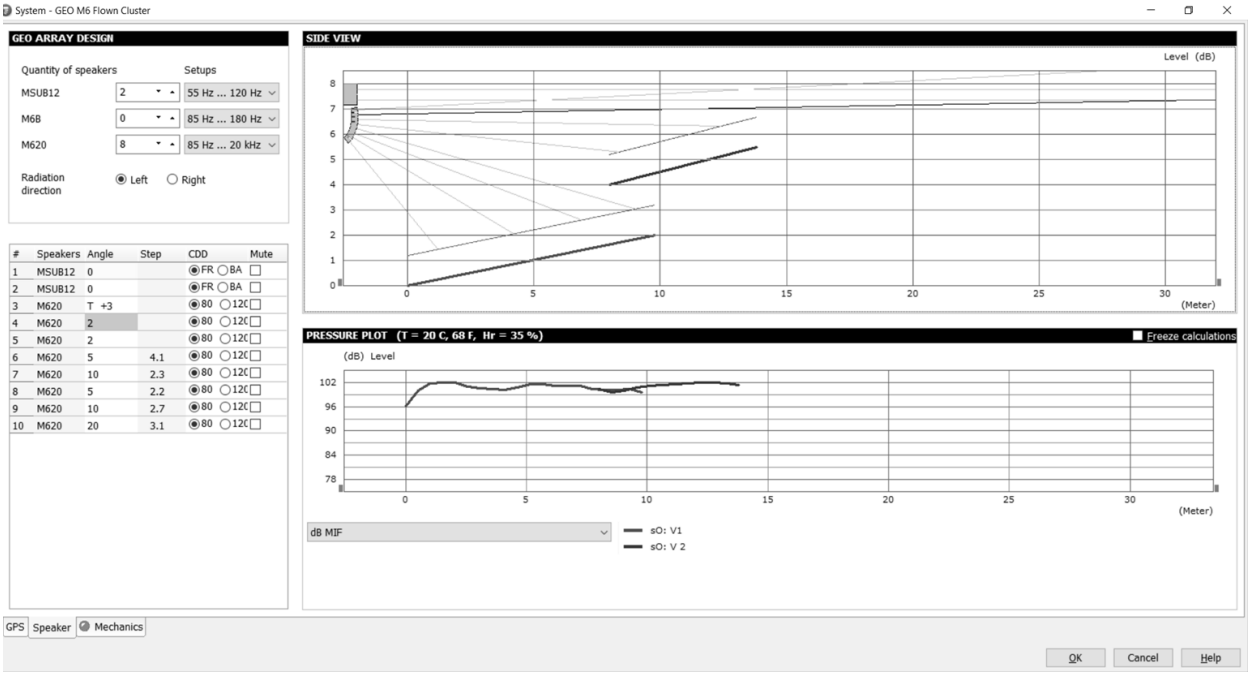
NS-1 installation package includes all NEXO User Manuals, Structural Analysis Reports and Certificates PDF files.

NS-1 is a freeware available on nexo-sa.com

IMPORTANT

Never install a GEO M6 and/or MSUB12 cluster without checking its acoustical performances and mechanical safety in NS-1 prior to installation.

Any question or bug report please contact technical@nexo.fr



NS-1 GEO M6 ACOUSTIC PAGE

5 CONFIGURABLE DIRECTIVITY DEVICE

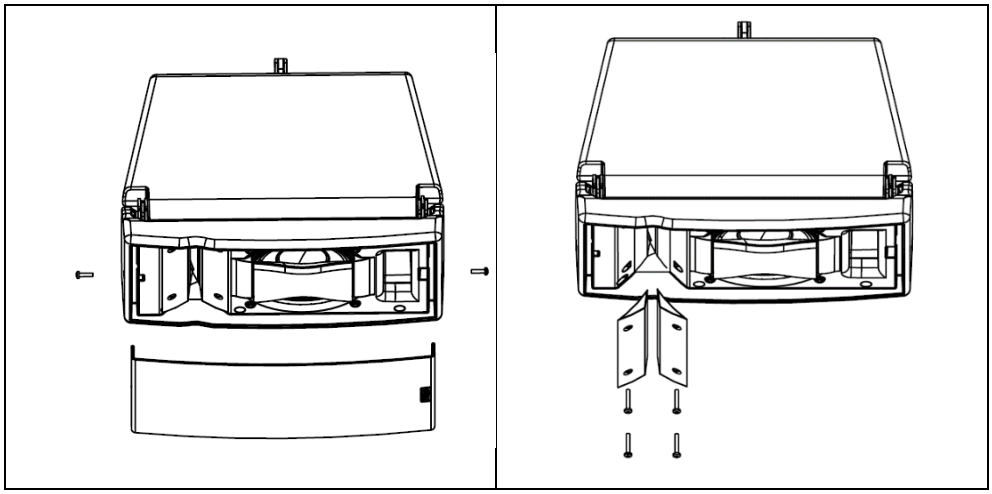
The GEO Wavesource controls dispersion of acoustic energy using a hyperboloid acoustical reflector in the “coupling plane” (the vertical plane of a curved vertical tangent array) and a diffraction slot in the “non-coupling plane” (the horizontal plane of a curved vertical tangent array). The patented Configurable Directivity Device consists of flanges that alter the diffraction slot’s exit flare rate.

5.1 Installing & removing GEO’s Configurable Directivity flanges

GEO M620 are shipped in the 80° dispersion configuration, 120° flanges is an optional accessory (GMT-FLG)

To change horizontal dispersion from 80° to 120° and vice-versa:

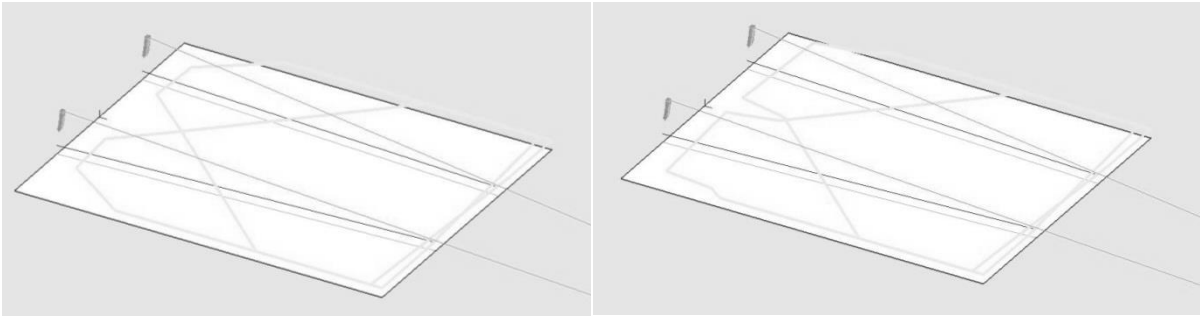
- Remove the front grill (TORX15, drawings below);
- Remove the 2 TORX screws per flange on each side of the GEO Waveguide (drawings below);
- Install or remove the 120° flanges with the 2 TORX screws
- Re-install the grid, being careful that the NEXO logo must be on the woofer side.



5.2 When & where to use Configurable Directivity flanges

The diagrams show audience area coverage for a stereo system. While a GEO cluster will deliver even SPL from the front to the rear of this audience area, there are “holes” near the front in the centre and at the outside edges. We cannot fill the outside coverage gaps without enlarging the centre gap, and vice versa (left figure below).

If 120° Configurable Directivity Devices are installed at the bottom cabinet of the clusters, coverage will look more like the pattern in right figure below.



-6dB coverage, all GEO M620 in 80° configuration

-6dB coverage, bottom GEO M620 in 120° configuration

In curved vertical arrays, the 120° Configurable Directivity Device can be used:

- On the bottom row of curved vertical arrays, to fill in coverage gaps in the front rows.
- On all rows of curved vertical arrays, in cases where 120° of horizontal coverage is preferred to 80°.

IMPORTANT

Installing or removing one of the two flanges anticipating asymmetrical coverage will degrade both coverage and frequency response.

6 GEO M6 HARDWARE SETUP PROCEDURE

Before proceeding with assembly of GEO M6 and MSUB12 arrays, please ensure that the components are present and undamaged. A component list is appended to this manual. In the event of any shortage, please contact your supplier.

For maximum efficiency the GEO M6 and MSUB12 rigging system requires three experienced persons for set-up: typically, one motor hoist operator, and one operator per side of the array. Good synchronisation and crosscheck between the operators are key elements for a reliable and safe set-up.

6.1 Safety first

GEO M6 and MSUB12 Rigging System structural computations and related documents are available in NS-1 or at NEXO (info@nexo.fr) upon request.

We include this section to remind you of safe practice when flying the GEO M6 and MSUB12 system. Please read it carefully. However, user must always apply his or her knowledge, experience and common sense. If in any doubt, seek advice from your supplier or NEXO agent.

This manual offers guidance only for GEO M6 and MSUB12 loudspeaker systems. References in this manual to other rigging equipment such as motor hoists, steels, shackles etc. are made to clarify the description of rigging procedures. The user must ensure that operators are properly trained by other agencies in the use of these items.

The GEO M6 and MSUB12 Rigging System has been optimised for the deployment of curved vertical arrays of GEO M6 and MSUB12 loudspeakers. Angle adjustment between cabinets has been limited to specific settings to ensure correct acoustic coupling.

The GEO M6 and MSUB12 Rigging System is a professional precision tool set and should be handled with extreme care. Only persons who are fully conversant with the operation of the GEO M6 and MSUB12 Rigging System and provided with suitable safety equipment should deploy GEO Arrays. Misuse of the GEO M6 and MSUB12 Rigging System could lead to dangerous consequences.

Used and maintained correctly, the GEO M6 and MSUB12 Rigging System will give many years of reliable service in portable systems. Please take the time to read and understand this manual. Always use NS-1 to determine the optimum angle settings for a particular venue, hang point and curved vertical GEO M6 and MSUB12 cluster. Applied forces and moments are strongly cabinet quantity and angle configuration dependent. Cluster configuration must be implemented and validated in NS-1 prior to installation.

6.1.1 Flown systems safety

Always inspect all the rigging components and cabinets for damage before assembly. Pay special attention to the lifting points, and safety clips. If you suspect that any of the components are damaged or defective, DO NOT USE THE AFFECTED PARTS. Contact your supplier for replacements.

Read this manual carefully. Also, be familiar with the manuals and safe working procedures for any ancillary equipment that will be used with the GEO M6 and MSUB12 Rigging System.

Applied forces and moments are strongly cabinet quantity and angle configuration dependent. Cluster configuration must be implemented and validated in NS-1 prior to installation.

Ensure that all local and National regulations regarding the safety and operation of flying equipment are understood and adhered to. Information on these regulations can usually be obtained from Local Government Offices.

When deploying a GEO M6 and MSUB12 system always wear protective headwear, footwear and eye protection.

Do not allow inexperienced persons to handle a GEO M6 and MSUB12 system. Installation personnel should be trained in loudspeaker flying techniques and should be fully conversant with this manual.

Ensure that motor hoists, hoist control systems and ancillary rigging components are currently certified as safe and that they pass a visual inspection prior to use.

Ensure that public and personnel are not allowed to pass beneath the system during the installation process. The work area should be isolated from public access.

Never leave the system unattended during the installation process.

Do not place any object, no matter how small or light, on top of the system during the installation procedure. The object may fall when the system is flown and is likely to cause injury.

Secondary safety steels must be installed once the system has been flown to the operating height. Secondary steels must be fitted irrespective of requirements of the local safety standards applicable to the territory.

Ensure that the system is secure and prevented from pivoting around the motor hoist.

Avoid any form of excessive dynamic loading to the assembly (structural computations on GEO M6 and MSUB12 Rigging System are based on a 1/1.2 factor for hoist or motor acceleration).

NEVER attach any item to the GEO M6 and MSUB12 system other than the GEO M6 and MSUB12 accessories.

When flying outdoor systems ensure that the system is not exposed to excessive wind or snow loads and is protected from rainfall.

In case of wind greater than 8 on Beaufort scale (72km/h – 45mph), a touring system has to be landed or an additional securing has to be implanted.

For fixed installations, wind loading has to be taken into account in accordance to the national standards.

The GEO M6 and MSUB12 Rigging System requires regular inspection and testing by a competent test centre. NEXO recommend that the system is load tested and certified annually or more frequently if local regulations require.

When de-rigging the system ensure that the same duty of care is given to the procedure as for the installation. Pack GEO M6 and MSUB12 components carefully to prevent damage in transit.

6.1.2 Ground stacking safety

Statistically, many more injuries occur due to unstable ground stacked PA systems than those associated with flown systems. There are several reasons for this fact, however the message is clear:

Always survey the supporting structure upon which a ground stack is to be built. Always look beneath PA wings to inspect the deck support and if necessary ask for the stage scrims and dressings be removed to allow access.

If the stage surface slopes, as it does in some theatres, ensure that the system is prevented from sliding forwards due to vibration. This may require the fitting of timber battens to the stage floor.

For outdoor systems ensure that that the system is protected from wind forces which might cause the ground stack to become unstable. Wind forces can be huge, especially upon large systems, and should never be underestimated. Observe meteorological forecasts, calculate the “worst case” effect upon the system prior to erection and ensure that the system is secured appropriately.

Take care when stacking cabinets. Always employ safe lifting procedures and never attempt to build stacks without sufficient personnel and equipment.

Never allow anyone, whether operators, artists or members of the public to climb onto a ground stacked PA system. Anyone who needs to climb over 2m (6 ft) high should be fitted with suitable safely equipment including a clip-on harness. Please refer to local Health and Safety legislation in your territory. Your dealer can help with advice on access to this information.

Apply the same attention to all safety matters when de-stacking systems.

Be aware that safety procedures are as important in the truck and in the warehouse as they are at the venue.

6.1.3 Contacts

Correct training is fundamental to safe practise when working with loudspeakers flying systems. NEXO recommend that users contact local industry associations for information on specialist course.

Information for International training agencies can be obtained by contacting either:

The Production Services Association (PSA),
School Passage,
Kingston-upon-Thames,
KT1 SDU Surrey,
ENGLAND
Telephone: +44 (0) 181 392 0180
www.psa.org.uk/

Rigstar Training and Testing Center
82 Industrial Dr. Unit 4
Northampton, Massachusetts 01060 U.S.A.
Phone: 413-585-9869
www.rigstar.com/

ESTA
Entertainment Services & Technology
Association
875 Sixth Avenue, Suite 1005
NEW YORK, NY 10001 USA
Phone: 212-244-1505
www.esta.org

6.2 General Description

6.2.1 GEO M6 “Left” and “Right” configuration

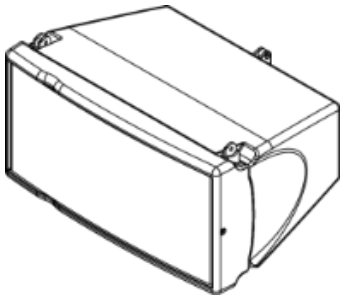
GEO M6 can be installed “Left” or “Right”:

- “Left” means HF waveguide is left as seen from front

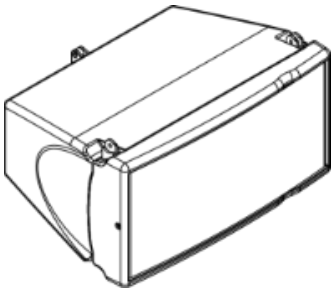
- “Right” means HF waveguide is right as seen from front.

GEO M6 can be connected to bumpers “Left” or “Right” by simply flipping the cabinets.

Whenever possible, NEXO recommends symmetrical designs (preferably NEXO logo outwards and HF waveguide inwards in stereo configurations)

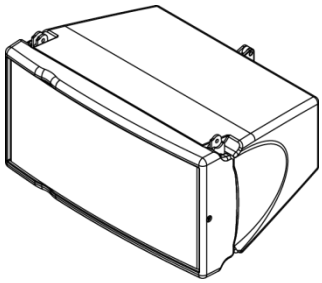


GEO M620 “Left”

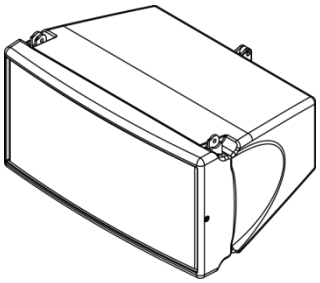


Geo M620 “Right”

6.2.2 GEO M6 modules rigging system



GEO M620



GEO M6Bass

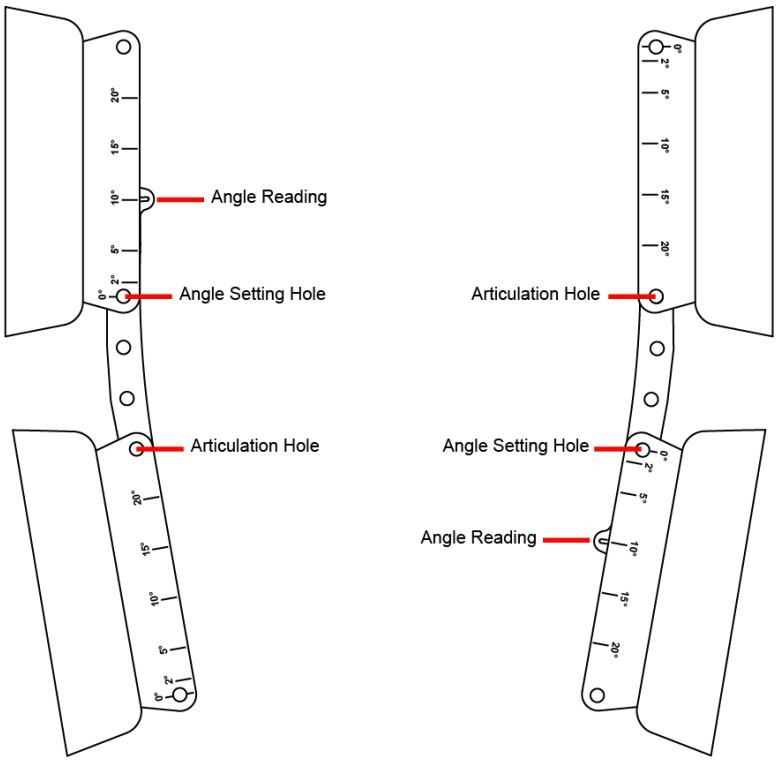
GEO M6B and GEO M620 feature a 3-point rigging system, 2 for front connection, and 1 for rear connection and angle splay settings.

Angle splay setting sequence is: 0.5° / 2° / 5° / 10° / 15° / 20°

GEO M6 angle setting bar connects 2 x GEO M6 with 2 quick release pins. It can be set upwards or downwards or removed on user’s choice (independently from “Left” and “Right” configuration):

- If the angle settings bars are set downwards, it will have to be removed from cluster bottom cabinet
- If angle setting bars are set upwards, it will have to be removed when attached to bumper

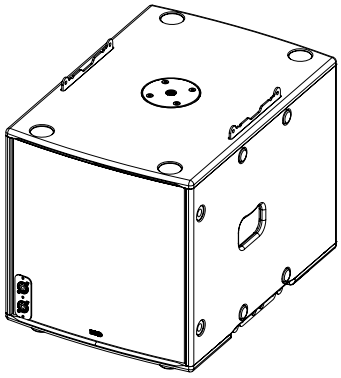
Below drawings show rear connecting bar configuration according to “left” or “right” configuration.



In order to avoid misuse or wrong angle setting by confusing left and right printings on GEO M6, remember that:

- The cabinet articulation hole around which angle setting bar rotates is always the one with no angle value indication
- The cabinet angle setting hole along which angle setting bar slides is always next to the “0°” indication
- The angle reading values are defined by the printing on the same side

6.2.3 MSUB12 and MSUB12-I rigging system



MSUB12 and MSUB12-I feature a 4-points rigging system, 2 for front and 2 for rear connection.

Angle splay settings are as follow:

- MSUB12 to MSUB12: 0°
- MSUB12 to GEOM620 (or GEOM6B): -12° / -9° / -3° / 0° / 3° / 6° / 9° / 12°

MSUB12 is connected by using quick release pins (not provided, 4 x VXT-BL615 have to be ordered separately for each MSUB12) while MSUB12-I is shipped with 4 axes, plates and screws.

6.2.4 Permanent installation variant

For permanent installations where systems won’t have to be frequently assembled and disassembled

- GEOM6 front pins are replaced by an axis with break nuts
- GEOM6 rear pins are replaced by shoulder screws with break nuts

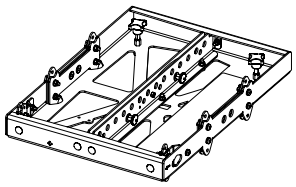
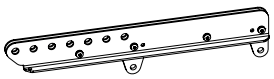
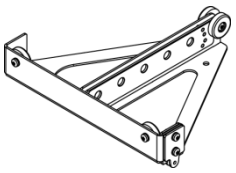
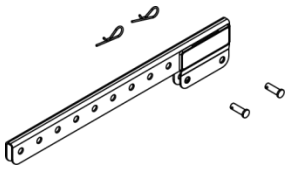
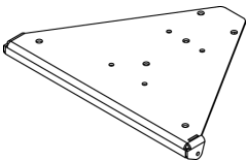
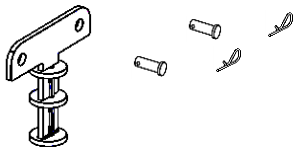
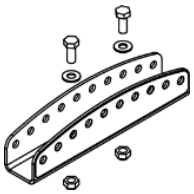
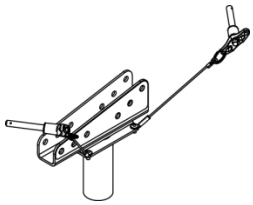
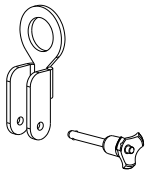
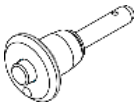
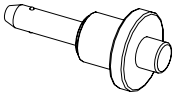
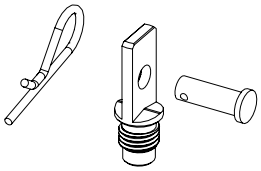
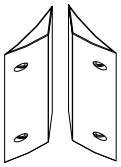
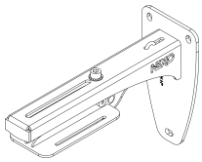
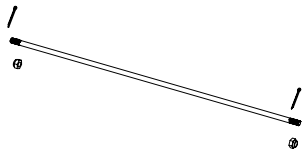
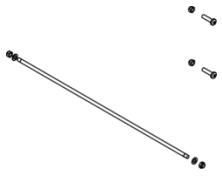
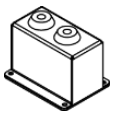
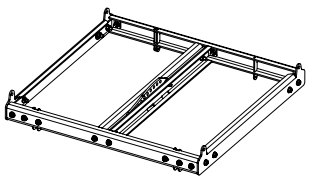
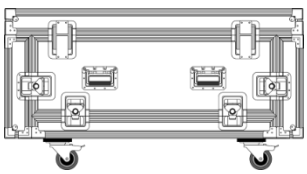
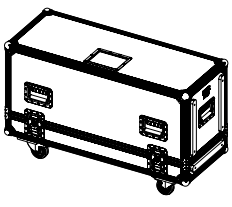
Please note that these elements are not shipped with GEO M6 but are included in the GMI-BNFIX kit.

- MSUB12 front and rear pins and MSUB12-I axes and plates are replaced by two axes with nuts and safety pins only for the connection to VNT-BUMPM6

Please note that these elements are not shipped neither with MSUB12 nor MSUB12-I but are included in the VNI-FIXBUMPM6 kit.

6.2.5 Accessories

GEO M6 and MSUB12 accessories are:

VNT-BUMPM6 	VNT-EXBARM6 	GMT-BUMPER  (**up to 12xGEO M6 max**)
GMT-EXBAR 	GMT-LBUMP  (**up to 3xGEO M6 max**)	GMT-BPADPT-2 
GMT-LBPADPT 	VNT-POLE 	VNT-XHBRK 
VNT-TCBRK 	VXT-BL515 	VXT-BL615 
VNT-MNSTKM6 	GMT-FLG 	VNI-WS15 
VNI-FIXBUMPM6 	GMI-BNFIX 	GMI-IPCOV 
VNI-LNKM61018 	GMT-6CASE 	MST-2CASEMSUB12 

6.2.6 Warnings on GEO M6 and MSUB12 accessories

WARNING

All GEO M6 accessories are specifically rated in agreement with structural computations.

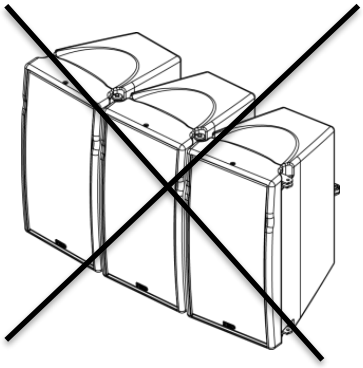
Never use other accessories – including push-pins - when assembling GEO M6 cabinets than the ones provided by NEXO: NEXO will decline responsibility over the entire GEO M6 accessory range if any component is purchased from different supplier.

WARNING

All GEO M6 accessories have been designed so that cabinets are arrayed vertically.

GEO M6 horizontal assemblies as shown in figure below are UNSAFE and STRICTLY PROHIBITED.

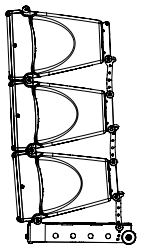
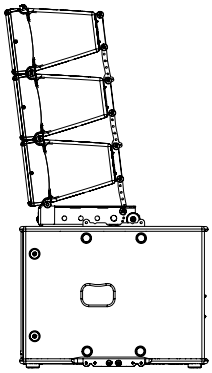
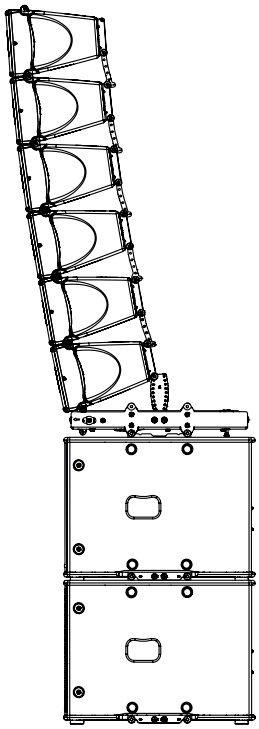
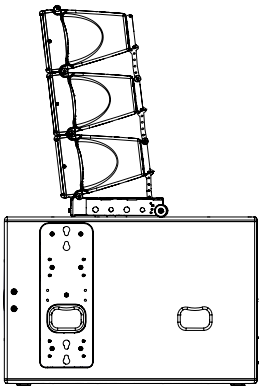
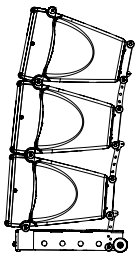
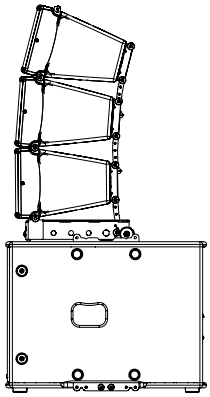
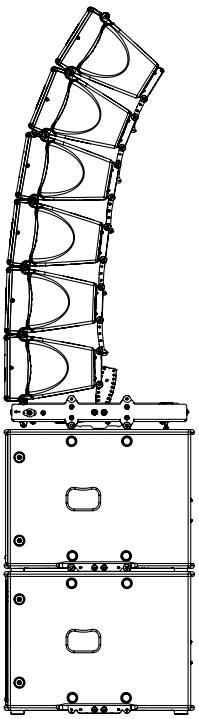
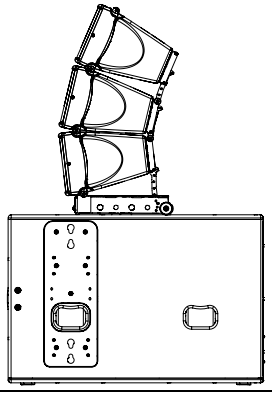
YES



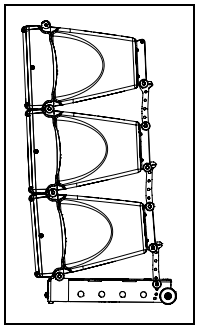
NO

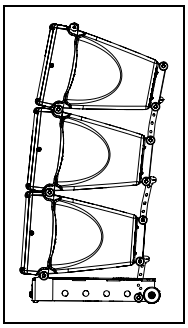
6.3 Ground Stack setups

6.3.1 Described configurations

GEO M6 only GMT-BUMPER	MSUB12 + GEO M6 VNT-MNSTKM6	MSUB12 + GEO M6 VNT-BUMPM6	LS18 + GEO M6 GMT-BUMPER
			
			

6.3.2 GEOM6 only on GMT-BUMPER





Required item

- 1 x GMT-BUMPER
- 4 x VXT-BL515 per GEO M6

IMPORTANT

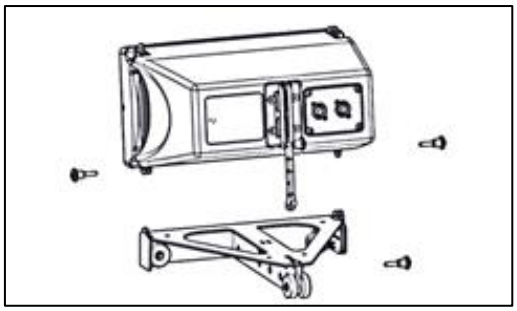
GMT-BUMPER is rated for a maximum of 3 stacked GEO M6 in any inter cabinet angle configuration with 0°/-7° initial angle, provided the stack is assembled according to below rules:

- GMT-BUMPER must always be installed on a horizontal surface

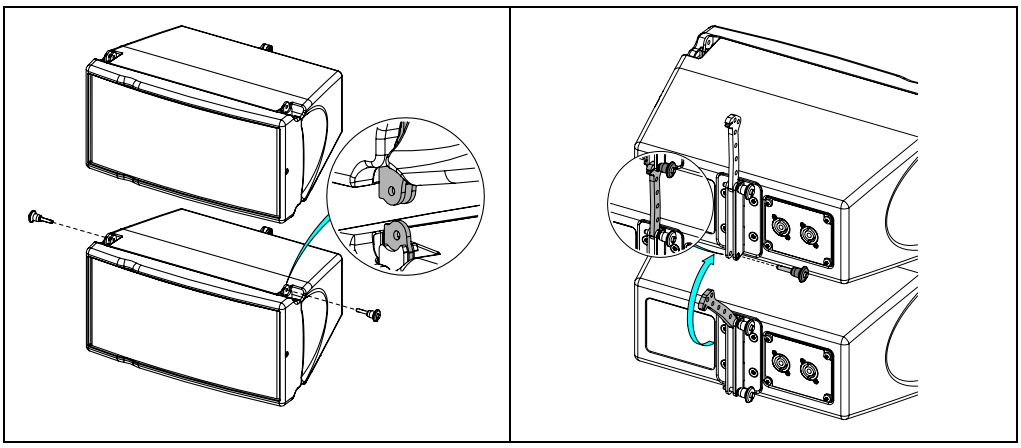
- Public is not allowed within a safety area which radius is equal or higher than assembly height.

Procedure

- Set GMT-BUMPER on the ground.
- Connect bottom GEO M6 to GMT-BUMPER at required vertical angle with 4 x VXT-BL515 quick release pins.



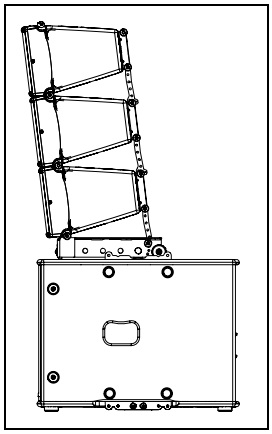
- Connect subsequent GEO M6 at required inter-angle values with 4 x VXT-BL515 quick release pins.

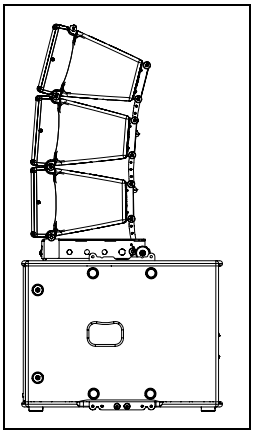


IMPORTANT

Ensure that 5mm pins are properly locked into GEO M6 and GMT-BUMPER

6.3.3 MSUB12 and GEO M6 with Ministack adaptor





Required item

- 1 x VNT-MNSTKM6
- 1 x GMT-BUMPER
- 4 x VXT-BL515 per GEO M6
- (N-1) x VXT-BL615 for N x MSUB12

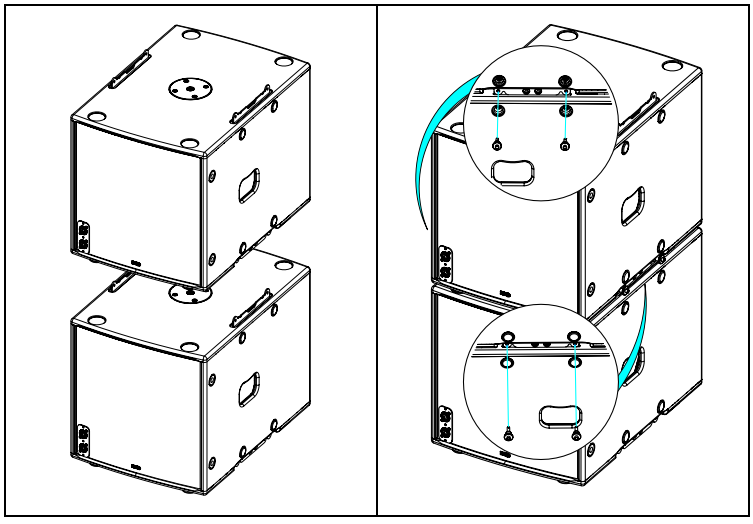
IMPORTANT

Ground stack assembly is rated for a maximum of 2 x MSUB12 + 3 x GEO M6 in any inter cabinet angle configuration with 0°/-7° initial angle, provided this device is assembled according to below rules:

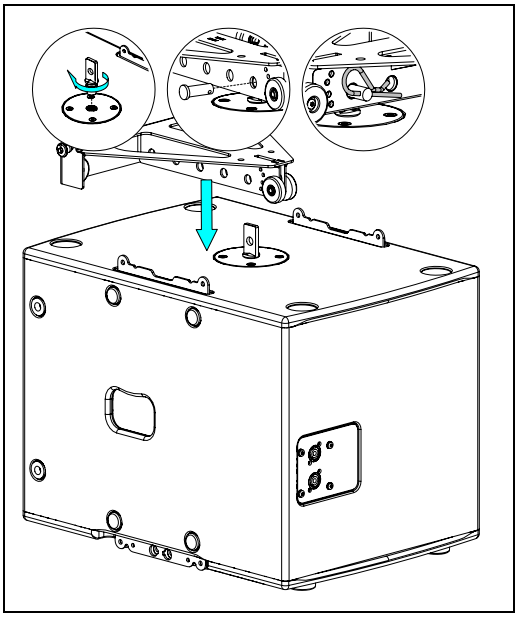
- **MSUB12 must always be installed on a horizontal surface**
- **Public is not allowed within a safety area which radius is equal or higher than assembly height.**

Procedure

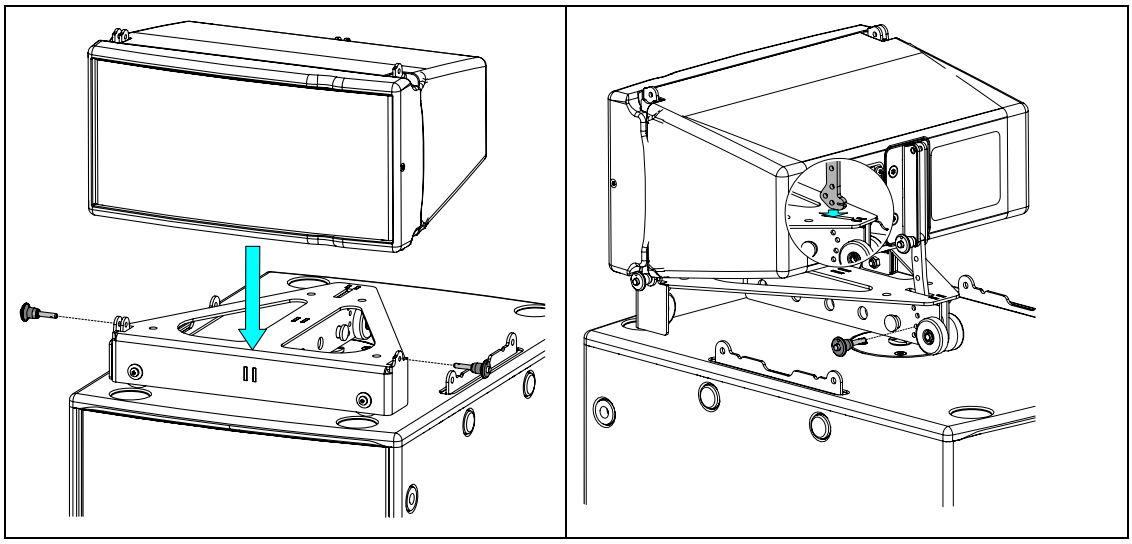
- Set first MSUB12 on the ground
- Align second MSUB12 on top of first and lock them by inserting the 4 VXT-BL615.



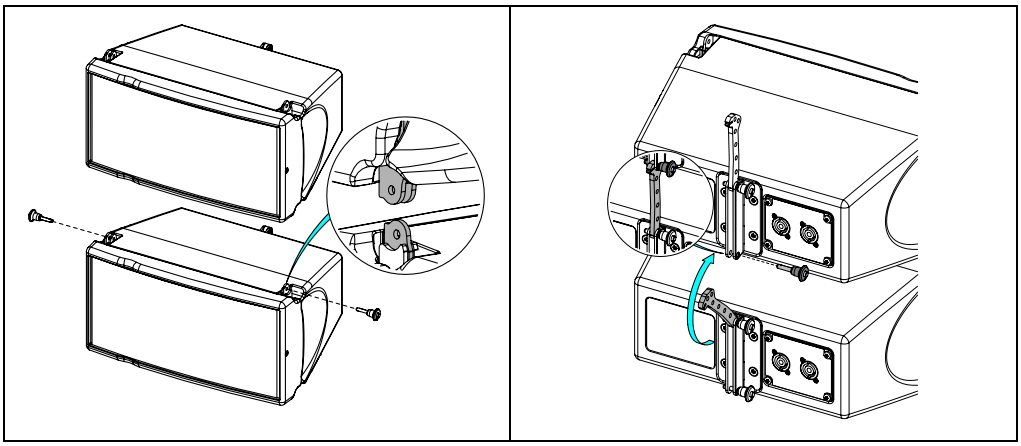
- Place MNSTKM6 in the M20 footprint of the MSUB12.
- Place GMT-BUMPER above MSUB12 and align one hole of it with MNSTKM6.
- Insert the clevis pin and secure with “R” clip.



- Connect bottom GEO M6 to GMT-BUMPER at required vertical angle with 4 x VXT-BL515 quick release pins.



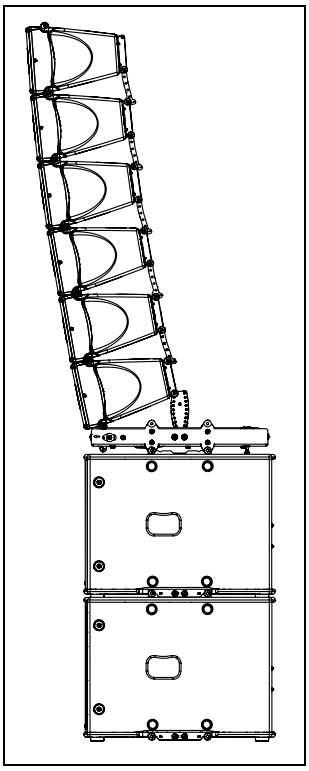
- Connect subsequent GEO M6 at required inter-angle values with 4 x VXT-BL515 quick release pins.

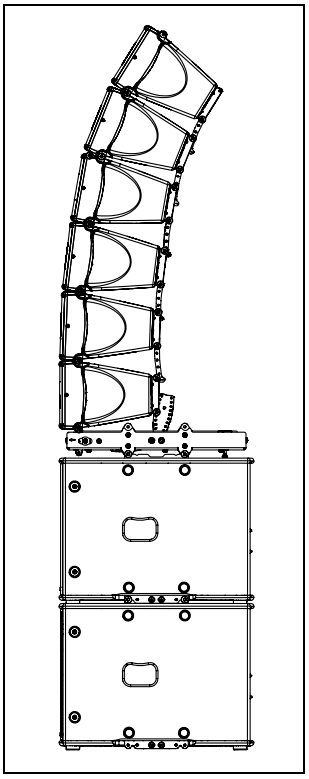


IMPORTANT

Ensure that the clevis pin is properly locked in VNT-MNSTKM6, and that 5mm pins are properly locked into GEO M6

6.3.4 MSUB12 and GEO M6 on Touring Bumper





Required items

- 1 x VNT-BUMPM6
- 3 x VXT-BL515 for first GEO M6
- 4 x VXT-BL515 per GEO M6
- 4 x VXT-BL615 per MSUB12

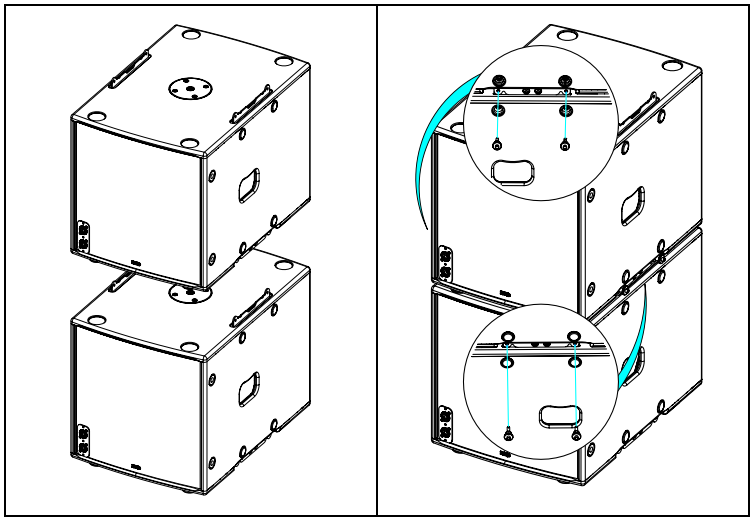
IMPORTANT

Ground stack assembly with VNT-BUMPM6 is rated for a maximum of 2 x MSUB12 + 6 x GEO M6 in any inter cabinet angle configuration with +/-12° initial angle, provided this device is assembled according to below rules:

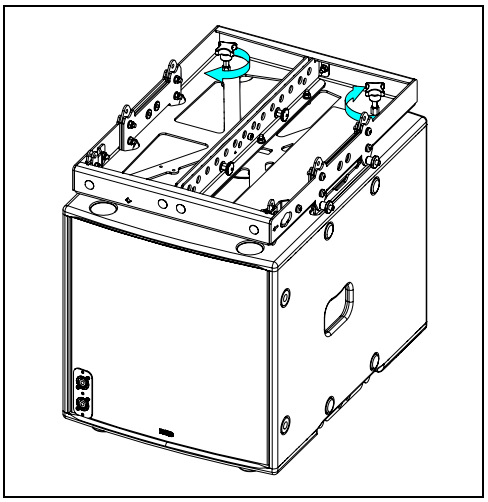
- **MSUB12 must always be installed on a horizontal surface.**
- **Public is not allowed within a safety area which radius is equal or higher than assembly height.**
- **It is highly recommended to secure the system to a fix point located at the back of the stack.**

Procedure

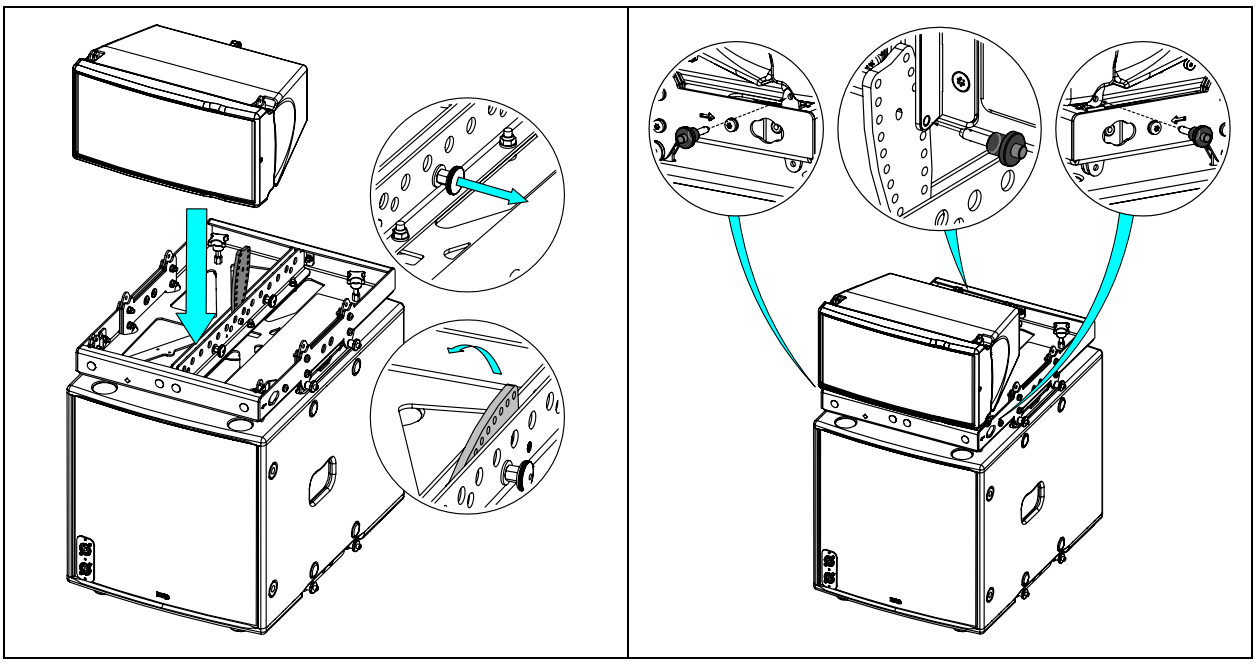
- Set first MSUB12 on the ground
- Align second MSUB12 on top of first and lock them by inserting the 4 VXT-BL615.

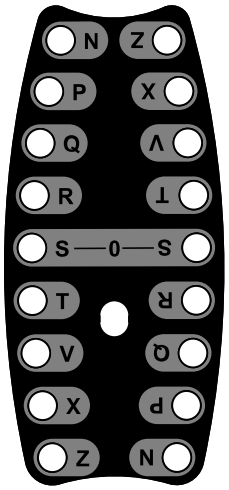


- Position VNT-BUMPM6 on top of MSUB12 and secure it by inserting 4 x VXT-BL615
- Lock the 2 wheels to avoid vibrations, put the skids in contact with MSUB12 but do not force.



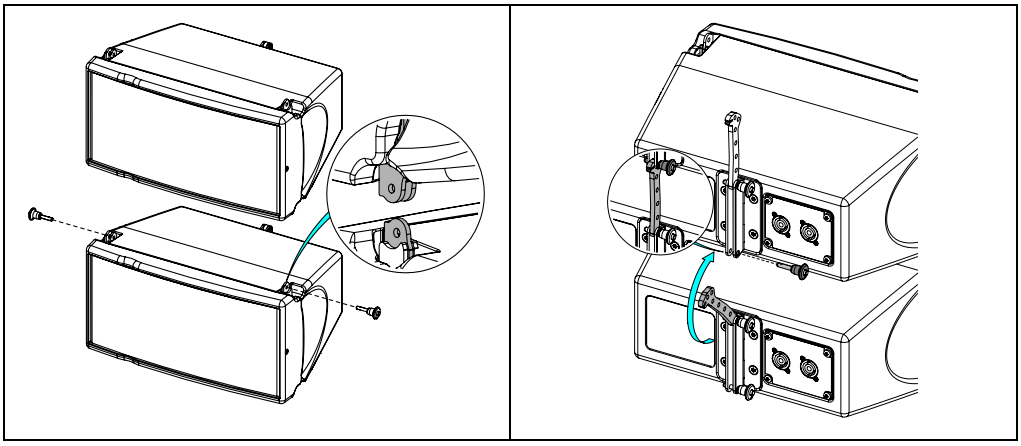
- Pull the bolt of VNT-BUMPM6 to unlock the link bar and rotate it
- Position first GEO M6 on top of VNT-BUMPM6 and secure the two front points by inserting 2 x VXT-BL515 quick release pins
- Connect GEO M6 rear point to VNT-BUMPM6 link bar at required inclination by inserting 1 x VXT-BL515 quick release pin





	STACKING
+12°	N
+9°	P
+6°	Q
+3°	R
0°	S
-3°	T
-6°	V
-9°	X
-12°	Z

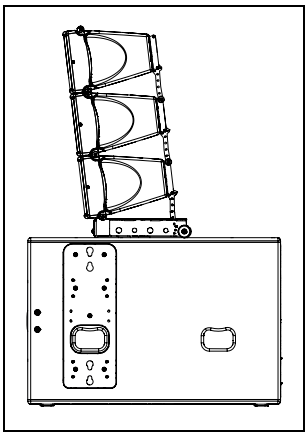
- Connect subsequent GEO M6 at required inter-angle values with 4 x VXT-BL515 quick release pins.

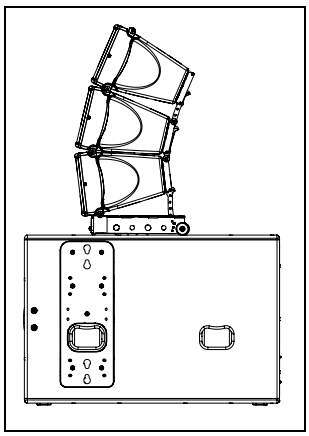


IMPORTANT

Ensure that 5mm pins are properly locked into GEO M6 and VNT-BUMPM6

6.3.5 GEO M6 stacked on LS18





Required items

- 1 x GMT-BUMPER
- 1 x GMT-BPADPT-2
- 4 x VXT-BL515 per GEO M6

IMPORTANT

GMT-BPADPT-2 is rated for a maximum of 6 x GEO M6 on a single LS18 in any inter cabinet angle configuration, with 0°/-7° initial angle, provided this device is assembled according to below rules:

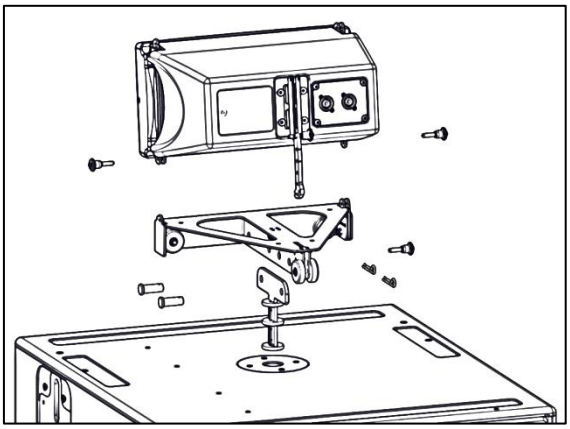
- LS18 must always be installed on a horizontal surface.

- Ensure that public is not allowed within a safety area which radius is equal or higher than assembly height.

- It is highly recommended to secure the system to a fix point located at the back of the stack.

Procedure

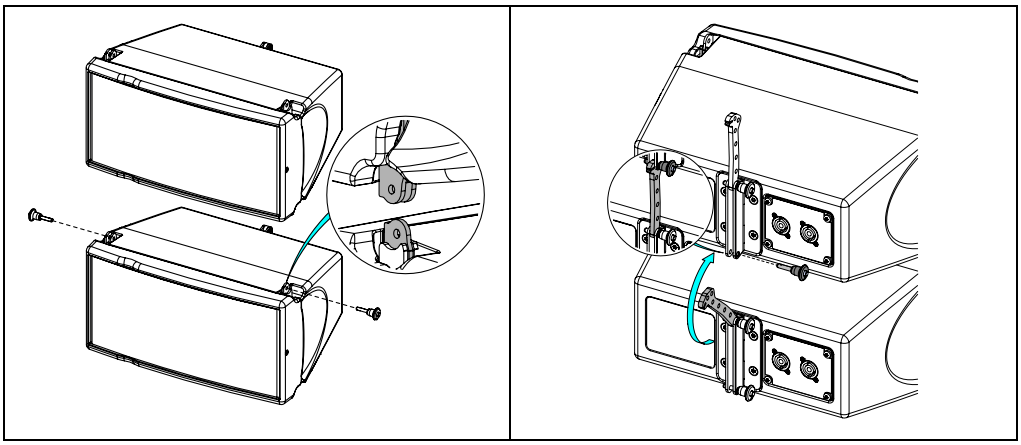
- Connect GMT-BPADPT-2 poles stand adaptor to GMT BUMPER using provided clevis pin; secure pin with “R” clip
- Stack GMT-BUMPER on top of LS18 by inserting GMT-BPADPT-2 into LS18 pole mount hole



- Connect bottom GEO M6 to GMT-BUMPER at required vertical angle with 4 x VXT-BL515 quick release pins

NB: please note that bottom cabinet angle can be adjusted from -7° to 0° in relation to LS18

- Connect subsequent GEO M6 at required inter-angle values with 4 x VXT-BL515 quick release pins



IMPORTANT

Ensure that the clevis pin is properly locked in GMT-BPADPT-2, and that 5mm pins are properly locked into GEO M6

6.3.6 1 to 3 (maximum) GEO M6 pole mounted

Required items

- 1 VXT-PLSTD or 1 Speaker Stand 35mm diameter
- 1 x GMT-LBUMP
- 1 x GMT-LBPADPT
- 1 x VNT-POLE
- 3 x VXT-BL515 for first GEO M6
- 4 x VXT-BL515 for second and third GEO M6

IMPORTANT (SPEAKER STAND)

- Speaker stand must be rated for assembly weight (30kg rated load min).

- Speaker stand must always be installed on a horizontal surface.

- Stand height and footprint must be defined to prevent assembly from collapsing.

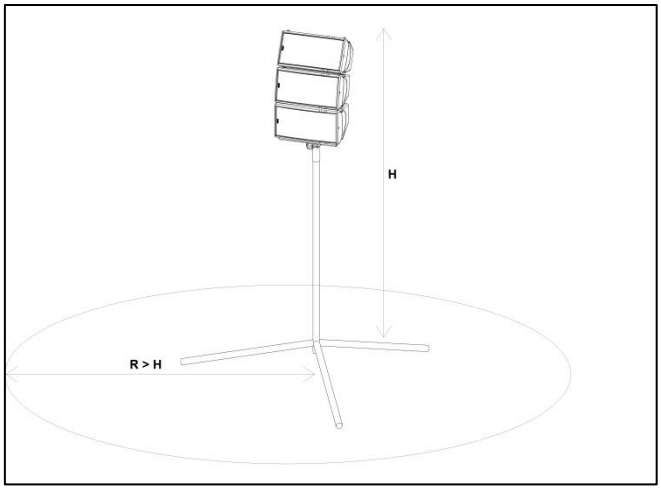
- Ensure that public is not allowed within a safety area which radius is equal or higher than assembly height.

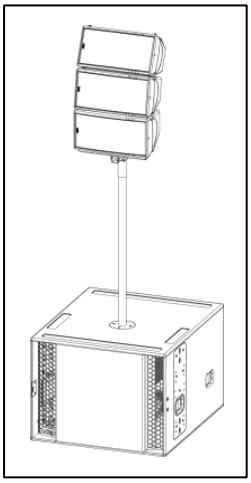
IMPORTANT (NEXO SUB POLE STAND)

- NEXO VXT-PLSTD pole stand only should be used for mounting on top of NEXO SUB.

- NEXO SUB must always be installed on a horizontal surface.

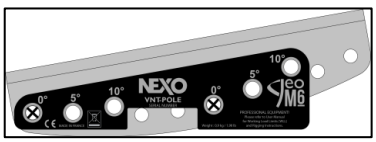
- Ensure that public is not allowed within a safety area which radius is equal or higher than assembly height.



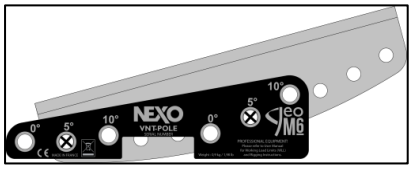


Procedure

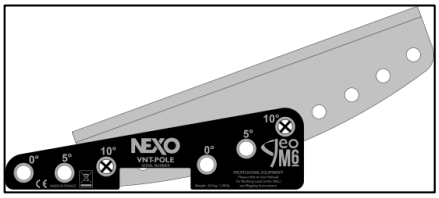
- Attach the GMT-LBPADPT to the GMT-LBUMP by using the screws, washers and bolts provided with GMT-LBPDAPT.
- Use the 2 pins provided with VNT-POLE to attach L-BUMP at required vertical angle, according to below drawings.



Bottom GEO M6 at 0°

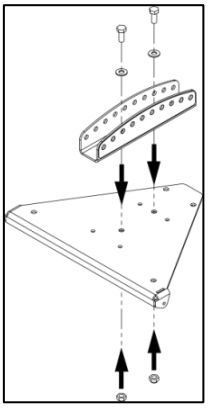


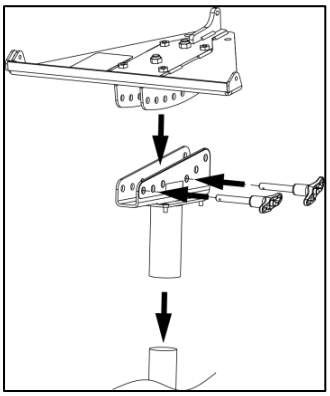
Bottom GEO M6 at -5°



Bottom GEO M6 at -10°

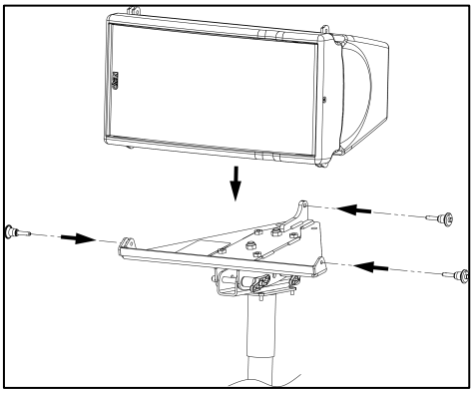
NB: above connection configurations are designed for assembly gravity center being aligned with pole axis, ensuring maximum safety.



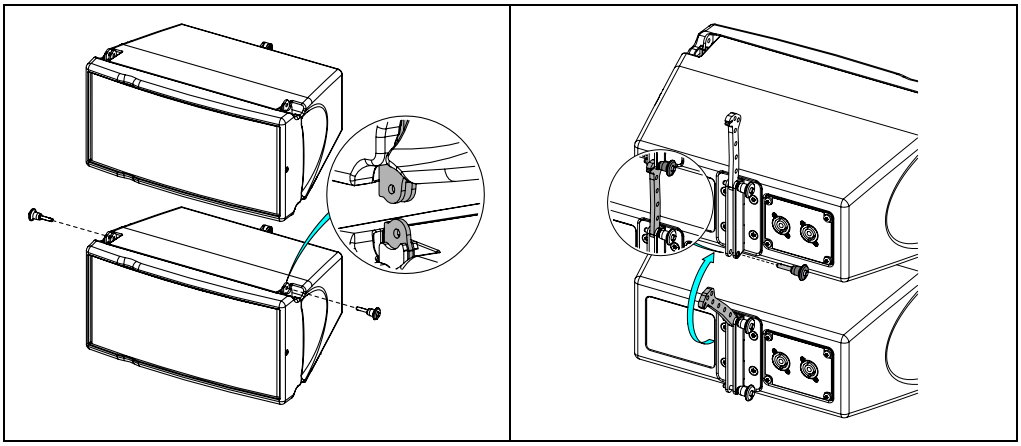


IMPORTANT
Ensure that 8mm pins are properly locked in VNT-POLE

- Connect bottom cabinet to GMT-LBUMP with 3 x VXT-BL515 quick release pins



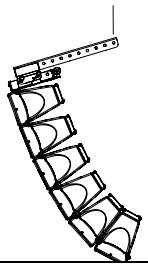
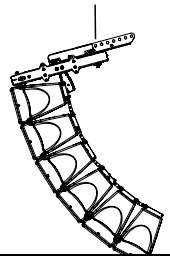
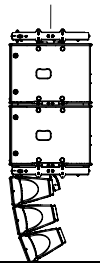
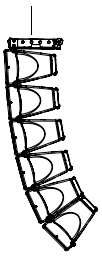
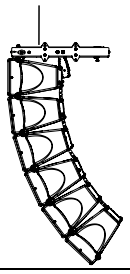
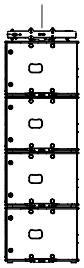
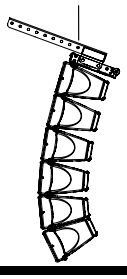
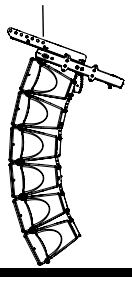
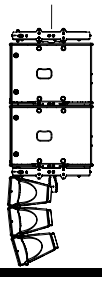
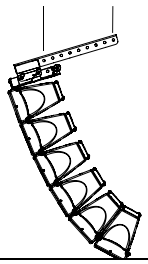
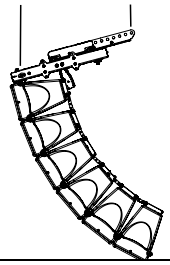
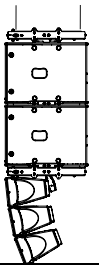
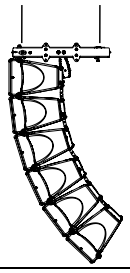
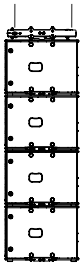
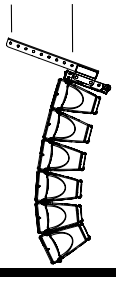
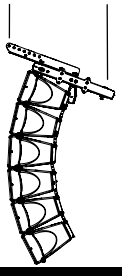
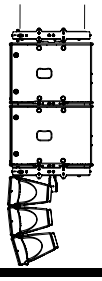
- Lift assembly on speaker stand or on LS18 with VXT-PLSTD pole stand.
- Connect subsequent GEO M6 at required inter-angle values with 4 x VXT-BL515 quick release pins



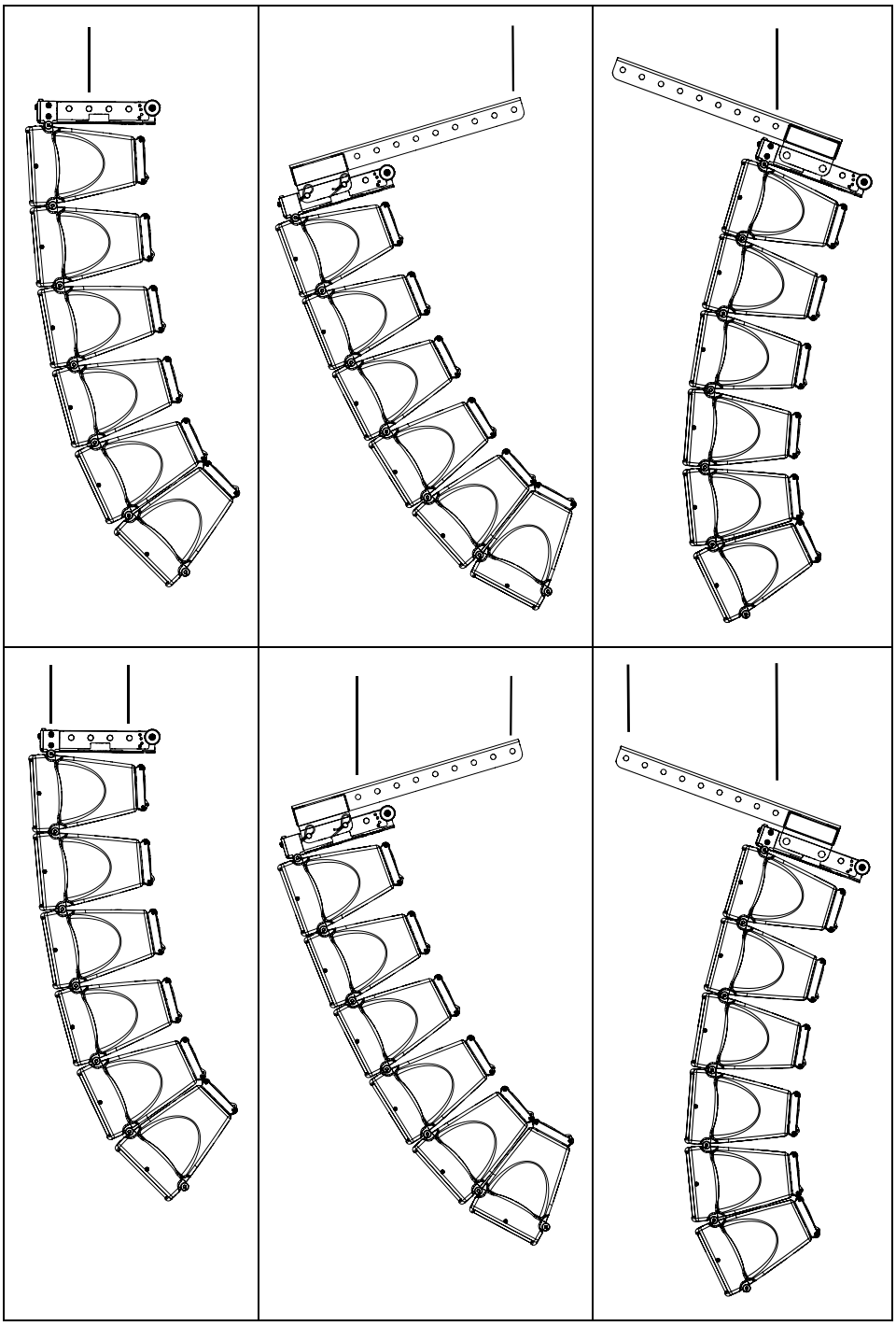
IMPORTANT
Ensure that 5mm pins are properly locked into GEO M6

6.4 Flown clusters setups

6.4.1 Described configurations

	GEOM6 only GMT-BUMPER	GEOM6 only VNT-BUMPM6	MSUB12 only VNT-BUMPM6	MSUB12 + GEOM6 VNT-BUMPM6
1 rigging point				
				
				
2 rigging points				
				
				

6.4.2 GEO M6 only flown with GMT-BUMPER



Required items

- 1 or 2 hoists (not provided).
- 1 x GMT-BUMPER
- 1 x GMT-EXBAR for extended positive and negative bumper angles
- 4 x VXT-BL515 per GEO M6
- 1 x GMT-6CASE for 6 x GEO M6

IMPORTANT

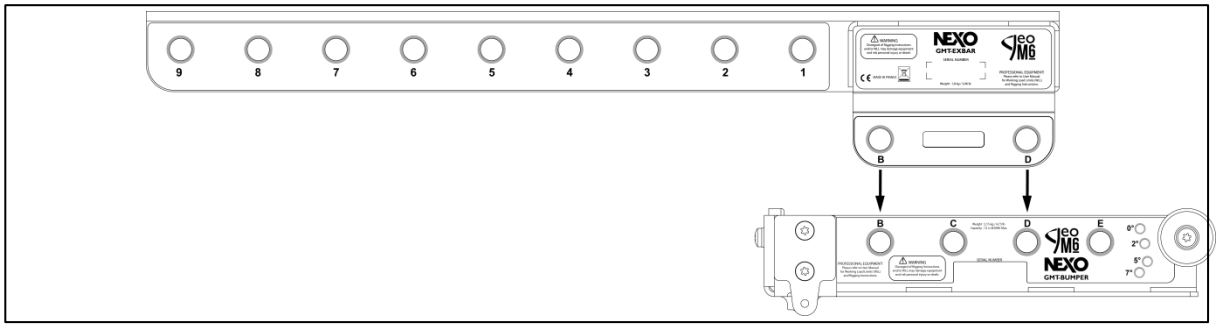
Maximum GEO M6 quantity for flown vertical cluster is 12 (and eventually less).
Please check NS-1 for mechanical Safety Working Load and acoustic computations.

IMPORTANT

Please check configuration in NS-1 for proper motor hoist rating

Procedure with flight case set vertically

- Tip the flight case vertically
- Remove upper cover to access to top cabinet rigging points
- Connect GMT-BUMPER to top cabinet with 4 x VXT-BL515 quick release pins
- If required, connect GMT-EXBAR to GMT-BUMPER by inserting EXBAR clevis pins into GMT-BUMPER “B” and “D” holes
- Connect single hoist to required hole as indicated in NS-1 design
  - “A”, “B”, “C”, “D” or “E” on GMT-BUMPER
  - Or “1” to “9” if using GMT-EXBAR
  - If using 2 hoists, connect these using extreme points
    (“A” and “E”, or “A” and “9” or “”9” and “E”)



GMT-BUMPER and GMT-EXBAR referenced rigging points

IMPORTANT

Ensure hoist hook(s) is (are) properly secured to GMT-BUMPER

- Lift assembly to sufficient height in order to connect additional GEO M6 if required
- Set inter-angle values

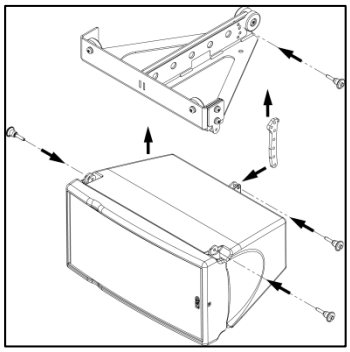
IMPORTANT

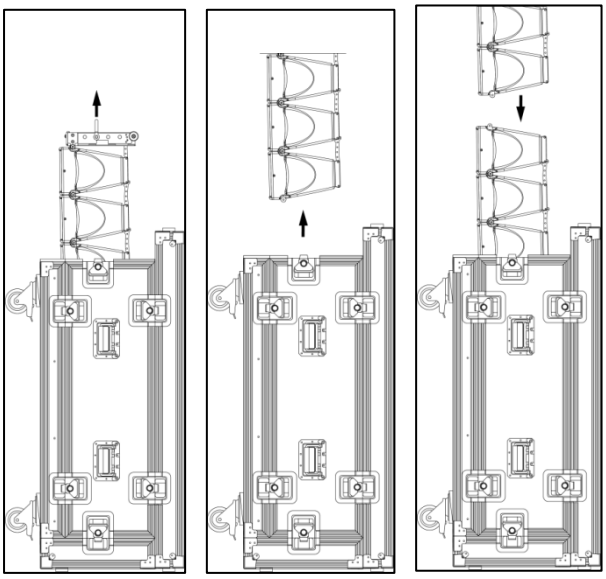
Ensure all pins are properly locked into GEO M6

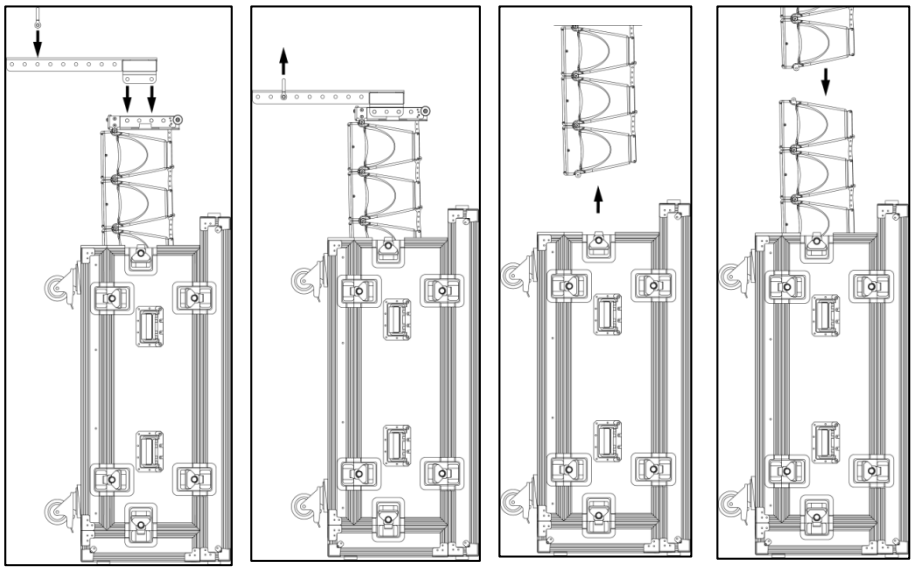
- Lift cluster to NS-1 defined rigging height, secure cluster horizontally to prevent it from rotating
- Secure bumper with secondary safety steel.

IMPORTANT

The requirements for secondary safety systems vary with territories. However, the secondary safety steel MUST have a SWL equivalent or greater than that of the rigging system.

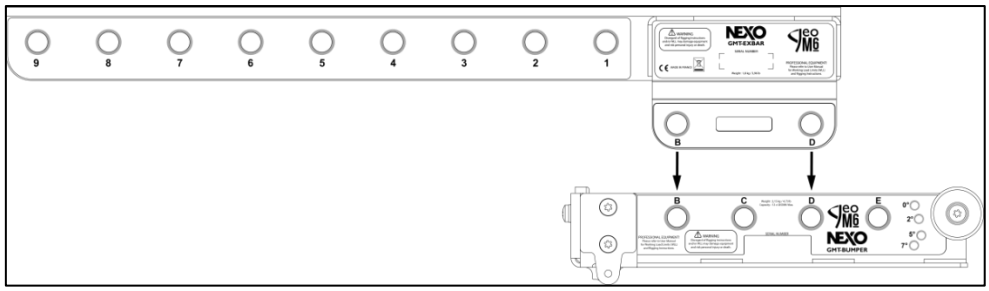






Procedure with flight case set horizontally

- Open upper cover while the flight case is on its wheels
- Connect GMT-BUMPER to top cabinet 4 x VXT-BL515 quick release pins
- If required, connect GMT-EXBAR to GMT-BUMPER by inserting EXBAR clevis pins into GMT-BUMPER “B” and “D” holes
- Insert shackle(s) in bumper or in extension bar in required hole(s) as indicated in NS-1 design and secure shackle(s) bolt(s)
  - If using 1 hoist on GMT-BUMPER, holes are “A” to “E”
  - If using 1 hoist on GMT-EXBAR, holes are “1” to “9”
  - If using 2 hoists, connect these using extreme points (“A” and “E”, or “A” and “9” or “”9” and “E”)



GMT-BUMPER and GMT-EXBAR referenced rigging points

- Connect hoist hook(s) to shackle(s) and start lifting bumper and position angle setting pins at required value

IMPORTANT

Ensure hoist hook(s) is (are) properly secured to GMT-BUMPER

- Attach second set of 6 x GEO M6 to the first set by bringing the second GEO M6 flight case adjacent to the first one, carry on lifting bumper and set inter-angle values for the second set of GEO M6

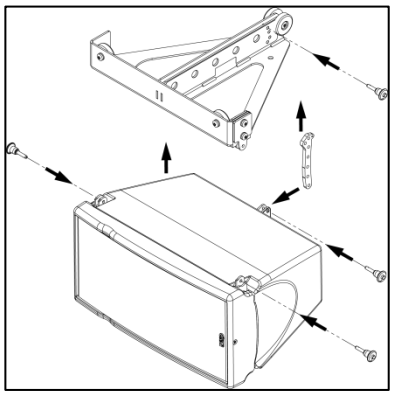
IMPORTANT

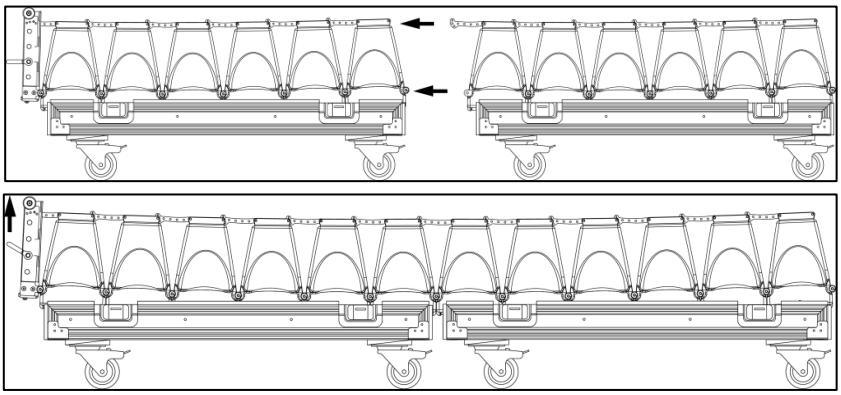
Ensure all pins are properly locked into GEO M6

- Lift cluster to NS-1 defined rigging height, secure cluster horizontally to prevent it from rotating
- Secure bumper with secondary safety steel.

IMPORTANT

The requirements for secondary safety systems vary with territories. However, the secondary safety steel MUST have a SWL equivalent or greater than that of the rigging system.





6.4.3 Variant with maximum 3 GEO M6 and GMT-LBUMP

Required items

- 1 x GMT-LBUMP
- 1 x GMT-LBPADPT
- 1 x VNT-TCBRK (truss mounting) or 1 x VNT-XHBRK (cable mounting)
- 3 x VXT-BL515 for first GEO M6
- 4 x VXT-BL515 for second and third GEO M6

IMPORTANT

Ensure that suspension point is strong enough to hold 4 times GEO M6 cluster weight (35 kg)

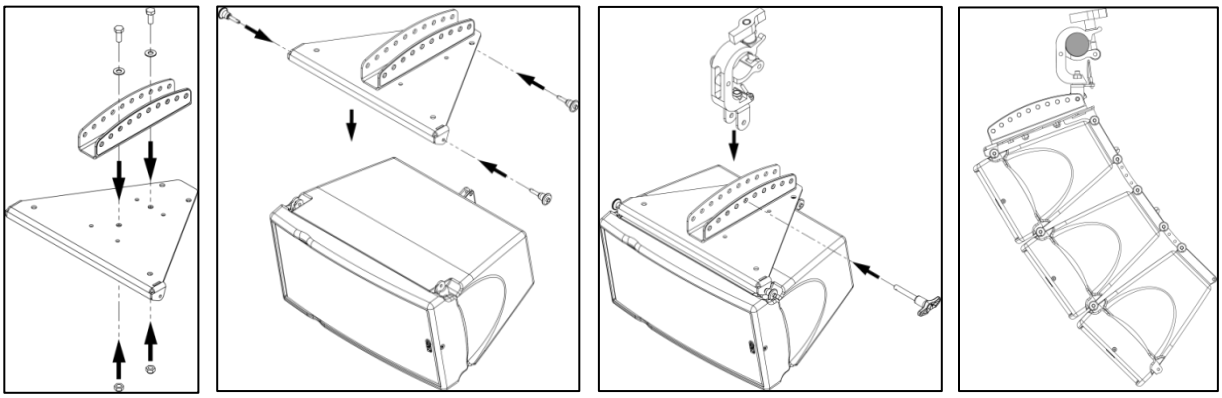
Procedure

- Attach the GMT-LBPADPT to the GMT-LBUMP by using the screws, washers and bolts provided with GMT-LBPADAPT
- Connect top cabinet to GMT-LBUMP with 3 x VXT-BL515 quick release pins
- Connect subsequent GEOM6 at required inter-angle values with 4 x VXT-BL515 quick release pins
- Connect truss clamp VNT-TCBRK or ring clamp VNT-XHBRK to GMT-LBPADAPT by inserting 8x45 quick release pin in required holes for proper vertical aiming

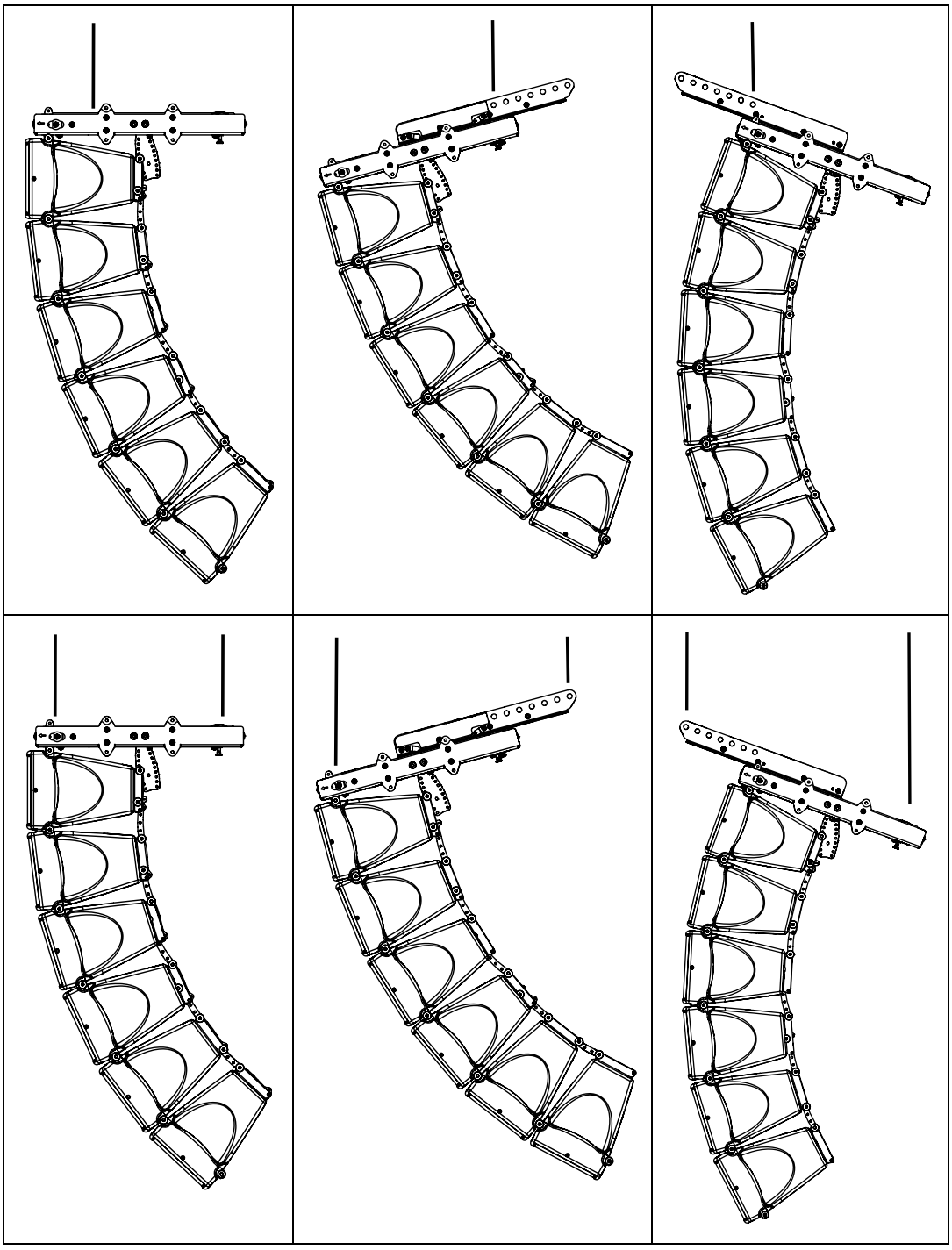
IMPORTANT

Ensure that the 8mm pin is properly locked in GMT-LBADPT, and that 5mm pins are properly locked into GEO M6

- Lift and position assembly, lock and secure clamp on rigging point.



6.4.4 GEO M6 only flown with VNT-BUMPM6



Required items

- 1 or 2 hoists (not provided).
- 1 x VNT-BUMPM6
- 1 x VNT-EXBARM6 for extended positive and negative bumper angles
- 3 x VXT-BL515 for first GEO M6
- 4 x VXT-BL515 per GEO M6

IMPORTANT

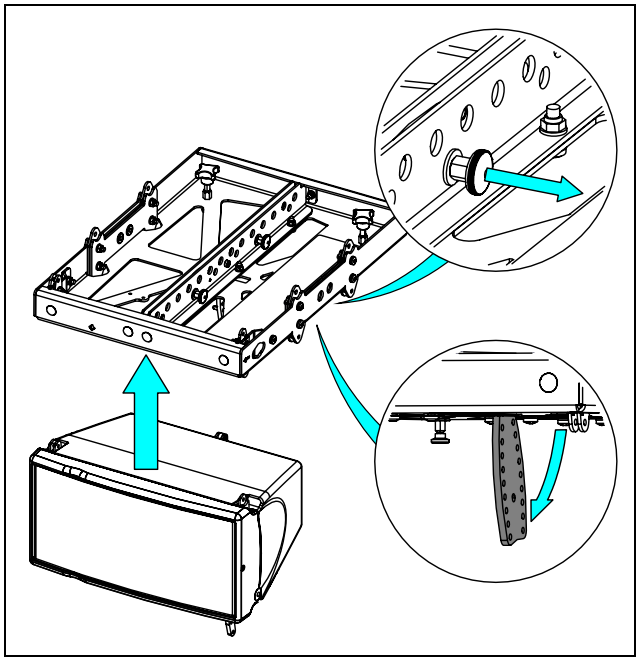
Maximum GEO M6 quantity for flown vertical cluster is 12 (and eventually less).
Please check NS-1 for mechanical Safety Working Load and acoustic computations.

IMPORTANT

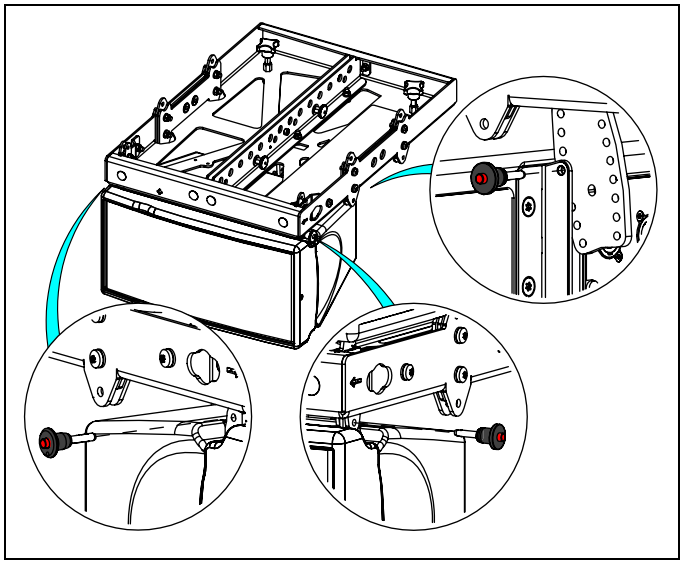
Please check configuration in NS-1 for proper motor hoist rating

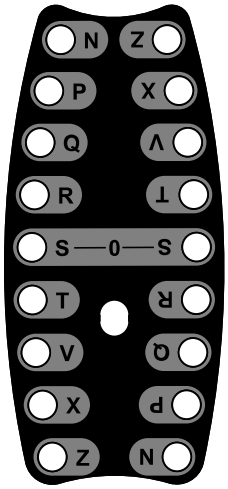
Procedure

- Pull the bolt of VNT-BUMPM6 to unlock the link bar and rotate it
- Position VNT-BUMPM6 on top of first GEO M6



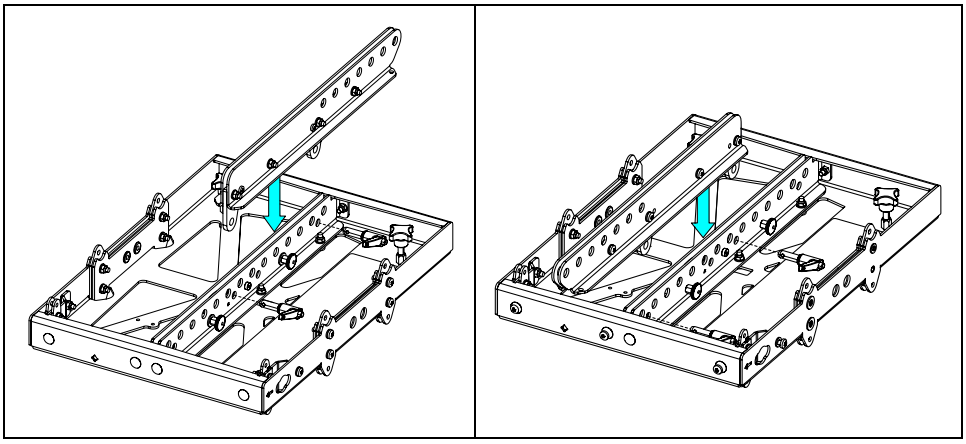
- Secure the two front points by inserting 2 x VXT-BL515 quick release pins
- Connect GEO M6 rear point to VNT-BUMPM6 link bar at required inclination by inserting 1 x VXT-BL515 quick release pin





HANGING	
Z	+12°
X	+9°
V	+6°
T	+3°
S	0°
R	-3°
Q	-6°
P	-9°
N	-12°

- If required, connect VNT-EXBARM6 to VNT-BUMPM6 by inserting the extension bar guides into the slots of the bumper
- Secure it with the two quick release pins connected to the extension bar



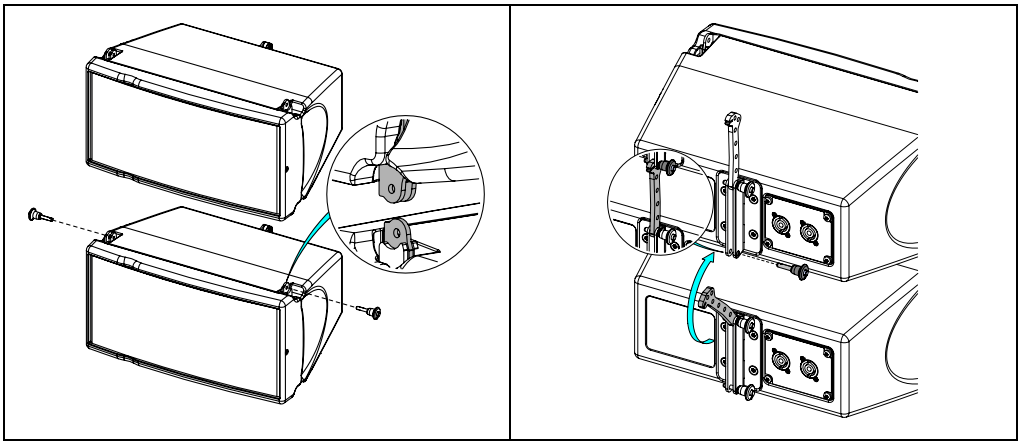
- Insert shackle(s) in bumper or in extension bar in required hole(s) as indicated in NS-1 design and secure shackle(s) bolt(s)
  - If using 1 hoist on VNT-BUMPM6, holes are “A” to “N”
  - If using 1 hoist on VNT-EXBARM6, holes are “O” to “U”
  - If using 2 hoists, connect these using extreme points (“A” and “N”, or “A” and “U” or “U” and “N”)
- Connect hoist hook(s) to shackle(s) and lift assembly to sufficient height in order to connect additional GEO M6 if required

IMPORTANT

Ensure hoist hook(s) is (are) properly secured to VNT-BUMPM6 or VNT-EXBARM6 shackle(s)

Ensure that all quick release pins are locked

- Connect subsequent GEOM6 at required inter-angle values with 4 x VXT-BL515 quick release pins



IMPORTANT

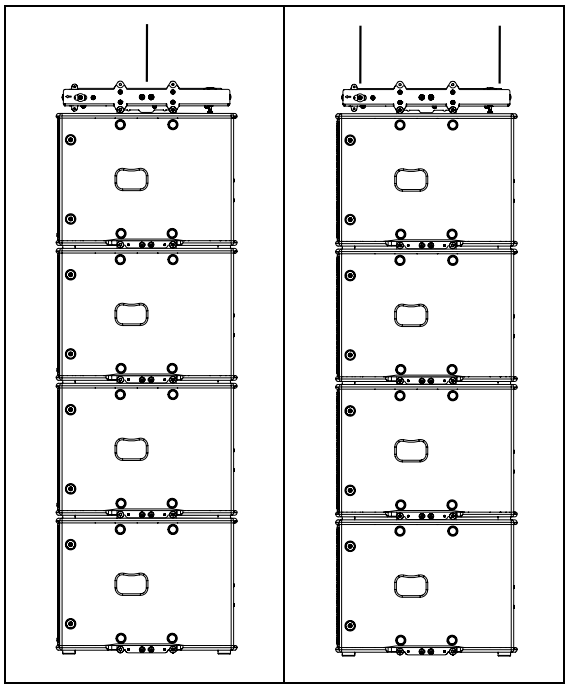
Ensure all pins are properly locked into GEO M6

- Lift cluster to NS-1 defined rigging height, secure cluster horizontally to prevent it from rotating
- Secure bumper with secondary safety steel.

IMPORTANT

The requirements for secondary safety systems vary with territories. However, the secondary safety steel MUST have a SWL equivalent or greater than that of the rigging system.

6.4.5 MSUB12 only flown with VNT-BUMPM6



Required items

- 1 or 2 hoists (not provided).
- 1 x VNT-BUMPM6
- 4 x VXT-BL615 per MSUB12

IMPORTANT

When flying MSUB12 cluster, VNT-BUMPM6 must be set at 0°

- **If cluster is flown from 2 points, bumper must be maintained horizontal in its definitive position as well as when lifting or lowering the cluster**
- **If cluster is flown from a single point, please check NS-1 for proper hole selection**

IMPORTANT

Maximum MSUB12 quantity for flown vertical cluster with VNT-BUMPM6 is 8.

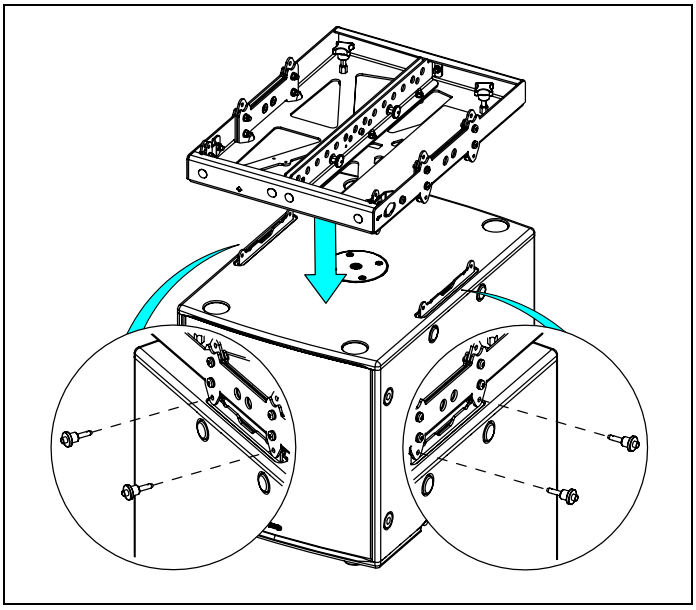
Please check NS-1 for mechanical Safety Working Load and acoustic computations.

IMPORTANT

Please check configuration in NS-1 for proper motor hoist rating

Procedure

- Position VNT-BUMPM6 on top of first MSUB12 and secure it by inserting 4 x VXT-BL615 quick release pins



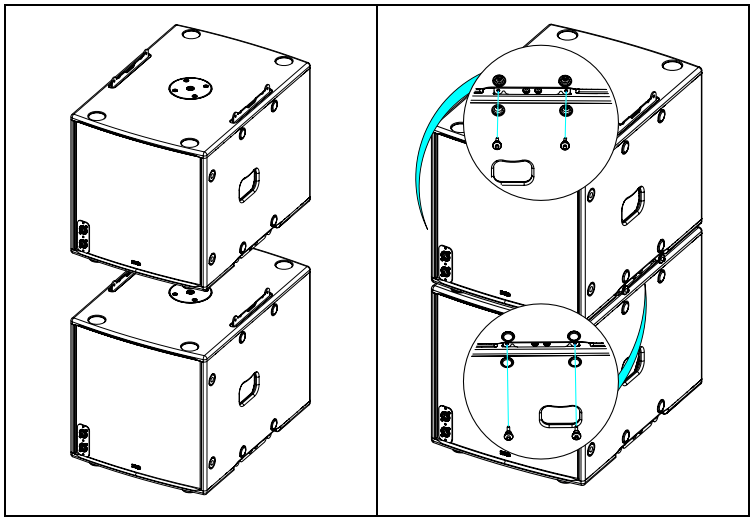
- Insert shackle(s) in VNT-BUMPM6 in required hole(s) as indicated in NS-1 design and secure shackle(s) bolt(s)
  - If using 1 hoist, holes are "A" to "N"
  - If using 2 hoists, connect these using extreme points (“A” and “N”)
- Connect hoist hook(s) to shackle(s) and lift assembly to sufficient height in order to connect additional MSUB12 if required

IMPORTANT

Ensure hoist hook(s) is (are) properly secured to VNT-BUMPM6 shackle(s)

Ensure that all quick release pins are locked

- Connect subsequent MSUB12 with 4 x VXT-BL615 quick release pins



IMPORTANT

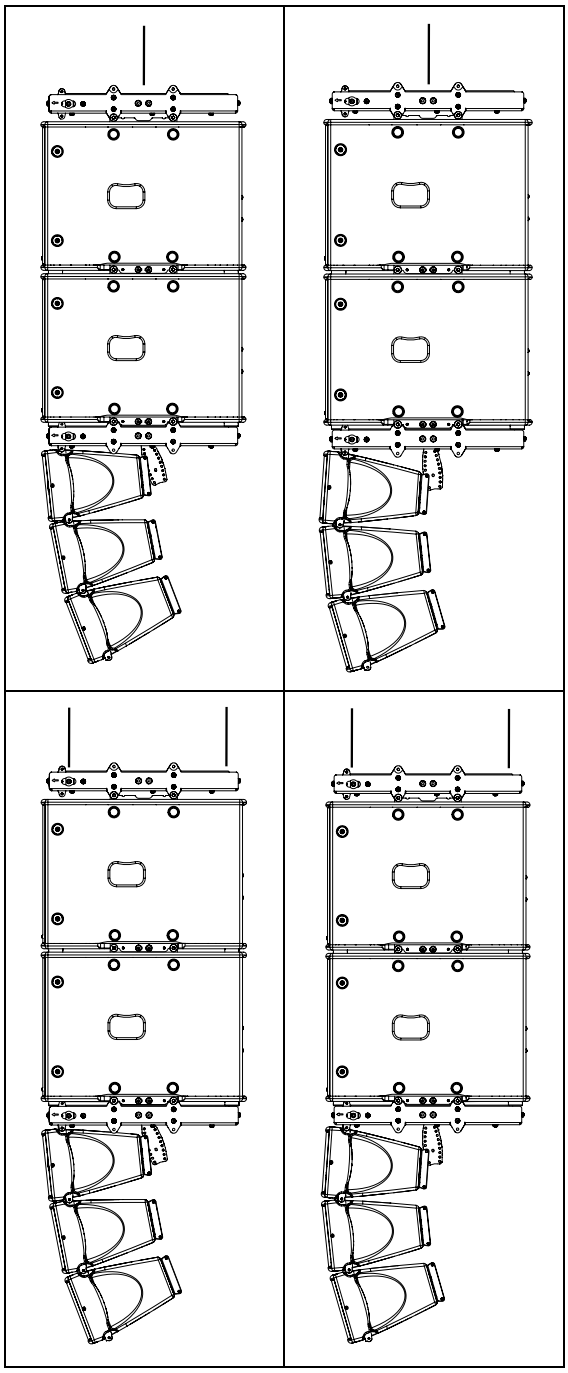
Ensure that all pins are properly locked into MSUB12

- Lift cluster to NS-1 defined rigging height, secure cluster horizontally to prevent it from rotating
- Secure bumper with secondary safety steel.

IMPORTANT

The requirements for secondary safety systems vary with territories. However, the secondary safety steel MUST have a SWL equivalent or greater than that of the rigging system.

6.4.6 MSUB12 and GEO M6 flown with VNT-BUMPM6



Required items

- 1 or 2 hoists (not provided).
- 2 x VNT-BUMPM6
- 4 x (N+1) x VXT-BL615 for N x MSUB12
- 3 x VXT-BL515 for first GEO M6
- 4 x VXT-BL515 per GEO M6

IMPORTANT

<u>When flying MSUB12 and GEO M6 cluster, VNT-BUMPM6 must be set at 0°</u>

- **If cluster is flown from 2 points, bumper must be maintained horizontal in its definitive position as well as when lifting or lowering the cluster**
- **If cluster is flown from a single point, please check NS-1 for proper hole selection**

IMPORTANT

Maximum quantity for flown vertical cluster with VNT-BUMPM6 is:

$$N_{GEOM6} + 1.5*N_{MSUB12} <= 12$$

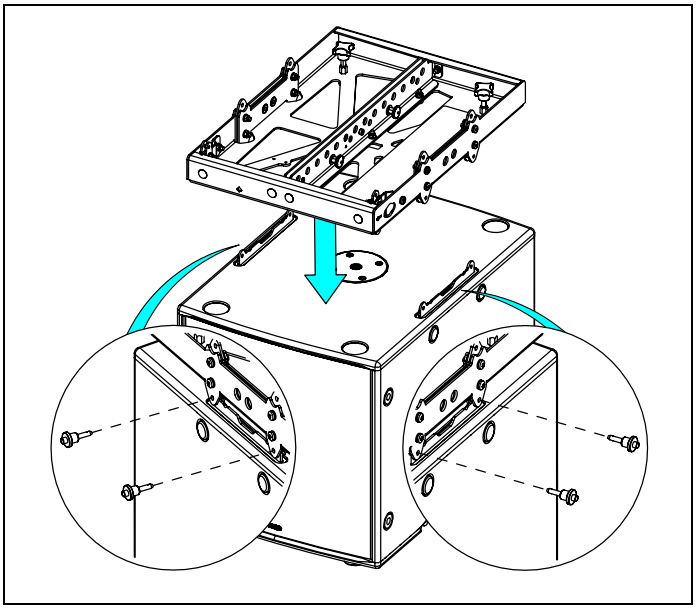
Please check NS-1 for mechanical Safety Working Load and acoustic computations.

IMPORTANT

Please check configuration in NS-1 for proper motor hoist rating

Procedure

- Position VNT-BUMPM6 on top of first MSUB12 and secure it by inserting 4 x VXT-BL615 quick release pins



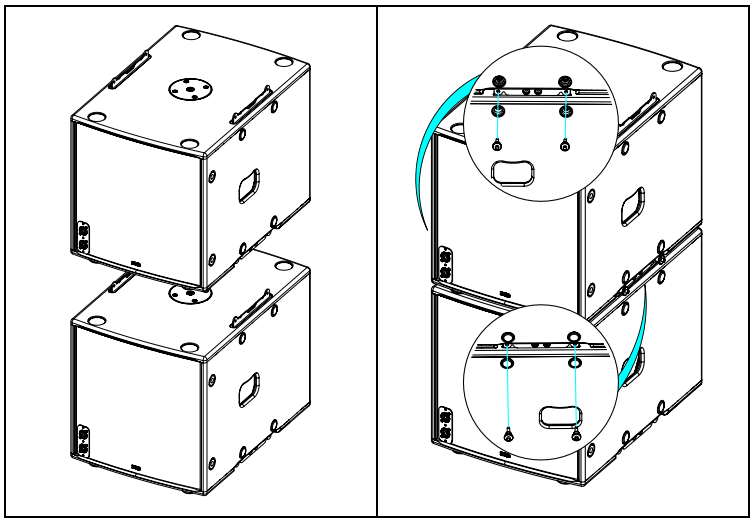
- Insert shackle(s) in VNT-BUMPM6 in required hole(s) as indicated in NS-1 design and secure shackle(s) bolt(s)
  - If using 1 hoist, holes are "A" to "N"
  - If using 2 hoists, connect these using extreme points (“A” and “N”)
- Connect hoist hook(s) to shackle(s) and lift assembly to sufficient height in order to connect additional MSUB12 if required

IMPORTANT

Ensure hoist hook(s) is (are) properly secured to VNT-BUMPM6 shackle(s)

Ensure that all quick release pins are locked

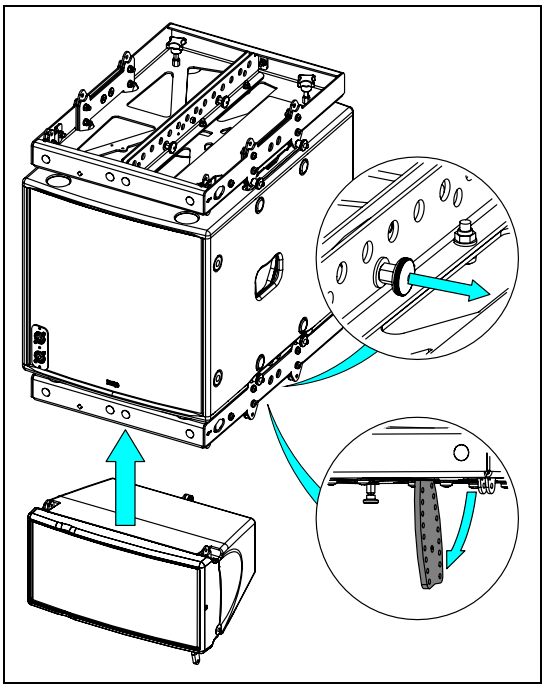
- Connect subsequent MSUB12 with 4 x VXT-BL615 quick release pins



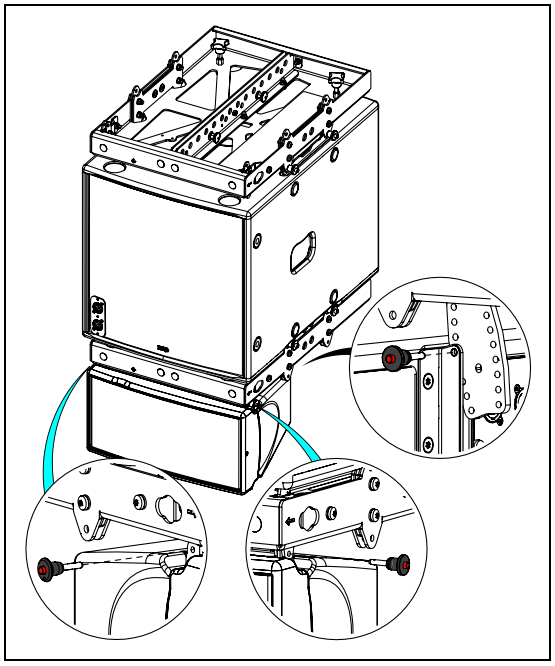
IMPORTANT

Ensure that all pins are properly locked into MSUB12

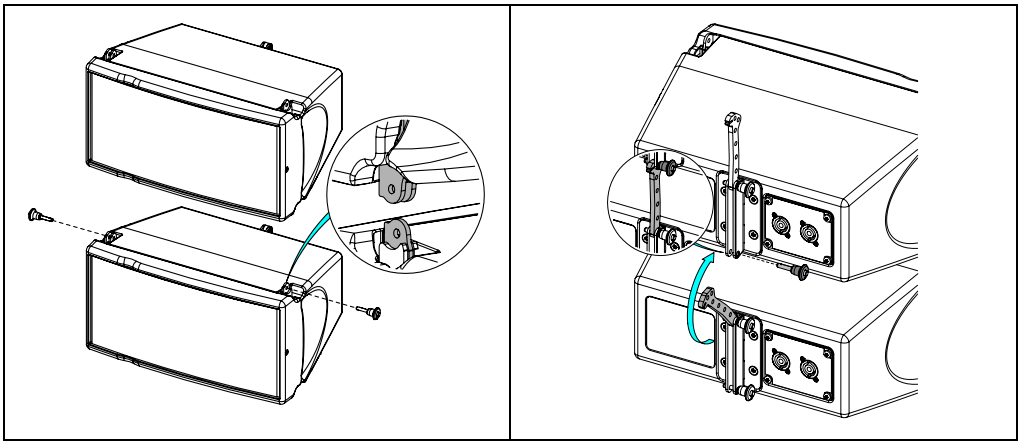
- Once all MSUB12 are off the ground, position second VNT-BUMPM6 below last MSUB12 and secure it by inserting 4 x VXT-BL615 quick release pins
- Pull the bolt of bottom VNT-BUMPM6 to unlock the link bar and rotate it
- Position first GEO M6 below bottom VNT-BUMPM6



- Secure the two front points by inserting 2 x VXT-BL515 quick release pins
- Connect GEO M6 rear point to VNT-BUMPM6 link bar at required inclination by inserting 1 x VXT-BL515 quick release pin



- Lift assembly to sufficient height in order to connect additional GEO M6 if required
- Connect subsequent GEOM6 at required inter-angle values with 4 x VXT-BL515 quick release pins



IMPORTANT

Ensure that all pins are properly locked into GEO M6

- Lift cluster to NS-1 defined rigging height, secure cluster horizontally to prevent it from rotating
- Secure bumper with secondary safety steel.

IMPORTANT

The requirements for secondary safety systems vary with territories. However, the secondary safety steel MUST have a SWL equivalent or greater than that of the rigging system.

6.4.7 4 to 12 (maximum) GEO M6 ceiling mounted

Required items

- 1 x GMT-BUMPER
- 1 x GMI-BNFIX per GEO M6
- 4 x 8mm diameter screws (not provided)

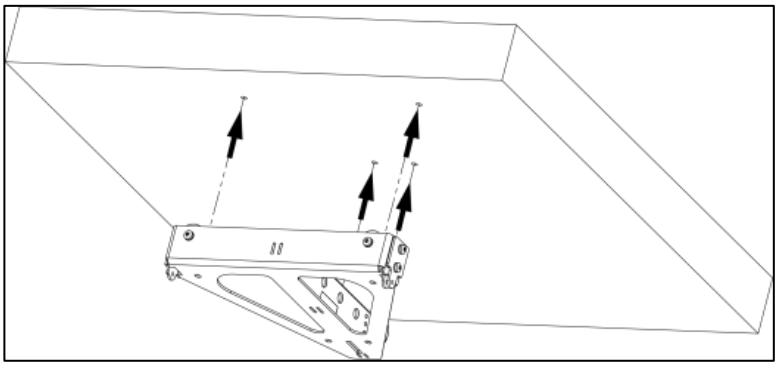
IMPORTANT

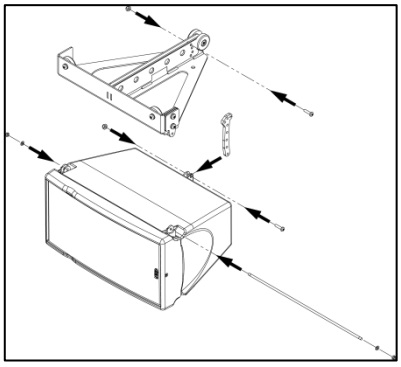
Ensure that the ceiling is strong enough to hold 4 times GEO M6 cluster weight and that the four screws 8 mm diameter and corresponding plugs required to fix the bumper under the ceiling are properly dimensioned.

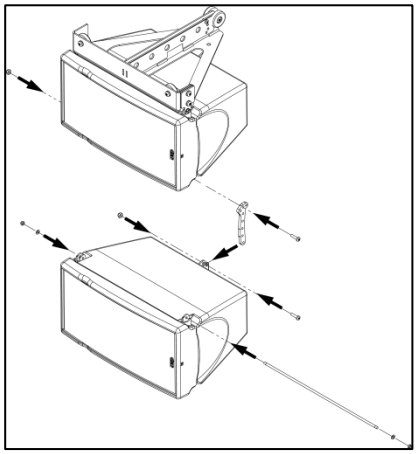
Procedure

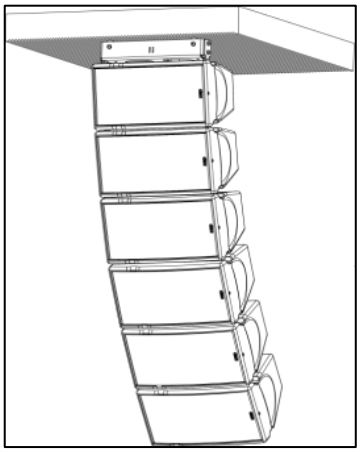
- 8mm diameter screws (not provided) are required to fix the GMT-BUMPER to the ceiling
- Connect the bumper to top cabinet by inserting the GMI-BNFIX axis through front holes and secure axis and rear link with GMI-BNFIX screws
- Connect subsequent cabinets with GMI-BNFIX at required inter-angle values

  NB: please note that top cabinet angle will be 0° in relation to the bumper









IMPORTANT

In order to prevent screws from getting loose in fixed installations, use blocking liquid LOCTITE™ 243 or equivalent for all screws used with GEO M6 fixed installation accessories.

LOCTITE™ 243 is available at NEXO or at your local distributor upon request.

6.4.8 1 to 3 (maximum) GEO M6 wall mounted

Required items

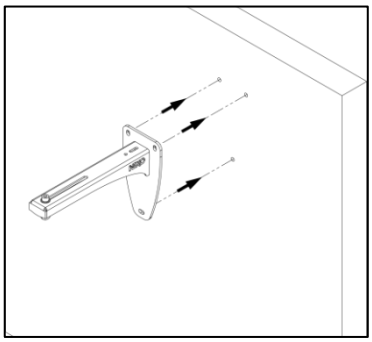
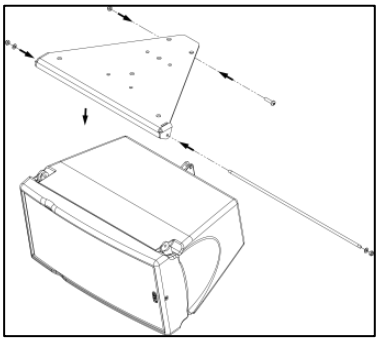
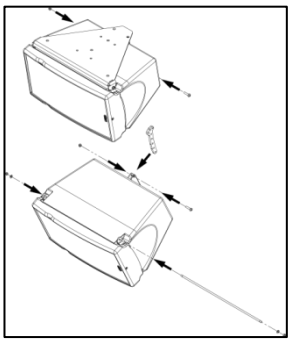
- 1 x VNI-WS15
- 1 x GMT-LBUMP
- 1 to 3 GMI-BNFIX
- 3 x 12mm diameter screws (not provided)

IMPORTANT

Ensure that the wall is strong enough to hold 4 times GEO M6 cluster weight and that the 12 mm diameter screws and corresponding plugs required to fix the VNI-WS15 on the wall are properly dimensioned.

Procedure

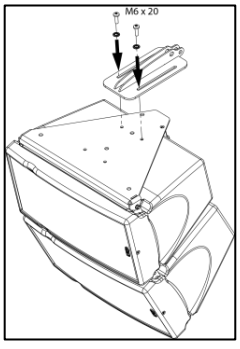
- 3 x 12mm diameter screws (not provided) are required to fix the VNI-WS15 support to the wall
- Connect GMT-LBUMP to top cabinet by inserting the GMI-BNFIX axis through front holes and secure axis and rear link with GMI-BNFIX screws
- Connect subsequent cabinets with appropriate inter-angle values

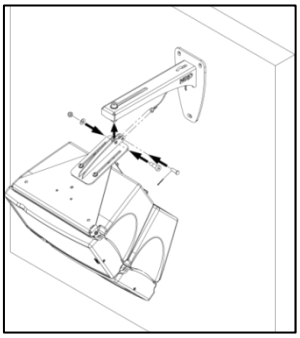




- Connect the VNI-WS15 suspension plate to the GMT-LBUMP by using the M6x20 screws provided with the GMT-LBUMP

NB: please do not use the screws supplied with VNI-WS15, too long for this application case

- Position the 6x20 screws in the oblong hole so that required vertical angle is obtained
- Secure the screws with Loctite 243 or equivalent
- Suspend to the wall suspension using the shoulder screws supplied with VNI-WS15
- Secure the assembly with the VNI-WS15 safety cable
- Adjust horizontal angle





IMPORTANT

In order to prevent screws from getting loose in fixed installations, use blocking liquid LOCTITE™ 243 or equivalent for all screws used with GEO M6 fixed installation accessories.

LOCTITE™ 243 is available at NEXO or at your local distributor upon request.

6.4.9 1 to 3 (maximum) GEO M6 ceiling mounted

Required items

- 1 x GMT-LBUMP
- 1 to 3 x GMI-BNFIX
- 4 x 8mm diameter screws (not provided)

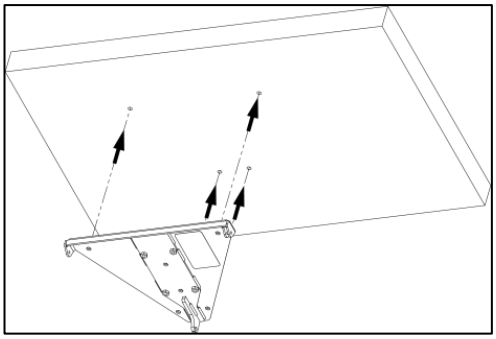
IMPORTANT

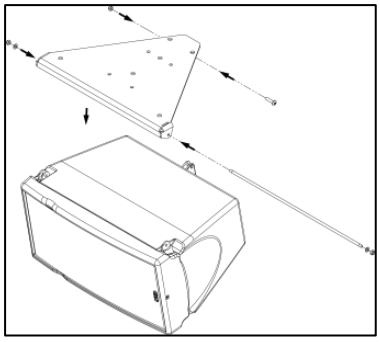
Ensure that the ceiling is strong enough to hold 4 times GEO M6 cluster weight and that the four screws 8 mm diameter and corresponding plugs required to fix the GMT-LBUMP under the ceiling are properly dimensioned.

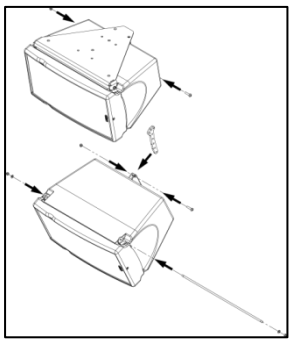
Procedure

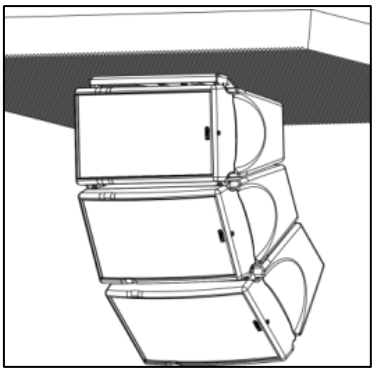
- 4 x 8mm diameter screws (not provided) are required to fix the GMT-LBUMP to the ceiling
- Connect GMT-LBUMP to top cabinet by inserting the GMI-BNFIX axis through front holes and secure axis and rear link with GMT-BNFIX screws
- Connect subsequent cabinets with GMI-BNFIX at required inter-angle values

  NB: please note that top cabinet angle will be -10° in relation to the L-bumper







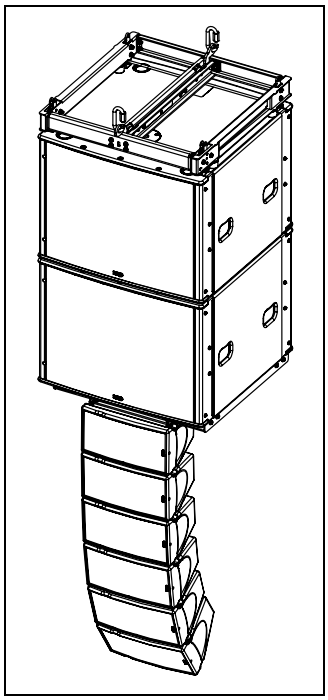


IMPORTANT

In order to prevent screws from getting loose in fixed installations, use blocking liquid LOCTITE™ 243 or equivalent for all screws used with GEO M6 fixed installation accessories.

LOCTITE™ 243 is available at NEXO or at your local distributor upon request.

6.4.10 MSUB18-I and GEO M6 flown with VNI-LNKM61018



Required items

- 1 or 2 hoists (not provided)
- 1 x VNI-BUMPM12
- 1 x VNT-EXBARM12 to fly on a single rigging point
- 1 x VNI-LNKM61018
- 1 x GMI-BNFIX per GEO M6

IMPORTANT

When flying MSUB18 & GEO M6 cluster, VNI-BUMPM12 must be set at 0°

- **If cluster is flown from 2 points, bumper must be maintained horizontal in its definitive position as well as when lifting or lowering the cluster**
- **If cluster is flown from a single point, extension bar must be used. Please check NS-1 for proper hole selection**

IMPORTANT

Maximum GEO M6 quantity for flown vertical cluster with VNI-LNKM61018 is 6.

Maximum MSUB18 quantity for flown vertical cluster with VNI-BUMPM12 is:

$$N_{GEOM6} + 1.5*N_{MSUB18} <= 12$$

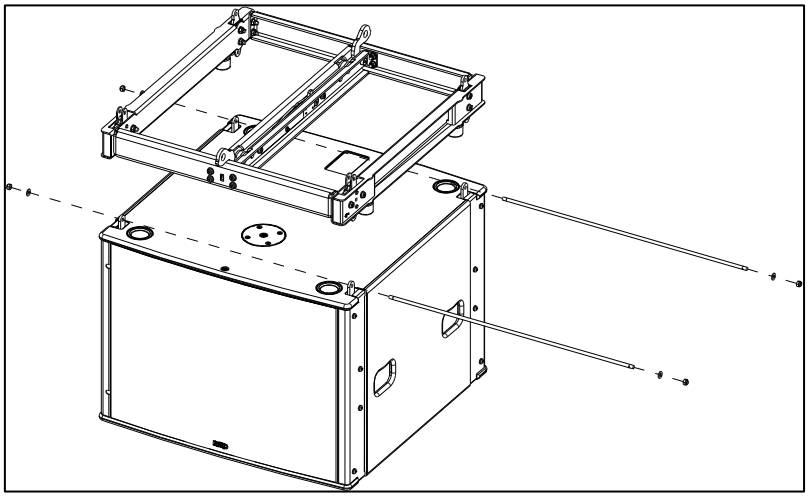
Please check NS-1 for mechanical Safety Working Load and acoustic computations.

IMPORTANT

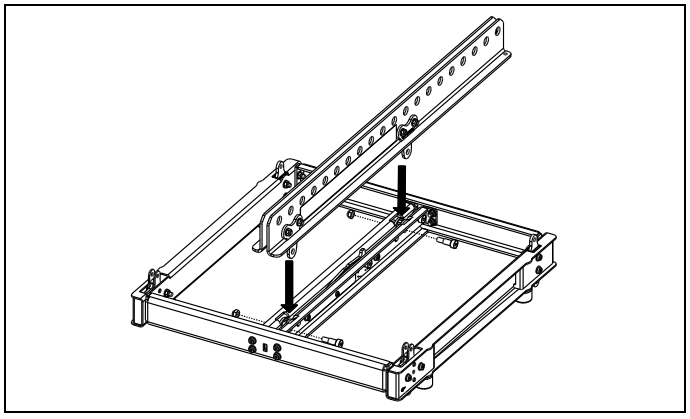
Please check configuration in NS-1 for proper motor hoist rating

Procedure

- Place the bumper on MSUB18-I, insert the axis and the washers (M8) and secure with the brake nuts (M8).



- If required, position VNT-EXBARM12 frontwards or rearwards into VNI-BUMPM12 slots and lock devices with the provided fasteners (shoulder screws and brake nuts).

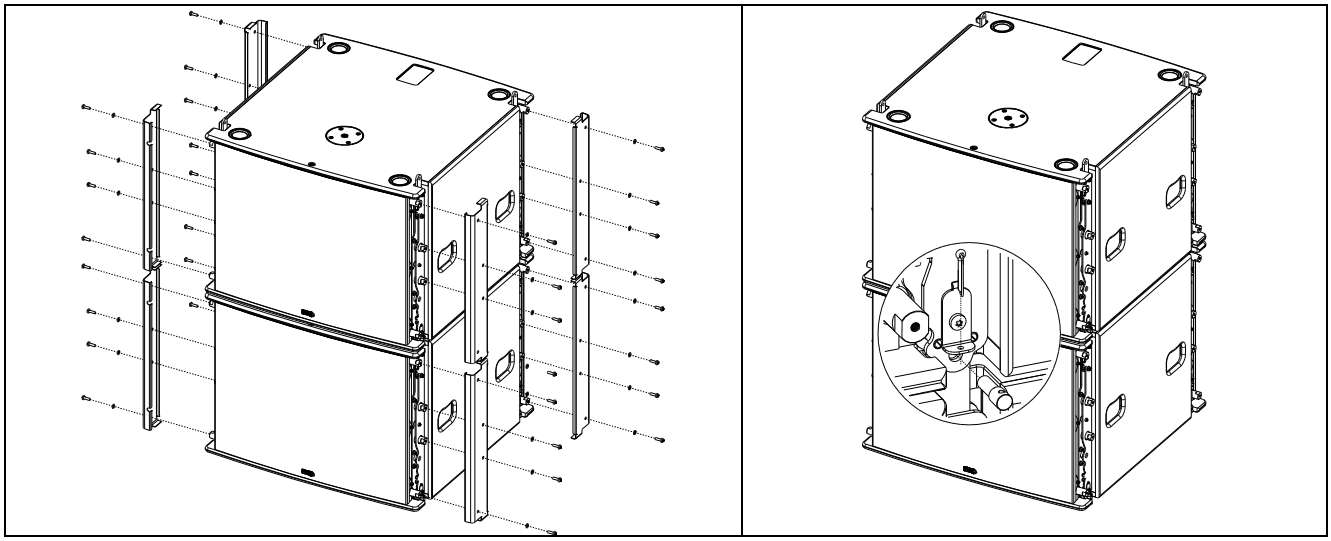


- Insert shackle(s) in bumper or in extension bar in required hole(s), ie:
  - If using 1 hoist on VNT-EXBARM12, it must be connected to the hole indicated by NS-1
  - If using 2 hoists on VNT-EXBARM12, connect these using extreme holes (“A” and “T”)
  - VNI-BUMPM12 without extension bar can only be flown with 2 hoists
- Connect hoist hook(s) to shackle(s) and lift assembly to sufficient height in order to connect a second MSUB18-I

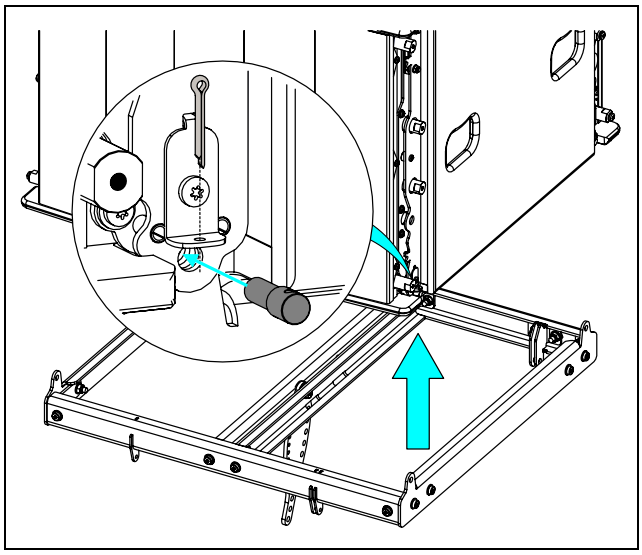
IMPORTANT

Ensure hoist hook(s) is (are) properly secured to VNI-BUMPM12 or VNT-EXBARM12 shackle(s)
Ensure that all quick release pins are locked

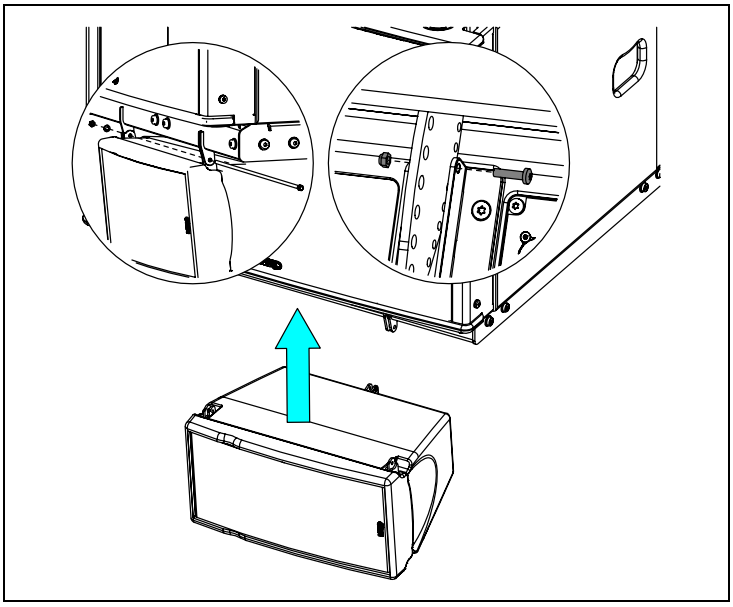
- Remove the 4 corner plates (Tx30) of each MSUB18-I
- Insert the axis across front and rear rigging points, insert safety clips and secure these by bending their legs



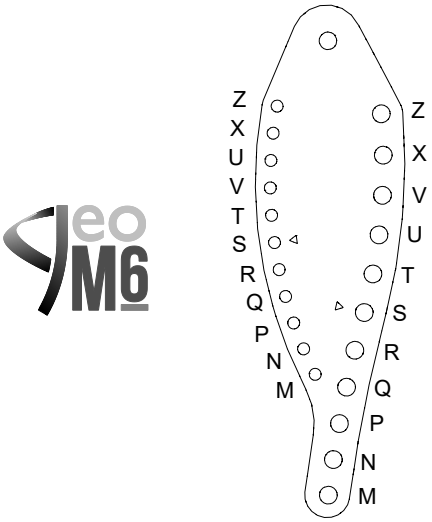
- Place VNI-LNKM61018 below the last MSUB18-I, insert the axis and secure by bending the legs.
- Check that the bumper is properly positioned with the GEO M6 rigging to the front (see image below)



- Position first GEO M6 below VNI-LNKM61018
- Insert the axis through front holes, insert the washers and secure with nuts
- Adjust the appropriate inter-angle value with the hybrid linkbar and secure with provided screw and nut

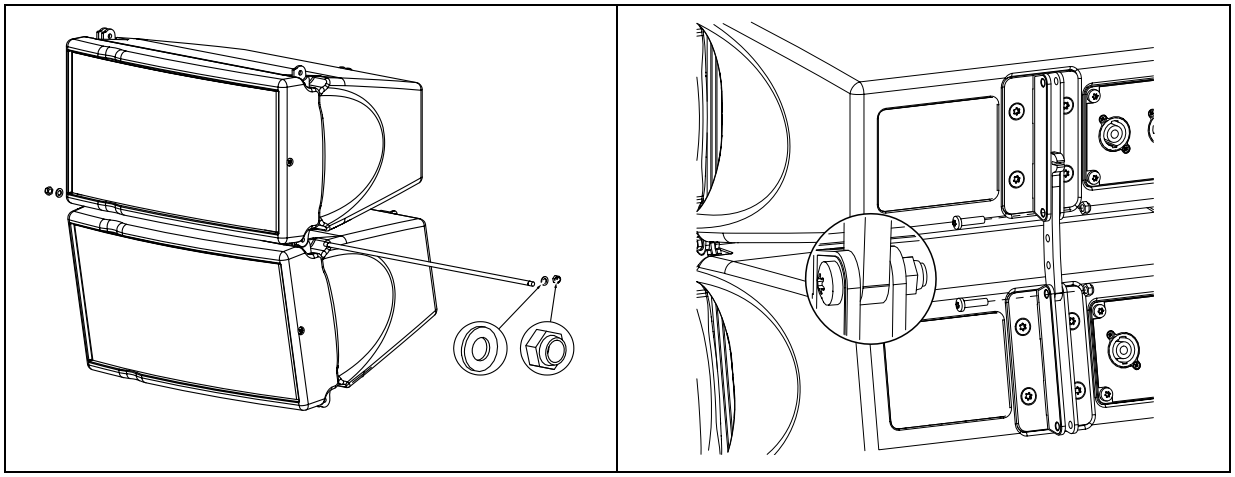


Inter-angle with the first GEOM6 or GEOM10



Mark	Angle
Z	+15°
X	+12°
V	+9°
U	+6°
T	+3°
S	0°
R	-3°
Q	-6°
P	-9°
N	-12°
M	-15°

- Connect subsequent cabinets with GMI-BNFIX at required inter-angle values
- Insert the axis through front holes, insert the washers and secure with nuts
- Adjust the appropriate angle splay bar value with the linkbar and secure with provided screws and nuts



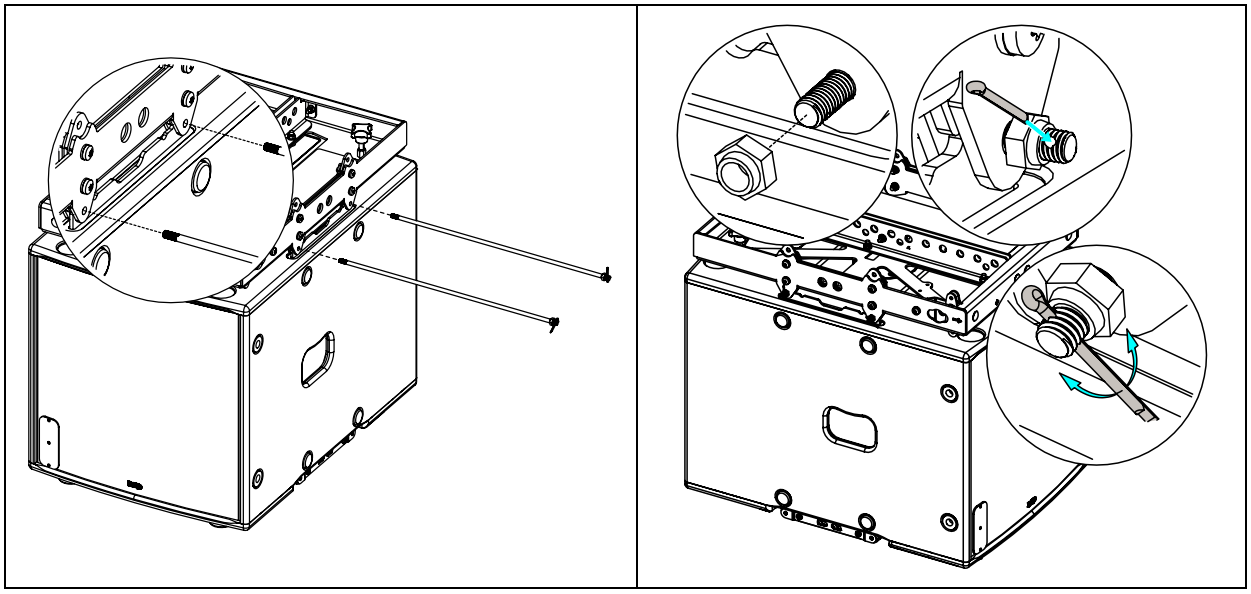
Please see GEO M12 System Manual for more information about MSUB18-I and VNI-BUMPM12.

6.5 Permanent installation variant

All procedures described above apply to installation versions, with the exception of bumper and cabinet connections, which are described below:

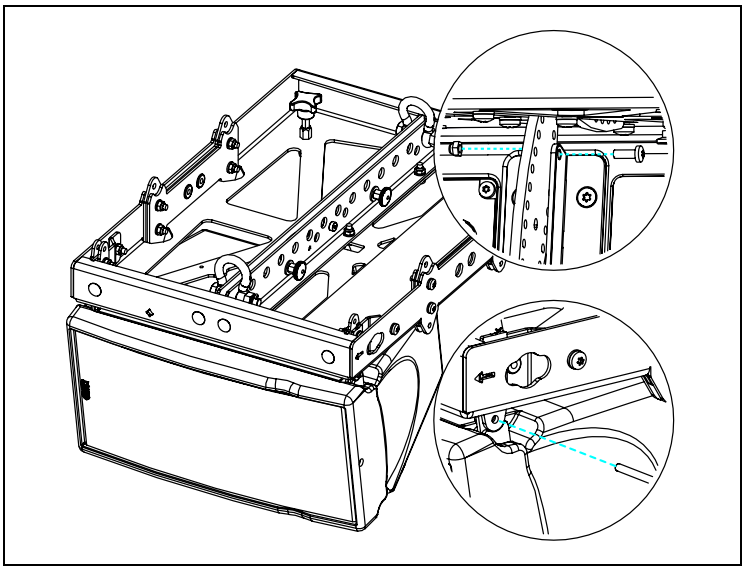
Connecting MSUB12 or MSUB12-I to VNT-BUMPM6 with VNI-FIXBUMPM6

- Place the bumper on MSUB12 or MSUB12-I
- Insert the axis and lock with the nuts
- Insert the safety pins and secure by bending the legs



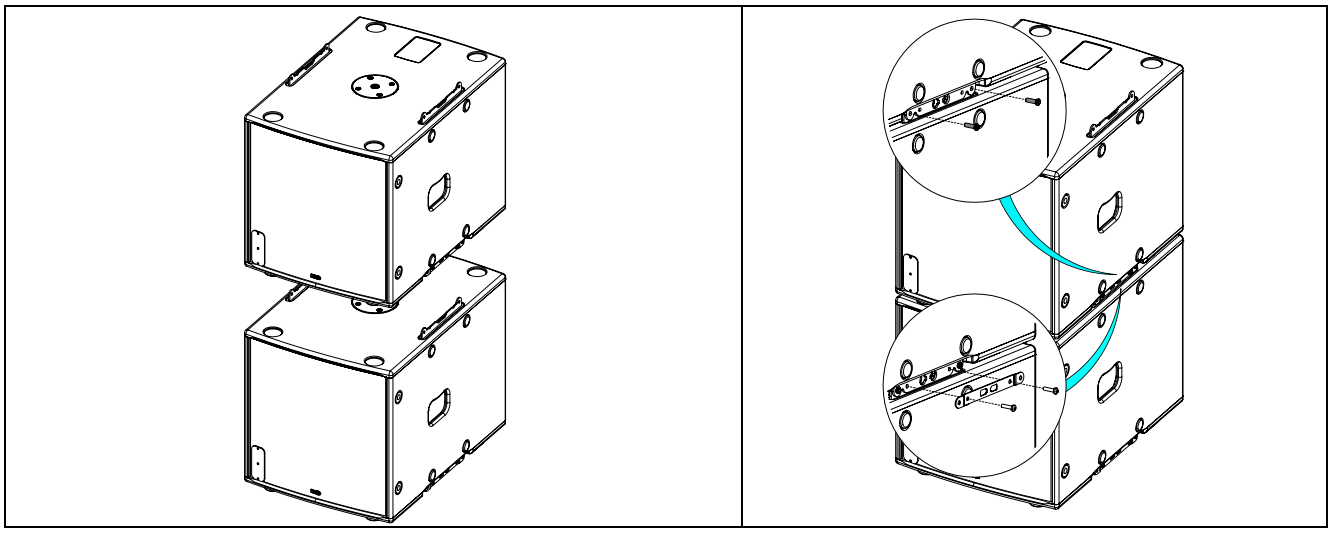
Connecting GEO M6 to VNT-BUMPM6 with GMI-BNFIX

- Place the bumper on GEO M6
- Insert the axis through front holes, insert the washers and secure with nuts
- Adjust the appropriate inter-angle value with the linkbar and secure with provided screw and nut



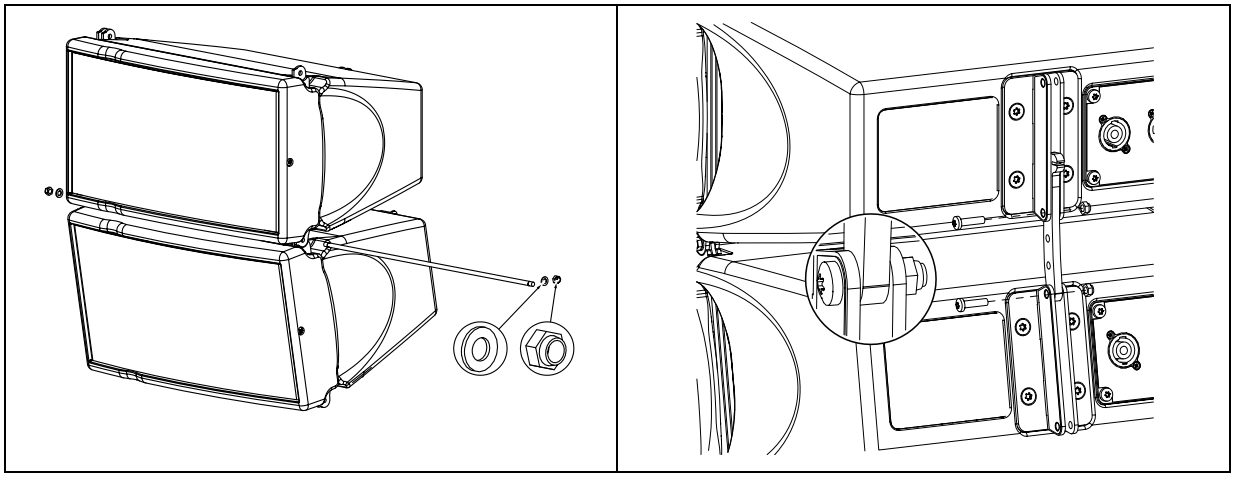
Subsequent MSUB12-I

- Place one MSUB12-I on top of another MSUB12-I
- Insert the 4 pins (2 on both sides) provided with MSUB12-I
- Secure with the provided plates and the screws



Subsequent GEOM6 with GMI-BNFIX

- Insert the axis through front holes, insert the washers and secure with nuts
- Adjust the appropriate angle splay bar value with the linkbar and secure with provided screws and nuts



6.6 Testing and Maintenance of the system

General: GEO is a precision piece of equipment and requires regular attention to maintenance in order to give long and reliable service. NEXO recommends regular testing of loudspeaker rigging components, preferably using a suitable test rig coupled with a visual inspection.

Fasteners: there are several critical points in the MSUB12 and GEO M6 cabinets.

Of primary concern are:

a) The grid screws attaching the grid to the cabinet

b) The machine screws attaching the connecting plates to the cabinet.

c) The screws attaching the directivity flanges to the front of the cabinet.

These fasteners should be regularly checked and tightened as necessary.

Cleaning: The exterior of the cabinet and the rigging system can be cleaned with a damp cloth soaked in mild soapy water. On no account use solvent based cleaners, which may damage the finish of the cabinet

After cleaning, the rigging system must be treated with a suitable lubricant to prevent rusting. NEXO recommends the use of Scottoil FS365 which is a water-based lubricant with a mixture of machine oil, surfactant and anti-rust treatment.

7 SYSTEM CHECK ALIGNMENT GUIDELINES

The NXAMP's factory delay presets are optimised to provide the best possible crossover between the GEO M6 and MSUB12 Subwoofers systems. The reference point for this adjustment is the front of each cabinet**,** which means that the internal delays needed to achieve a correct time alignment are set for cabinets standing next to each other with both fronts aligned. We recommend that the system is adjusted so that arrivals from GEO M6 and MSUB12 subwoofer are coincident at a fairly distant listening position.

7.1 GEO M6 Vertical Cluster design

Cluster design must be done with NS-1, which provides very intuitive and fast method to determine all cluster geometry parameters in relation to venue where cluster is implemented.

NS-1 is a freeware available for all NEXO users at nexo-sa.com

IMPORTANT

Never install a GEO M6 and/or MSUB12 cluster without checking its acoustical performances and mechanical safety in NS-1 prior to installation.

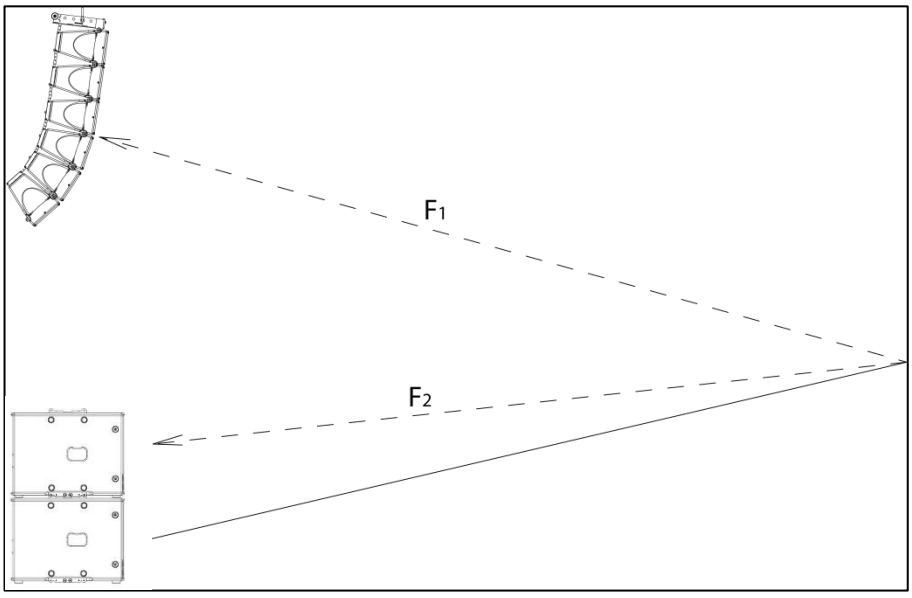
Please contact your local distributor for assistance and/or training NS-1

7.2 Stacked MSUB12s and Flown GEO M6

In the example below, r_1 being the distance from GEO M6 array to listener position, and r_2 being the distance from MSUB12 to listener position, the distance difference is then $r_1 - r_2$ (specified meters or feet).

- $r_1 > r_2$, the delay should be set on the MSUB12 NXAMP TDcontroller channel.
- $r_1 < r_2$, the delay should be set on the GEO M6 NXAMP TDcontroller channel
- To convert the result in time delay (specified in seconds), apply:
- $\Delta t = (r_1 - r_2)/C$ r_1 and r_2 in meters, C (sound speed) ≈ 343 m/S.

Set the units to meters, feet or seconds according to your preference). Delay will have to be adjusted according to the distance difference $r_1 - r_2$ (see figure below).



7.3 Driving the MSUB12s from the AUX send

It is quite common to use the AUX send of a mixing desk to drive the Sub section of a PA system. This gives the mixing engineer more flexibility to set the level of the sub bass relative to the main PA, apply special effects, or to use a different EQ on the Sub. However, it also raises some serious issues for the performance & safety of the system (mostly time alignment).

At NEXO, great care is taken to design optimum phase alignment from one octave above to one octave below the crossover frequency point. By doing so, drivers are working perfectly together and providing the best efficiency possible. It is then up to the user to adjust the delay on the NXAMP to match the physical path difference of the different systems. It is thus possible to get a well-adjusted system, even without measuring instruments.

If MSUB12s are driven form an AUX output, NXAMPs are fed with two signals coming from different sources. If those two sources (MAIN output & AUX send) are not exactly in phase, delay is introduced into the crossover between the GEO M6 array and the MSUB12s. It is then mandatory to use proper measurement tool to optimize phase response.

Why is it unlikely that AUX and MAIN outputs have the same phase?

- Signal paths are likely to be different; any filter modifying the bandwidth and EQ of the signal is also affecting the phase.

  Example: a 24dB/oct high pass filter set at 15Hz is affecting amplitude of the signal by only 0.6dB at 30Hz, but the phase shift is 90°!! At 100Hz we can still measure 25° of phase shift.

- Limiting bandwidth with a low pass filter can introduce a phase difference of up to 180° (completely out of phase) at the cross over point.

- If the signal is passing through any digital equipment, between 1.4ms and 2.2ms is being added (around 70° phase shift at 100Hz) due solely to the converter delay! The additional delay due to the processing itself (look ahead compressor, delay…) can be quite important as well.

If both outputs are not measured in the actual configuration, it is very likely that phase alignment will not be correct.

Consequences of badly aligned systems

Mis-aligned systems have lower efficiency: i. e. for the same SPL the system will have to be driven harder, activating the displacement & temperature protection at lower output levels. Both sound quality and reliability will decrease as the system is stressed.

Precautions & Checks

Before using the AUX of a mixing desk, ensure that MAIN and AUX outputs are in phase.

Always apply identical EQ or processing on both channels, so that the phase relationship will not be altered.

Never add additional low pass filtering on the SUB or high pass filtering on the main system.

Inverting polarity on one channel should always result in a massive difference near the crossover point. If that is not the case, the system is no longer aligned.

7.4 Recommended installation tools and equipment

Tape measure – should be 30m/100ft in length and be of durable fibre material. Have one per array available to speed up the installation process.

Laser Inclinometer – For measuring vertical and horizontal angles in the venue.

Spirit level – used to ascertain the trueness of the surface from which the angle measurements originate.

Rangefinder measuring device – either a Disto type laser measure or an optical laser rangefinder can be used. Devices such as the Bushnell ‘Yardage Pro’ sports rangefinders provide sufficiently accuracy and are easy to use. They have the additional advantage of working very well in bright sunlight.

Electronic calculator with trigonometric functions to calculate the height from ground level to points in the room. The formula to calculate height of a point from measured angle and distance is:

Height of point = Sin(vertical angle in degrees) x distance to point

NB: Take care when using spreadsheets as they calculate using radians by default. To convert degrees to radians use the formula:

Angle (in radians)=3.142 x Angle (in degrees)/180

Computer – Laptop or Desktop PC running Windows XP with the current version of NEXO NS-1 installed. It is not possible to configure a Geo tangent array properly without using NS-1. Note that, when NS-1 designs are prepared prior to arrival at the venue, it is often necessary to modify or update the design to accommodate special circumstances. A PC is absolutely essential to make such changes.

Audio Analysis Software – recommended but not absolutely essential, programs such as Systune™, Smaart™ enable rapid and detailed analysis of the installation. Consider taking a training course in using one of these tools if you are not already competent with them – it will pay dividends in increased performance of the system.

7.5 GEO M6 – MSUB12 System check list

It is essential to execute all these check steps prior to perform a sound check on the “front end” to the system. Following this checklist step by step will prevent many troubles and will save time in the end.

Are the speakers properly connected and angled?

Attach the first series of modules to the bumper.

Before flying, verify that all channels of all modules are functioning properly.

To check that all elements have the proper amplitude and phase, you should listen to the upper boxes at a close distance (<1 meter). You should be able to move from the top to the bottom of the cluster without hearing any change in the tonal balance.

Verify that the angle settings are the same on both sides of each module.

Raise the bumper, attach the next series of modules and repeat the above checks.

Make sure that these series of modules sum properly with the modules above them.

When all the modules are flown, check that the aiming angles are the same left and right.

Make sure that multiple GEO M6 and MSUB12 are summing properly: 6 dB gain per doubling of quantity.

Final Pre-Sound Check Check

Play a CD track mono left, and then right: both sides must sound strictly identical. When listening in the centre between Left and Right GEO M6’s, everything from LF to HF should be located to the “phantom centre” position. If not, repeat the above check sequence to identify the source of the problem.

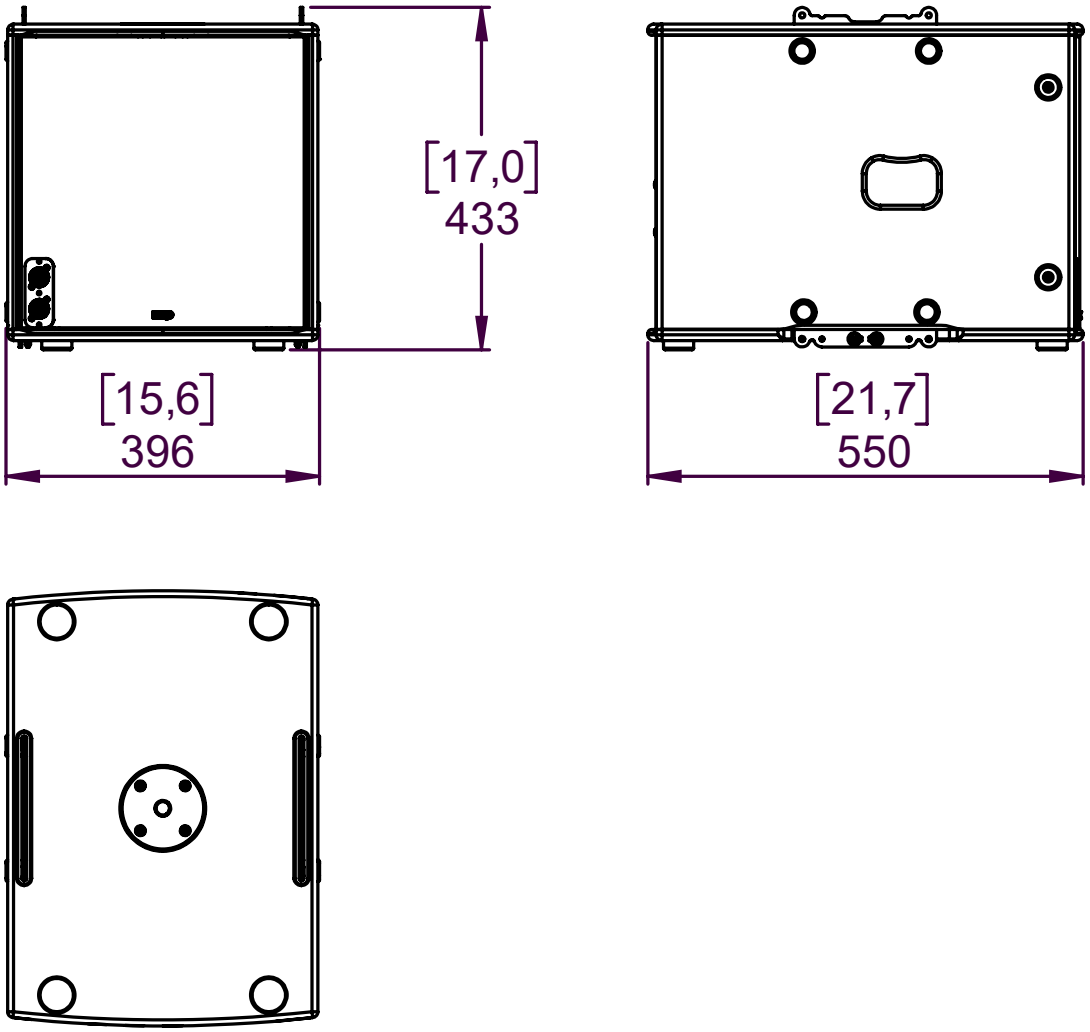
8 TECHNICAL SPECIFICATIONS

8.1 MSUB12 Subwoofer

8.1.1 System specifications

MSUB12 WITH NEXO TDCONTROLLER SETUP	
Frequency Response @-6 dB	45Hz - 150 Hz
Sensitivity 1W@1m	102 dB SPL Nominal
Peak SPL@1m	130 dB
Available Crossover Frequencies	45-85, 45-120Hz, 45-150Hz, 63-120Hz, 63-150Hz
Nominal Impedance	6 Ohms
Recommended Power	700 Watts / 6 ohms
PRODUCT FEATURES	
Component	1 x 12'' (30cm) 3'' voice coil long excursion Neodymium 6 Ω driver
Height x Width x Depth	433 x 396 x 550 mm (17.0" x 15.6" x 21.7")
Weight: Net	23 kg (51 lb)
Connectors (Touring version)	4 x NL4, 4 poles connectors (1+/1- MSUB12 / 2+/2- Through)
Connectors (Installation version)	1 x Cable gland with 2 cores cables
Construction	Baltic Birch Ply & structured black coating
Fittings	2 x Side handles
Front Finish	UV Resistant acoustic fabric fitted Magnelis® front gril
Operating temperature range	0°C - 40 °C (32° F - 104° F)
Storage temperature range	-20 °C - 60 °C (-4 ° F - 140° F)
SYSTEM OPERATION	
Recommended powering solution	NXAMP4x1mk2 Powered TDcontroller: up to 2 x MSUB12 per channel
Optional powering solution	NXAMP4x2mk2 Powered TDcontroller: up to 3 x MSUB12 per channel
	NXAMP4x4mk2 Powered TDcontroller: up to 3 x MSUB12 per channel
	DTD TDcontroller + DTDAMP4x1.3 Power amplifier: 1 x MSUB12 per channel
	DTD TDcontroller + DTDAMP4x0.7 Power amplifier: 1 x MSUB12 per channel

8.1.2 Dimensions

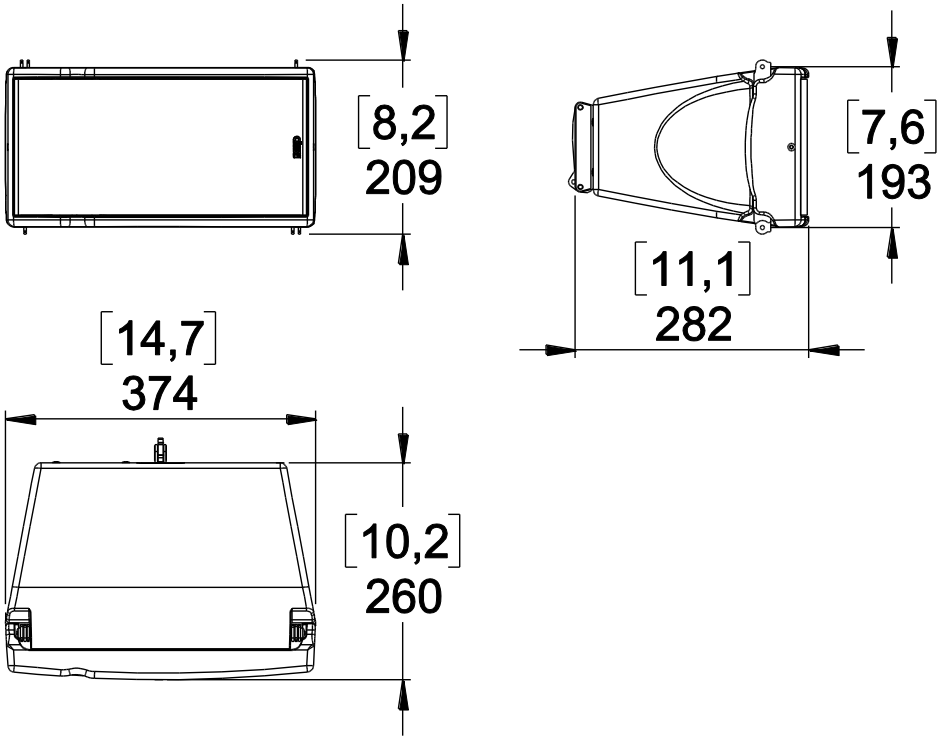


8.2 GEO M620 Module

8.2.1 System specifications

	GEO M620 (without CDD™)	GEO M620 (with CDD™)
GEOM620 WITH NEXO TDCONTROLLER SETUP		
Frequency Response @-6 dB	75 Hz to 20 kHz	
Sensitivity 1W@1m	95 dB SPL Nominal	
Peak SPL@1m	128 dB	
Vertical Dispersion	20°	
Horizontal Dispersion	80°	120°
Passive Crossover Frequency	2 kHz	
Nominal Impedance	8 Ohms	
Recommended Power	450 Watts	
PRODUCT FEATURES		
LF Component	1 x 6.5" 8 Ohms long excursion driver	
HF Component	1 x 1" throat driver on a BEA/FEA optimized HR Wavesource™	
Height x Width x Depth	209mm x 374mm x 282 mm (8.2' x 14.7' x 11.1')	
Weight: Net	9.7 kg (20 lbs)	
Connectors	2 x NL4, 4 poles connectors (1+/1- Through, 2+/2- GEO M620)	
Construction	Lightweight Polyurethane Composite	
Fittings	2 x Side handles	
Front Finish	Acoustic fabric fitted front grill	
Operating temperature range	0°C - 40 °C (32° F - 104° F)	
Storage temperature range	-20 °C - 60 °C (-4 ° F - 140° F)	
SYSTEM OPERATION		
Recommended powering solution	NXAMP4x1mk2 Powered TDcontroller: up to 3 x GEO M620 per channel	
Optional powering solution	NXAMP4x2mk2 Powered TDcontroller: up to 4 x GEO M620 per channel	
	NXAMP4x4mk2 Powered TDcontroller: up to 4 x GEO M620 per channel	
	DTD TDcontroller + DTDAMP4x1.3 Power amplifier: up to 2 x GEO M620 per channel	
	DTD TDcontroller + DTDAMP4x0.7 Power amplifier: up to 2 x GEO M620 per channel	

8.2.2 Dimensions

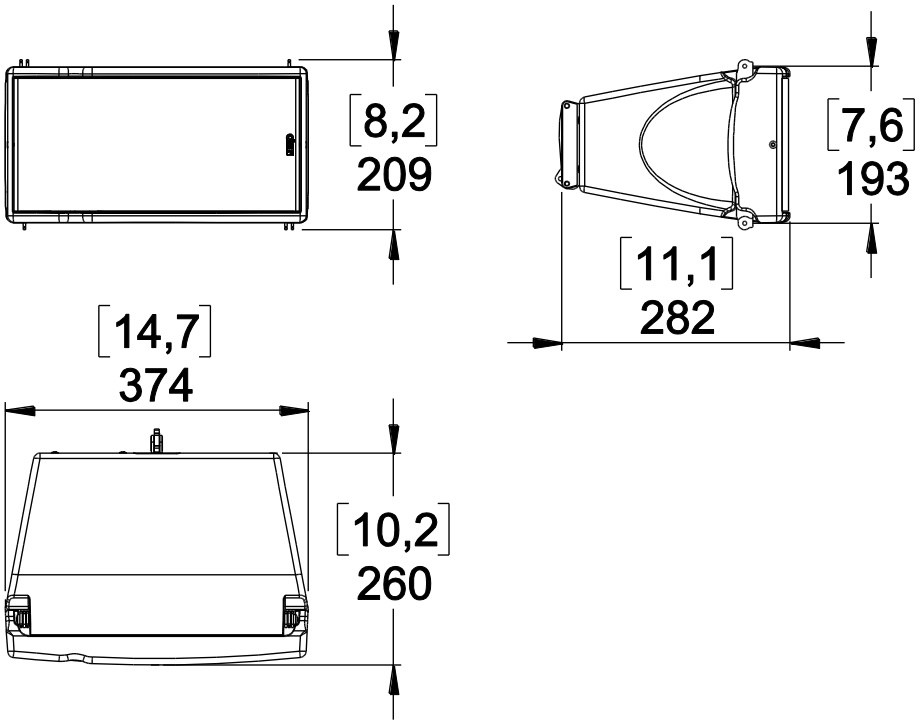


8.3 GEO M6B Module

8.3.1 System specifications

GEOM6B WITH NEXO TDCONTROLLER SETUP	
Frequency Response @-6 dB	70 Hz to 1kHz
Sensitivity 1W@1m	94 dB SPL Nominal
Peak SPL@1m	125 dB
Nominal Impedance	8 Ohms
Recommended Power	450 Watts
PRODUCT FEATURES	
LF Component	1 x 6.5" 8 Ohms long excursion driver
Height x Width x Depth	209mm x 374mm x 282 mm (8.2' x 14.7' x 11.1')
Weight: Net	7.6 kg (14 lbs)
Connectors	2 x NL4, 4 poles connectors (1+/1- GEO M6B, 2+/2- Through)
Construction	Lightweight Polyurethane Composite
Fittings	2 x Side handles
Front Finish	Acoustic fabric fitted front grill
Operating temperature range	0°C - 40 °C (32° F - 104° F)
Storage temperature range	-20 °C - 60 °C (-4 ° F - 140° F)
SYSTEM OPERATION	
Recommended powering solution	NXAMP4x1mk2 Powered TDcontroller: up to 3 x GEO M6B per channel
Optional powering solution	NXAMP4x2mk2 Powered TDcontroller: up to 4 x GEO M6B per channel
	NXAMP4x4mk2 Powered TDcontroller: up to 4 x GEO M6B per channel
	DTD TDcontroller + DTDAMP4x1.3 Power amplifier: up to 2 x GEO M6B per channel
	DTD TDcontroller + DTDAMP4x0.7 Power amplifier: up to 2 x GEO M6B per channel

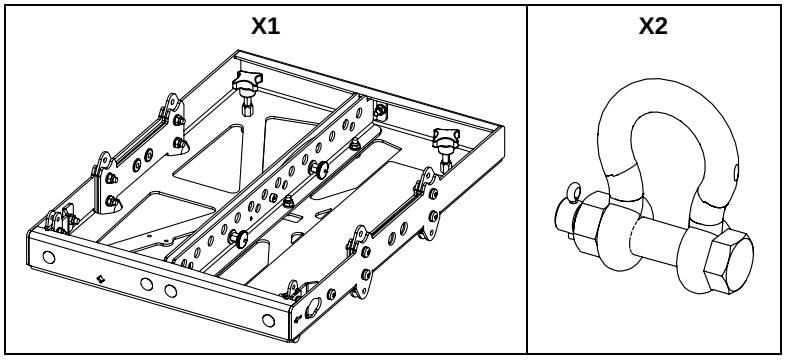
8.3.2 Dimensions



8.4 GEO M6 and MSUB12 accessories

8.4.1 VNT-BUMPM6

Parts



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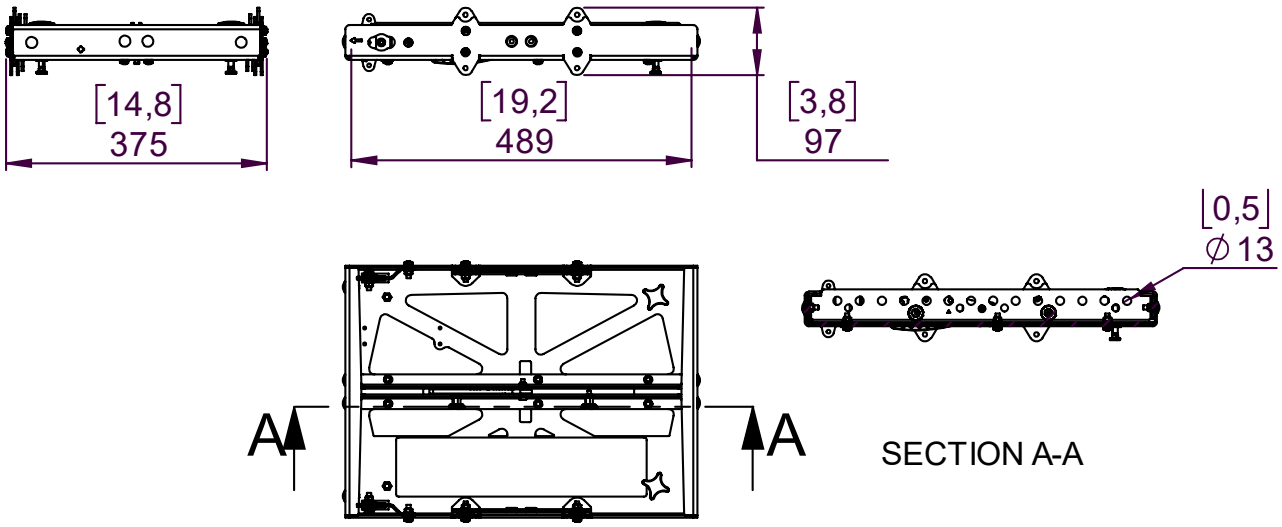
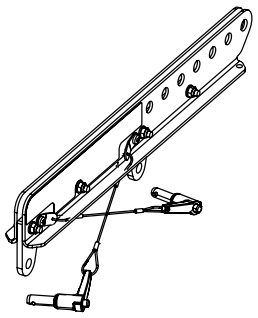
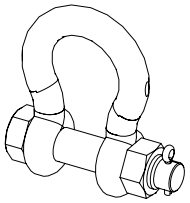


Weight: 9kg / 20lb

8.4.2 VNT-EXBARM6

Parts

X1	X1
	

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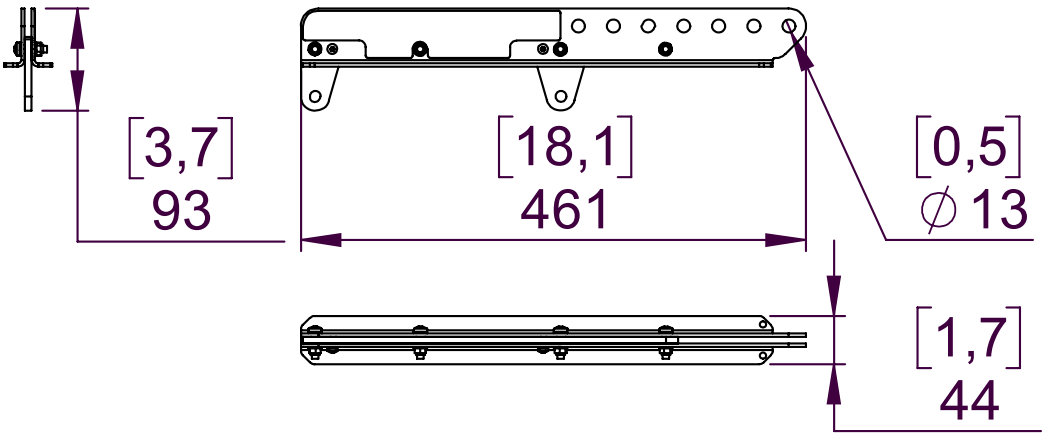
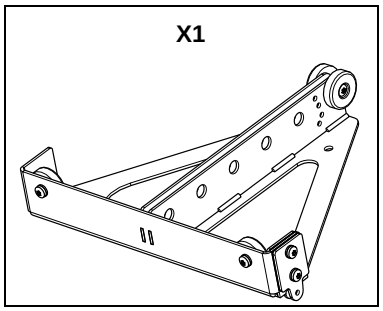


Weight: 2kg / 4.4lb

8.4.3 GMT-BUMPER

Parts



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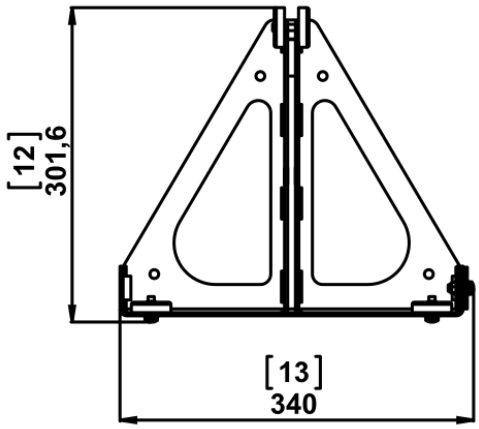
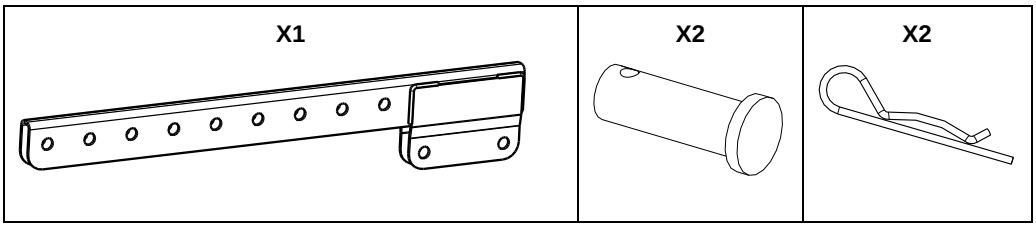


Weight: 2,2 kg / 4.9 lb

8.4.4 GMT-EXBAR

Parts



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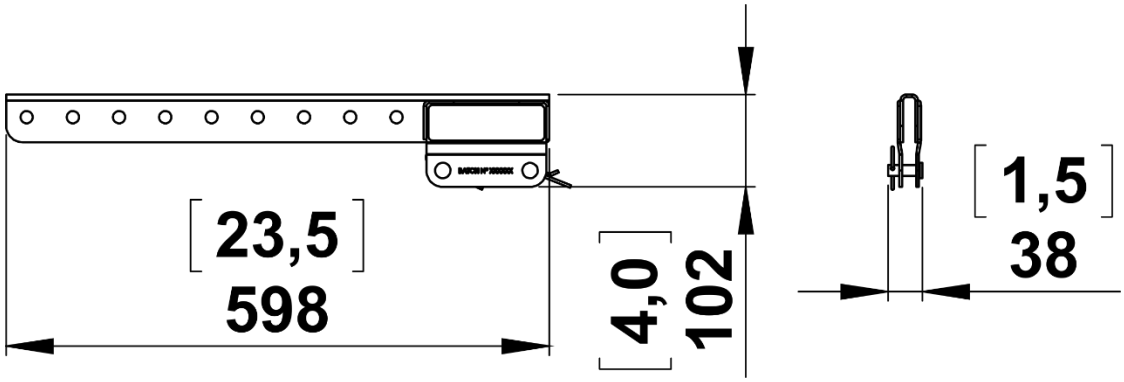
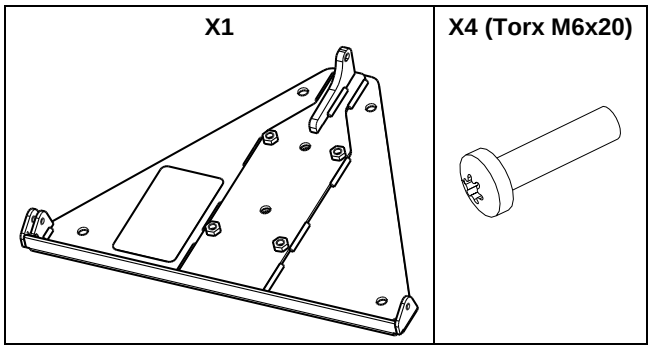


Weight: 1,9 kg / 4.2 lb

8.4.5 GMT-LBUMP

Parts



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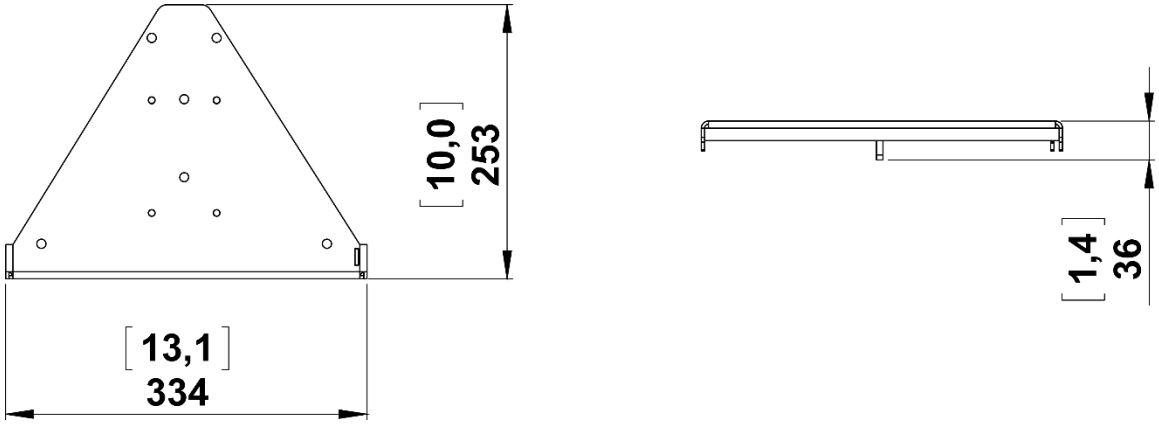
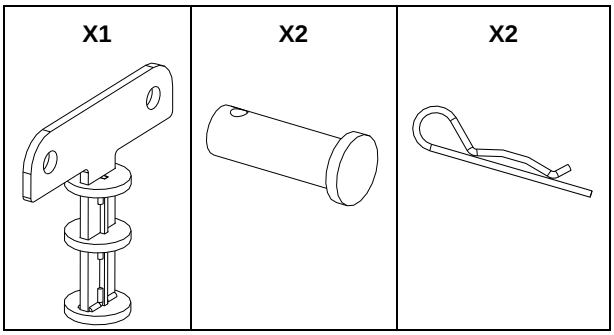


Weight: 1,9 kg / 4.2 lb

8.4.6 GMT-BPDAPT-2

Parts



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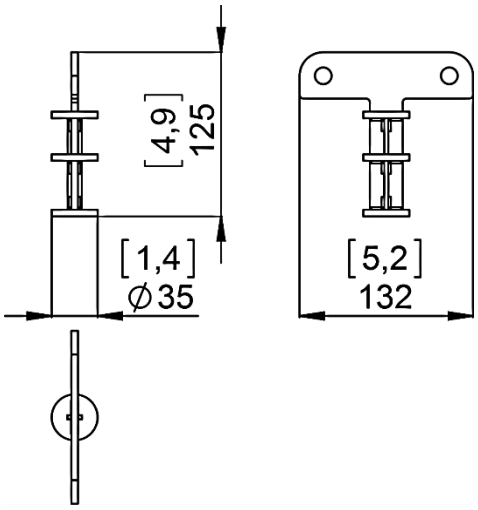
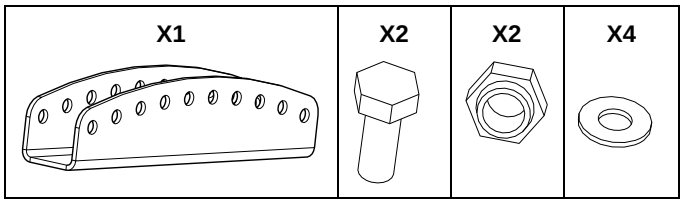


Weight: 0,5 kg / 1.1 lb

8.4.7 GMT-LBPADPT

Parts



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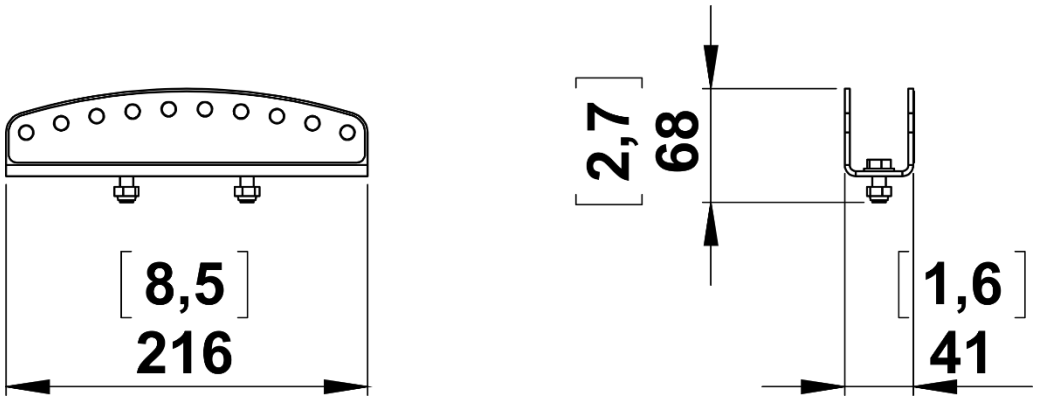
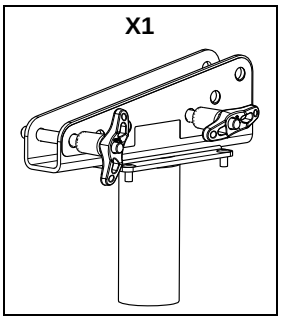


Weight: 0,7 kg / 1.6 lb

8.4.8 VNT-POLE

Parts



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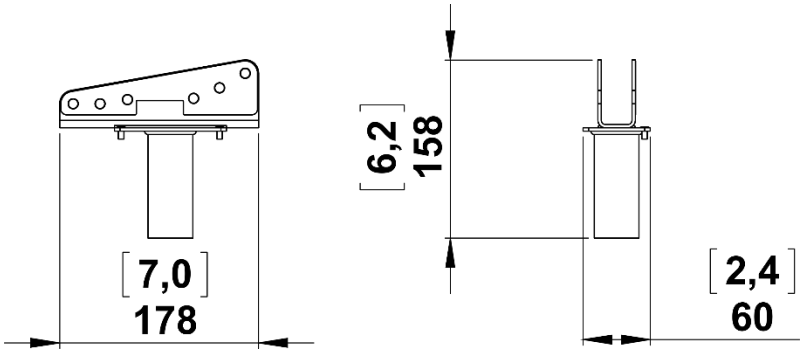
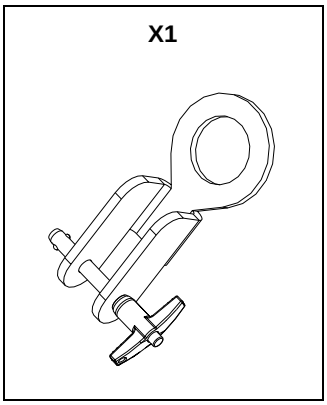


Weight: 0,9 kg / 2.2 lb

8.4.9 VNT-XHBRK

Parts



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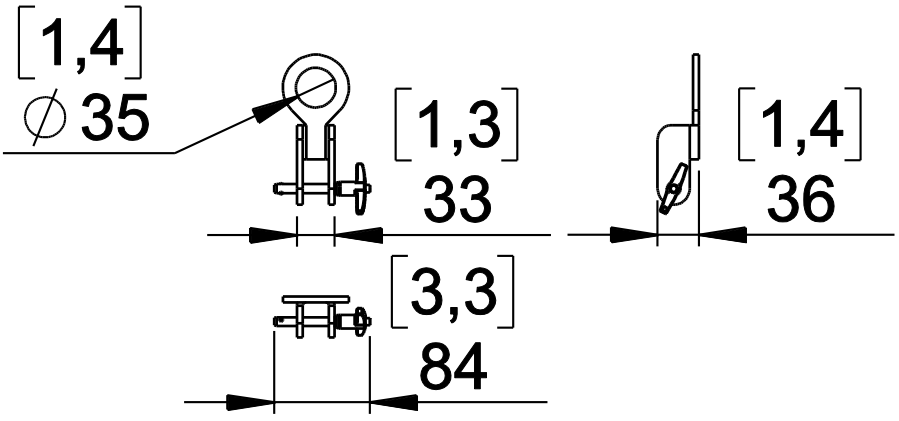
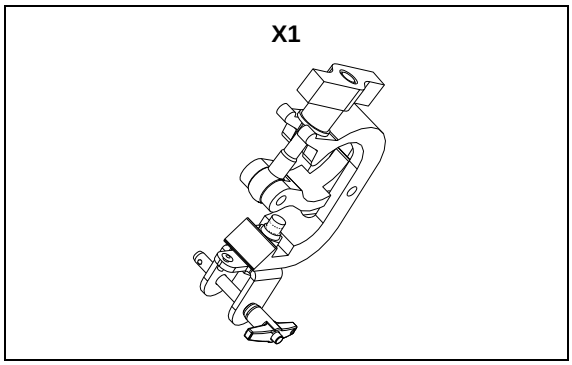


Weight: 0,35 kg / 0.8 lb

8.4.10 VNT-TCBRK

Parts



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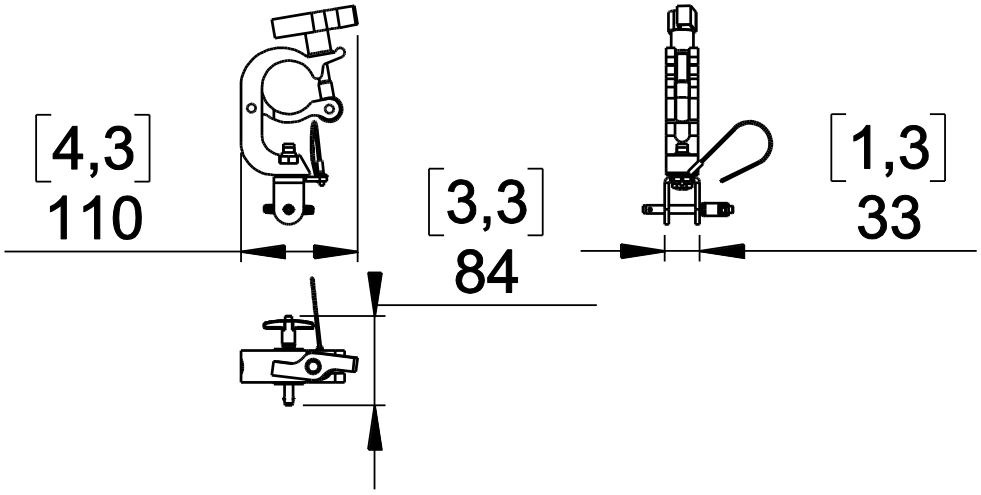
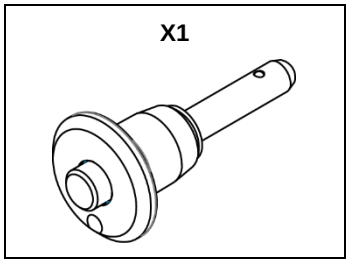


Weight: 0,78 kg / 1.8 lb

8.4.11 VXT-BL515

Parts



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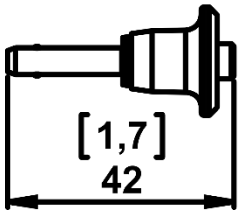
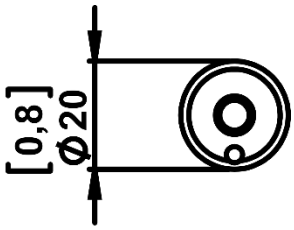
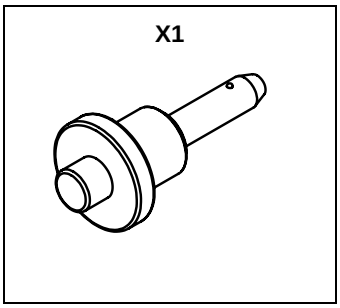




Weight: 0,0125 kg / 0.0275 lb

8.4.12 VXT-BL615

Parts



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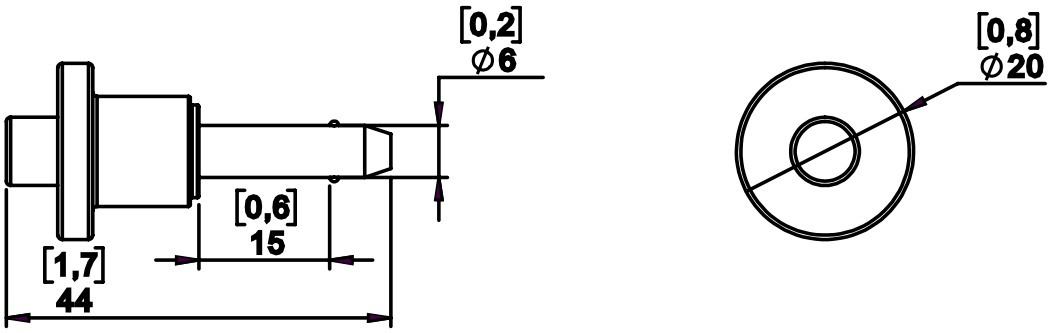
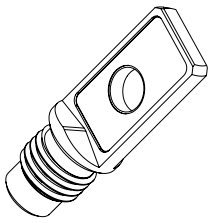
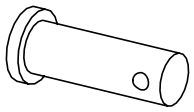
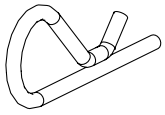


Weight: 0.0125 kg / 0.03 lb

8.4.13 VNT-MNSTKM6

Parts

X1	X1	X1
		

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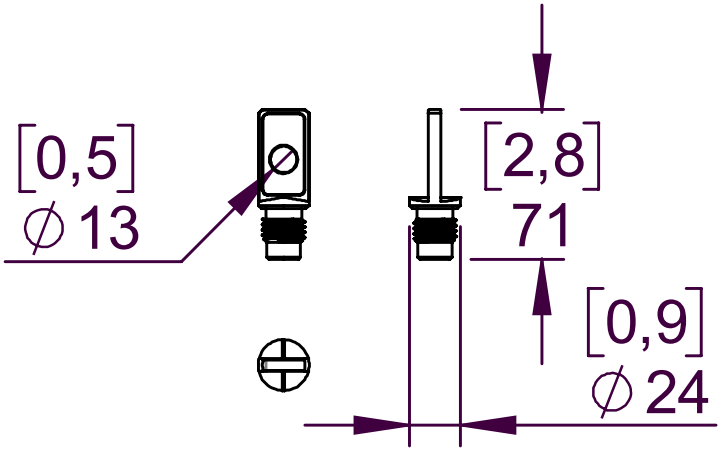
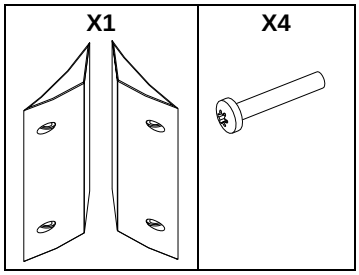


Weight: 0.14 kg / 0.31 lb

8.4.14 **G**MT-FLG

Parts



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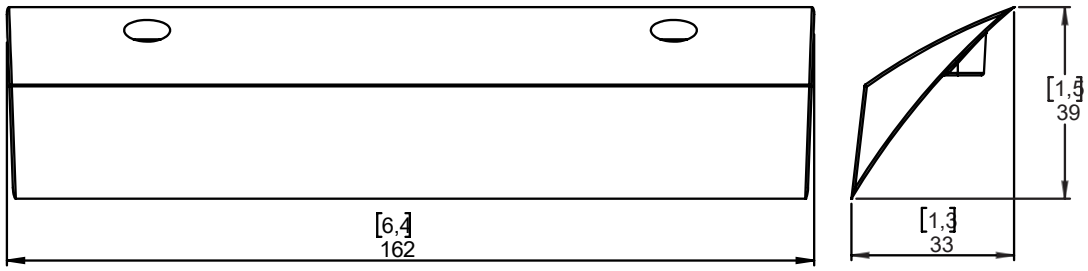
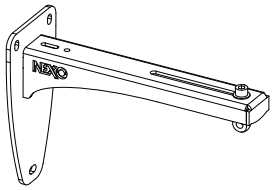
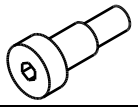
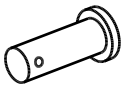


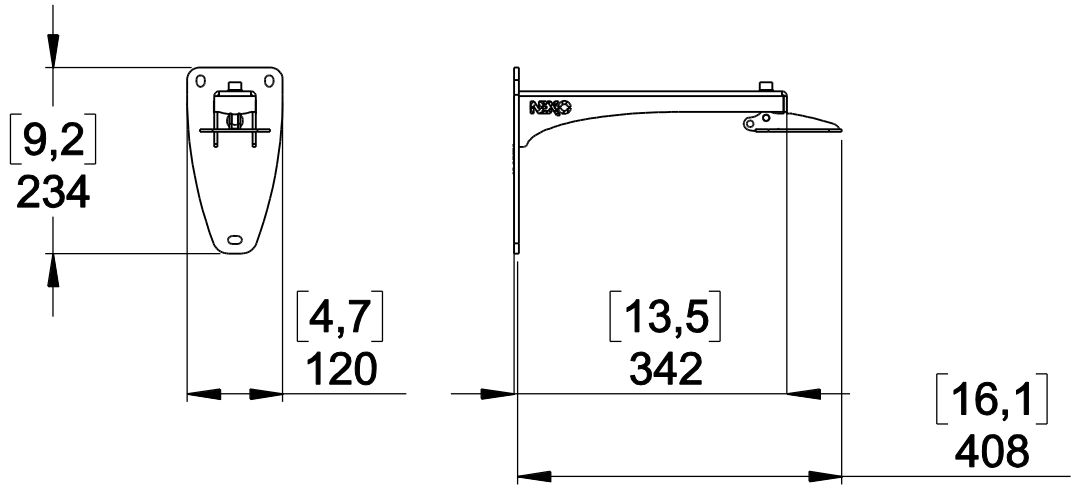
Weight: 0,2 kg / 0.44 lb

8.4.15 VNI-WS15

Parts

X1 (Arm) 	**X1 (Adapter)** 	**X1** 	
X1 	**X2** 	**X1** 	**X2** 
X1 	**X1** 	**X1** 	**X1** 

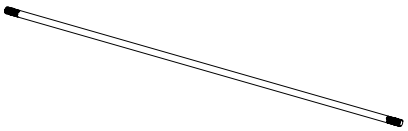
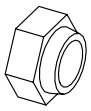
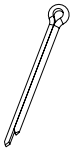
Dimensions



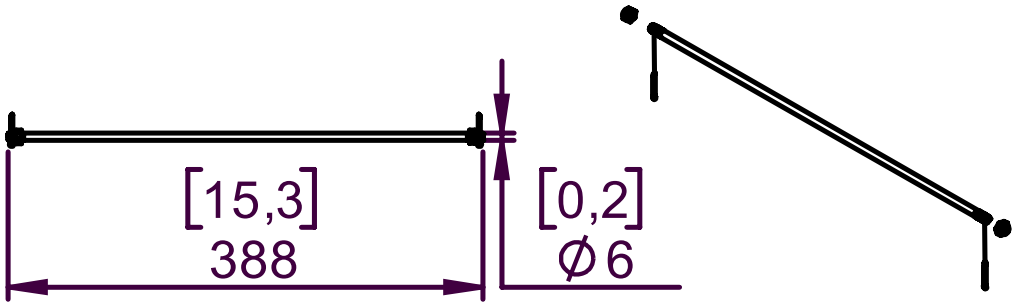
Weight: 2,8 kg / 6.2 lb

8.4.16 VNI-FIXBUMPM6

Parts

X2	X2	X2
		

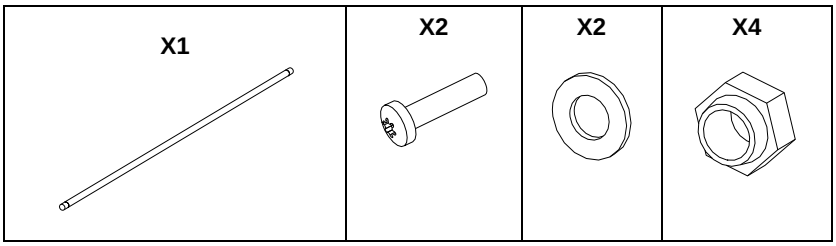
Dimensions



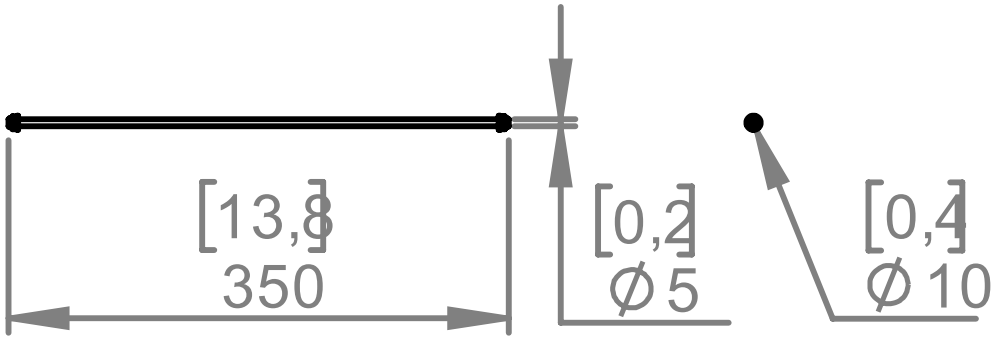
Weight: 0.1 kg / 0.22 lb

8.4.17 GMI-BNFIX

Parts



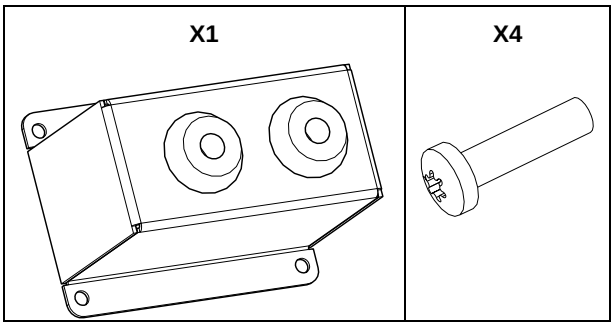
Dimensions



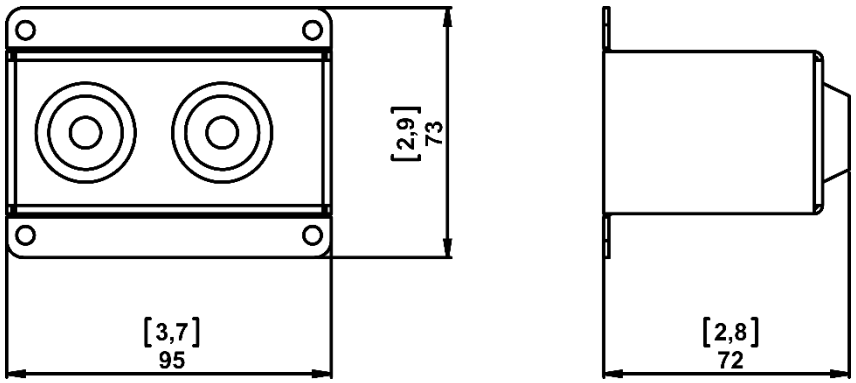
Weight: 0,2 kg / 0.44 lb

8.4.18 GMI-IPCOV

Parts



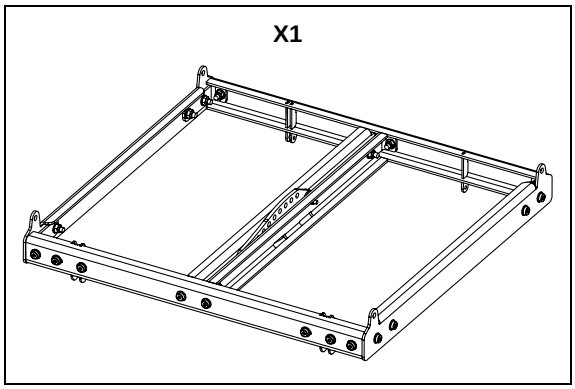
Dimensions



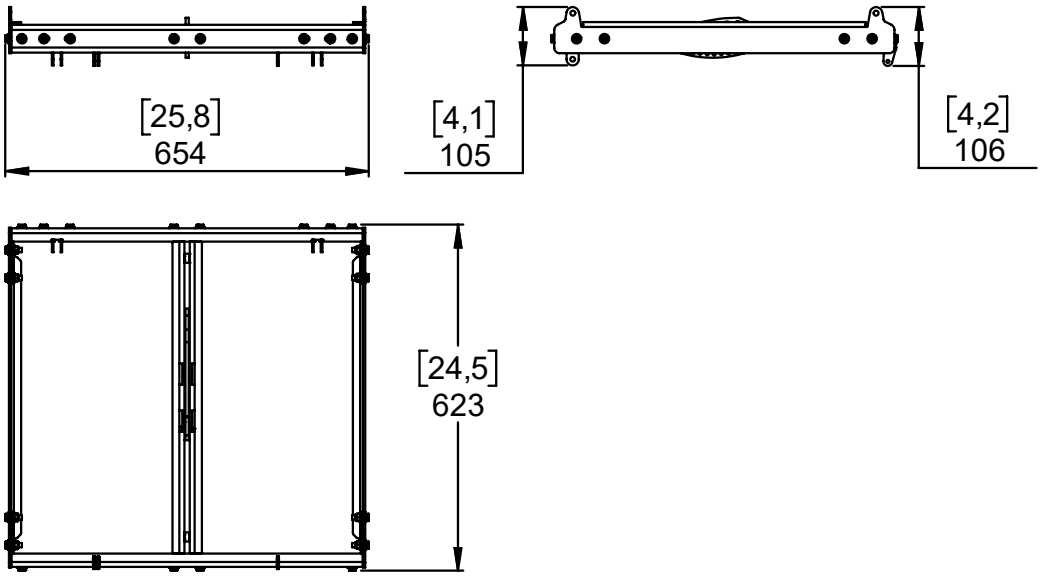
Weight: 0,3 kg / 0.66 lb

8.4.19 VNI-LNKM61018

Parts



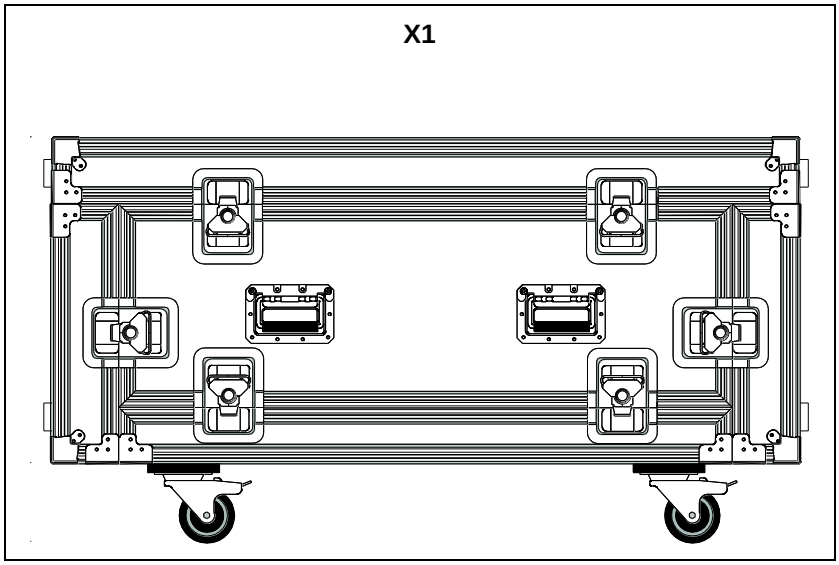
Dimensions



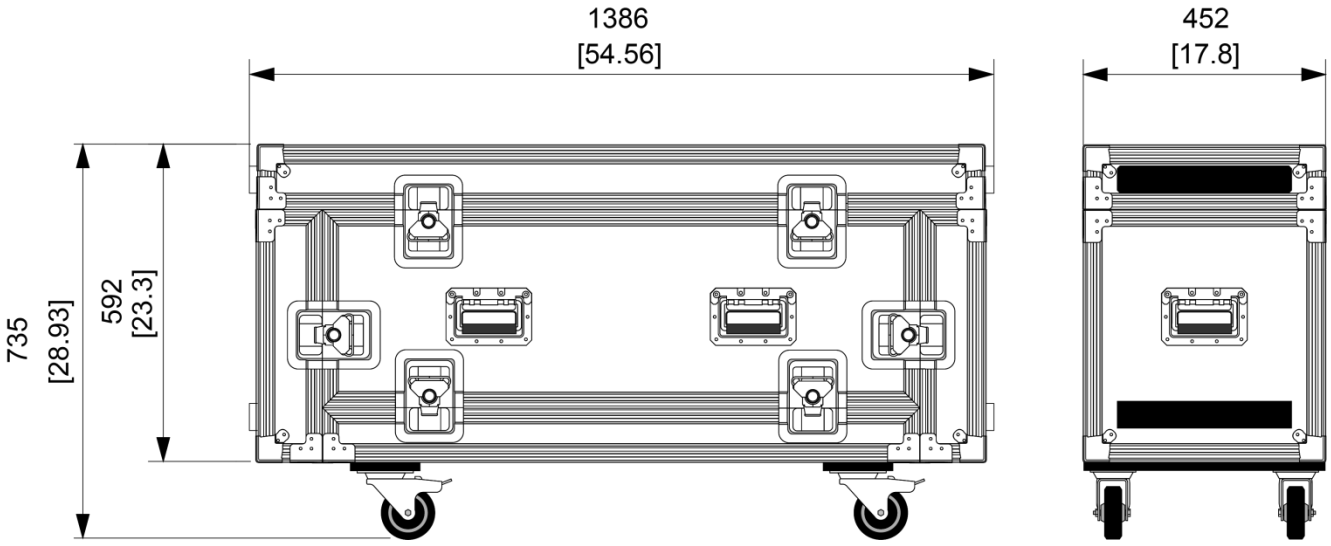
Weight: 11 kg / 22 lb

8.4.20 GMT-6CASE

Parts



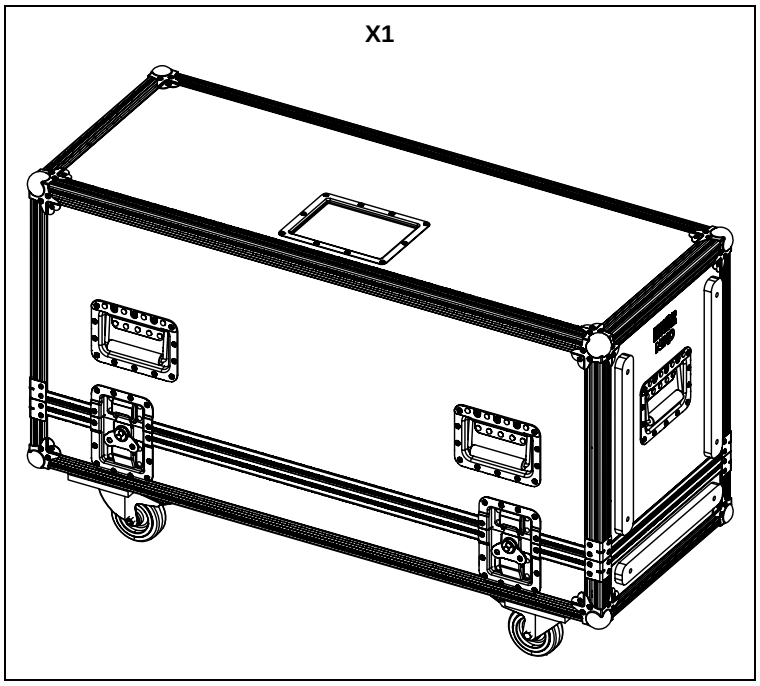
Dimensions



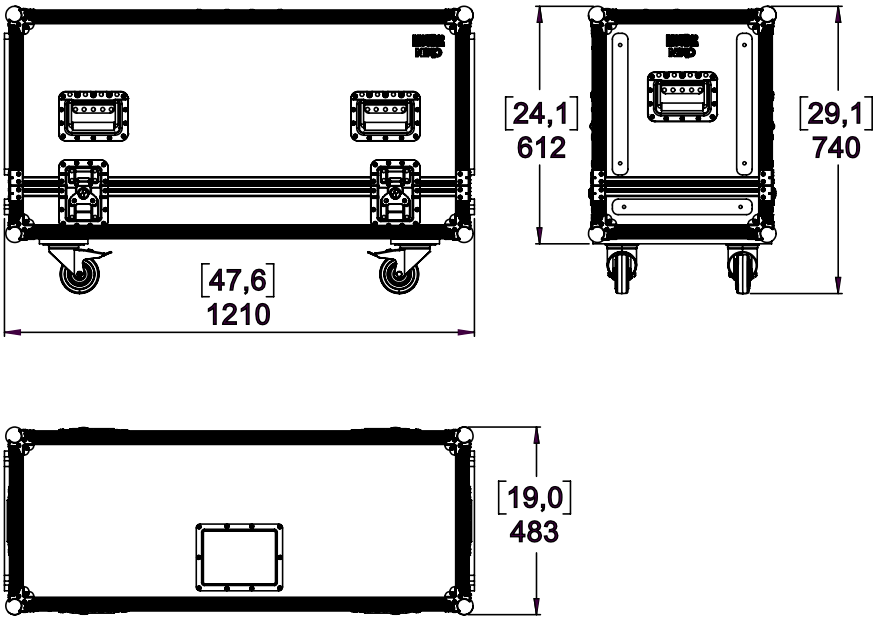
Weight: 57 kg / 125.7 lb

8.4.21 MST-2CASEMSUB12

Parts

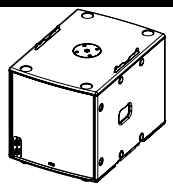
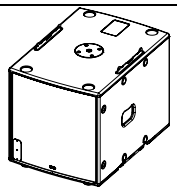
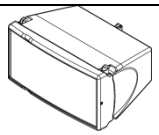
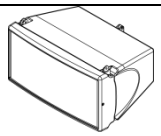
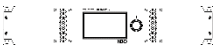
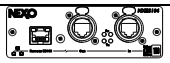
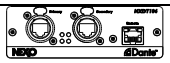


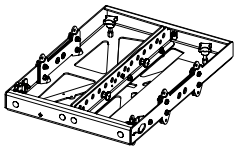
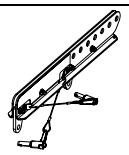
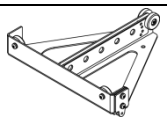
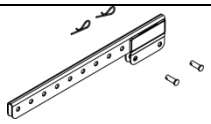
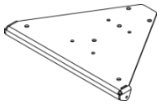
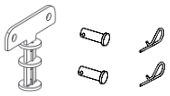
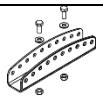
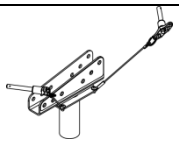
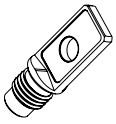
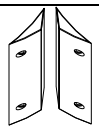
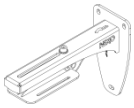
Dimensions

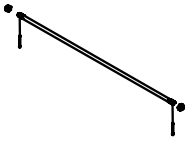
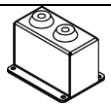
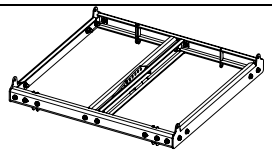
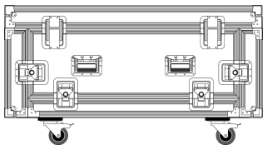
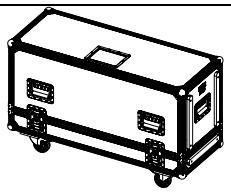


Weight: 37 kg / 81.5 lb

9 GEO M6 & MSUB12 MODULES & ACCESSORIES LIST

REFERENCE	DRAWING	DESCRIPTION
MSUB12		12" Subwoofer Touring Version
MSUB12-I		12" Subwoofer Installation Version
GEO M620		GEO M620 Module
GEO M6B		GEO M6B Module
DTD-IU		Digital TD Controller Installation Version
DTD-IN		Digital TD Controller Installation Version - Dante
DTD-TU		Digital TD Controller Touring Version
DTD-TN		Digital TD Controller Touring Version - Dante
DTDAMP4x0.7C		Power Amplifier 4x700W / 220V
DTDAMP4x0.7U		Power Amplifier 4x700W / 110V
DTDAMP4x1.3C		Power Amplifier 4x1250W / 220V
DTDAMP4x1.3U		Power Amplifier 4x1250W / 110V
NXAMP4x1mk2		Digital Powered Controller 4x1300W
NXAMP4x2mk2		Digital Powered Controller 4x2500W
NXAMP4x4mk2		Digital Powered Controller 4x4500W
NX.ES104		Ethersound Network Card for NXAMP
NX.DT104MK2		Dante Network Card for NXAMP
NX.AE104		AES Card for NXAMP

REFERENCE	DRAWING	DESCRIPTION
VNT-BUMPM6		Lifting / Stacking Bumper for GEO M6 and MSUB12
VNT-EXBARM6		Extension bar for VNT-BUMPM6
GMT-BUMPER		Main GEOM6 Bumper (up to 12 x GEO M6 maximum)
GMT-EXBAR		Extension bar for GMT-BUMPER
GMT-LBUMP		Light GEO M6 Bumper (up to 3 x GEO M6 maximum)
GMT-BPADPT-2		Stacking adaptor for GMT-BUMPER
GMT-LBPADPT		Adaptor for GMT-LBUMP
VNT-POLE		Pole Mount for GMT-LBUMP
VNT-XHBRK		Lifting ring for GMT-LBADPT (includes 8x45 Quick Release Pin).
VNT-TCBRK		Truss clamp for GMT-LBADPT (includes 8x45 Quick Release Pin)
VXT-BL515		5x15 Quick Release Pin for GEO M6
VXT-BL615		6x15 Quick Release Pin for MSUB12
VNT-MNSTKM6		Stacking Accessory for GEO M6 on top of MSUB12
GMT-FLG		Pair of flanges for GEO M620 120° horizontal dispersion
VNI-WS15		Wall Mount suspension for GMT-LBUMP

VNI-FIXBUMPM6		Fixing kit for VNT-BUMPM6 and MSUB12
GMI-BNFIX		GEO M6 Connection kit for installation
GMI-IPCOV		Connector protection for IP54 rating
VNI-LNKM61018		Adapter MSUB18-I to GEOM6
GMT-6CASE		Flight Case for 6 x GEO M6 + Hardware
MST-2CASEMSUB12		Flight Case for 2 x MSUB12

10 USER NOTES

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