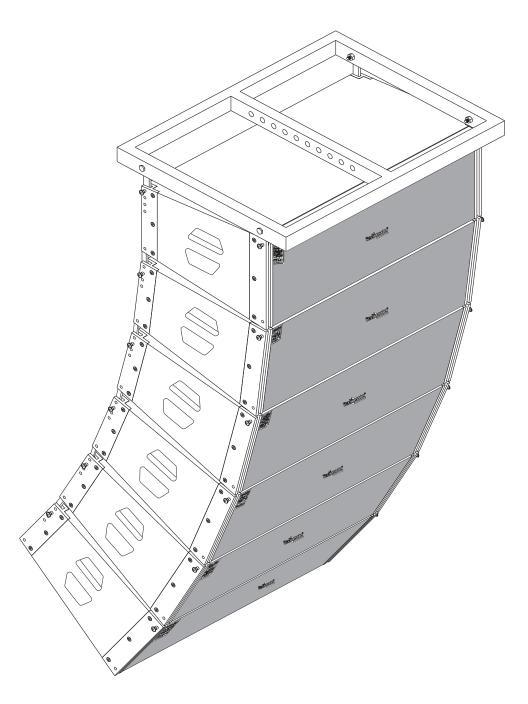


Step into the amazing world of Line Array Systems with the Studiomaster Professional Advantage



FIRE 90 - LINE ARRAY

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1. IMPORTANT NOTES

- Before connecting and using this product, please read this instruction manual carefully.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- The manual is to be considered as integral part of this product and must accompany it when it changes ownership as a reference for correct installation and use as well as for the safety precautions.
- Install in accordance with Studiomaster Professional's instructions and under the supervision of a licensed Professional Engineer only.
- Studiomaster Professional shall not assume any responsibility for the incorrect installation/or use of this product.

SAFETY SYMBOL AND MESSAGE CONVENTIONS

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety hazards.

⚠ WARNING

Indicates a potentially hazardous situation which, if mishandled, could result in serious personal injury.

A CAUTION

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

2. IMPORTANT SAFETY PRECAUTIONS



- 1. Loudspeaker lines (amplifier outputs) can have sufficient high voltage to involve a risk of electrocution: never install or connect speakers when the line is alive.
- 2. Make sure all connections have been made correctly & speaker impedances are suitable for amplifier.
- 3. Protect speaker lines from damage; make sure they are positioned in a such way that they can not be stepped on or crushed by any object.
- 4. Make sure that no object or liquids can get in to the product as this may cause short circuit.
- 5. Never attempt to carry out any operations, modifications or repairs that are not expressly mentioned in this manual. Contact your authorized dealer or qualified personnel if any of the following occur:
 - The system does not function or works in anomalous way.
 - The cable has been damaged.
 - Objects or liquid have got in to unit.
 - The system has been damaged due to heavy impact or fire.
- 6. Before placing, installing, rigging, or suspending any speaker product, inspect all hardware, suspension, cabinets, transducers, brackets and associated equipment for damage.
- 7. Any missing, corroded, deformed, or non-load rated component could significantly reduce the strength of the installation, placement or array. Any such condition severely reduces the safety of the installation and should be immediately corrected.
- 8. Use only recommended hardware, brackets, joining plates, locking pins etc which are supplied with the unit for the installation. Never exceed the rating of the hardware or equipment.
- 9. Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down and causing personal injury and/or property damage.
- 10. Refer all installation work to the dealer from whom the speaker was purchased. Installation for flying requires extensive technical knowledge and experience. The speaker may fall off if incorrectly installed, resulting in possible personal injury.

- 11. For Flying be sure to follow the instructions below. Otherwise, the suspension wires or belts may be off or snap & the speaker may fall off, causing personal injury.
 - Check to confirm that the suspension wires and belts are strong enough to withstand the speaker load.
 - The connectors of the suspension wires and belts must be securely linked with those of the speaker.
- 12. Install the unit only in a location that can structurally support the weight of the unit and the mounting bracket. Doing otherwise may result in the unit falling down and causing personal injury and/or property damage.
- 13. Owing to the unit's size and weight, be sure that two or more persons are available to install the unit. Failure to do so could result in personal injury.
- 14. Do not use other methods than specified to mount the bracket. Extreme force is applied to the unit and the unit could fall off, possibly resulting in personal injuries.
- 15. Tighten each nut and bolt securely. Ensure that the bracket has no loose joints after installation to prevent accidents that could result in personal injury.
- 16. Do not mount the unit in locations exposed to constant vibration. The mounting bracket can be damaged by excessive vibration, potentially causing the unit to fall, which could result in personal injury.

A CAUTION

- 1. Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.
- 2. Do not stand or sit on, nor hang down from the unit as this may cause it to fall down or drop, resulting in personal injury and/or property damage.
- 3. Should the unit emit any strange odours or smoke, remove it from line after having the amplifier switched off.
- 4. Exposure to high sound levels can cause permanent hearing loss. The acoustic pressure level that leads to hearing loss is different from person to person and depends on the duration of exposure. To prevent it wear ear plugs or protective earphones.

3. INTRODUCTION

Studiomaster Professional marks its entry into the world of professional the line-array systems be setting new standards in handling, flexibility and profitability by using most modern technology and materials. The FIRE 90 is simple to use & understand, quick to rig up!

The FIRE 90 is a specially designed loudspeaker module designed to form a vertical stack in varying numbers. This stack is usually flown to provide superior sound coverage in the intended listening areas. Stacked FIRE 90 modules form a line array for constructive summing and increased coupling. Sound disperson of FIRE 90 array has a very narrow vertical dispersion angle. Therefore sound can be precisely directly where audience is present.

4. FEATURES

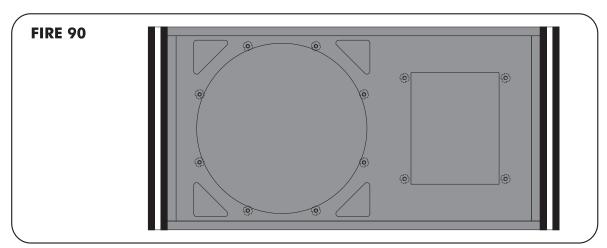
- High performance singal 12"LF & one High quality 2" HF transducers.
- Exceptional sound quality, powerful response & long throw.
- High grade & durable cabinet design.
- Easy carry handles & heavy duty protective grille.
- Fast, integral rigging system with variable splay angles.
- HF frequency attenuation for selection of throw.
- Constant Curvature waveguide for unprecedented array coherence.
- Coverage Pattern: 120 degree x 9 degree nominal (horizontal x vertical), single unit.
- Extra textured anti-scratch paint finish.
- High-quality passive crossover network for maximum reliability.

FIRE 90 System Consists of:

- FIRE 90: High performance singal 12", 2 way passive, 600 watts line array module..
- FIRE 90 Kit: Fly bar & rigging hardware.

Enclosure Features:

FIRE 90: The FIRE 90 incorporates 1 x 12" Mid-Bass transducers & 1 x 2" High Quality HF transducers with state of the art Waveguide horn, all comprised into a sleek enclosure. This Array module has a horizontal coverage angle of 120° & vertical Coverage angle of 9°.

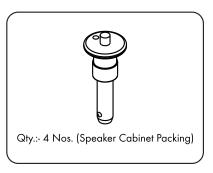


About Waveguides:

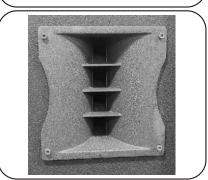
Sound Waves in open space propagate in all directions, this way they lose their power significantly. In order to counter this problem the FIRE 90 incorporates waveguide driver to ensure maximum control on power & dispersion. This ensures pure performance and negates the possibilities of phase cancellations.



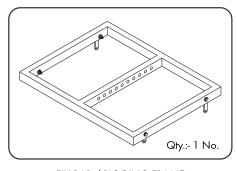
Enclosure hardware:



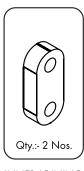
LOCKING PIN 21 MM



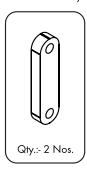
FIRE 90 Kit: The FIRE 90 Kit is set of essential hardware required for rigging flying this line array system. It consist of ultra durable Flybars / Array Frames & Quick Release Pins (Push-Pull Bullets). This kit makes flying the FIRE 90 easy.



FLY BAR / RIGGING FRAME (MSSBML18)



INNER JOINING PLATE SMALL



INNER JOINING PLATE BIG

Note: Flybar & rigging hardware is not part of enclosure hence it need to be ordered separately as per requirement.

Advantages of a using the FIRE 90 line array:

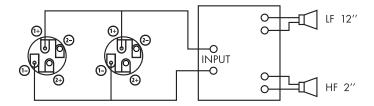
Studiomaster Professional FIRE 90 has several advantages over the horizontally stacked speaker systems normally used for covering large events. These are:

- · Higher direct to reverberant ratio due to directional nature of the system and therefore better intelligibility.
- Increased feedback rejection due to increased directionality in vertical plane and therefore more acoustic gain available.
- Frequency response is uniform over the coverage area.
- Because of increased HF throw of the system, need for delay stacks is eliminated or reduced.
- Even sound pressure level can be achieved over the entire listening area by proper articulation of the vertical array formed by FIRE 90.
- More stage space available as FIRE 90 arrays are flown.

The FIRE 90 system can be configured in any of the following vertical formations:

- · Straight Array all modules are without tilt.
- Curved Array upper modules are curved up towards ceiling and lower ones are curved down.
- J Array upper modules are without any tilt and lower ones are curved down.
- Spiral Array The topmost module/ modules is/ are without tilt and the subsequent modules have increasing tilt with the lowest having maximum tilt with varying splay angles 3°, 6°, 9°.

5. INTERNAL WIRING DIAGRAM



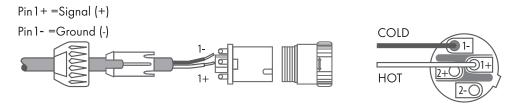
6. REAR PANEL & CONNECTION





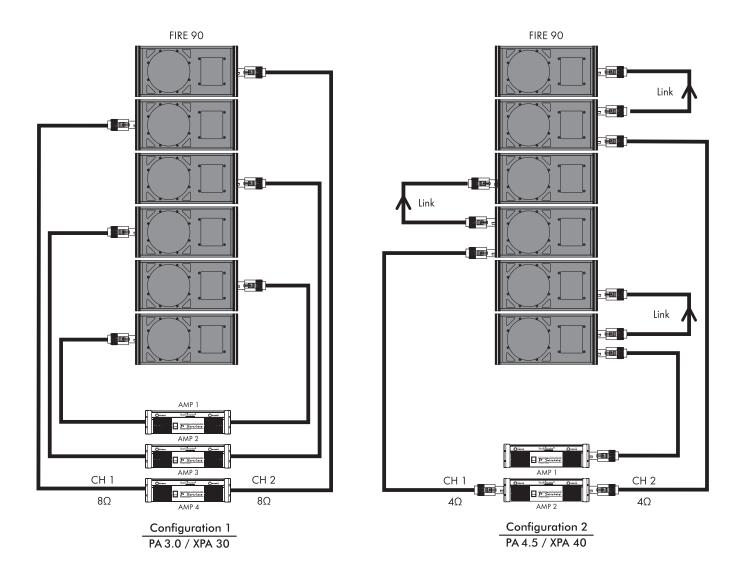
WARNING: To prevent risk of electric shock, do not connect the speaker with the amplifier switched on. Before using the speaker, make sure that all connections are made correctly to prevent accidental short circuit from giving rise to electric sparks.

Speakon Connectors: There are two Speakon connectors. One socket is used for audio signal input from amplifier output and other socket can be used as output for parallel connection of another speaker.



7. SYSTEM CONFIGURATION

You can configure Line array system with amplifiers as shown below.



Configuration 1:- Individual speaker loading (8Ω Impedance).

Configuration 2:- Two speakers in parallel (4Ω Impedance).

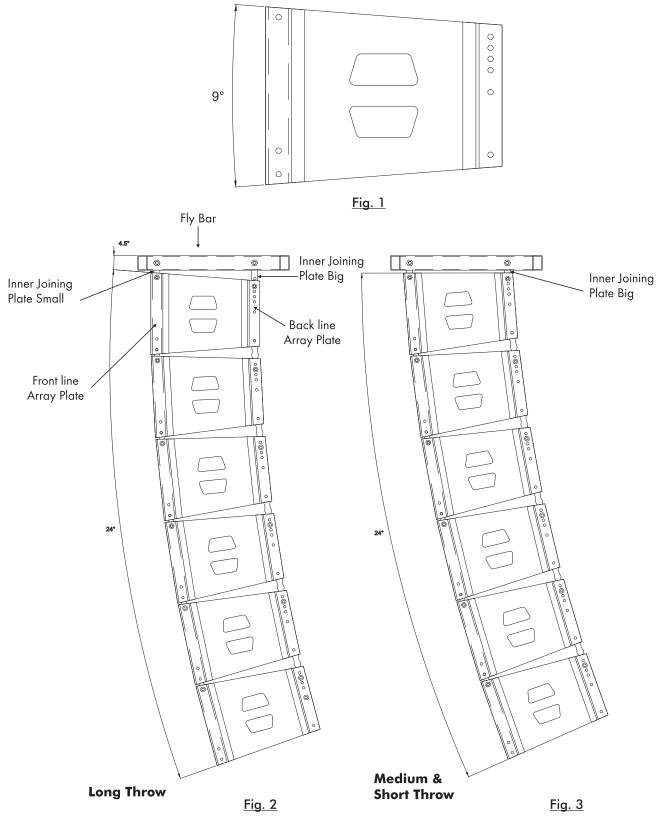
8. INSTALLATION (FLYING)

8.1 General

Use Fly bar for flying the Line Array speakers. With the use of the Fly bar, up to 6 Line Array speakers can be arranged in flying configuration. When joining two or more speakers, or joining the Fly bar and the speaker, use the Joining Plates supplied with the system.

The vertical directivity angle of the Line Array speaker is 9 degrees. The horizontal directivity angle is fixed at 120 degrees.

To transmit sound over long distances, you can adjust splay angles as 0, 3, 6 & 9 degrees. The splay angle can be adjusted by means of the Inter Joining Plates used to join the speakers. It is very easy to do by just quick release locking pins.



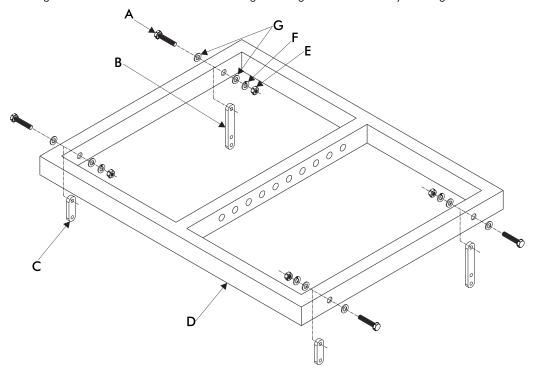
8.2 Fly bar Assembly



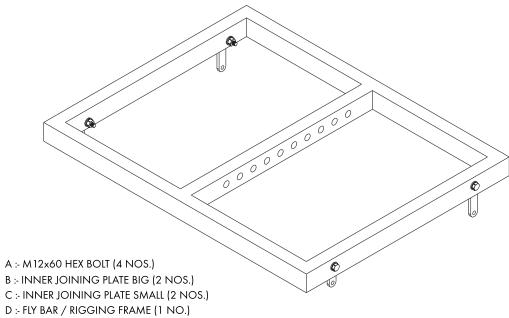
Use only shackle holes for suspension of array!

For assembling, refer to the figure & procedure below.

- Tighten 4 supplied M12X60 bolts with plain washers, spring washers and nut securely to fix inner joining plates (Big & Small) to the Fly bar.
- Fix Inner Joining Plate Small on front side & Inner Joining Plate Big on back side of fly bar. It gives 4.5° vertical inclination (downward).



MSSBML18 - FLYBAR / RIGGING FREAME OF LINE ARRAY (Including joining plates & hardware)



E :- M12x10 HEX NUT (4 NOS.)

F:- M12 SPRING WASHER (4 NOS.)

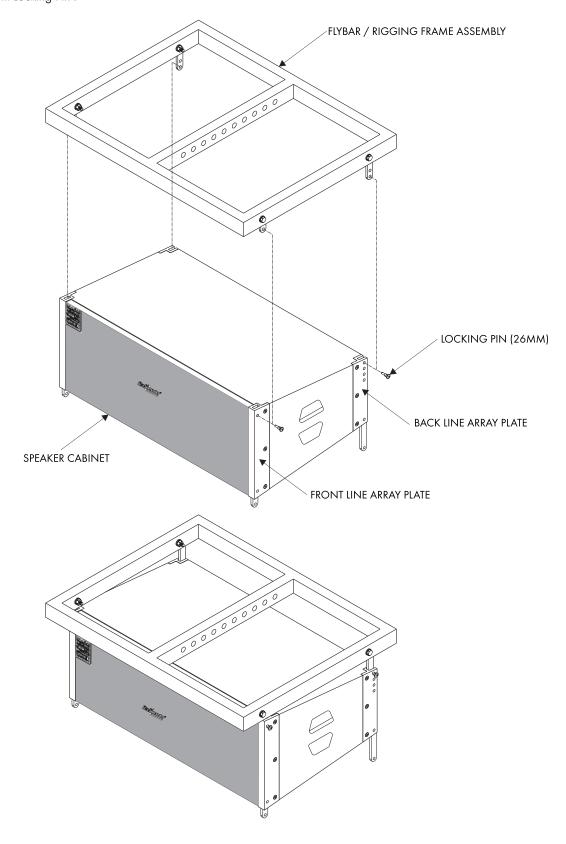
G:- M12 PLAIN WASHER (8 NOS.)

Note: We will get flybar assembled with all rigging hardware from supplier.

8.3 Joining the Enclosure to the Fly bar / Rigging Frame

Follow the procedure below to mount the enclosure to the Fly bar, as shown in the assembly diagrams below.

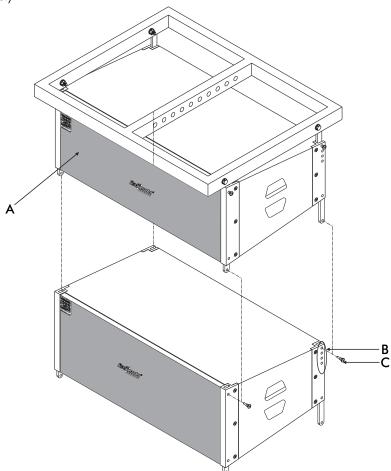
- Use Fly bar / rigging frame assembly as mentioned in 8.2.
- Place speaker box in line with Fly bar / rigging frame assembly
 Pl ensure that speaker direction is correct ("Studiomaster Professional" Logo on bottom side).
- Insert Inner Joining Plates to line array plates (front & back) of speaker box as shown in figure below.
- Fix quick release 21 mm Locking Pin .



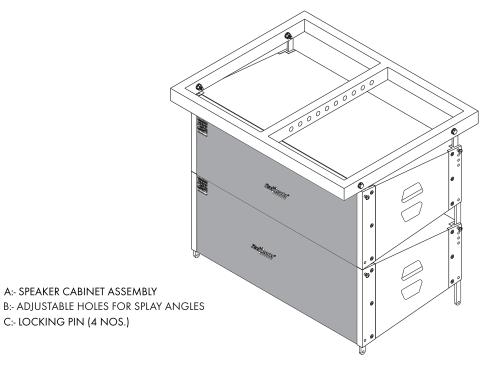
8.4 Joining Enclosures

Follow the procedure below to mount the enclosure to the Fly bar as shown in the assembly diagrams below.

- Use Finished speaker cabinet assembly as mentioned in 8.3
- Align lower speaker as shown in drawing below.
 Pl ensure that lower speaker direction is correct ("Studiomaster Professional" Logo on bottom side).
- Now fix quick release 21 mm Locking Pin to joining plates of lower speaker box . You can adjust Splay Angles 0 , 3 , 6 & 9 as shown below assembly

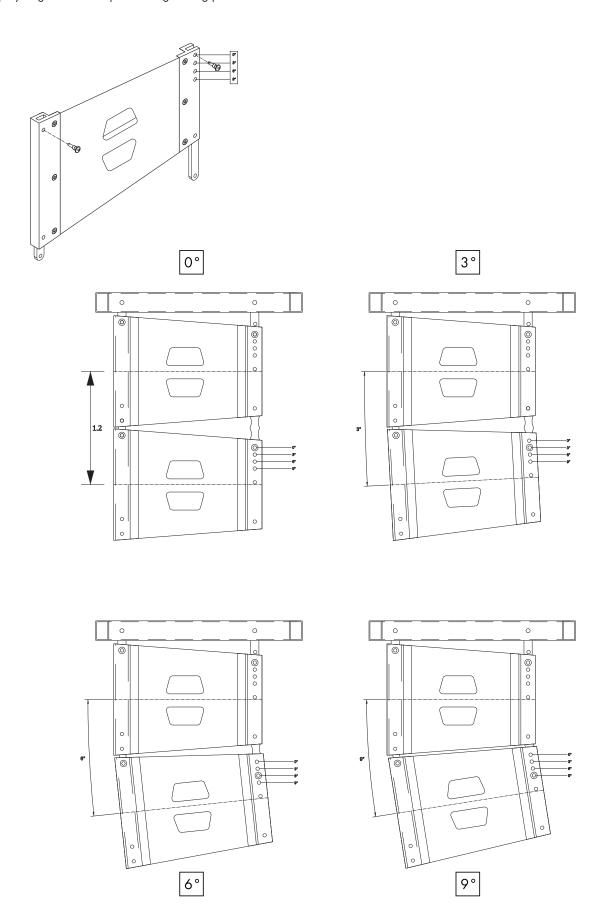


FINISHED JOINING ENCLOSURES ASSEMBLY DIAGRAM



8.5 Variable Splay Angle adjustment

Splay angle can be adjusted using Joining plate holes as shown below.

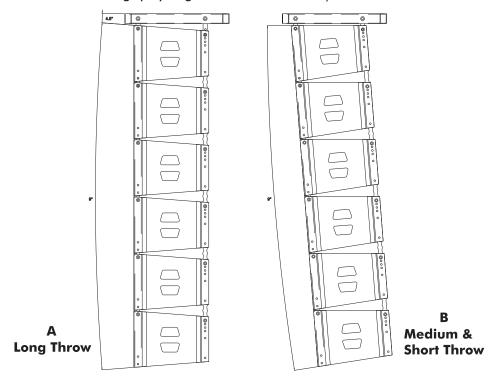


9. VERTICAL DIRECTIVITY (COVERAGE AREA)

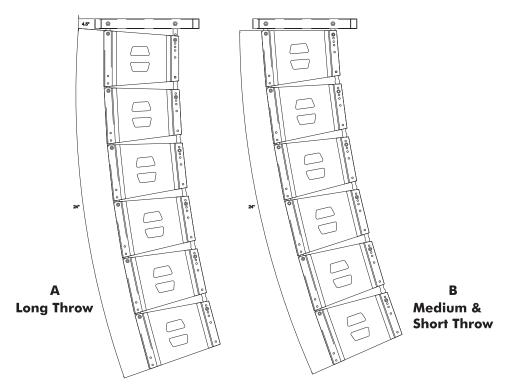
With different Splay angles we can cover required area. The overlapping angle can be adjusted by means of the combination of different splay angles using holes on line array as explained in point 8.5. The horizontal directivity angle is fixed at 120 degrees. Pl see below different coverage areas.

In below configuration of each splay angle,

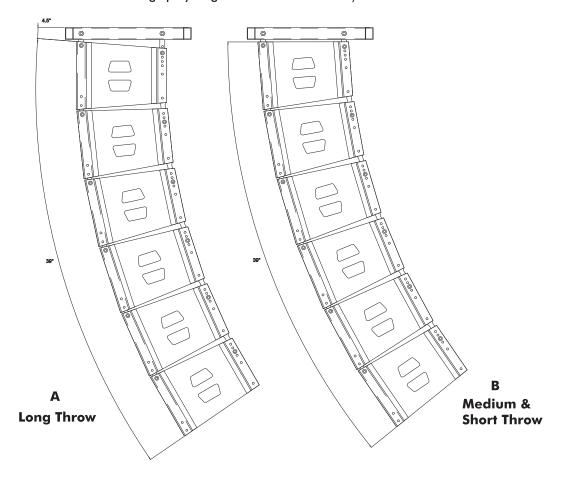
- 1. **Configuration A** First speaker is at 4.5° inclination w.r.t. fly bar which is to be used for long throw. On front, small joining plate are used & on rear big joining plate are used.
- 2. **Configuration B** Front speaker is parallel to fly bar. This configuration can be used for medium & short throw. On front, small & on rear big joining plate are used
- 1. All enclosures fitted with 0 deg splay angle total vertical directivity 9°.



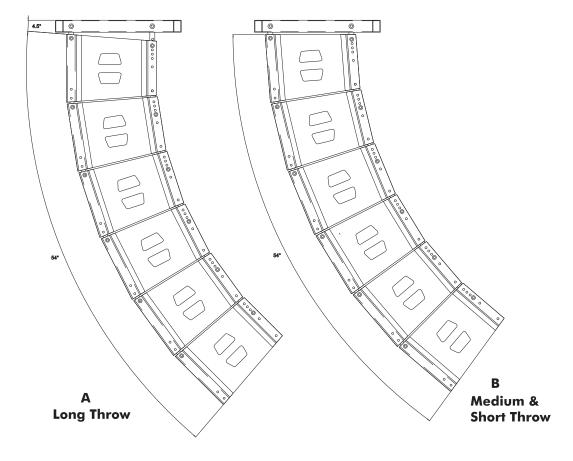
2. All enclosures fitted with 3 deg splay angle – total vertical directivity 24°.



3. All enclosures fitted with 6 deg splay angle – total vertical directivity 39°.



4. All enclosures fitted with 9 deg splay angle – total vertical directivity 54° .



10. NOTES ON FLYING



- Check to confirm that the suspension wires, belts, construction of the ceiling, etc are strong enough to withstand the speaker load.
- Tighten each joint bolt to 300-350 kg-cm of torque securely. Be sure to use the joint bolts supplied with the speaker and the Fly bar / Rigging frame.
- Up to 6 Line Array speakers can be arranged in flying configuration per one Fly bar / Rigging frame. No more than 6 speakers can be arranged in flying configuration.
- Use a suspension point that provides the desired downward angle. The downward angle increases as the suspension point is moved backward.
- Use safety belts for further safety.

11. Technical Specifications:

Electrical Parameters	
System Type	2-Way
Frequency Range (-10 dB)	40-20 KHz
RMS Power	600W (LF=500 W + HF=100W)
Peak Power	1200W (LF=1000 W + HF=200W)
System Maximum SPL	128 dB
Sensitivity (1 w @ 1 m) dB	98dB LF / 100dB HF
Crossover Frequency	2000 Hz
Nominal Impedance	8 Ohm
Connectors & switches	
Connectors	2 X Speak-on
Coverage Angles	
Horizontal Coverage Angle	120°
Vertical Coverage Angle	9°
Variable splay angles	0, 3, 6 & 9 deg C
Components	
LF Component (Powered by RCF)	1 x 12" Woofer
HF Component	1 x 2" Driver
Mechanical	
Enclosure	15 mm Plywood
Dimensions (L x W x H) mm	665 x 452 x 340
Net Weight (Kg)	36Kg

Recommended products to be used with FIRE 90.

Subwoofer : FIRE 80 (1 \times 18" woofer, 1400Wrms / 2800W peak power) FIRE 85 (1 \times 18" woofer, 1500Wrms / 3000W peak power) FIRE 86 (1 \times 18" woofer, 2800Wrms / 5600W peak power)

Range of Products.

Wired Microphones

SM 100XLR **TRIO 100** SM 200XLR TRIO 200 SM 300I SM 400XLR SM 450XLR SM 500XLR SM 600XLR SM 650XLR (Black) SM 650XLR (Silver) **SM 800C** Flex 3 / Flex 4

Wireless Microphones

BR 28 Series ER 31 Series ER 58 Series XR 20 Series XR 40 Series XR 60 Series XR 80 Series XR 100 Series NT 50 Series NT 60 Series

Conference System

Vāk 10 System Vāk 10d / Vāk 10c Vāk 20 Vāk 30 Vāk 30d / Vāk 30c

Crossovers

SX-2 SX-321 SX-341

Processors

SEO 152 **SEQ 302F SEQ 312** SEQ 341 Multi 3

Mixers

Mini Series Mini 6 Mini 6U Mini 8 Mini 8U

~ Air Series

AiR 2 AiR 4 AiR 4F AiR 6 AiR 6R AiR 8 AiR 12 **AiR 16** AiR 24 AiR 2U AiR 4U AiR 6U AiR 8U AiR 12U AiR 16U

Mixers

~ Air Series AiR Pro 18 AiR Pro 28 AiR Pro 36

~ AQUA Series

Aqua 6 Aqua 8 Aqua 10 Aqua 14

~ Digital Mixer

D. Mix 20

Diamond Club Series

Diamond Club 8.2 Diamond Club 8.2 EFX Diamond Club 12.2 Diamond Club 12.2EFX Diamond Club 16.2 Diamond Club 16.2EFX

~ Diamond Supreme Series

Diamond Supreme 12 Diamond Supreme 12U Diamond Supreme 16U

~ Club 2000 Series

Club 2000 142 Club 2000 182

~ Diamond Pro-3 Series

Pro-3 12.3 Pro-3 16.3

~ DJ Mixers

DJX 325 DJX 825 DJX 925 X35

Amplifiers

~ P - Series PA 1.5 PA 2.0 PA 3.0 PA 4 5 PA 6.0 PA 7.5

~ DPA Series

DPA 2000 DPA 3200 DPA 4500

~ RAX Series

RAX 5020 RAX 7020

~ DJA Series

DJA 500 **DJA 800** DJA 1600 DJA 2500 DJA 3200 DJA 4000 DJA 5000 DJA 6000

Amplifiers

Industrial Amplifier

ARC 120A ARC 240A ARC 120UB ARC 240UB

Speaker Component

S-Series

SWF 18120 SWF 18140 SWF 18100 SWF 1880 SWF 1560 SMB 1565 SMB 1545 SMB 1530 SMB 1250 SMB 1230 SMB 1220 SHF 0104 SHF 0106

SHF 0210 ~ E-Series

FMB 1225 EMB 1530 EMB 1535

~ TITAN Series

TWF 2115 TWF 1815 TWF 1810 TWF 1580 TWF 1570 TMB 1555 TMR 1535 THF 0208

~ FURY Series

F18.120 F15.70 F15.40 F15.50X F15.40X F12.30X

~ S-Series

S8018 S8118 S8218 S8128 S8028

Passive Speakers

Fire 21 Fire 51 Fire 55 Fire 57 Fire 59 Fire 82 Fire 84 Fire 85 Fire 90 Fire 92

Passive Speakers

~ XVP Series

XVP 1540 XVP 2550 XVP 2585MK2 XVP 1808 XVP 1810 XVP 2820

~ ELAN Series

ELAN 151 ELAN 181

EKS 151

O 400

~ ARIA Series

Aria 8 Aria 12 Aria 15

Powered Speaker

~ Clio Series

Clio 84 Clio 124 Clio 154

~ B Series

B 200 B 400V2

~ OP Series

OP 415

~ SUB Series

12SUB 15SUB

~ Muse Series

MUSE 61 MUSE 81 **MUSE 101**

Line Array System

FIRE 92 SLA-40 T SLA-40 Kit S 9022

Stabilizers

SVC - S1000 SVC - S2000 SVC - S3000 SVC - S5000 SVC - S8000 SVC - S10000 SVC - S12000

* Design and specification are subject to change without notice.



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