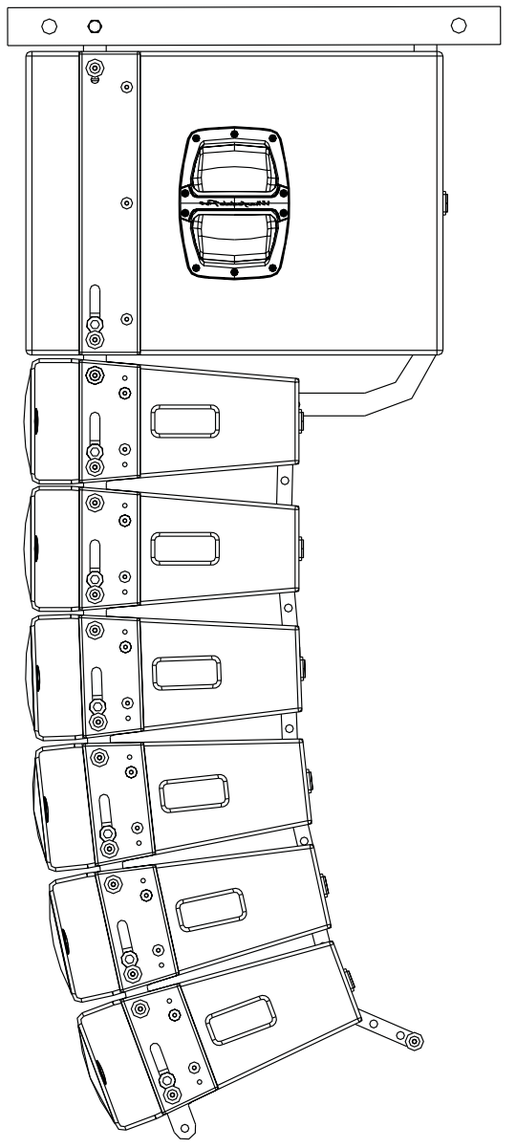
WLA-25 & WLA-25SUB

OPERATING MANUAL AND USER GUIDE



www.wharfedalepro.com

Contents

IMPORTANT WARNINGS & SAFETY INSTRUCTIONS

- Read these instructions
- Follow these instructions
- Keep these instructions for future reference
- Heed all warnings
- Do not use this system near moisture or water
- Clean only with a dry cloth
- Install in accordance with these Wharfedale Pro operating instructions
- Follow the manufacturer’s 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 experience 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.

INTRODUCTION

Designed for the most demanding concert and installation audio professionals, the WLA-25 system sets new standards for astonishing acoustical performance in a compact size.

Line arrays are increasingly employed in a wider range of venues and applications. Frequently these venues have height or sightline restrictions that limit the placement and size of the array. Rising fuel costs are putting pressure on touring system providers to downsize their transportation requirements. At the same time, client and audience expectations for audio performance has never been higher. To meet these needs, Wharfedale Pro embarked on a program to develop the most compact, highest output line array speaker system available.

Each WLA-25 element uses a pair of high-power, 5” low-frequency drivers. Both cover low frequencies while only one extends into the mid range, thus maintaining horizontal dispersion control at a crossover. High frequencies are handled by a premium 1.7” diaphragm, neodymium compression driver, 100° x 10° multiple aperture diffraction waveguide. This creates a wide coverage with a superb stereo image and allows for more diverse placement.

The waveguide exit extends nearly to the top and bottom of the enclosure to create a continuous acoustical source with minimal discontinuities between adjacent elements resulting in greatly reduced destructive interaction.

Premium materials are used throughout the system. The enclosure is constructed of Baltic birch plywood and coated in an environmentally friendly, waterborne polymer finish that is field repairable. To keep the weight to a minimum and prevent rust, suspension fittings are made of aluminium.

An elegantly simple 3-point suspension system combined with light weight, compact size and excellent handling ergonomics mean that a one person crew can easily deploy an array. A single WLA-25 array fly frame suspends up to twelve line array elements or up to twelve line array elements plus one subwoofer. The WLA-25 system is equally at home in the air or ground-stacked.

FEATURES

WLA-25

High sensitivity, Full Horn Loaded design

120W RMS/240W Program/480W Peak Power Handling

Dual 5” woofer, 1.5” voice coils

1x1” exit HF compression driver

1.7 “ Titanium diaphragm, neodymium magnet compression driver

100°x10° degree constant-directivity horn

Nominal Passive Crossover Network

Front hinged rigging system

Captive rigging hardware with tethered quick release pins

Comprehensive adjustable splay angles

Integral, side plate adjustable rigging system, vertical splay adjustable in 1° increments from 0°-10°

Trapezoid Baltic birch plywood enclosure

2 x Parallel Speakon Inputs

Constant directivity waveguides

Black and white paint finish

WLA-25SUB

700W RMS/1400W Program/2800W Peak power handling

Road tough modular subwoofer system

Dual 10” woofer, 2.5” voice coil

Nominal Impedance 4 Ohm

Strong internal bracing prevents bass loss and distortion from enclosure, vibration and resonance

2xParallel Speakon Inputs

Black and white paint finish

SPLAY ANGLES

The WLA can be configured with several different splay angles. The splay angles determine the amount of overlap between the 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 the spectral variance due to interactions between the 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 close seating. Used correctly this can provide even coverage over long distances.

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

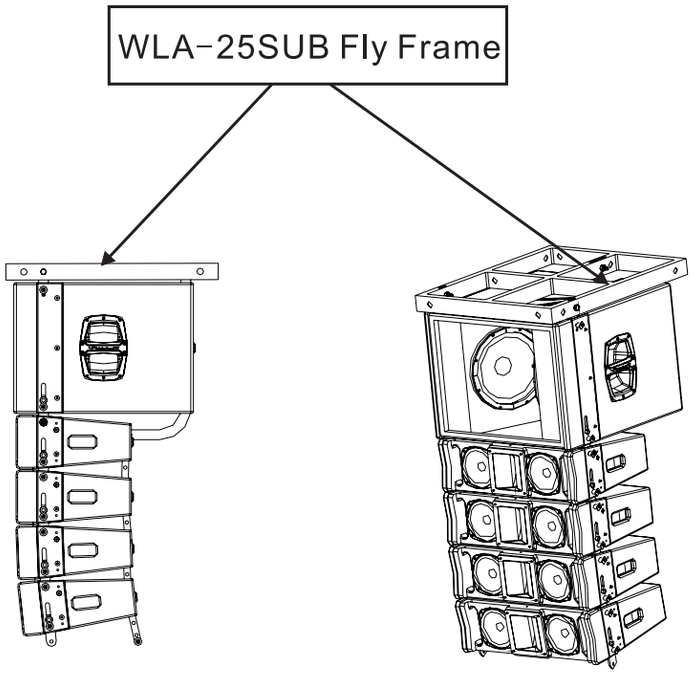
LEVEL TAPERING

Tapering the level of enclosures has a beam steering effect which can be used in the conjunction with angular separation between elements. The beam will be steered away from the ‘on-axis’ centre line of 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 the 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.

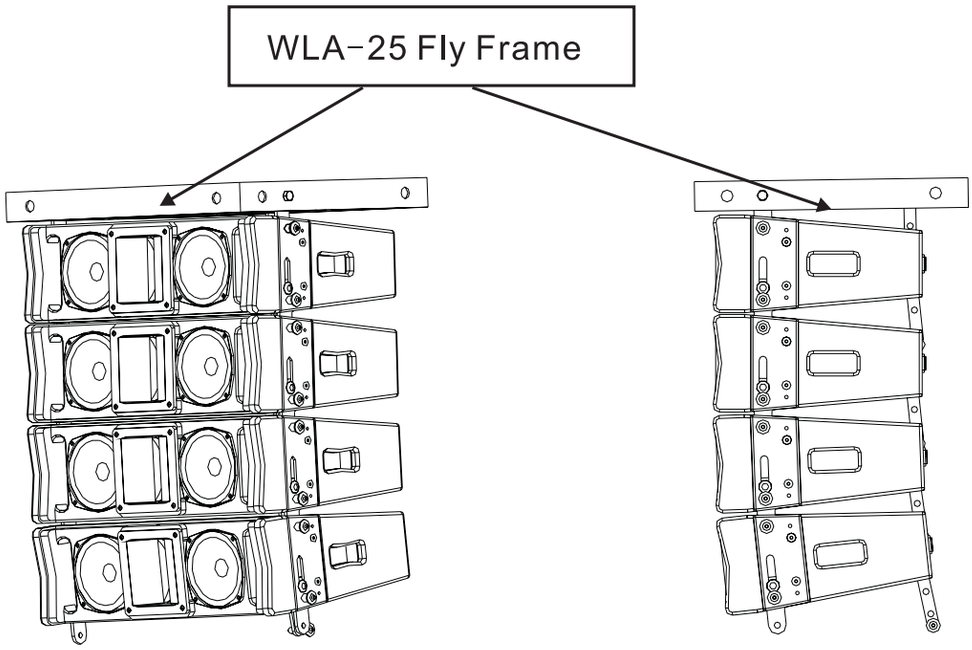
Ideally the level of each enclosure is tapered gradually (e.g. 0.5dB or 1dB per element). This means you will require an amplifier channel per element in passive mode, or two amplifier channels per element in bi-amp mode. Groups of elements can be tapered in pairs or more, although a more gradual taper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

FLEXIBLE ARRAYS

Arrays can be assembled using only WLA-25 line array modules or with WLA-25SUB Subwoofers at the top of the array. The WLA-25SUB Fly Frame allows for a WLA-25SUB subwoofer to be used at the top of the array. The WLA-25SUB Fly Frame supports up to 12 x WLA-25 modules and 1 x WLA-25SUB with a safety factor of 12.

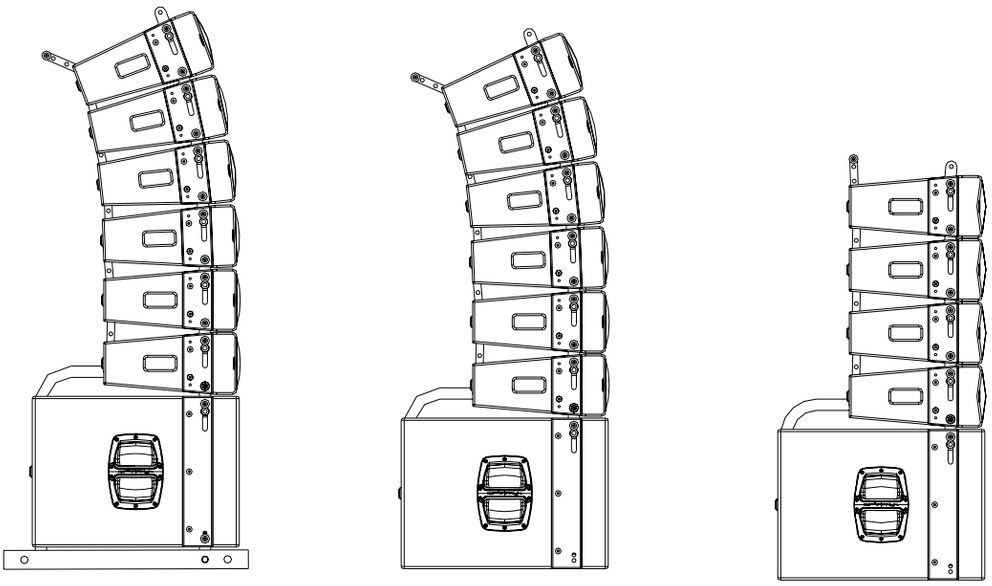


Arrays can be assembled using only WLA-25 line array modules. The smaller WLA-25 Fly Frame supports up to 12 x WLA-25 modules with a safety factor of 12.



OPTIMISED GROUND STACKING

WLA-25 rigging doubles up as an optimized ground stacking system, using the WLA-25SUB subwoofer as a base. Arrays of WLA-25 line array elements can be aimed downwards by as much as 10° to cover audience areas close to a stage, as well as upward by as much as 10° in order to better cover distant balcony seating areas.



AIR ABSORPTION

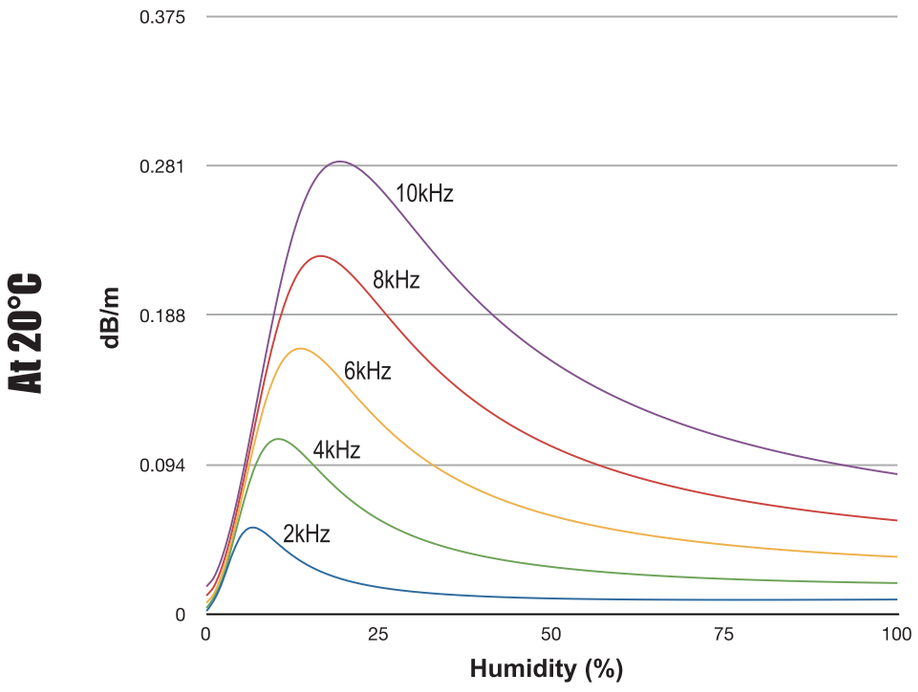
The high frequency performance of the medium and long throw sections of the line array will be limited by air absorption. As the distance from the source increases, the mid and high frequencies will be reduced. The amount of absorption at a given frequency is function of pressure, temperature and relative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

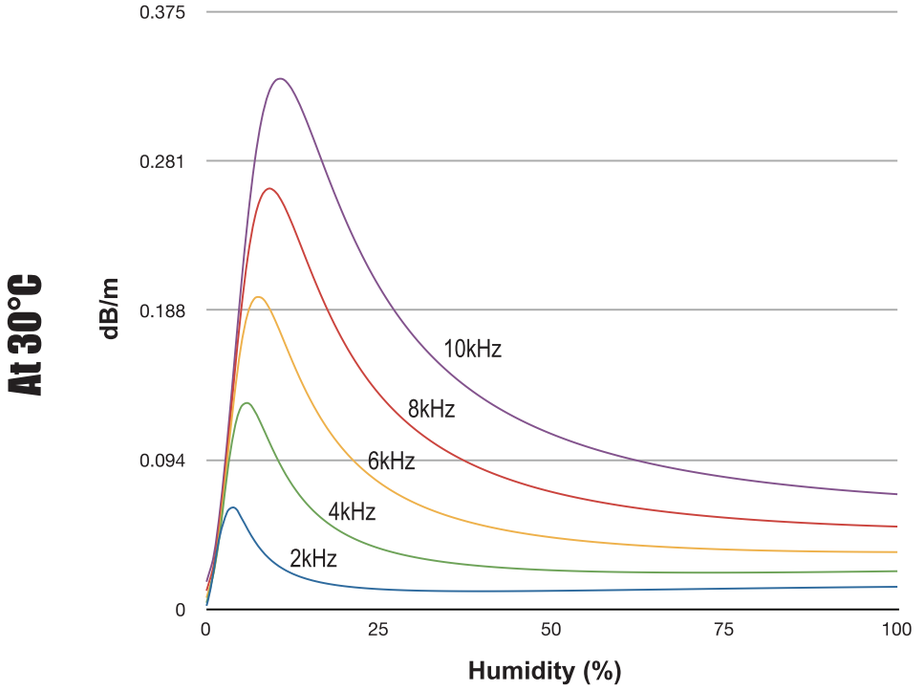
To achieve minimal spectral variance across the coverage of the array, the groups of loudspeakers covering the middle to rear of the venue will require equalization to compensate for this effect. Air absorption is difficult to predict with any great accuracy, and in any case the relative humidity of 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.

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 of 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 20° the level at 10kHz will be an additional 16dB below this (approximately 56dB down).

AIR ABSORPTION





The WLA-25 has internal crossovers. The internal crossover of the WLA-25 loudspeaker divides the audio signal into the separate frequency ranges for each driver.

The WLA-25SUB subwoofers do not have internal crossovers. This function must be supplied by external electronic devices such as the Wharfedale Pro Versadrive series or LMX-204.

WLA-25/WLA-25SUB FLY FRAMES

The WLA-25/ WLA-25SUB fly frame is certified to hold a total weight (including third party hardware) of 280kg. Up to 12 WLA-25 1 WLA-25SUB elements can be flown with a safety factor of 12.

The WLA-25 fly frame is certified to hold a total weight (including third party hardware) of 230kg. Up to 12 WLA-25 elements can be flown with a safety factor of 12.

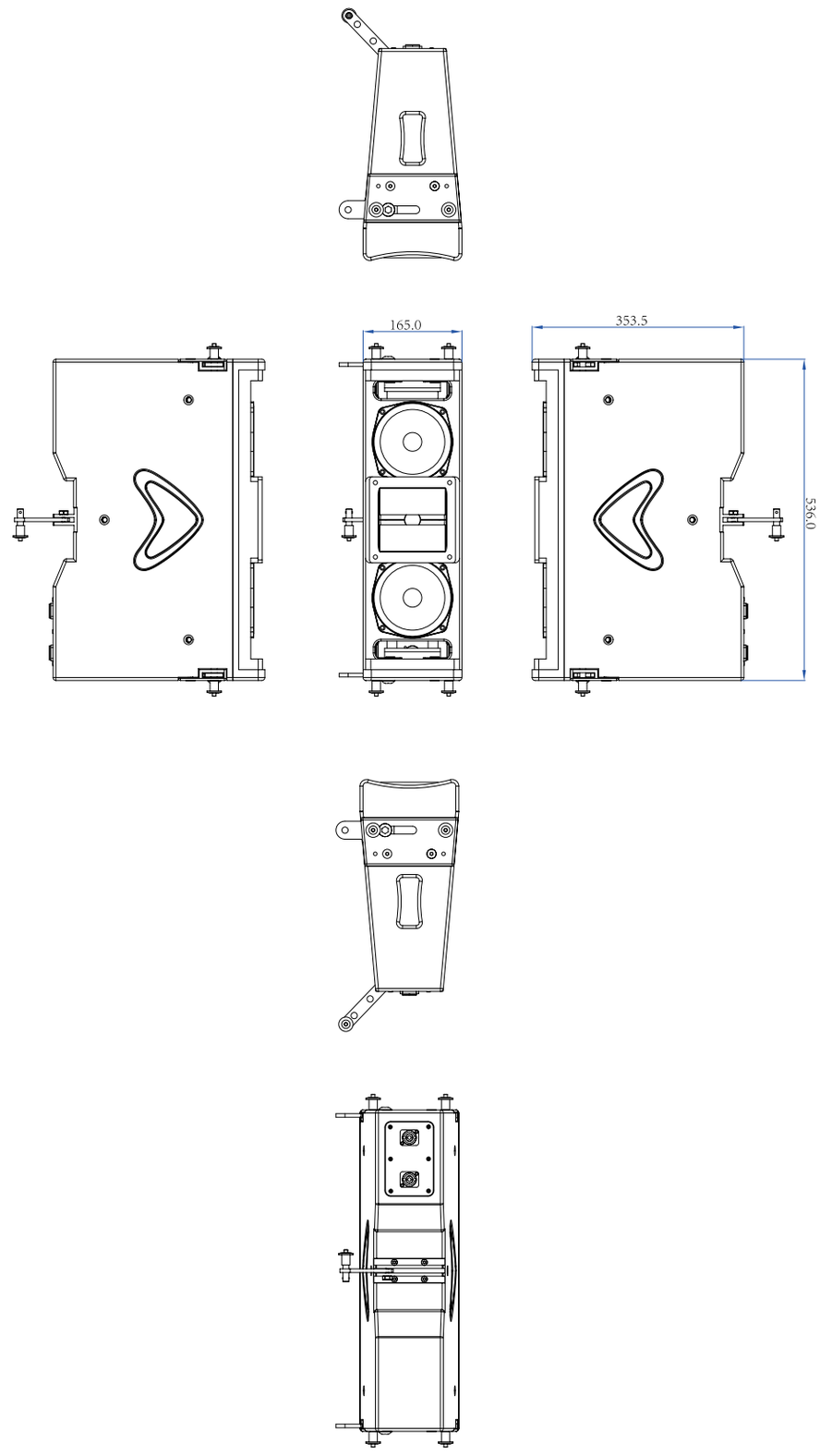
Only use the Wharfedale Pro WLA-25SUB or WLA-25 Fly Frame.Ensure that only rated, certified hardware such as tumbuckles, shackles and chains are used.

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

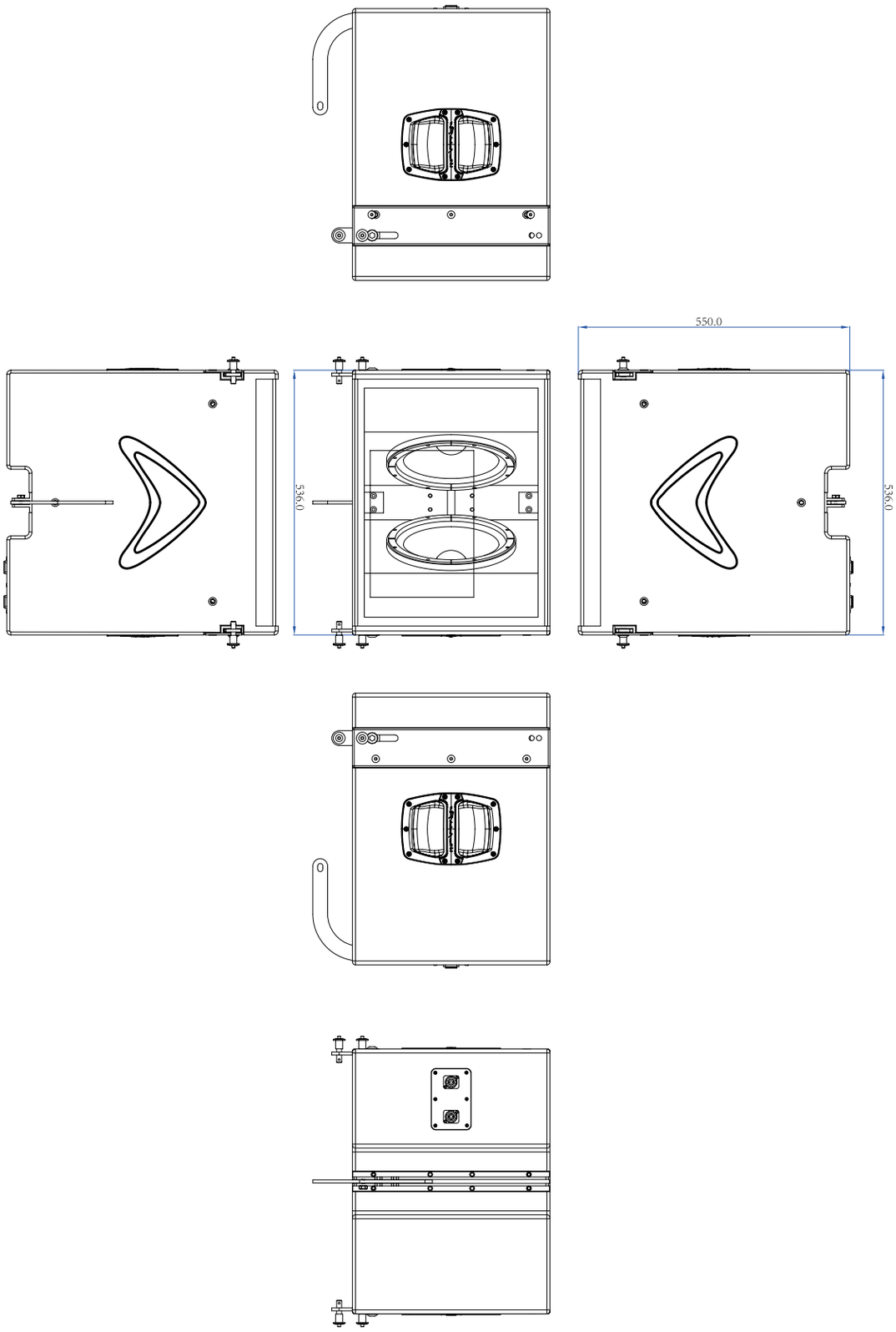
Rigging, suspending and mounting should only be attempted by experienced qualified professionals. Incorrect usage can result in damage to equipment and property, injury and even death. Under no circumstances should you attempt to rig, suspend or mount these speakers unless you are fully qualified or do not know of pertinent regulations consult qualified personel 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 and contact your Wharfedale Pro distributor if any quick release pins are lost or damaged.

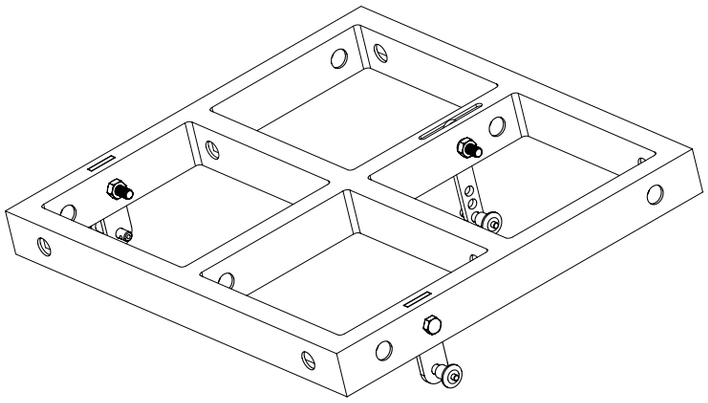
DIMENSIONAL DRAWINGS-WLA-25

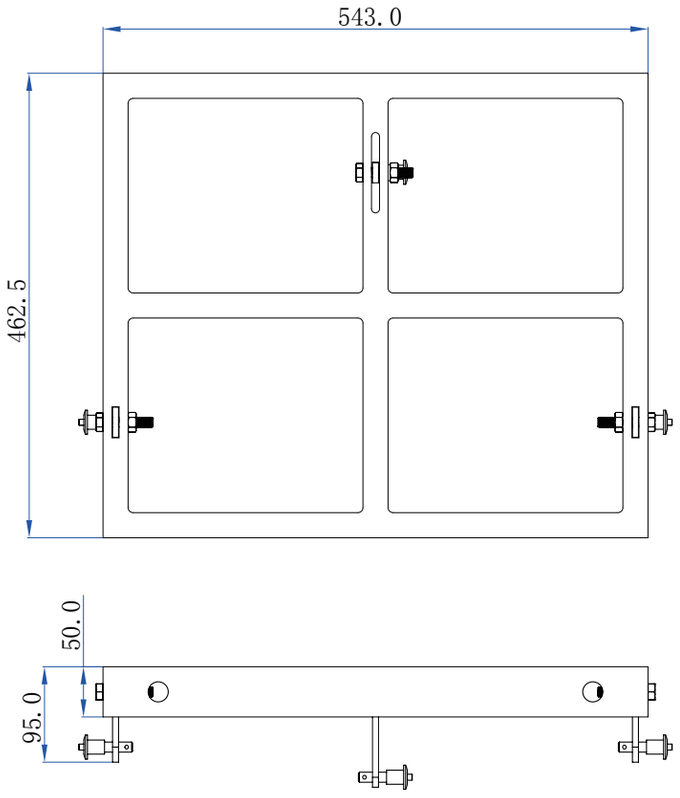


DIMENSIONAL DRAWINGS-WLA-25SUB



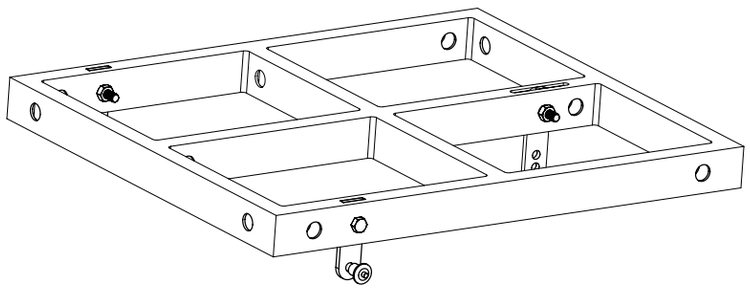
DIMENSIONAL DRAWINGS-WLA-25 FLY FRAME

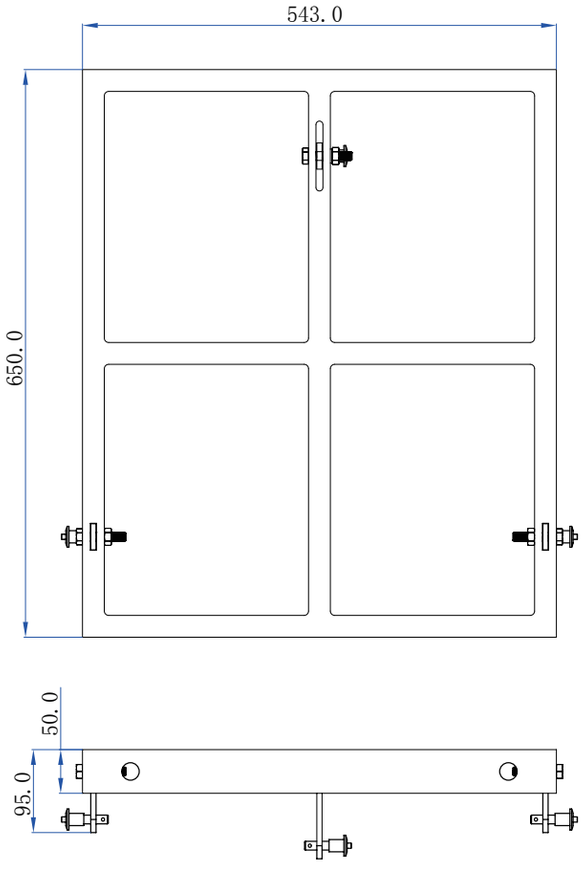




The WLA-25 ly frame is certified to hold a total weight (including third party hardware) of 230kg. Up to 12 WLA-25 elements can be flown with a safety factor of 12.

DIMENSIONAL DRAWINGS-WLA-25SUB FLYF RAME





The WLA-25/ WLA-25SUB ly frame is certified to hold a total weight (including third party hardware) of 280kg. Up to 12 WLA-25 and 1 WLA-25SUB elements can be flown with a safety factor of 12.

SPECIFICATION

Model Name	WLA-25	WLA-25SUB
System Type	Passive	Passive
Configuration	two-way	Subwoofer
Frequency Response (+/-3dB)	108-18kHz	56-1.5kHz
Frequency Range (- 10 dB)	108-20kHz	56-2.0kHz
Sensitivity 2.83v/1m	HF:108dB/LF:100dB	107dB
Calculated Maximum SPL @1m	HF:135dB/LF:127dB	141dB
System Rated Impedance	16Ω	4Ω
Low Frequency Transducer		
LF Size (mm / inches)	130mm / 5"	254mm / 10"
LF Voice-Coil Size (mm / inches)	35.0mm / 1.4"	65.5mm / 2.5"
LF Magnet Material	ferrite	ferrite
LF Frame Material	aluminium	aluminium
Rated Impedance	16Ω	8Ω
LF Power re:AES2-2012	2X60W	2X350W
High Frequency Transducer		
HF Driver Type:	Compression Driver	
Coil Size (mm / inches)	44mm / 1.75"	
Exit Size (mm / inches)	1"	
HF Magnet Material	NdFeB	
Diaphragm Material	Titanium	
Rated Impedance	16Ω	
HF Power re:AES2-2012	40W	
Waveguide Type	square	
Nominal Coverage (H x V)	100°x10°	
Power		
System Continuous Power (w)	HF:40W/LF:120W	700W
System Programme Power (w)	HF:80W/LF:240W	1400W
System Peak Power (w)	HF:160W/LF:480W	2800W
Crossover frequency	3.7kHz	
Input Connector	2xSpeakon	2xSpeakon
Rigging	Intergral side plate adjustable rigging0°-10°	Integral, non-adjustable
pole mount	NO	NO
handles	yes	yes
Enclosure		
cabinet type	Trapezoid	square
Enclosure Material and finish	15mm,18mm plywood	15mm,18mm plywood
Colour Options	black or white paint	black or white paint
Grille Material & Finish	steel	steel
Dimensions - Unpacked (mm / inches):		
Height	536mm/21.1"	536mm/21.1"
Width	363mm/14.3"	400mm/15.7"
Depth	164.5mm/6.45"	550mm/21.7"
Dimensions - Packed (mm / inches):		
Height	606mm/23.9"	610mm/24.0"
Width	430mm/16.9"	470mm/18.5"
Depth	235mm/9.3"	596mm/23.5"
Weight		
Net Weight (kg / lbs)	13kg/28.6lbs	37kg/81.4lbs
Gross Weight (kg / lbs)	15kg/33lbs	39.5kg/86.9lbs

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 dealer or distributor for information. These terms do not infringe your statutory rights.

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