# MA210D7 / MAW215D/2K

**User's manual**

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CAUTION

RISK OF ELECTRIC SHOCK
DON'T OPEN

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

**Safety Instructions**

**1.** All the safety and operation instructions should be read before this product is operated.

**2.** The exclamation point within an equilateral triangle is intended to alert the user of the presence of internal components whose substitution may affect safety.

**3.** The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of the presence of uninsulated dangerous voltage, that may constitute a risk of electric shock to people.

**4.** This product should not be exposed to rain or moisture. Do not use it, for example, near a swimming pool, water fountain or any liquid sources.

**5.** Clean only with a dry cloth.

**6.** This product should be situated so that its location does not interfere with its proper ventilation.

**7.** Do not install near heat sources such as radiators or other devices which produce heat.

**8.** This equipment should be serviced only by qualified service personnel when:

**A.** The power-supply cord or the plug has been damaged; or
**B.** Objects have fallen or liquid has been spilled onto it; or
**C.** This product does not appear to operate normally; or
**D.** This product has been exposed to rain; or
**E.** The chassis is damaged.

**9.** Unplug this product during lightning storms or when unused for long periods of time.

**10.** Do not suspend the cabinet from the handles.

# 1.INTRODUCTION

## 1.1.General

**Amate Electroacústica, s.l.** would like to thank you for your confidence in our new **MA** and **MAW Series,** specially designed for Line Array configurations.

The accumulated experience of more than 30 years in the design of acoustic cabinets and amplifiers, together with the application of the most advanced technology and transducers, have allowed this series to become the optimal and ideal solution for a wide range of situations, specially those which require high levels of sound pressure and a control of vertical coverage. Stadiums, theatres, big events, etc... will become the perfect places for its use.

We suggest you carefully read the following instructions in order to obtain the best results in performance.

## 1.2.What is a line array?

The trend in sound reinforcement has been to increase both the sound pressure level (SPL) and the size of the audience to be covered. This leads to an increase in the number of cabinets and, as a result of this, an increase in the total size and weight.

A line array is a group of independent sound sources which are vertically stacked in order to transform the spherical wavefronts generated by individual sources into a single flat wavefront.

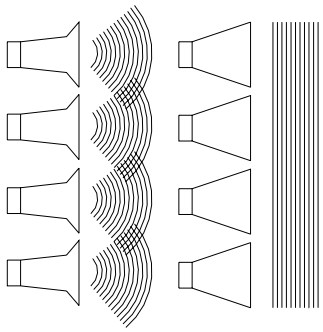


**Fig.1.** Wavefield interference for different wavefronts.

To carry out effectively arraying individual sound sources the system must follow the acoustic coupling conditions based on the wavelength, the shape of each source, the surface area of each transducer and the relative source separation.

An assembly of individual sound sources arrayed with regular separation between the sources on a plane or curved continuous surface is equivalent to a single sound source having the same dimensions as the total assembly if the following conditions are fulfilled:

1) The step of source separation, defined as the distance between the acoustic centres of the individual sources, is smaller than half the wavelength over the bandwidth of operation.

$$d <= \lambda/2$$

It is easy to fulfil this first condition for the low and mid frequencies. For example, two 7" loudspeakers that are separated by 17 cm will reproduce a cylindrical wave up to 1015 Hz.

This condition is difficult to be fulfilled for the high frequencies, as their wavelengths are too small to make the adjacent acoustic centres any smaller than λ/2. Here comes the second "arrayability" criterion.

2) The wavefronts generated by the individual sources are planar and the combined surface area of the sources fills at least 80% of the total target surface area:

$$H_1 \cdot W + H_2 \cdot W + ..... + H_n \cdot W >= 0.8 \cdot H \cdot W$$

This is achieved by using waveguides, which are coupled to the compression drivers output. We achieve flat wavefronts with a constant phase. By vertically assembling these waveguides we fulfil the second criterion of line array construction.

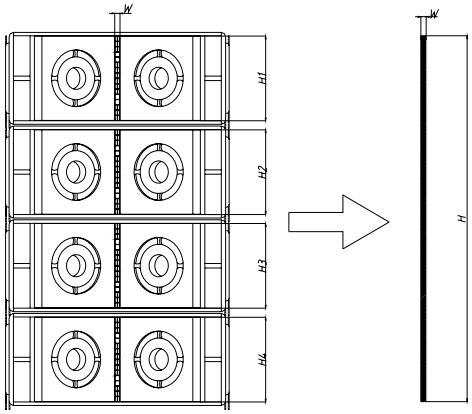



**Fig.2.** Second criterion of "arrayability"

3) The deviation from a flat wavefront must be less than λ/4 at the highest operating frequency (this corresponds to less than 5 mm curvature at 16kHz).

This third condition can be explained through our property waveguide. Thanks to some complex mathematical calculations we have obtained an aluminium component which is able to adapt the circular section of the compression driver to a rectangular section, getting on-phase waves at the end of the guide. This flat wavefront is ideal for vertical configurations.

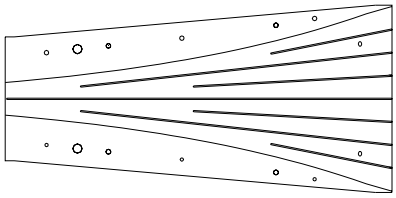


**Fig.3.** High frequency waveguide

Sound engineers use line arrays to obtain narrow directivities on the vertical plane. For configurations with many cabinets (big height) and at high frequencies it is not unusual to achieve narrow angles- in some cases they may be grade fractions. This can be useful in venues where both a high sound pressure level and long throw are required; nevertheless, this means less coverage of the audience area.

It is sometimes useful to achieve an asymmetrical coverage pattern on the vertical plane, which can be obtained by aiming some of the cabinets through their hinging points. We are now ready to define the last two criteria of "arrayability".

4) For curved arrays, the tilt angles should vary in inverse proportion to the listener distance (this is geometrically equivalent to shaping variable curvature arrays to provide equal spacing of individual element impact zones).

5) There are limits given the vertical size of each cabinet and their relative tilt angles. In our case the maximum tilt angle (between cabinets) is 6º.

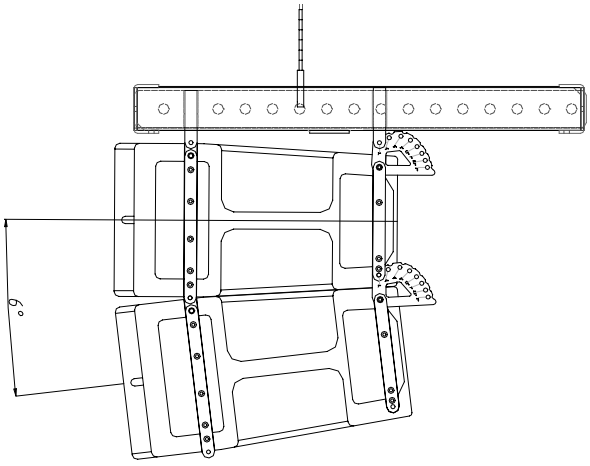



**Fig.4.** Tilt angle between cabinets (6º maximum)

### 1.3.Fresnel Region (Near Field) and Fraunhofer Region (Far Field)

If our system is able to fulfil the previous conditions it will produce cylindrical waves to a maximum frequency. The wave will be flat up to a certain distance where it will start to become spherical (depending on the frequency and the size of the array).

The limit distance between the zone of cylindrical waves (Fresnel) and spherical waves (Fraunhofer) can be calculated through the following formula

$$d_c = \frac{3}{2} H^2 f \sqrt{1 - \left( \frac{1}{3Hf} \right)^2}$$

where

$d_c$= limit distance between near field and far field (in metres)
H = height of the array (in metres)
f= frequency (in kHz)

In the near field region (Fresnel), the wavefront is cylindrical and waves only expand on the horizontal plane (120º in **MA-210**). The height of the wavefront is, in this case, the total height of the array.

In the far field region (Fraunhofer), the wavefront is spherical and expands both on the horizontal and vertical planes. The horizontal coverage is 120º and the vertical coverage is defined by the frequency and the height of the array.

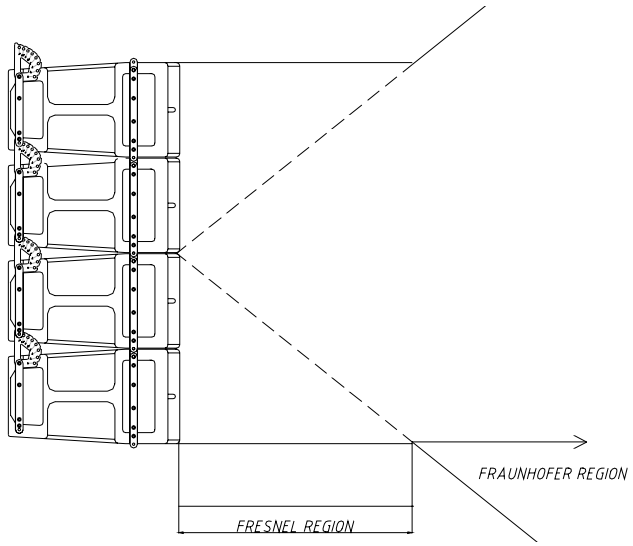



**Fig.5.** Limits of Fresnel-Fraunhofer Regions

We can create a chart with some of the basic configurations and their performance regarding wave propagation.

| **Freq (Hz)** | **2x MA210 $d_c$(m)** | **4x MA210 $d_c$(m)** | **8x MA210 $d_c$(m)** | **12x MA210 $d_c$(m)** |
|---|---|---|---|---|
| **100** | Spherical | Spherical | Spherical | 0.99 |
| **125** | Spherical | Spherical | Spherical | 1.88 |
| **250** | Spherical | Spherical | 2 | 4.97 |
| **500** | Spherical | 1 | 4.56 | 10.48 |
| **1k** | 0.5 | 2.28 | 9.38 | 21.21 |
| **2k** | 1.14 | 4.69 | 18.88 | 42.55 |
| **4k** | 2.34 | 9.44 | 37.84 | 85.16 |
| **8k** | 4.72 | 18.9 | 75.71 | 170.4 |
| **10k** | 5.9 | 23.65 | 94.64 | 213 |

**Fig.6.** $d_c$ Calculation

An 8-cabinet array has a near field extending to 19 metres at 2kHz. Beyond this distance the wavefront will be spherical.

In the first zone (Fresnel), sound pressure loss is of 3 dB per doubling of distance, whereas in the second zone (Fraunhofer) the loss is 6 dB. In long throw and high SPL configurations it is very important to produce cylindrical waves .

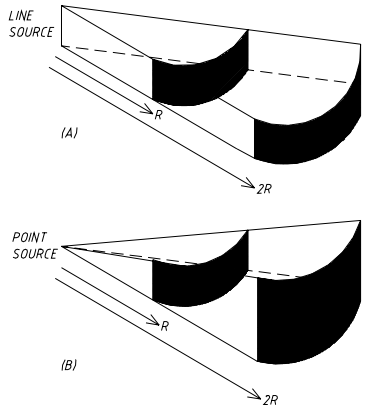



**Fig.7.**Cylindrical wave (A) vs Spherical wave (B)

(A) : -3 dB / doubling of distance
(B) : -6 dB / doubling of distance

## 2. MA-210 SYSTEM DESCRIPTION

**Amate Electroacústica** offers one version of its **MA-210** System.

**MA-210/D7**: Active version with DSP control

It is a 2-way unit that uses two 10" for the low-mid frequencies (with front phase-plug) and two 1" compression drivers (44mm voice coil) coupled to property waveguides for the high frequencies. We also introduce a low frequency reinforcement cabinet called **MAW-215/2**, which is offered in the active with DSP version (**MAW-215/D/2K**).

### 2.1.Why this "strange" front design?

The **MA-210** shape is "trapezoidal-triangular". The "baffles" are V-shaped, forming a 120º angle between them (horizontal coverage of the system).

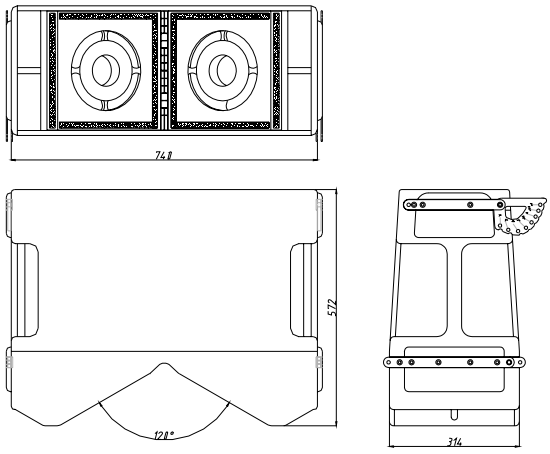



**Fig.8.** Dimensions of **MA-210**

With this geometry we avoid stationary waves within the upper and lower sides of the enclosure and we reduce cancellations on the total frequency response of the system.

### 2.2. 10" Neodymium Woofers with Phase-Plug

The low-mid way includes two 10" Neodymium woofers, with 2.5" voice coil and with copper ring to align the impedance. This woofer is the perfect ratio between a wide response and a small-sized transducer. We achieve an optimum performance on the frequency range of the voice.

Each loudspeaker is coupled to a phase plug. We widen the frequency response on the "higher" mid range and increase the total sound pressure level through its radiation areas.

### 2.3.1" Compression drivers with waveguide

The high frequency way includes two 1" compression drivers coupled to planar waveguides. Thanks to their Pure Titanium 44mm diaphragm we achieve an extremely good and clear sound, better than any other option.

The accurate design of our waveguide transforms the spherical waves produced by the driver into planar waves, while transversal stationary waves are also avoided within the audio field (up to 20kHz).

### 2.4.Finish

In its continuous research into offering the best product at all levels, the **MA-210** has been made of vibration and moisture-resistant birch plywood. All cutting and milling work, as well as drilling operations, has been developed by computerized numeric control machinery (CNC) which allows us to assure perfect and accurate assembly.

The black finish, which uses totally ecological water-based acrylic resin paint, provides an excellent external protection.

We also include a 2mm black painted steel grille with transparent foam on the front side.

Each unit incorporates rigging on its side for safe, easy and quick flying or stacking.

### 2.5. MA-210/D7 System

D=DSP version of **MA-210** with independent amplification on each way and internal processing through DSP included.

The **Class D** amplification modules are **1000 W** for the low way and **500 W** for the high way. Their high efficiency (almost 90%) allows their location on the rear panel .

The DSP control software allows:

- Parametric equalizations
- Delays
- Gain control for each way
- Crossovers up to 24 dB/Oct
- Limiters for each way

The adjustments can be done through a rear screen placed on each **MA-210/D7** or through PC with RJ45 connectors.

### 2.5.1.Rear connections

Each unit of **MA-210/D7** includes a rear panel with the following items:

A) **RJ45 INPUT** : PC Signal Input

B) **RJ45 LINK** : PC Link Signal

C) **INPUT SIGNAL** : Balanced XLR input signal connector
1= Shield 2= Live 3= Return

D) **LINK INPUT SIGNAL** : Balanced XLR connector for paralleling several units, which will share the same input.
1= Shield 2= Live 3= Return

E) **AC INPUT** : Input PowerCon connector.

F) **AC STACKING OUTPUT** : PowerCon Output connector to feed a secondary cabinet. Up to 4 boxes can be powered by a single AC Line.

G) **AC MAINS LED INDICATORS**
**ON:** Lights when AC input is correct.
**STAND BY:** Lights during power-up sequence.
**OVERVOLTAGE PROTECTION:** Lights if AC input voltage is over 250VAC. The system protects itself and will not start up until AC level is correct.

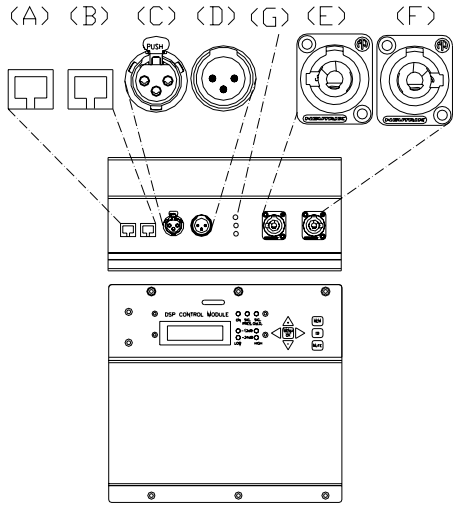



**Fig.9.** Connections panel for **MA-210/D7**

## 3.MAW-215 SYSTEM DESCRIPTION

**Amate Electroacústica** offers one version of its **MAW-215/2** Low frequency reinforcement System.

**MAW-215/D/2K**: Active version with DSP control

It includes two 15" Neodymium Woofers and they are acoustically controlled by the volume of their three chambers. Despite its compact size, we obtain an excellent performance with very low levels of distortion.

### 3.1. 15" Neodymium Loudspeakers

The 15" transducers used, which are probably the best ones on the current market with these features, offer a clean, undistorted low frequency reproduction at very high sound pressure levels. This low distortion and unmatched quality are further and significantly improved by the double demodulating rings (DDR) embedded in the pole piece of the magnetic structure. These are designed to dramatically reduce the intermodulation and third order distortion while also improving transient response. Excellent heat dissipation is achieved by incorporating external magnetic configuration.

### 3.2.Finish

The **MAW-215** has been made of vibration and moisture-resistant birch plywood. All cutting and milling work, as well as drilling operations, has been developed by computerized numeric control machinery (CNC) which allows us to ensure perfect and accurate assembly.

The black finish, which uses totally ecological water-based acrylic resin paint, provides an excellent external protection

We also include a 2mm black-painted steel grille with acoustically transparent foam on the front side.

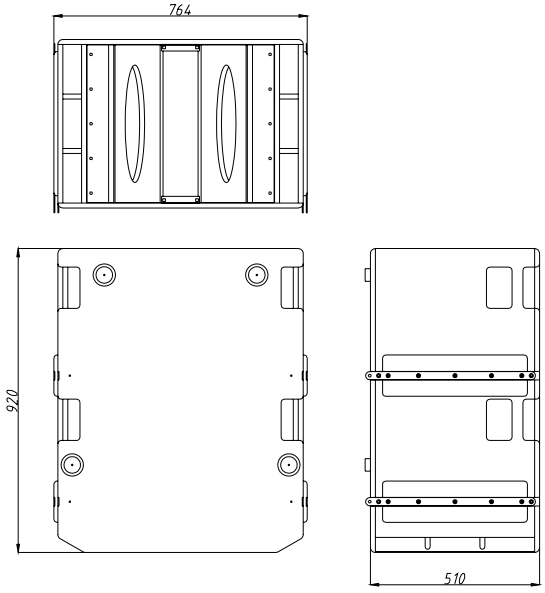



**Fig.10.** Dimensions of **MAW-215**

Each unit incorporates rigging on its side for safe, easy and quick flying or stacking.

### 3.3. MAW-215/D/2K System

D=DSP version of **MAW-215** with in-built amplification and internal processing through DSP included.

The **Class D** amplification modules are 1000 W (two units, total **2000 W**). Their high efficiency (almost 90%) allows their location on the rear panel without the necessity of forced cooling. We eliminate any fan or any other auxiliary device which may fail because of extra mechanical work.
The DSP control software allows:

- Parametric equalizations
- Delays
- Gain control
- Crossovers up to 24 dB/Oct
- Limiters

The adjustments can be done through a rear screen placed on each **MAW-215/D/2K** or through PC with RJ45 connectors.

#### 3.3.1.Rear connections

Each unit of **MAW-215/D** includes a 4mm Rear Aluminium Panel with the following items:

A) **RJ45 INPUT** : PC Signal Input

B) **RJ45 LINK** : PC Link Signal

C) **INPUT SIGNAL** : Balanced XLR input signal connector
1= Ground 2= Live 3= Return

D) **LINK INPUT SIGNAL** : Balanced XLR connector for paralleling several units, which will share the same input.
1= Ground 2= Live 3= Return

E) **AC INPUT** : Input PowerCon connector.

F) **AC STACKING OUTPUT** : PowerCon Output connector to feed a secondary cabinet.

G) **LED OVERVOLTAGE**

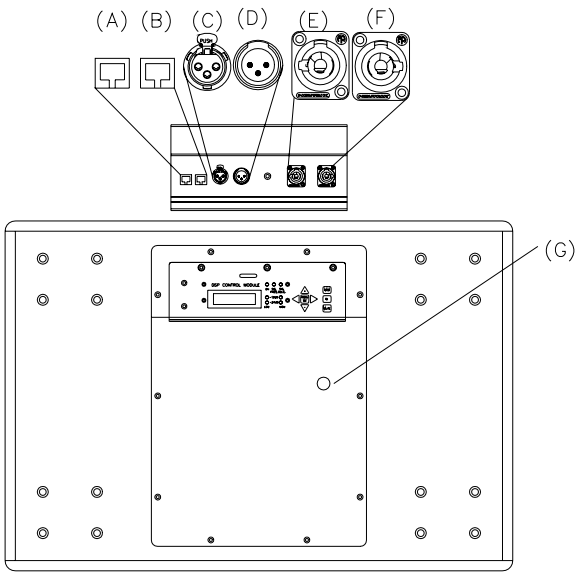



**Fig.11.** Connections panel for **MAW-215/D/2K**

## 4.-SYSTEM CONNECTIONS

### 4.1.Active Systems with DSP Control MA-210/D7

As an example, let us start with a 4 **MA-210/D7** cabinet configuration. All the rest of configurations may be deduced from this base system.

Each cabinet includes a FACTORY PRESET which can be modify through the control software or the in-built rear digital screen.

A sound system must be switched on sequentially. Firstly switch on the sound sources such as CD players. Then, the mixer and finally the self-powered cabinets. If you are using several units it is recommended that you switch them on sequentially one at time.

If you are not using **MA-210/D7** in combination with low frequency reinforcement units, plug the output of mixer into the **MA-210/D7** Input. (Fig.9. **INPUT SIGNAL** (C)).

If you have more cabinets, simply daisy chain them through **LINK INPUT SIGNAL** connectors.

Feed one unit through **AC INPUT** connector and simply daisy chain the others through **AC STACKING OUTPUT. The maximum number of units than can be linked this way is 4 (including main unit).**

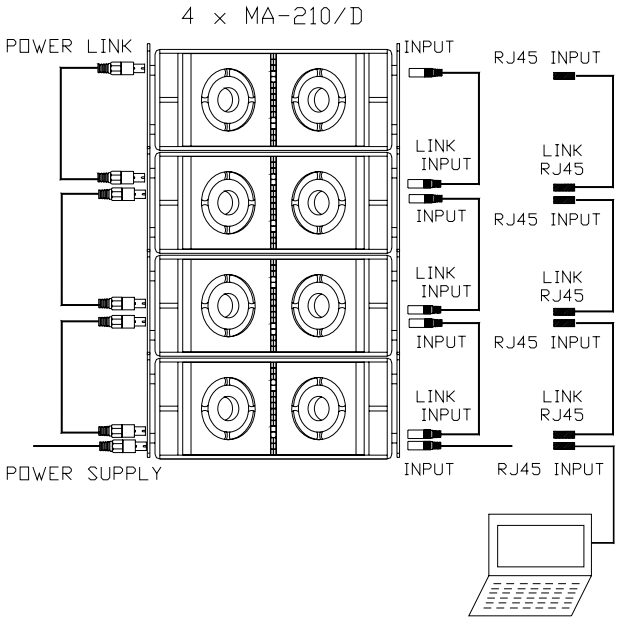



**Fig.12.** 4x**MA-210/D7** Connections

## 5.FLYING SYSTEM

Flying an **MA** system is easy, fast and secure. To perform any operations related to flying the system, read the present document, and act on the warnings and advice given.

Only experienced installers with adequate knowledge of the system and local safety regulations should fly speaker cabinets.

It is the user's responsibility to ensure that the systems to be flown and the flying accessories (such as chains, eyebolts, lock pins...) comply with state and local regulations. They should be regularly inspected and replaced if in doubt.

When flying enclosures from ceiling support structures, extreme care should be taken to assure the load bearing capabilities of the structures. Do not fly systems from unsafe structures.

All flying accessories that are not supplied by **Amate Electroacústica** are the user's responsibility. Use at your own risk.

Remember that no risks should be taken with regards to public safety.

### 5.1.Description

Each **MA-210D7** cabinet includes two structures on each side of the enclosure, one on the front-lateral side and the other on the back-lateral side. These structures are manufactured from 3mm stainless steel; they are affixed to an internal plate with special crop resistant screws. There is a guide (front guide) assembled on the front-lateral structure (which is used to vertically join the cabinets); a second guide (back guide) assembled on the back-lateral structure is used to vertically join the cabinets and to tilt them.

Angles can be changed from 0º to 6º. To safely lock both guides, the lock pins supplied must be used.

To tilt the cabinets, both the back-lateral structure and the back guide must be used.

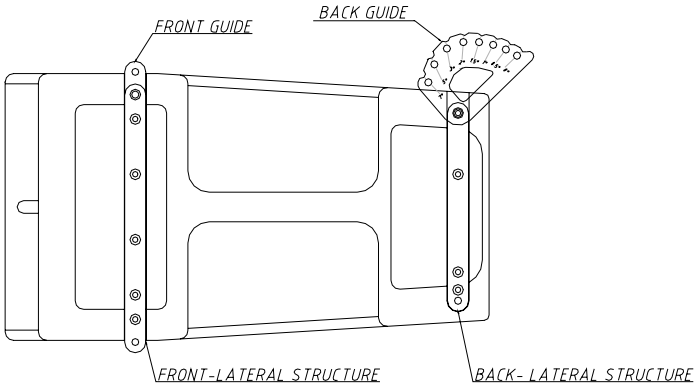



**Fig.13.** Lateral structures (general view)

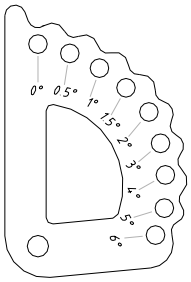



**Fig.14.** Back guide with graduation

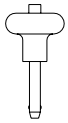


**Fig.15.** Ball Lock Pins

To fix the guides to the holes, highly resistant 8mm pins are used with ball safety lock.

To fly more than 6 units of MA210D7 use the TA-210HD Frame. It is made from Stainless Steel and is designed to handle great loads. It includes a centre bar to reinforce the whole structure. The bar has a series of holes (20 mm) that provide a pickup point for the steel chain slings or the hoists. The pickup point chosen will determine the tilt angle of the whole array system.

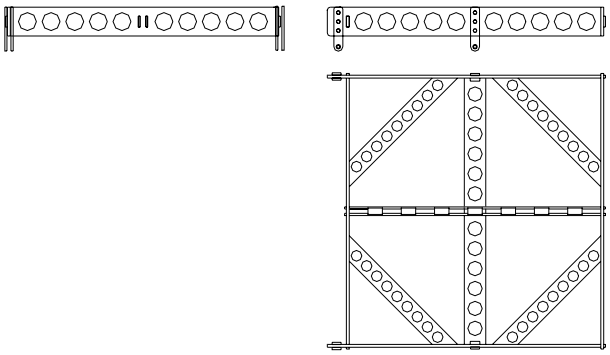


**Fig.16.** TA-210HD Flying Frame

The TA-210SD Frame can be used for flying up to six MA210D7 cabinets.

A shackle is included on the Flying Frame Kit. It can be fitted into any of the centre bar holes (depending on the gravity centre of the configuration). The shackle can be also hung on the elevation motor of the system.

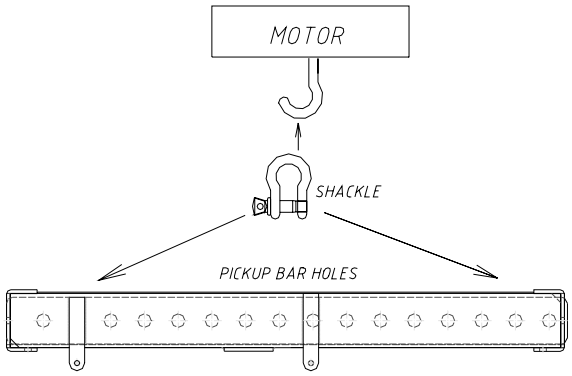



**Fig.17.** Flying structure

We **recommend** the use of a safety cable on the shackles' hole. (see Fig.30). You should coil the cable around the shackle to avoid any incident in case of unscrewed guides.

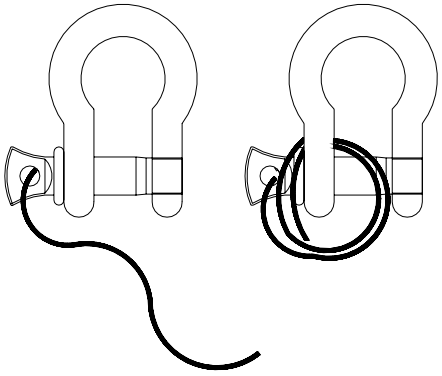


**Fig.18.** Safety cable for shackle

### 5.2. MA-210 Flying

Use the back guide to choose the desired tilt angle (0º, 0.5º, 1º, 1.5º, 2º, 3º, 4º, 5º and 6º). Set the back guide between the back lateral structures of the cabinet that is placed above. Lock the guides with the safety pins.

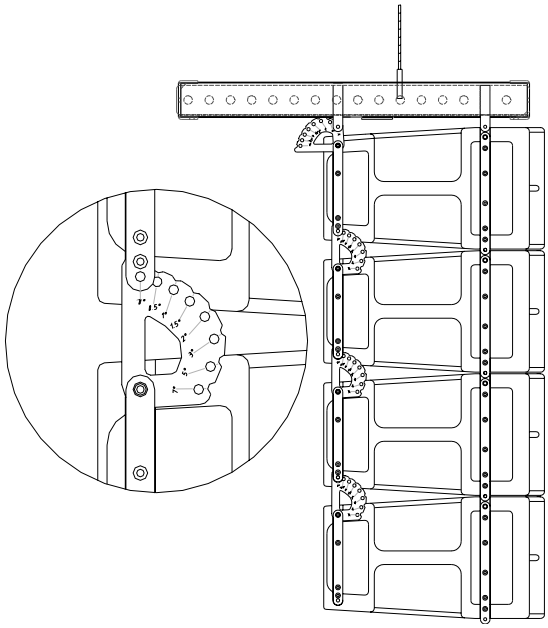


**Fig.19. MA-210D7** Flying. Flat Line Array
0 º (Back Guide =0º)

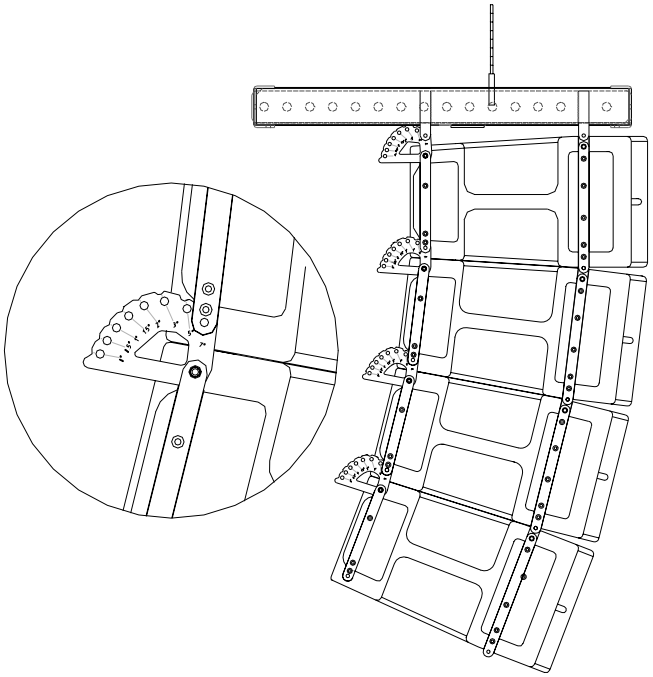


**Fig.20. MA-210D7** Flying. Curved Line Array.
6º (Back Guide =6º)

### 5.3. MAW-215D/2K Flying

It is not possible to aim low frequency reinforcement units. Units are joined through the built-in guides of each cabinet.

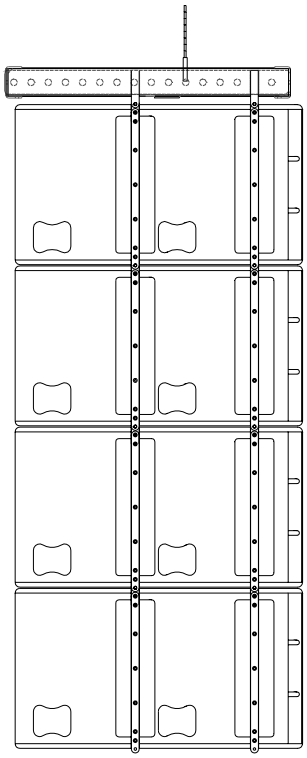


**Fig.21. MAW-215D/2K** Flying

### 5.4. MA-210D7 +MAW-215D/2K Flying

It is useful to hang low frequency reinforcement units on the top of the system, as they are the heaviest enclosures. Place the subwoofers as has been explained in section 5.3. Join the last unit of **MAW-215D/2K** onto the first unit of **MA-210/D7** through the built-in steel structure on the subwoofer.

If you want to place the first unit of **MA-210/D7** with a 0º degree (flat cabinet), please select 6º position on its back guide.

Follow Section 5.2. to hang the rest of **MA-210/D7** units (choose between a flat line array or a curved line array)

We recommend 3-4 units of **MAW-215D/2K** for every 8 units of **MA-210/D7**.

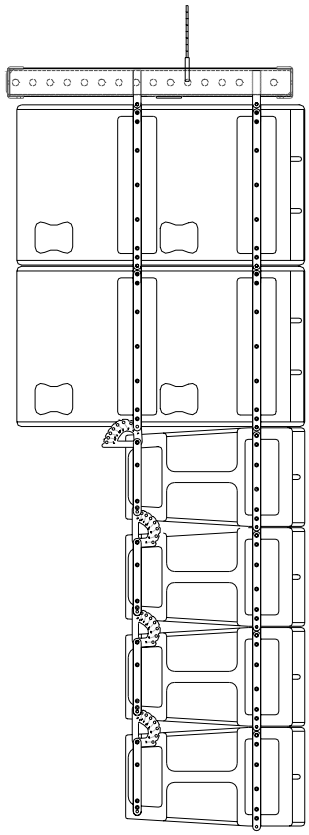


**Fig.22. MA-210/D7+MAW-215D/2K** Flying. Flat Line Array

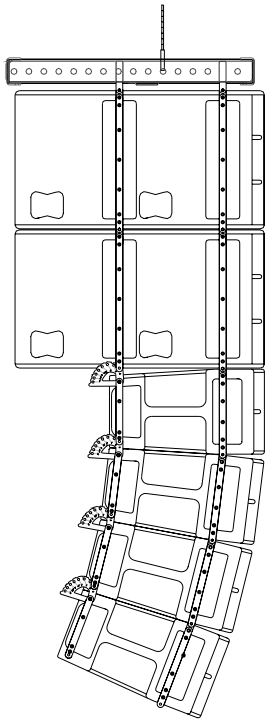


**Fig.23. MA-210/D7+MAW-215D/2K** Flying. Curved Line Array

## 6- OVERVOLTAGE PROTECTION

The MA210D7 and MAW215D/2K models include over voltage protection.

An electronic circuit compares the input voltage with a reference value on the AC Input connector (MAINS). When the input voltage is higher than 250 Volts the circuit starts to work, blocking the input voltage until its value returns to its correct limits (230V +/- 10% ).

When the Overvoltage LED lights (in RED) (Fig.9. **LED OVERVOLTAGE (G),** Fig.11. **LED OVERVOLTAGE (G** )), the cabinet stops working (or works intermittently) until the correct voltage values are reached again.

## 7.TECHNICAL SHEETS

### MA-210/D7

**Line Input (Balanced)** 1.8 V

**Impedance** 10k ohms

**Mains**
230V +/- 10% Overvoltage Protection at 250V

**Consumption at Maximum Power**
6 A

**Frequency Response**

| | | |
|---|---|---|
| LF Usable bandwidth | 80 Hz - 2 kHz (-10 dB) | (1W, processed) |
| HF Usable bandwidth | 2 kHz - 20kHz (-10 dB) | (1W, processed) |
| Total Usable bandwidth | 80 Hz - 20kHz (-10 dB) | (1W, processed) |

**Sensitivity**

| | |
|---|---|
| LF (2V rms @ 1m) | 104 dB SPL |
| HF (2.83V rms @ 1m) | 109 dB SPL |
| Total SPL (2V rms @ 1m) | 104 dB SPL |

**Amplifier Power**

| | |
|---|---|
| LF | 1000 W |
| HF | 500 W |

**Nominal Directivity (-6dB)**

| | |
|---|---|
| Horizontal | symmetrical 120º |
| Vertical | defined by the array |

| **System Output** (Long Term) | **Continuous SPL** (flat array) |
|---|---|
| One enclosure @1000W | 134 dB |
| Two enclosures @1000W | 140 dB |
| Four enclosures @1000W | 146 dB |

**Components**
LF 2x10" Neodymium Woofer with **ICCR**-Impedance Compensation Copper Ring (2.5" voice coil)
HF 2x1" Neodymium Pure Titanium compression Driver (1" ¾ voice coil) mounted on property waveguide

**Enclosure**

| | |
|---|---|
| Width | 740 mm |
| Front height | 314 mm |
| Rear height | 265 mm |
| Depth | 572 mm |
| Trap angle | 2 x 3.5º |
| Weight (net) | 35 Kg |
| Connectors | 2 x AC PowerCon (Input, Link)<br>2 x XLR (Input, Link)<br>2x RJ45 for External PC Control |
| Material | Birch plywood, Stainless Steel Flying Hardware, Front grille with Foam |
| Finish | Black (Acrylic resin, ecological water-based) |
| Rigging | Integrated flying hardware and handles |

**MAW-215/D/2K**

| **Line Input (Balanced)** | **Impedance** |
|---|---|
| 1.8 V | 10k ohms |

**Mains**

230V +/- 10% Overvoltage Protection

**Consumption at Maximum Power**

9 A

**Frequency Response**

LF Usable bandwidth 32 Hz - 140 Hz (-10 dB) (1W, processed)

**Sensitivity**

LF (2V rms @ 1m) 102 dB SPL

**Amplifier Power**

LF 2000 W

**Nominal Directivity (-6dB)**

| | |
|---|---|
| Horizontal | omnidirectional |
| Vertical | omnidirectional |

| **System Output** | **Continuous SPL** |
|---|---|
| (Long Term) | (flat array) |
| One enclosure @ 2000 W | 135 dB |
| Two enclosures @ 2000 W | 141 dB |
| Four enclosures @ 2000 W | 147 dB |

**Components**

LF 2x15" Long excursion Neodymium Woofer (100mm Voice Coil)

**Enclosure**

| | |
|---|---|
| Width | 740 mm |
| Height | 510 mm |
| Depth | 920 mm |
| Weight (net) | 72 Kg |
| Connectors | 1x AC INPUT PowerCon<br>1x AC STACKINGOUTPUT PowerCon<br>1x INPUT XLR Balanced<br>1x LINK XLR Balanced<br>2x RJ45 for External PC Control |
| Material | Birch plywood, Stainless Steel Flying Hardware, 2mm Black Painted steel grille |
| Finish | Black (Acrylic resin, ecological water-based) |
| Rigging | Integrated flying hardware and handles |

## 8.TROUBLESHOOTING

**No Power**

- Make sure that the cabinet is plugged in.
- The Fuse is blown. Replace the fuse on fuse holder with one of the same type. This replacement must be done by specialized people as the fuse is set inside the amplification modules. AC Voltage may be controlled by rotating the Fuse 90º (230V or 115V). **See fuse holder for more information.**

**No Sound**

- Check that the mixer, sound source and processor is sending signal to the unit.
- Check that the cable from the mixer, sound source or processor to the units is correctly connected. Replace the cable if defective.
- Make sure the output volume (gain) control on the mixing console and processor is sufficiently turned up to drive the inputs of the speakers.
- Make sure the mixer and the processor do not have a Mute on.

**Distorted sound**

- The system is overloaded and has reached maximum power. Turn down the mixer's output or the channel's gain.

**Poor bass performance**

- Check the polarity of the connections between the mixer/processor and the **MA-210/D** amplifiers. If you have inverted any of the Pins (1,2 or 3) in one of the extremes of the wire, the losses may be extremely high.

**Noise and Hum**

- Make sure all connections to the active units are in good conditions.
- Avoid routing the signal cables near AC cables, power transformers, or EMI-inducing devices.
- Check if there is any light dimmer on the same AC circuit as the cabinet. Connect the sound system to a different phase than the lights.

**Fig.24**. Fuse placement

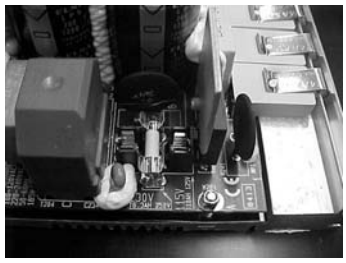


**Fig.25**. Fuse position (front view):

**VERTICAL**: 220V

**HORIZONTAL**: 115V

**Overvoltage LED (on RED)**

- Check that the input voltage is within the right values (230V +/- 10%)

## 9.PRESETS

This manual is aimed to describe some of the Presets that are recommended from our factory and that will be included in all the cabinets that form your **MASTER AUDIO** Line Array System.

The Presets are internal configurations that have been loaded to a memory (EPROM) on each box and that contain information regarding the Crossover Frequencies, Parametric Equalizations, Delays, Gains on each way...

These Presets cannot be erased but they can be externally modified through our *DSP Controller* software or through the small keyboard placed on the rear side of the box. Then, any user can create their own Presets.

Some of the parameters cannot be changed by the user (for example, the crossover frequency of the mid and high way in MA210D). We try to avoid some damages on the transducers in case of. inappropriate or "dangerous" frequencies of cut.

This manual describes the features of the following product version:

**EPROM MA210D: v1.0.1**
**EPROM MAW215D2: v1.0.0**
(You can check the version on the LCD placed on the rear side of the cabinet)

Should you own different product versions, there may be differences between the actual product and the description written here.

### Knowing the Presets

The first time you switch on a MA210/MAW215 cabinet you will see the following screen:

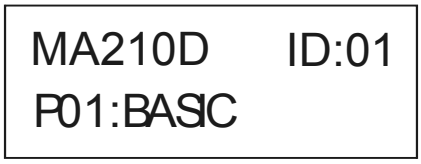



**Fig.26**. LCD Rear Screen

This screen contains:

- Model of the cabinet.
*(In this case, MA210D)*
- *ID Number*.
*(In this case, 01)*
- Name of the Preset that is activated at that time.
*(In this case, BASIC)*

The rest of the Presets are permanent recorded on the EPROM (internal memory) and they can be used whenever is necessary.

## 9.1. MA210D7 PRESETS

We have in this version the following Presets:

### 9.1.1. BASIC Preset (P01) (In previous versions it was called FACTORY01)

This is the most basic, general Preset. It avoids the damage on the transducers and it cannot be related to any specific acoustic configuration.

### 9.1.2.FR-8B Preset (P02)

It comes from "Full Range 8 Box" and it is recommended on an 8xMA210D configuration.

Its main features are:
- flat response
- low/mid cut frequency, fc=74.5Hz ,24dB/Oct
- +2.5dB /f=82Hz Boost
- for Full Range applications where there is no need to use low frequency reinforcement units.

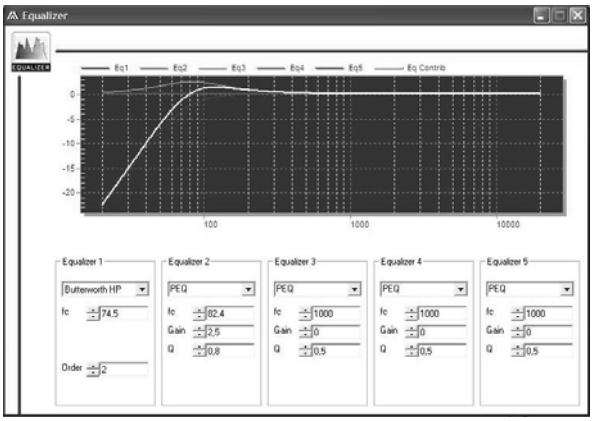



**Fig.27**. Preset 02. FR-8B

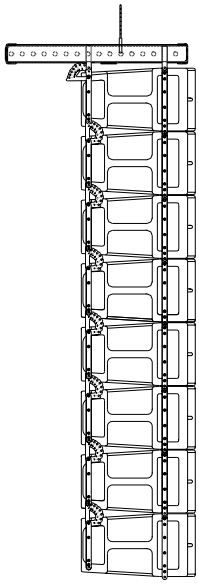


**Fig.28**. Recommended configuration for Preset 02. FR-8B

### 9.1.3. HP100-8B Preset (P03)

It comes from "High Pass 100Hz 8 Box" and it is recommended on an 8xMA210D with subwoofers configuration.

Its main features are:
- flat response
- low/mid cut frequency, fc=100Hz ,24dB/Oct
- for Full Range applications where there is the need to use low frequency reinforcement units.

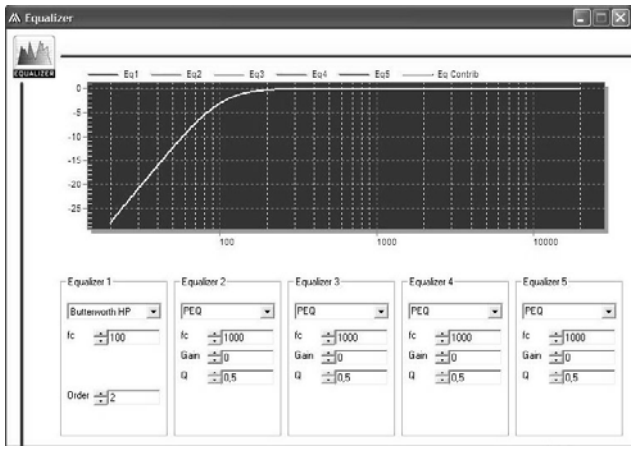



**Fig.29**. Preset 03. HP100-8B

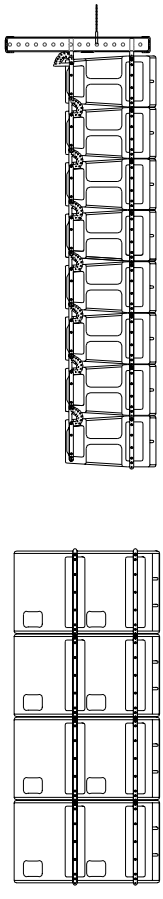


**Fig.30**. Recommended configuration for Preset 03. HP100-8B

### 9.2. MAW215D2K PRESETS

We have in this version the following Presets:

#### 9.2.1.BASIC Preset (P01)

- HPF, fc=45.7Hz, 24dB/Oct
- LPF, fc=120Hz, 24dB/Oct
- +6dB Boost, fc=50.7Hz

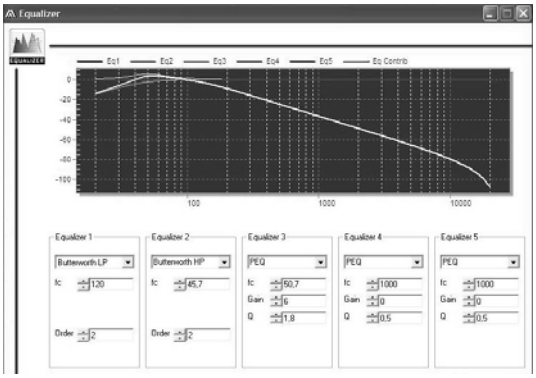
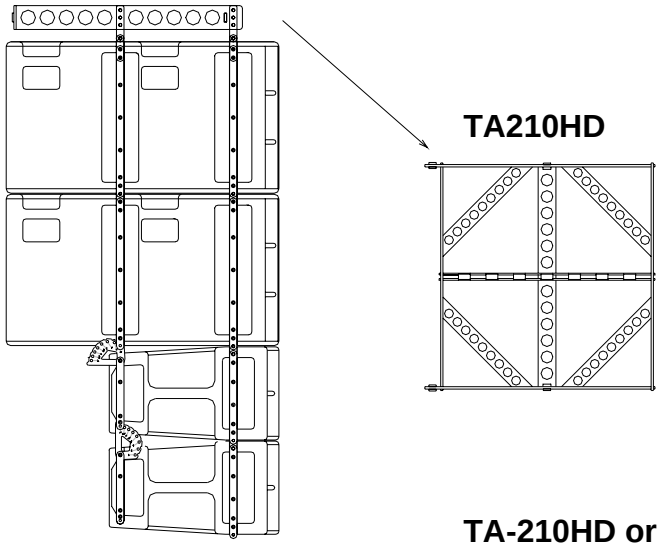


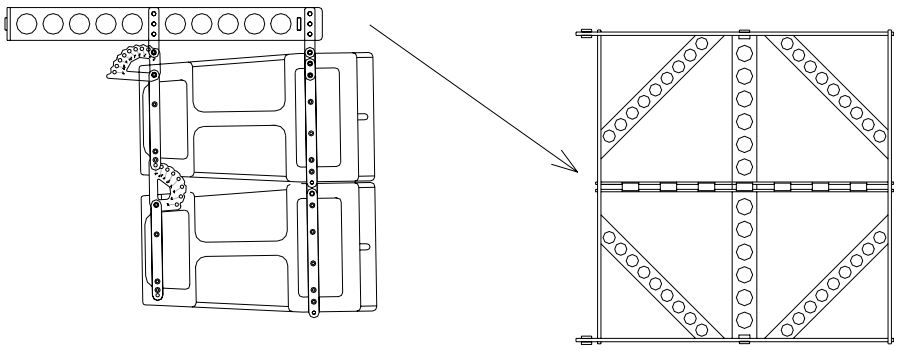

**Fig.31**. Preset 01. BASIC

### 10. MA210D7 FLYING

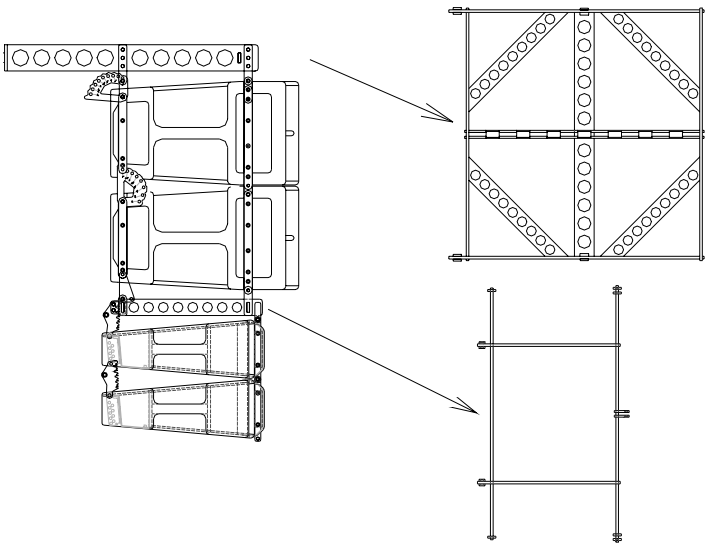



| MA210D7 + MAW215D/2K |
|---|
| You need |
| TA-210HD Bumper |

**TA-210HD or TA-210SD**



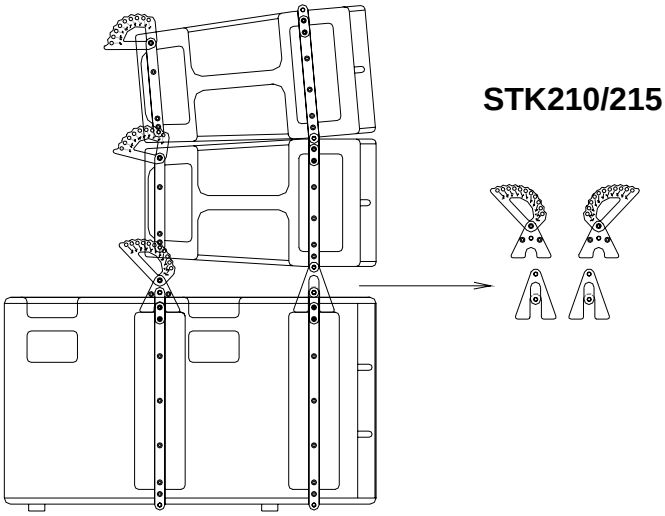
| MA210D7 |
|---|
| You need |
| TA-210SD Bumper (up to 6 cabinets) |
| TA-210HD Bumper (more than 6 cabinets) |



| MA210D7 + MA206 |
|---|
| You need |
| TA-210HD Bumper |
| FA-10/6 Frame Adaptor |
| 4 x BL-8 Ball Lock Pins |

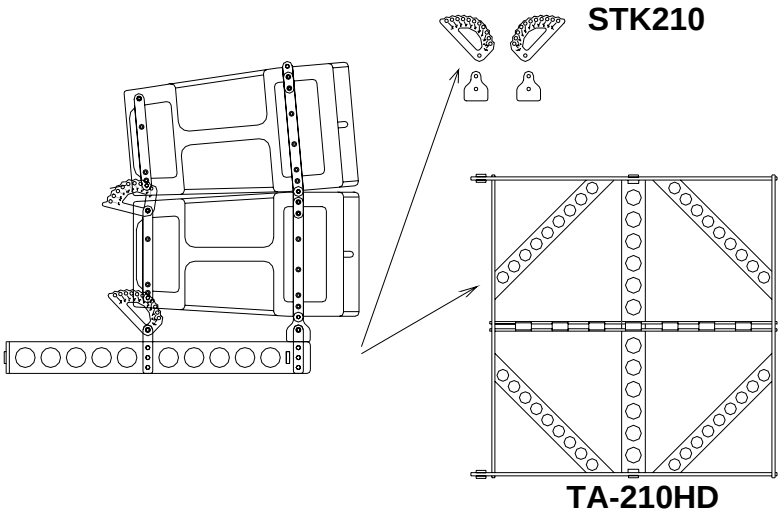
**FA-10/6**

## 11.MA210D7 STACKING



**STK210/215**

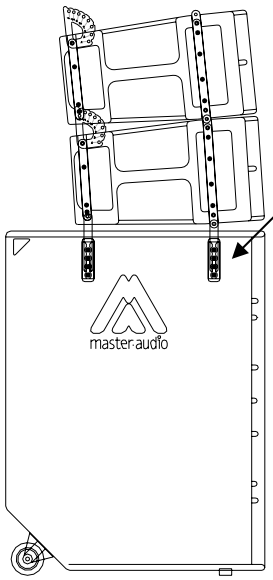
| MA210D7 + MAW215D/2K |
|---|
| You need |
| STK210/215 Kit Stacking |
| 4 x BL-8 Ball Lock Pins |



**STK210**

| MA210D7 on Floor |
|---|
| You need |
| TA-210HD Bumper |
| STK210 Kit Stacking |
| 4 x BL-8 Ball Lock Pins |

**TA-210HD**




| MA210D7 + MAW218D7 |
| --- |
| You need |
| STK210/218 Kit Stacking |