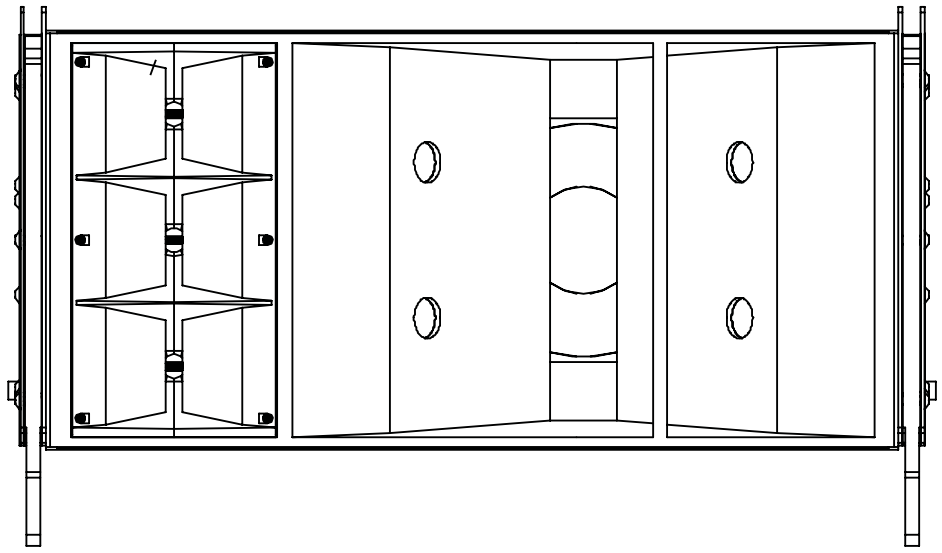
WLA-12

OPERATING MANUAL AND USER GUIDE



www.wharfedalepro.com

Important Warnings And Safety Instructions

- Read these instructions
- Follow these instructions
- Keep these instructions for future reference
- Heed all warnings
- Do not use this system near water or moisture
- Clean only with a dry cloth
- Install in accordance with these Wharfedale Pro operating instructions
- Follow the manufacturers operating instructions for all peripheral devices such as amplifiers and processors
- Do not install near heat sources such as radiators, heat registers, stoves or any other apparatus that produces heat (For example lighting systems and amplifiers)
- Use only accessories specified or supplied by Wharfedale Pro
- Do not use shielded microphone/instrument cables to connect amplifiers and speakers, use only approved speaker cables with proper connectors
- Use caution with placement and operation of this speaker system, permanent hearing damage can be caused by prolonged exposure to excessive sound pressure levels
- Refer all servicing to qualified professionals. Servicing is required when the loudspeaker has been damaged in any way, such as impact damage, liquid ingress or foreign object damage. In addition the loudspeaker should be referred to qualified service personnel if there is any kind of malfunction.

Rigging, suspending and mounting should only be attempted by **experienced qualified professionals. Incorrect usage can result in damage to equipment and property, injury and even death. Under** no circumstances should you attempt to rig, suspend or mount **these speakers unless you are fully qualified and certified to do so by relevant local, state and national authorities. If you are not properly qualified or do not know of pertinent regulations consult qualified personnel for advice. Consult a structural engineer before suspending a speaker system and ensure that the total weight of your system can be held by the truss or mounting surface.**

Inspect all mounting hardware before your line array is flown. If there is any damage or distortion to any mounting hardware do not fly the array until any damaged hardware is repaired or replaced. Only use Wharfedale Pro supplied Quick Release Pins, contact your Wharfedale Pro Distributor if any Quick Release Pins are lost or damaged.

Contents

Introduction

The Wharfedale Pro WLA-12 is a mid format line array system with exceptional output, frequency response, directivity and throw capability. High tech transducers and enclosure design techniques give the WLA-12 a perfect power to size ratio.

The WLA-12 achieves ultra high sensitivity with its fully horn-loaded architecture. A horn-loaded 12” LF is combined with three horn-loaded titanium compression drivers for the HF, generating huge SPL with maximum efficiency. The ultra high sensitivity of the WLA Series creates punishing level from even the most modest of power amplifiers, ensuring that your system can generate a huge SPL.

Physically aligned transducers and an internal passive crossover network deliver natural intelligibility, clarity and precision without the need for expensive speaker management. A rear panel bypass setting allows you to use an external active crossover network or speaker management system to fine tune the system.

Rhino Rock™, our proprietary ultra tough textured composite finish is used to ensure that the WLA-12 can withstand life on the road, even in the most demanding touring applications.

A versatile captive, hidden rigging system allows for fast setup with the widest range of splay angles, while keeping the toughened steel brackets hidden within the chassis. Inter element splay angles from 0° to 12.5° are possible, a guarantee that a WLA-12 system can meet the needs of your venue.

Features

- **High Sensitivity, Full Horn Loaded Design**
- **400W/800W/1600W Power Handling**
- **12” Horn Loaded LF Driver**
- **3” LF Voice Coil**
- **3x 1” Exit HF Compression Drivers**
- **1.8” Pure Titanium HF Diaphragms With Rare Earth Magnets**
- **Physically Aligned Transducers**
- **Internal Passive Crossover Network**
- **External Crossover Bypass Switching**
- **Front Hinged Rigging System**
- **Captive Rigging Hardware with Tethered Quick Release Pins**
- **Comprehensive Adjustable Splay Angles**
- **Tethered Quick Release Pins (Each Rated To 2000Kg)**
- **Rhino Rock™ Textured Composite Finish**
- **Trapezoid Baltic Birch Plywood Enclosure**
- **2x Parallel Speakon Inputs**

Splay Angles

The WLA can be configured with several different splay angles. The splay angles determine the amount of overlap between individual units. This is used to determine the amount of summation, or “throw”, for separate sections of the array. As the splay angle between boxes increases the summation decreases but spectral variance due to interactions between elements is also decreased.

For many venues a good compromise between throw and spectral variance can be reached by varying the splay angle across the length of the array. By varying the angular separation along the length of the array a balance can be met for the required coverage. Smaller splay angles provide higher summation to cover more distant seating and bleachers. Larger splay angles provide lower summation with reduced spectral variance for closer seating. Used correctly this can provide even coverage over long distances.

Each group of loudspeakers with a different splay angle will require a separate channel of amplification and different EQ settings. This is due to the different summation effects caused by differing splay angles.

Level Tapering

Tapering the level of enclosures has a beam steering effect which can be used in conjunction with angular separation between elements. The beam will be steered away from the “on-axis” center line of the array toward the cabs being driven at the highest level. The extent of the beam steering effect depends on the length of the array and the level difference between the top and bottom of the array. This technique allows you to further tailor the vertical coverage to differently shaped venues, reducing the level variance between the front and rear of the venue.

Ideally the level of each enclosure is tapered gradually (e.g. 0.5dB or 1dB per element). This means you will require an amplifier channel per element in passive mode, or two amplifier channels per element in bi-amp mode. Groups of elements can be tapered in pairs or more, although a more gradual taper will give you smoother vertical pattern control.

Air Absorption

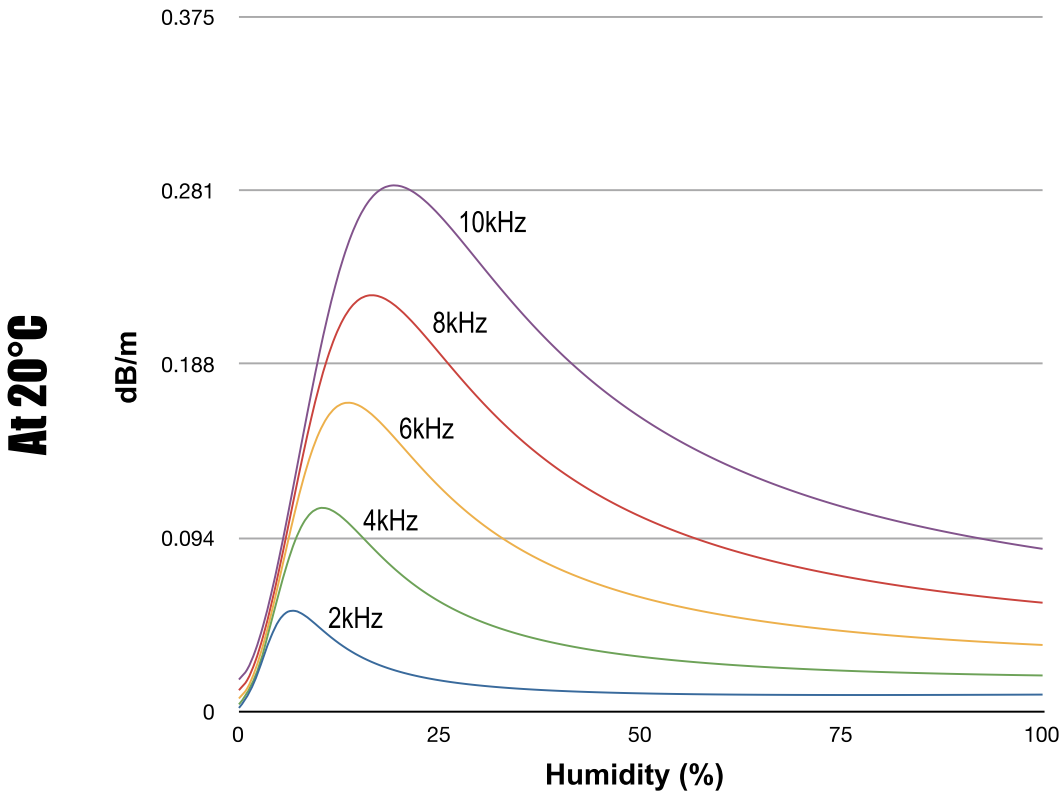
The high frequency performance of the medium and long throw sections of the line array will be limited by air absorption. As the distance from the source increases, the mid and high frequencies will be reduced. The amount of absorption at a given frequency is a function of pressure, temperature, and relative humidity. By far the most important factor is the relative humidity, although temperature does have a significant effect.

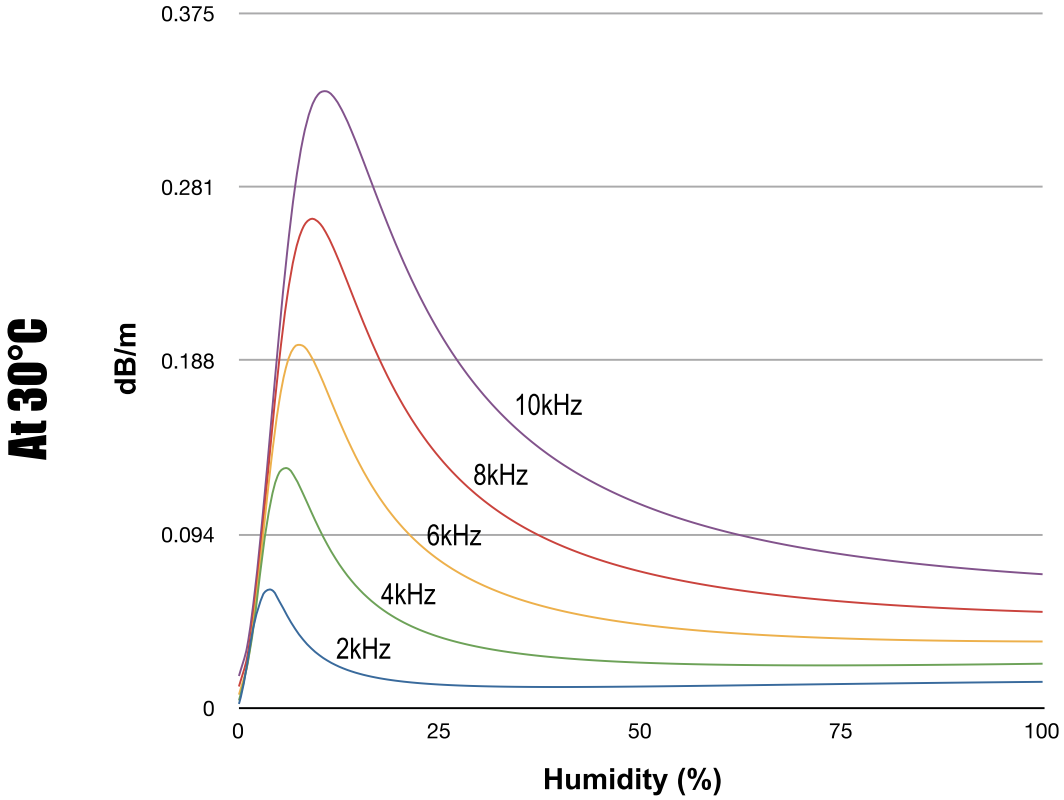
To achieve minimal spectral variance across the coverage of the array, the groups of loudspeakers covering the middle to rear of the venue will require equalization to compensate for this effect. Air absorption is difficult to predict with any great accuracy, and in any case the relative humidity of the venue is likely to change when the audience arrive or the weather changes. It is important that the venue is monitored during the event as the equalization applied during the design stage with an empty venue may not be suitable during the event.

As a general guide, boost above 8KHz for a long throw group of loudspeakers, and 12KHz for a medium throw group of loudspeakers is recommended.

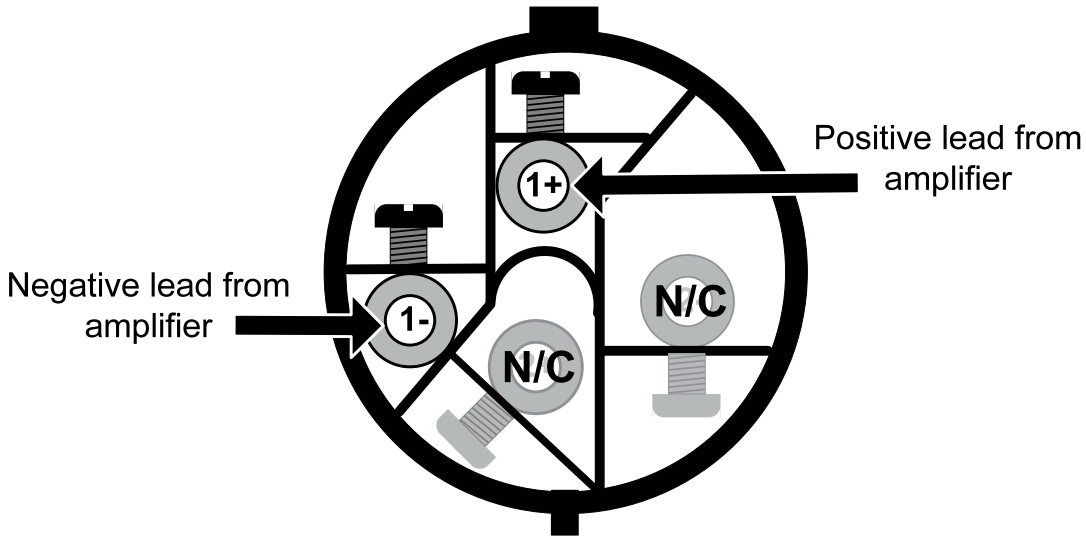
The chart overleaf shows attenuation in dB/m for a given frequency and humidity. It is important to note that the effects of air attenuation are linear, unlike the level attenuation from distance from the inverse square law. For example, at 100m a source would be 40dB down compared to it's SPL at 1m. Assuming 50% relative humidity and 20ºC the level at 10KHz will be an additional 16dB below this (approximately 56dB down).

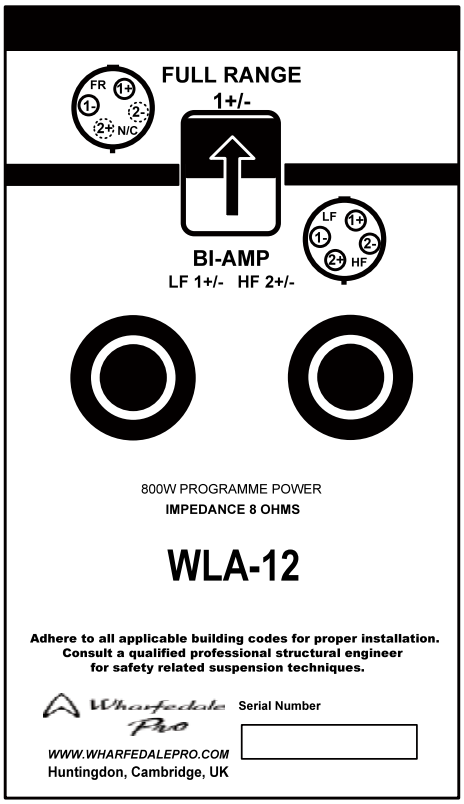
Air Absorption



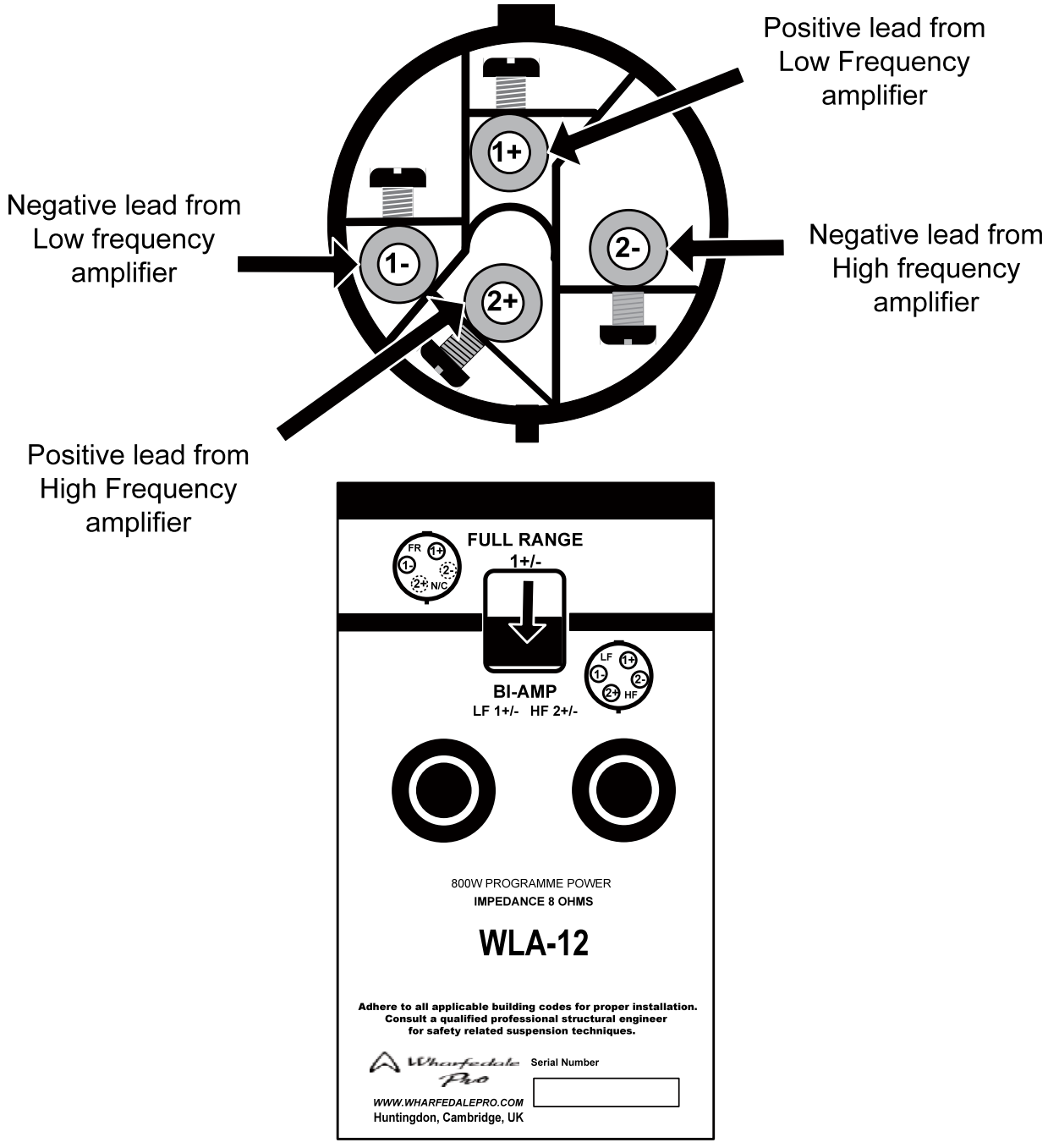


Full Range Mode

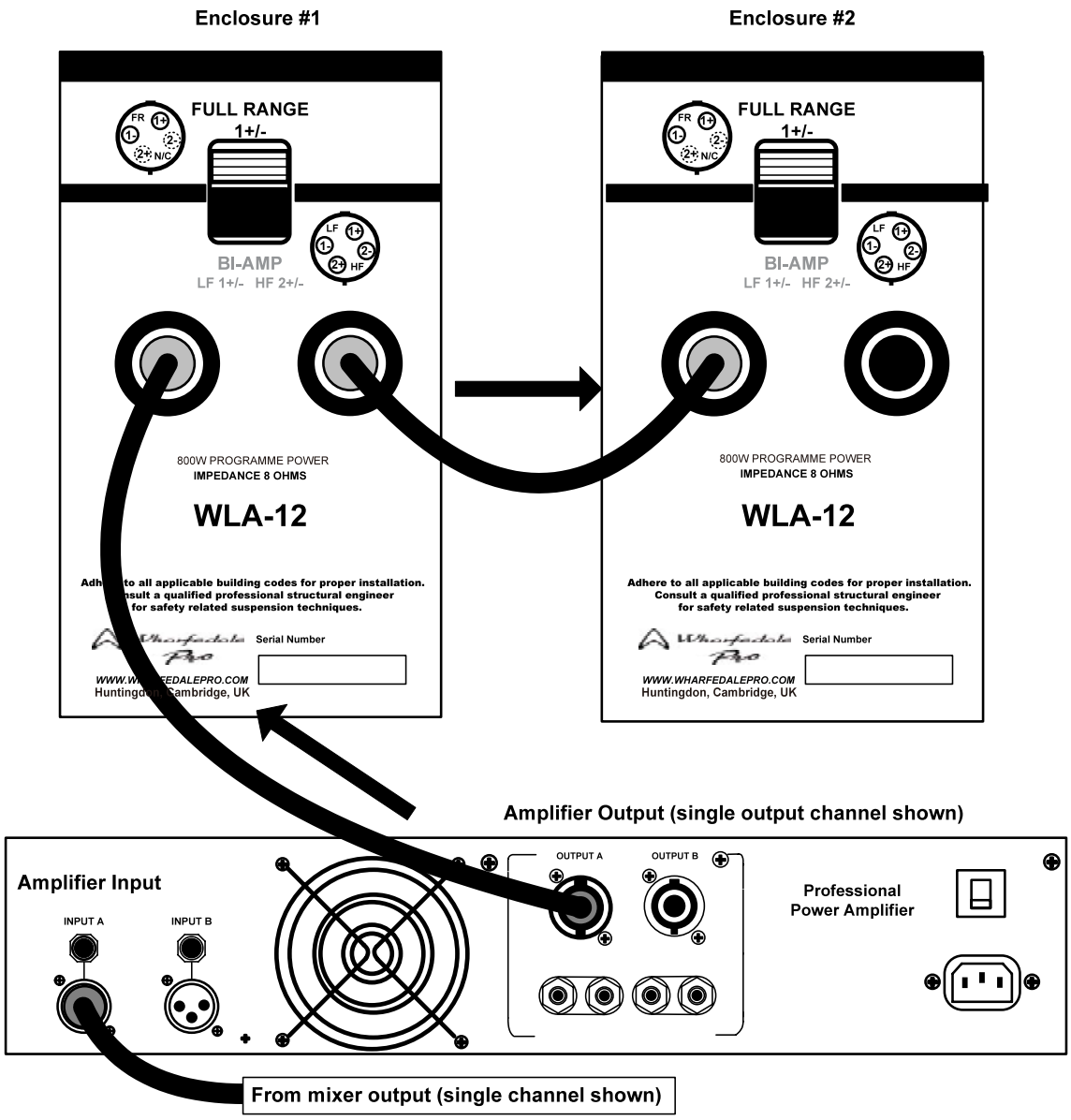




Bi-Amp Mode


Positive lead from
Low Frequency
amplifier
Negative lead from
Low frequency
amplifier
Negative lead from
High frequency
amplifier
Positive lead from
High Frequency
amplifier
1+
1-
2+
2-
FULL RANGE
1+/-
FR
N/C
BI-AMP
LF 1+/- HF 2+/-
LF
HF
800W PROGRAMME POWER
IMPEDANCE 8 OHMS
WLA-12
Adhere to all applicable building codes for proper installation.
Consult a qualified professional structural engineer
for safety related suspension techniques.
Wharfedale Pro
Serial Number
WWW.WHARFEDALEPRO.COM
Huntingdon, Cambridge, UK

Parallel Wiring



WLA-12 Fly Frame

THE WLA-12 AND FLY FRAME IS CERTIFIED TO HOLD A TOTAL WEIGHT (INCLUDING THIRD PARTY HARDWARE) OF 750KG. 12 ELEMENTS CAN BE FLOWN WITH A SAFETY FACTOR OF 5.7.

Only use the Wharfedale Pro WLA-12 with the WLA Flyframe. Ensure that only rated, certified hardware such as turnbuckles, shackles and chains are used.

Ensure that all truss, structures and flying hardware are capable of suspending the entire array, plus flying hardware, to a suitable safety factor.

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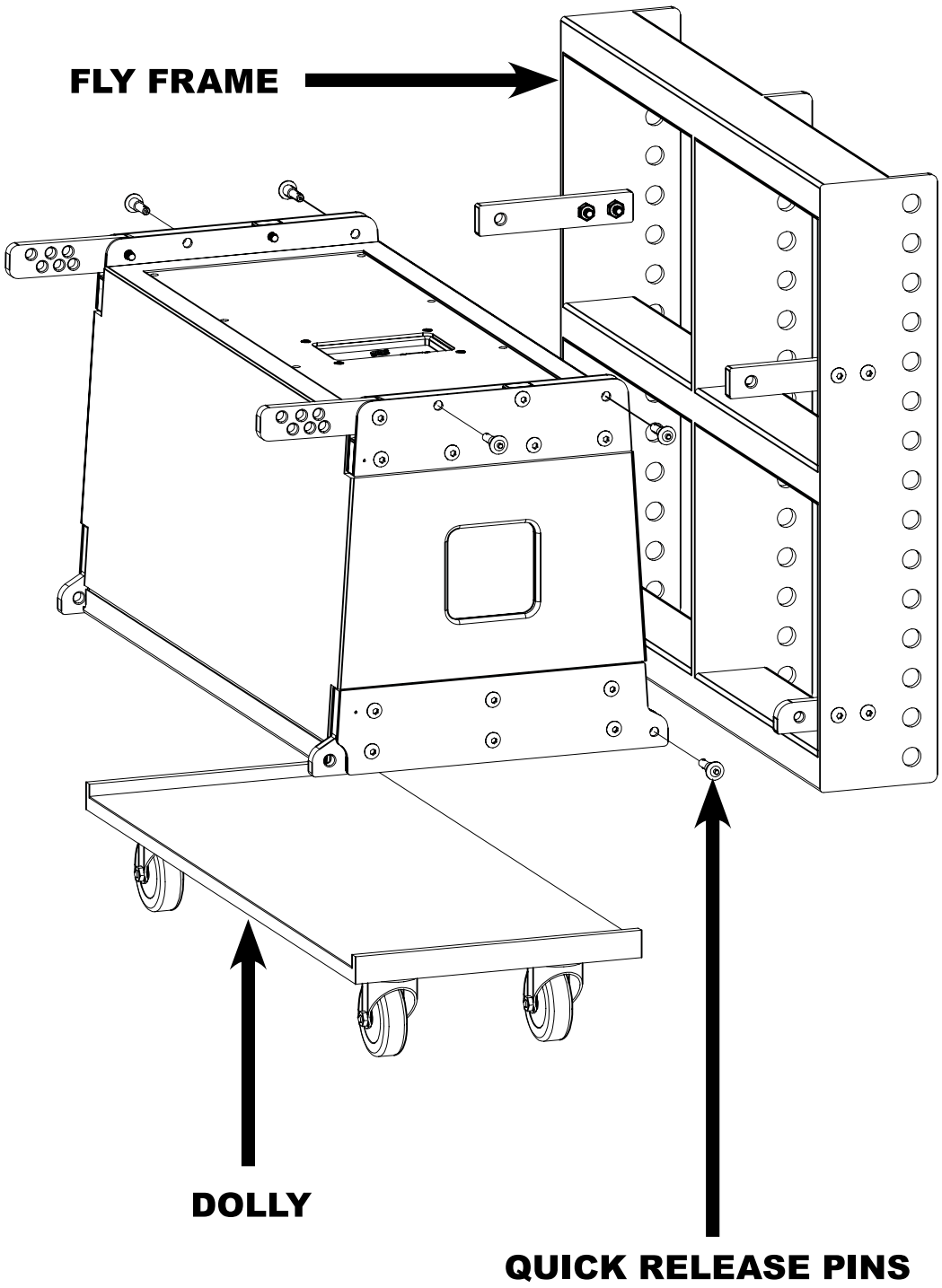
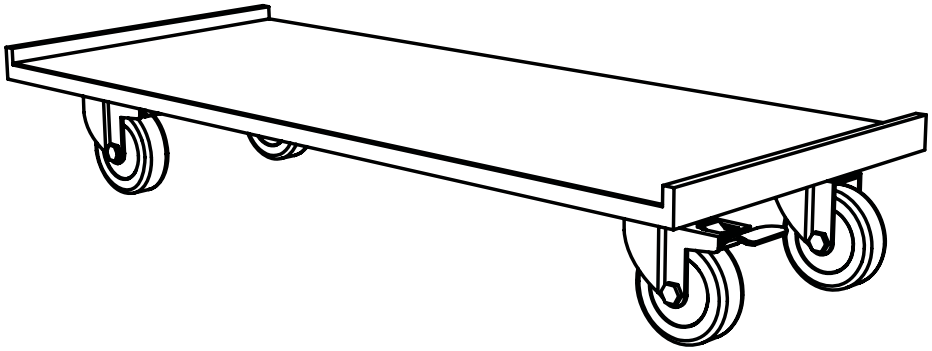
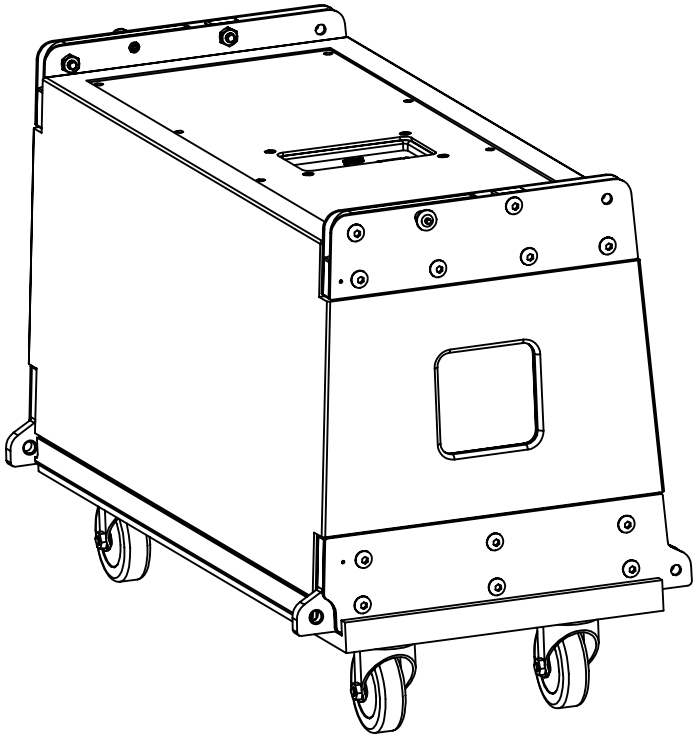

FLY FRAME
DOLLY
QUICK RELEASE PINS

WLA-12 Dolly



The WLA-12 Dolly should always be used when flying a WLA-12 line array system. Each WLA-12 Dolly will hold a single WLA-12 element. The WLA-12 Dolly helps to protect the WLA-12 element and aid the connection and flying process.



Installation

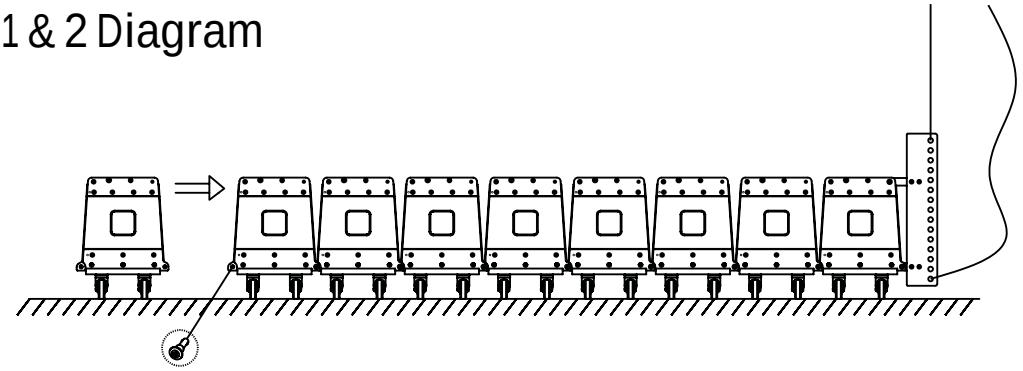
One Point Hang Procedure - Method 1

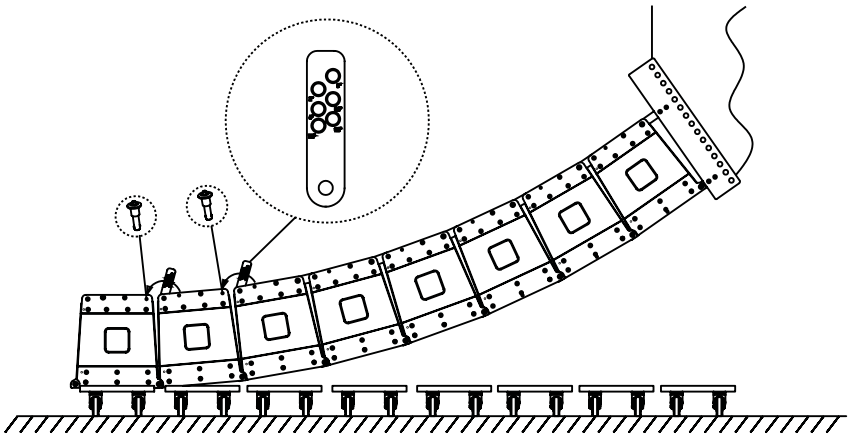
1. Attach a suitably rated shackle to the center spine of the fly frame. Use washers to ensure the shackle pin is centered on the spine. The connection point will depend on the splay angles used in your array and can be used to aim the array.
2. Line up all elements face down on dollies.
3. Attach the front of the elements to each other with quick release pins.
4. Attach a Pull Back Bar if required.
5. Connect signal cables to each element. Take care to ensure that cables of a sufficient length are used for each connection.
6. Lower the locking hoist hook to the level of the Fly Frame.
7. Attach the locking hoist hook to the shackle on the Fly Frame.
8. Attach the Fly Frame to the top element using quick release pins.
9. Raise the hoist to a level that tilts the top element. It should be positioned so that the quick release pins can easily be inserted through the desired Splay Angle holes.
10. Repeat the process of raising the hoist and attaching the Splay Angle Links of each consecutive element.
11. Raise the line array to the desired height.

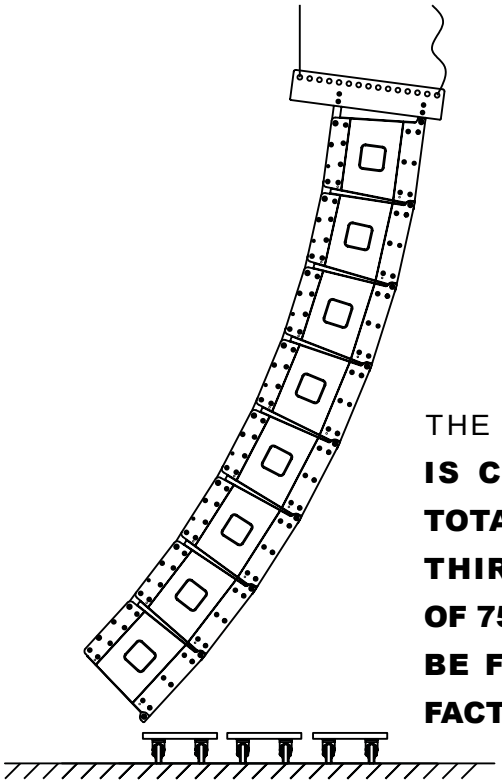
Two Point Hang Procedure - Method 2

1. Attach suitably rated shackles to front and rear holes on the center spine of the Fly Frame. Use washers to ensure shackle pins are centered on the spine.
2. Line up all elements face down on dollies.
3. Attach the front of the elements to each other with quick release pins.
4. Connect signal cables to the elements. Take care and ensure that cables of a sufficient length are used for each connection.
5. Attach locking hoist hooks to the shackles on the Fly Frame.
6. Attach the Fly Frame to the top element using quick release pins.
7. Raise the hoist to a level that tilts the top element. It should be positioned so that the quick release pins can easily be inserted through the desired Splay Angle holes. (note: raise rear hoist first)
8. Repeat the process of raising the hoist and attaching the Splay Angle Links of each consecutive element.
9. Raise the line array to the desired height.
10. Adjust the hoists to achieve the desired tilt angle of the array.

Method 1 & 2 Diagram







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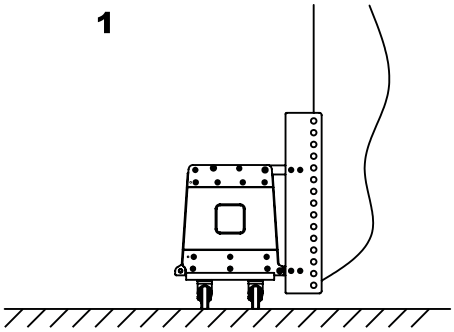
Two Point Hang (Limited Space) Procedure - Method 3

1. Attach suitably rated shackles to the front and rear holes on the center spine of the fly frame. Use washers to ensure the shackle pins are centered on the spine.
2. Attach locking hoist hooks to the shackles on the Fly Frame.
3. Raise the Fly Frame so that the rear connection points are lined up.
4. Position an element below the Fly Frame and attach the rear of the element to the Fly Frame using quick release pins.
5. Raise the Fly Frame slightly, raise the element and connect the front to the frame using quick release pins.
6. Raise the elements again and position another element below it so that the rear connection points are lined up.
7. Now repeat through steps 4-6, before each element is out of reach ensure that all signal cables have been connected and the length of each one is adequate.
8. Raise the line array to the desired height.
9. Adjust the hoists to achieve the desired tilt angle of the array.

Method 3 Diagram

1



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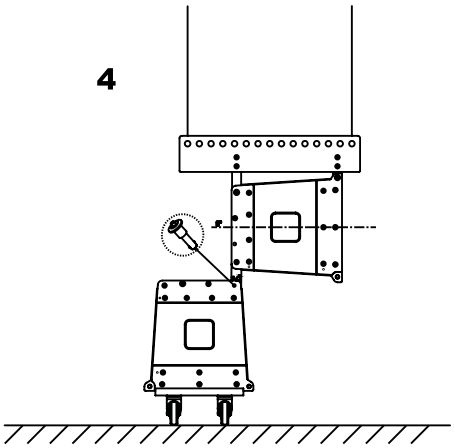

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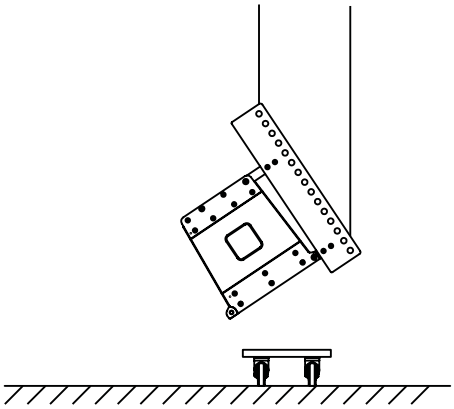

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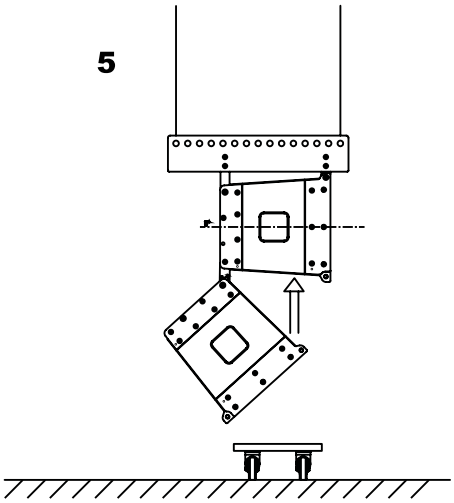

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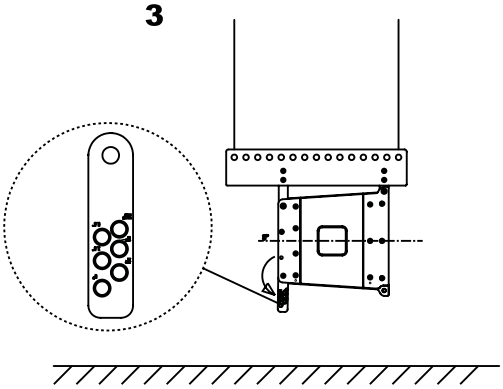

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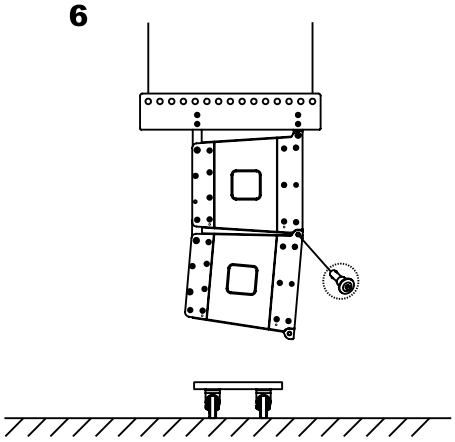

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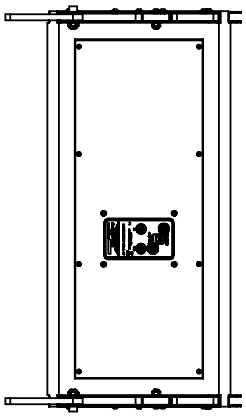
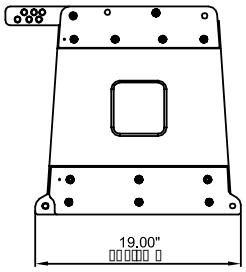
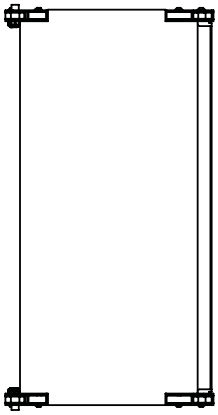
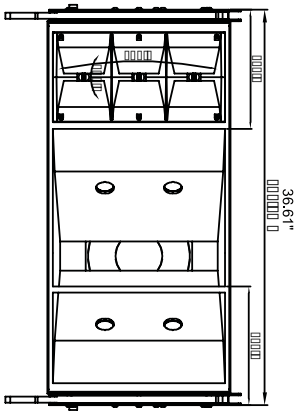
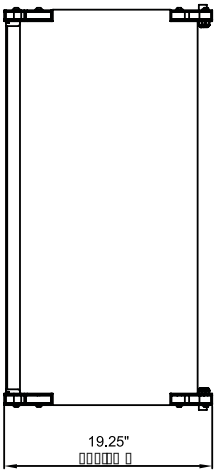
Dimensional Drawings - WLA-12

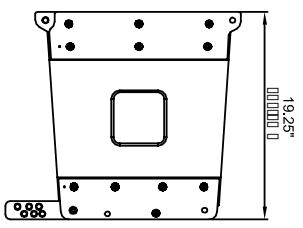




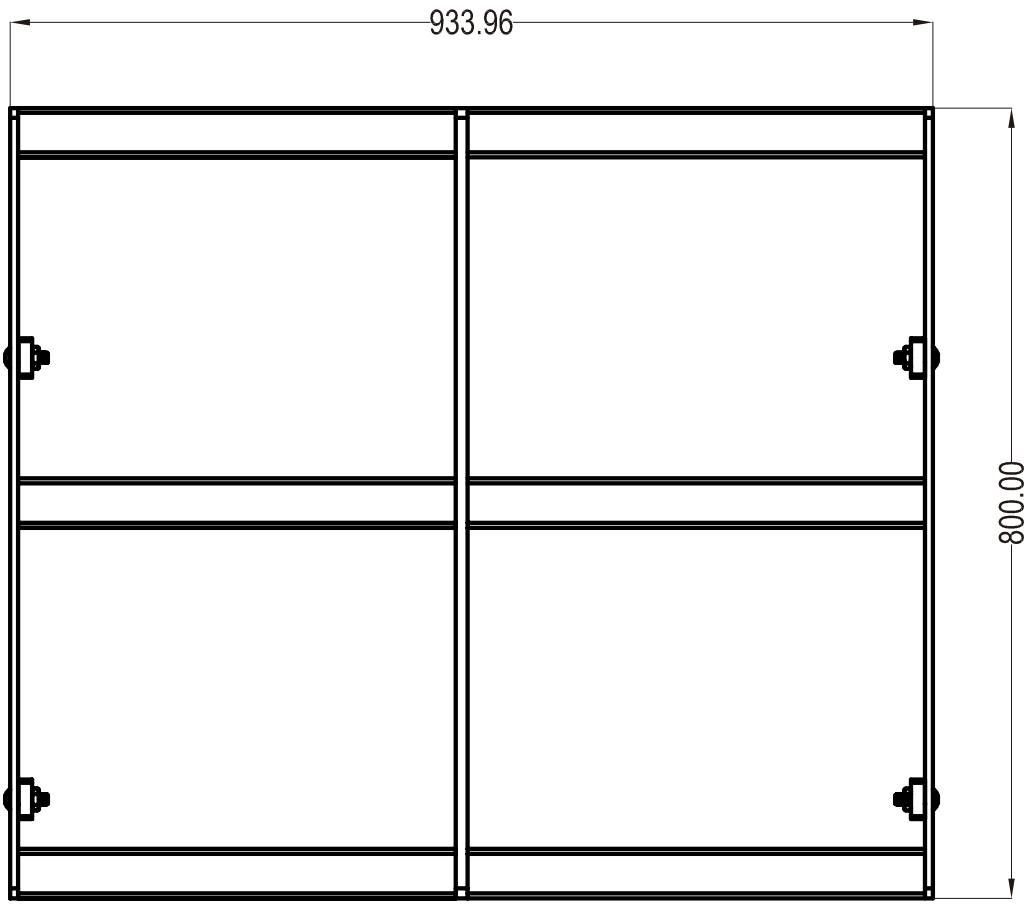


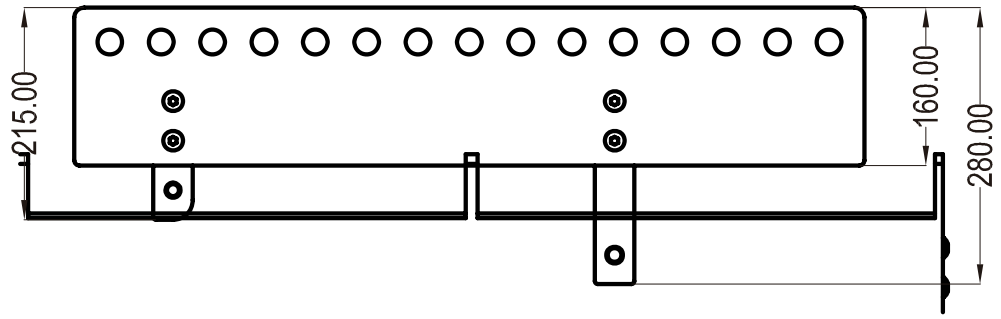






Dimensional Drawings - WLA-12 Fly Frame





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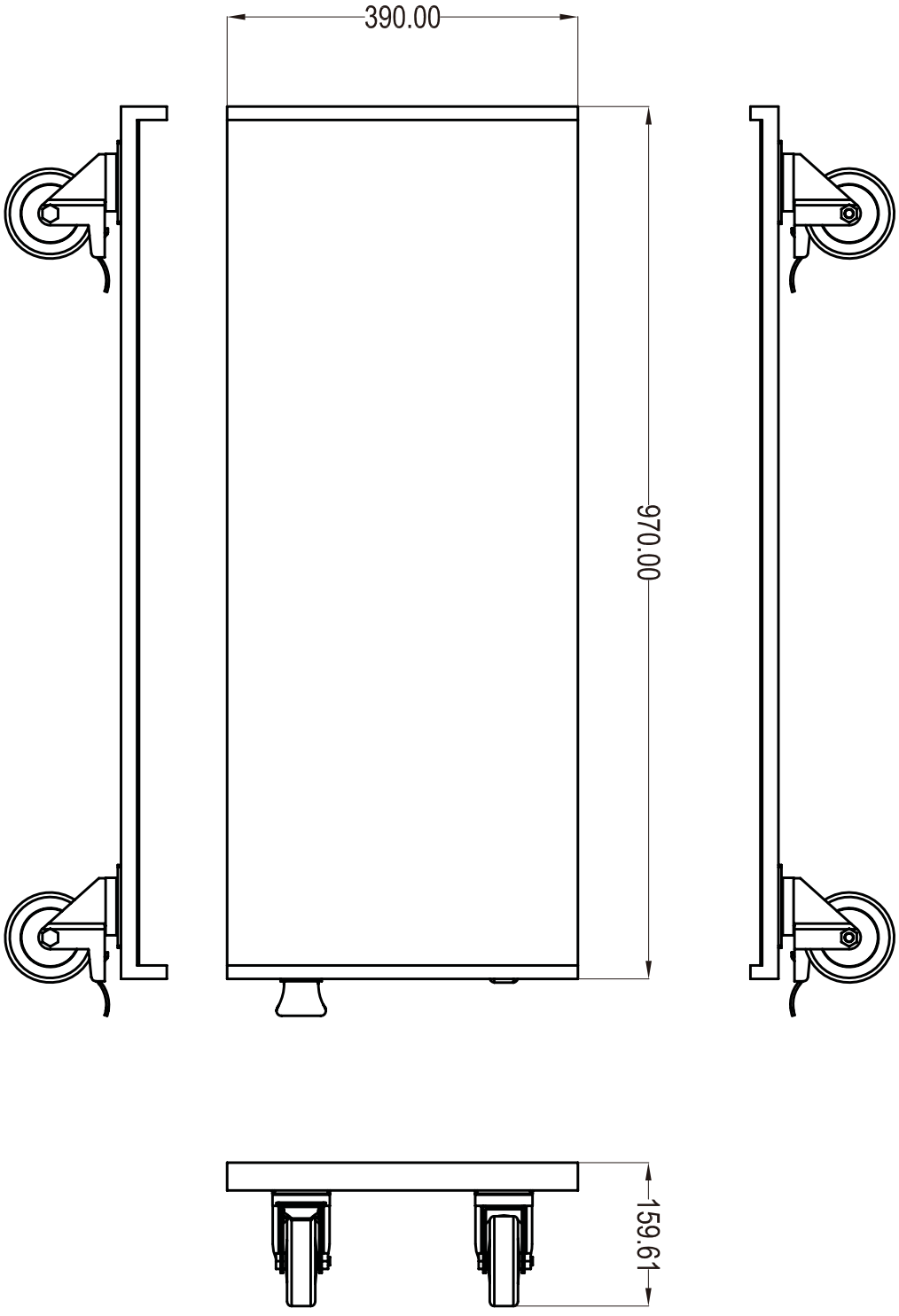
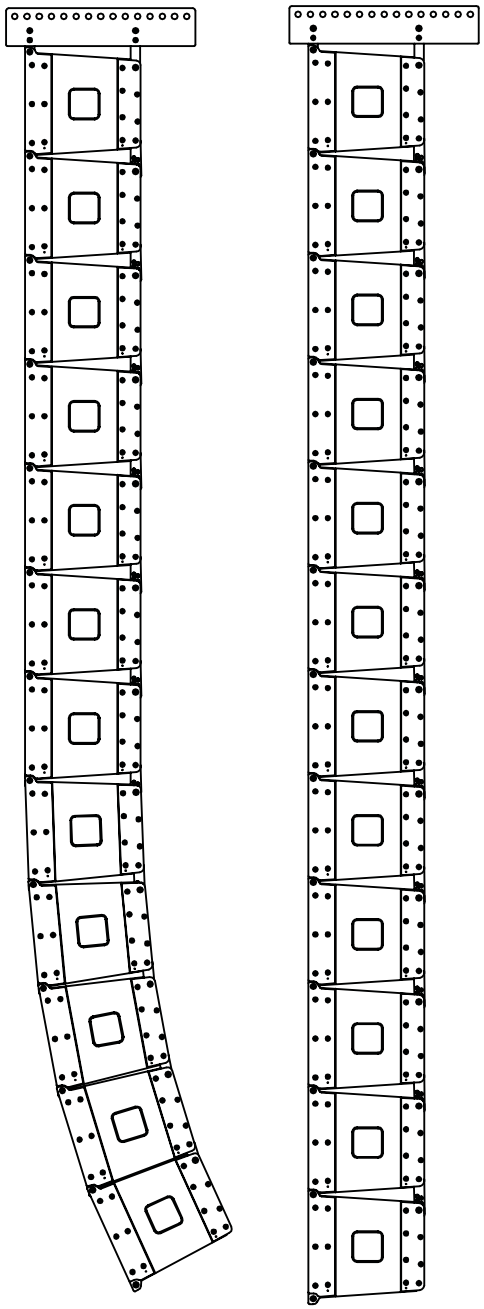
Dimensional Drawings - WLA-12 Dolly



Example Arrays



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Specification

	WLA-12
System Specification	
System Type	Full Range
Frequency Range (-10dB)	47Hz-18kHz
Frequency Response (±3dB)	65Hz-18kHz
Sensitivity (1w@1m)	102dB
Peak SPL	134dB
System Impedance	8Ω
Power Handling	
Continuous	400w
Music	800w
Peak	1600w
LF Driver	
Driver Size	305mm / 12"
Frame Material	Al
Impedance	8Ω
Quantity	1
HF Driver	
Driver Size	45mm / 1.8"
Frame Material	Al
Impedance	24Ω
Quantity	3
Enclosure	
Dimensions	
(L)	930mm / 36.6"
Front (W)	483mm / 19.0"
Back (W)	376mm / 14.8"
(H)	489mm / 19.2"
Enclosure Type	Trapezoid
Finish	Paint
Finish Colour	Black
Construction Material	Plywood
Thickness	15mm
Grille	Black Steel
Input Connectors	2 X Parallel Speakon
Carton Dimensions	
(L)	1025mm / 40.3"
Front (W)	585mm / 23.0"
Back (W)	530mm / 20.9"
(H)	580mm / 22.8"
Weight	
Net Weight	61Kg / 134.2lbs
Gross Weight	73Kg / 160.6lbs

WHARFEDALE PRO LIMITED WARRANTY

Wharfedale Pro products are warranted of manufacturing or material defects for a period of one year from the original date of purchase. In the event of malfunction, contact your authorized Wharfedale Pro dealer or distributor for information.

*Be aware that warranty details may differ from country to country. Contact your dealers or distributor for information. These terms do not infringe your statutory rights.

Wharfedale Professional
IAG House, 13/14 Glebe Road, Huntingdon, Cambridgeshire, PE29 7DL, England
www.wharfedalepro.com