TRACTION

Osprey System
User Guide

Revision 1

Manufacturer's Declarations

1.1 EU Declaration of Conformity

This declaration applies to:

- Osprey FC10-X
- Osprey FC20-X
- Osprey SW215

Manufactured by:

Scicoustic Ltd.
Studio 6, The Granary,
Fairclough Hall Farm,
Halls Green, Hitchin,
Herts, SG4 7DP
United Kingdom

This includes production versions of these passive loudspeakers. They must correspond with the original technical version and not subject to modification.

These passive loudspeakers comply with the Essential Requirements of the following EU Directives:

• Low Voltage Directive 2014/35/EU
• EMC Directive 2014/30/EU
• RoHS 2 Directive 2011/65/EU

These passive loudspeakers further conform with the following EU Harmonized Standards:
• EN 55032:2015
• EN 55035:2017
• EN 60065:2014+A11:2017

1.2 WEEE Declaration (Recycling)

The WEEE directive applies to this product and it's packaging.
At the end of this products useful life please dispose of it responsibly. This should be according to local and national recycling regulations. The packaging supplied with this product is recyclable.

2.0 User Guide

2.1 Product Description

Osprey is a product line aimed at delivering our high-fidelity sound to larger audiences by scaling up the technology used in our Harrier products for easier and more predictable deployment, system design and transport. Osprey is a vertical constant curvature array system, making use of a near uninterrupted arc of Air Motion Transducers (AMTs) paired with a parallel midrange array and supported by two powerful 12” low frequency transducers extending the array response to below 60Hz. AMTs naturally propagate a planar wave across their operating band, avoiding the distortion caused by diffraction waveguides often used to convert point-source compression driver output to quasi-planar output for use in typical line array systems. This means Osprey achieves more predictable even coverage from front to back, with reduced vertical lobing and less energy radiated toward reflective surfaces.

A choice between 10-degree and 20-degree vertical coverage means users can assemble arrays that cover the majority of audience topologies. Osprey is not designed to compete with the long-throw capabilities of traditional variable line arrays, and as such does not require the construction of large straight array sections. Instead, Osprey is designed to focus its energy across the near to mid field, and beyond this delay systems should be used to extend coverage distance.

The Osprey product line is completed by the SW215 subwoofer; a dual 15” reflex subwoofer with integrated array hardware and excellent low frequency performance. The SW215 extends the Osprey system response down to 32Hz, with the latest generation of transducers showing very low power compression figures at full input power. It can be used to create simple ground stack arrays, cardioid systems, horizontal spaced arrays and many more configurations supporting stacked or flown arrays of Osprey FC loudspeakers. Osprey systems can be further enhanced by including Harrier SW218 subwoofers in the system design, which have compatible fixing points for the Osprey ground-stack hardware and further extend the system’s low frequency limit and maximum SPL.

2.2 System components

The Osprey product line is comprised of the following products:

- Osprey FC20-X
- Osprey FC10-X
- Osprey SW215
- Osprey HB1 Rigging System

2.3 Directions for use

The first step in achieving a successful deployment of an Osprey system, as with any system, is to establish its operational boundaries. Osprey is optimised for the use case stated above, and trying to use it beyond that will almost certainly result in insufficient coverage, SPL and ultimately a lack of audience enjoyment. Systems should always be designed with enough elements to provide even coverage at the desired SPL, with an appropriate number of subwoofers for the application. It cannot be overstated how important it is to ensure enough subwoofers are used and that the maximum SPL of the sub-120Hz range far exceeds that of the rest of the frequency spectrum at the listening position.

The sensitivity of human hearing dictates that for music played at concert levels, the 30-120Hz range should have up to 12dB greater SPL than the rest of the spectrum, and it is not uncommon to see systems tuned to have up to a +15dB rise in the low frequency range. This does not begin to consider the headroom requirement on top of this to ensure low distortion sound reproduction.

As a general guide, we recommend the following system configurations (per side) for typical audience profiles:

100-200 people/10-15m depth: 1x FC20-X | 2x SW215
200-500 people/15-20m depth: 1x FC20-X | 4x SW215 (Quad stack)
500-1000 people/20-30m depth: 1x FC10-X + 1x FC20-X (flown)| 4x SW215 (spaced array)

As with all good sound system deployments, delay speakers should be used to cover any gaps left by the main FOH system for example as balcony fills, in-fills, out-fills and delay systems for longer/narrower audience shapes. Delay and fill elements serve not just to cover areas not covered by the main system, but also to increase the ratio between direct and reflected sound heard by the listener, which is critical in delivering a good audio experience and is often the main cause for complaint about live sound, especially at indoor venues.

AMTs are more fragile than compression drivers. Whilst we have done everything we can to protect them inside the cabinet, it is important that extra care is taken not to drop or knock your AMT equipped Osprey loudspeakers when handling and transporting.

2.3.2 Amplification

We always recommend that the amplifier with the highest rated power available be used for any system, to ensure delivery of the peak voltage required to reproduce signals with crest factors of 4 and higher present in music signals. The Traction Engine 4|2700-DSP is a power amplifier with a rated output power of 2700W into a 4 Ohm load on all four channels, equipped with a comprehensive DSP system controlled by the Audio Core: Amped Edition software (available at www.tractionsound.com). Loudspeakers can be wired in parallel, however for optimal performance we recommend using one loudspeaker element per pair of (bi-amp) amplifier channels, enabling full array control and use of system processing tools. Our DSP preset library is also available to download from our website.

2.3.3 DSP Presets

The Osprey system is a significant step up from our Hawk and Harrier product lines, and as such requires greater attention from the user to ensure it continues to deliver its full potential for the duration of the operating period. Environmental conditions can change significantly over the course of an event, let alone season to season, and as such an Osprey system should be attended by a competent and trained technician.

Furthermore, each individual deployment should be measured and calibrated using a 2-channel FFT measurement system before commencing operation. Traction Control provides a full suite of tools for technicians and engineers to be able to calibrate and operate the Osprey system.

We currently only support the use of Traction Control DSP, found on our Traction Engine amplifiers, for use with Osprey products. The following presets and their intended uses are found the Traction Control DSP Library available from our website:

FC10-X:
FC10-X S Bi-Amp – For use with subwoofer reinforcement.
FC10-X FR Bi-Amp - For use as a standalone fill with no sub reinforcement.

FC20-X:
FC20-X S Bi-Amp - For use with subwoofer reinforcement.
FC20-X FR Bi-Amp – For use as a standalone fill with no sub reinforcement.

SW215:
SW215 – For standard use in ground stacks, horizontal arrays or flown arrays.
SW215 Cardioid – For use in a cardioid gradient array (see below).

"S" Presets indicate a preset designed to allow a product to work with Traction subwoofers. "FR" Presets indicate a preset designed to allow a product to work on its own without subwoofer reinforcement.

SpeakOn™ wiring is as follows:

Osprey FC10-X:

- LF: Pins 1+/-
- MHF: Pins 2+/-

Osprey FC20-X:

- LF: Pins 1+/-
- MHF: Pins 2+/-

Osprey SW215:

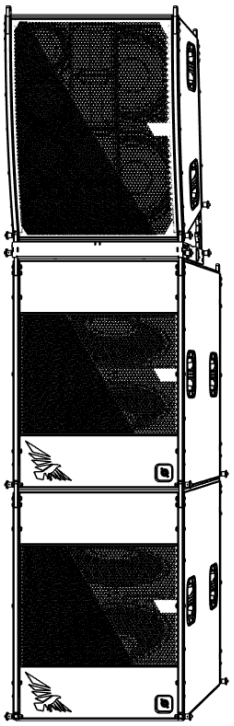
- Pins 2+/- (Rear connectors)
- Pins 2+/- (Front connector)

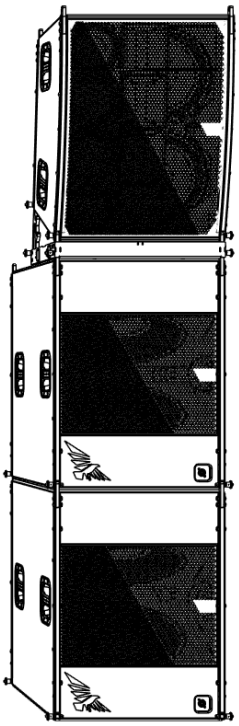
Whilst parallel wiring of Osprey FCxx-X loudspeakers is possible, we strongly recommend powering each element with discrete amplifier and DSP channels to allow full user configuration of the array's performance. If parallel wiring is unavoidable, only connect two of the same element type. ***DO NOT*** *connect an FC10-X and a FC20-X in parallel.*

2.4 Suggested System configurations

2.4.1 – Ground Stack 1

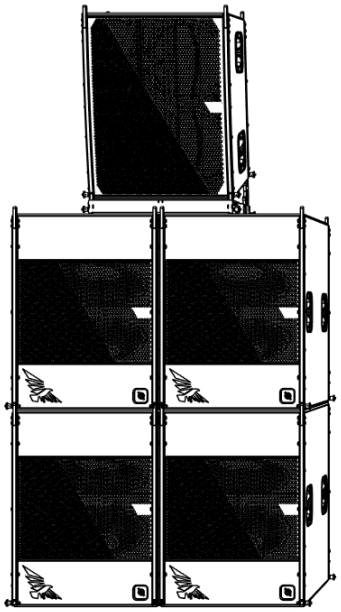
- 4x SW215 | 2x FC20-X | 2x Traction Engine 4|2700-DSP

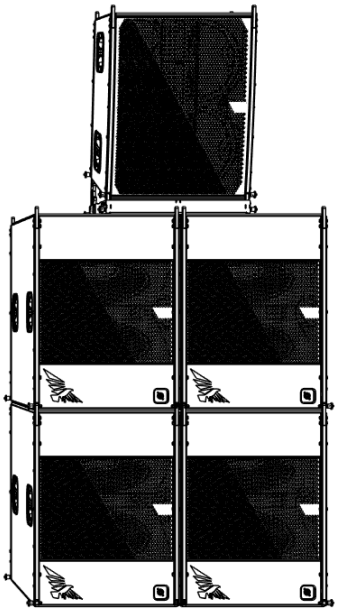




2.4.2 – Ground Stack 2

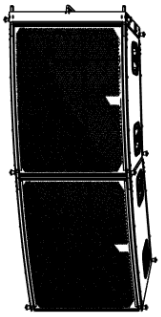
- 8x SW215 | 2x FC20-X | 3x Traction Engine 4|2700-DSP

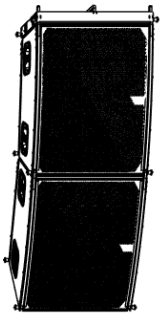


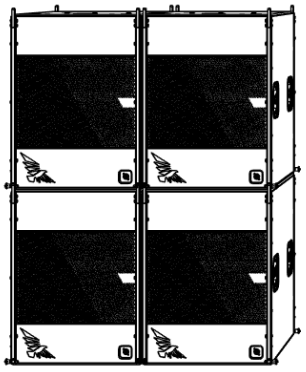


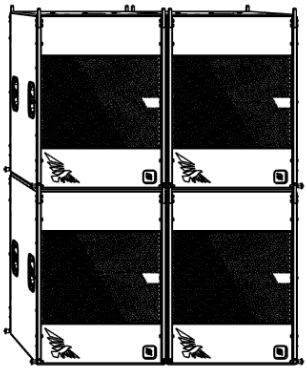
2.4.3 – Flown Array 1

- 8x SW215 | 4x FC20-X | 4x Traction Engine 4|2700-DSP



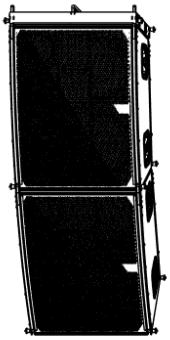


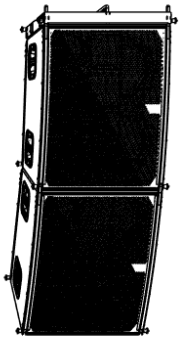


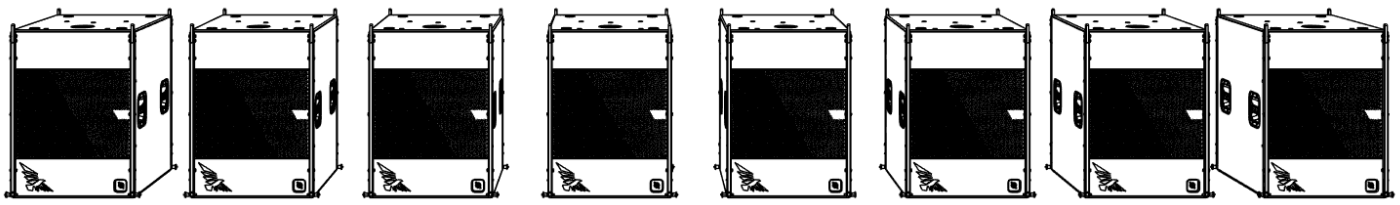


2.4.5 – Flown Array 2

- 8x SW215 | 2x FC10-X | 2x FC20-X | 4x Traction Engine 4|2700-DSP







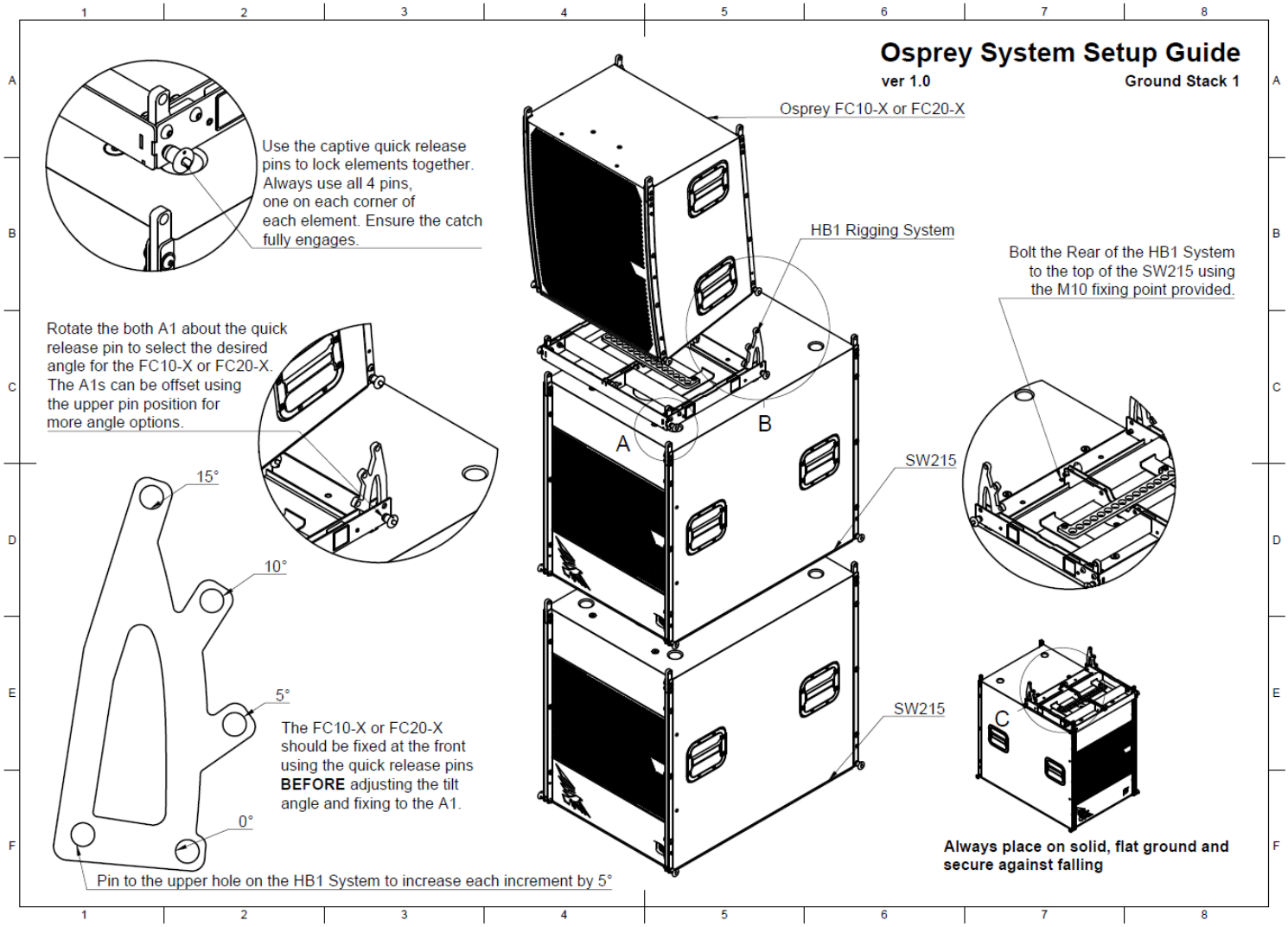
2.5 Rigging Guide:

All rigging operations must be carried out by trained, competent and sober individuals. All rigging equipment must be used in accordance with your country's or state's laws and applicable regulations. Do not take risks when undertaking rigging operations.

Appropriate PPE (Personal protective Equipment) must be used by every person(s) involved in the rigging procedure.

Failure to comply fully with these instructions can cause risk of injury and damage to equipment.

All removable/adjustable bolts, quick release pins, straps and other fixings must be fully secured before use. Always carry out an inspection of the equipment before commencing in rigging operations, ensuring that all permanent fixings and hardware is properly secured and undamaged before use.

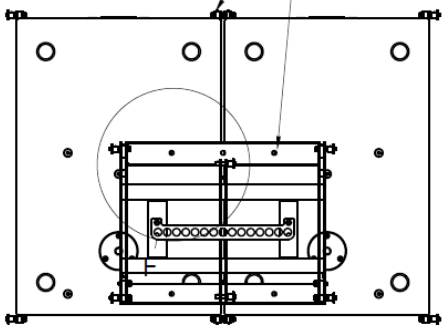


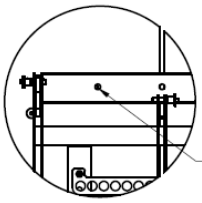
Osprey System Setup Guide

ver 1.0 **Ground Stack 2**

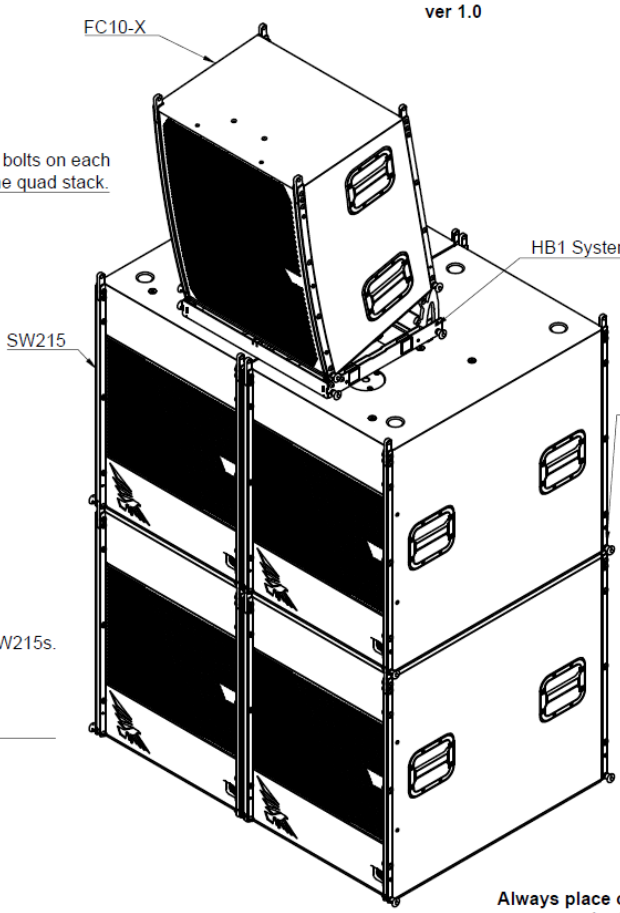
To stack the SW215s in this configuration, first remove the inner quick release pins as they will otherwise interfere with cabinet spacing.

Remove the inner two bolts on each of the top SW215 in the quad stack.





Sit the HB1 on top of the quad stack of SW215s. Align the holes in the HB1 frame with the M10 bolt holes in the top of the SW215s, and then use the removed bolts to attach it to the stack.



Use the outer quick release pins on each side of the stack to fix the SW215s together and secure the system.

Always place on solid, flat ground and secure against falling

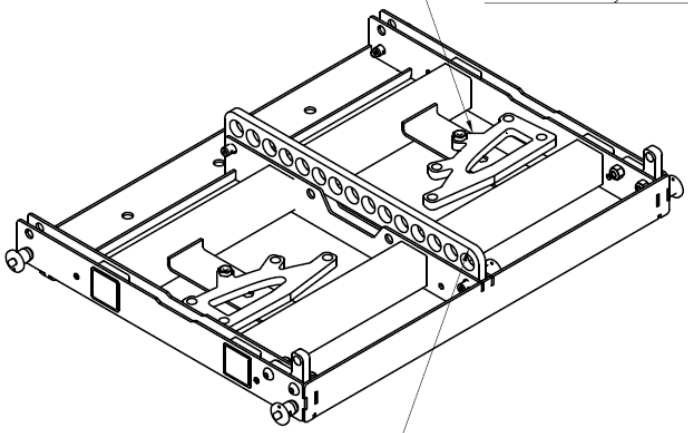
Osprey System Setup Guide

ver 1.0 **Single Element Hang**

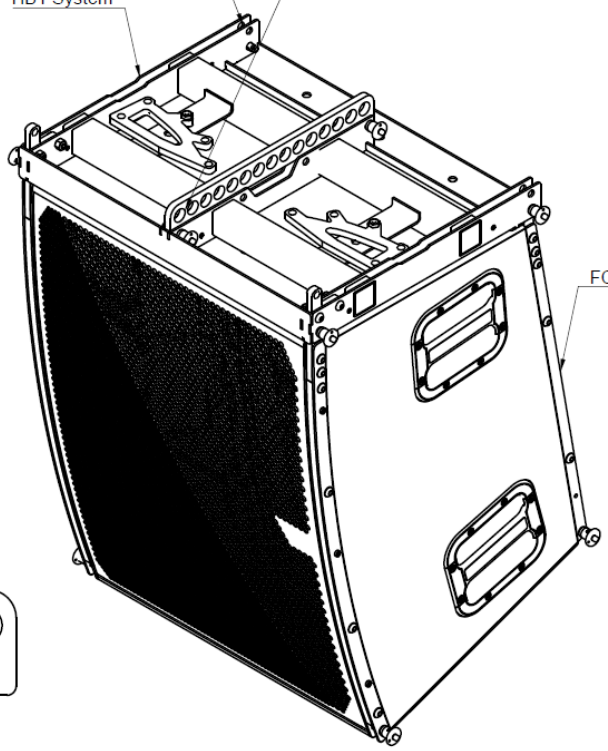
To configure the HB1 System for flying mode, first un-pin the A1 angle bars from the rear mounting points and bolt them to the M8 screw point shown here.

Steel wire or paracord ties can be affixed to these free holes on the rear of the HB1 to steer the array horizontally.

The holes along the length of the P1 are designed for use with 3.25T SWL bow shackles. Use a shackle to connect a manual or motorised chain hoist to the assembly.

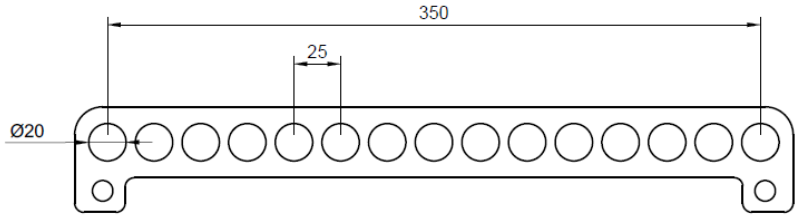


HB1 System



FC20-X

The P1 pick-up bar should then be fitted here using the captive quick release pins provided. Always ensure these pins are fully engaged before fitting the HB1 to a speaker or rigging system.



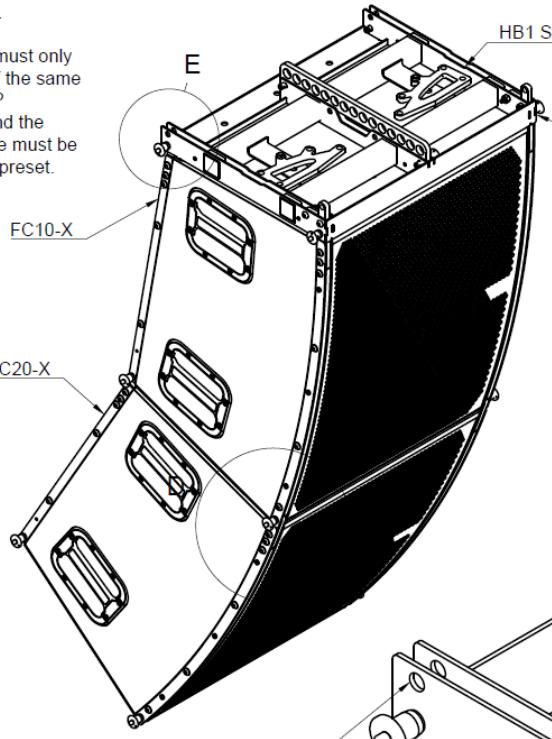
Array vertical angle depends on array size, composition and pick-point connection.

Osprey System Setup Guide

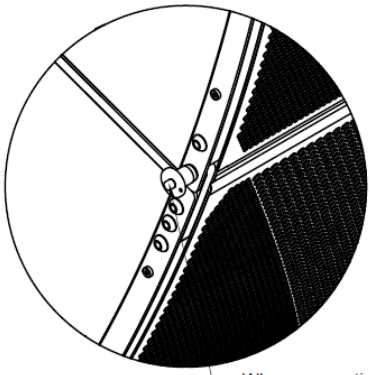
ver 1.0 **Multiple Element Hang**

Up to two Osprey tops can be wired in parallel, however we strongly recommend driving each cabinet separately, as this allows for discrete array processing per element.

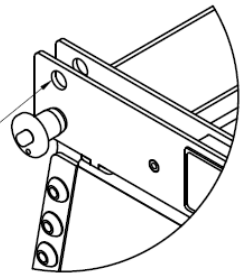
If parallel wiring is used, this must only be done between elements of the same type. There are separate DSP parameters for the FC10-X and the FC20-X and each cabinet type must be driven by its associated DSP preset.



Follow the steps set out in the "Single Element Hang" section of this user guide to attach the HB1 System to the top-most speaker in your array.



When connecting loudspeakers together, ensure each of the 4x quick release pins are fully engaged before attempting to lift or move the array.



Steel wire or paracord ties can be affixed to these free holes on the rear of the HB1 to steer the array horizontally.

A maximum of 3 Osprey FC10-X or FC20-X loudspeakers can be used in a vertical array maintaining a safety factor of 4. We recommend using an FC10-X with an FC20-X below, or two FC20-X to achieve optimal coverage.

4.0 Safety Instructions

4.1 Beware of sound levels
Do not stay near loudspeakers in operation. Loudspeaker systems can produce a very high sound pressure levels which can cause permanent hearing damage. It can happen at moderate levels with exposure over a long time. Always use appropriately rated hearing protection when working in high noise environments.

4.2 Intended use
Trained personnel must operate these loudspeakers in professional applications.

4.3 Associated Equipment
Always use these loudspeakers with the correct amplifier and signal processing. Only use equipment or accessories approved by Traction Sound.

4.4 Safety Checks
Perform a safety check before each use of these loudspeakers. Check the product and accessories for visible signs of wear and tear. This includes load bearing bolts and accessories. Replace damaged parts immediately.

4.5 Intended Environment
Do not expose these loudspeakers to rain or sea spray. Do not expose these loudspeakers to dripping or splashing liquids. Do not place objects filled with liquid such as vases or drinks on the loudspeaker. Do not expose these loudspeakers to atmospheric moisture. This includes mist, steam, condensation and humidity. Do not expose these loudspeakers to excessive heat including direct sunlight. Do not place naked flame sources such as lit candles on the loudspeakers. Do not allow dust, sand or other particulates to enter this loudspeaker.

4.6 Fall Risk
If loudspeakers fall they can cause injury and damage. Do not use, store or transport loudspeakers where they are unstable. Secure against accidental movement. Place stands and tripods on a firm surface and test that they are stable.

4.7 Maintenance
There are no user serviceable parts inside. There are no periodical internal maintenance procedures for this product. All maintenance must be undertaken by a qualified and competent individual.

External cleaning of your loudspeakers should be carried out periodically and immediately after being exposed to dirt, dust, moisture or other contaminants to avoid component damage and ensure long life of the product. Cleaning should be carried out using a damp microfiber cloth, antistatic foam cleaner and if necessary, a soft brush. Never use running water to clean a loudspeaker.

We also recommend that after periods of continuous use in high SPL conditions, some lower-level signal is played through the system before shutting it down completely. This is to

give the moving components of transducers a more gradual cool-down period, preserving the life of the adhesives and more sensitive components used in their construction.

4.8 Warranty conditions

A 5-year warranty applies to this product from the date of purchase. If any of these safety instructions are not followed, then the product warranty will be void.

8.0 Contact Details

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