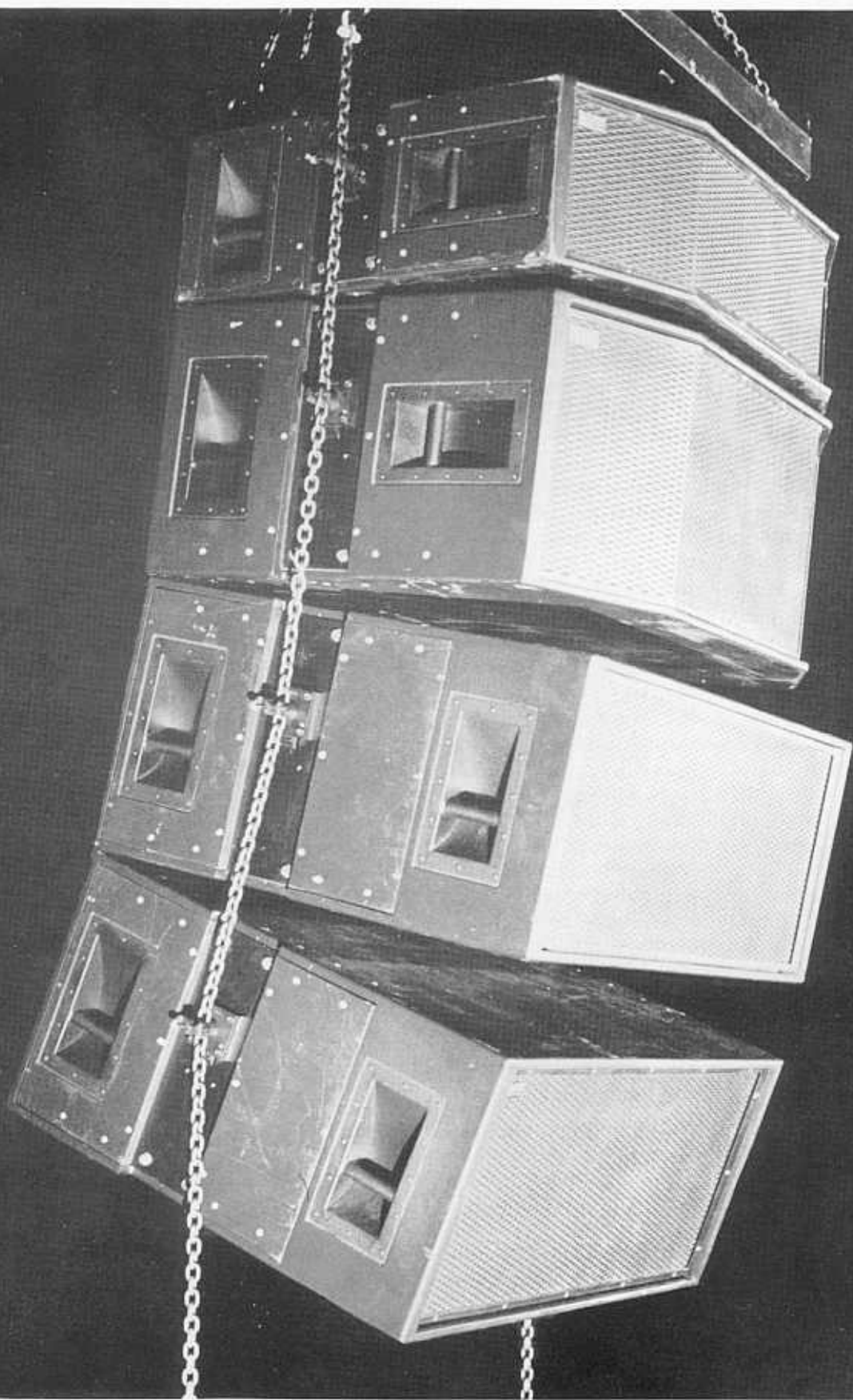


**MARTIN AUDIO**  
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**F-1 MODULAR FLYING SYSTEM**

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## F-1 MODULAR FLYING P.A. SYSTEM

The F-1 combines the proven sonic advantages of the full modular concept with a revolutionary rigging design. We offer it as the definitive realisation of our commitment to manufacture the finest fully horn loaded flying P.A. system available.

### F-1 DESIGN FEATURES

1. Full modular design. Can be configured to suit specific applications.
2. Can be flown as individual modules, or may be bolted together in blocks for rapid rigging and ease of trucking.
3. Proprietary flying attachments together with a unique chain linked rigging system allow full adjustment of vertical coverage. Any chosen lower section is quickly adjustable for the desired downward coverage, or the entire system may be bowed such that the top functions in a "long throw" mode with progressively shortened throw with increased tilt down angle.
4. Auto latching rigging points, with safety lock and positive visual indication of latched condition, are used in combination with a chain pin. The chain pin is adjustable on the chain in one link increments, insertion and release requiring only one hand.
5. Auto latching rigging point, chain pin and cabinet structure tested in accordance with British safety standards. Each rigging point rated to carry 1.5 TONNE (1500Kg) load. Single system maximum weight is 3.0 TONNE.
6. At single system maximum weight, with heaviest cabinet (F-1B bass bin) 22 cabinets can be flown in a 35ft. column.
7. Such a protracted column of identical close coupled modules generates a 35ft. high cohesive, mildly divergent cylindrical wave front which has sharply defined upper and lower boundaries. Horizontal dispersion is similar to the dispersion of one module. This powerful technique creates an effective vertical "window" of sound, and when suitably modified (see 3 above) enables sound of the highest fidelity to be projected into all audience areas, minimising reverberant energy by reducing unwanted sound spillage.
8. THREE such columns form a full range system of 65° horizontal coverage, adjustable up to 90° vertical coverage. The addition of side modules will broaden the horizontal coverage to any desired degree.
9. Other configurations may be used, as there is considerable scope for operators to tailor the flown cluster to their individual needs.
10. "All in the air" concept with extended low end. For most applications, sub bass is not required. Sonic integrity in the vital mid bass "punch" region is thus preserved. A small cluster (3xF-1B bass bins) operates effectively to 50Hz, while a large homogeneous stack provides heavy bass to 35Hz.
11. Sub bass if required may be operated optionally in the frequency band from 70Hz down. Thus, cancellation effects due to inevitable path length differences between flown and ground bass cabinets in the cross-over region are reduced in magnitude and occur in a less critical bass region.
12. The F-1 system has constant horizontal directivity over the 65° angle from 300Hz up. By adopting this coverage angle, increase of coverage to 130° can be achieved with minimum interference in the horizontal pattern overlap region.

13. F-1H high frequency horn. Two horns having  $35^{\circ}$  horizontal coverage are used side by side to create a composite horn of  $65^{\circ}$  coverage. Careful horn design results in minimum interference near the centre axis, whilst low distortion is assured by having continuous expansion away from the throat. This expedient was adopted after much experimentation with Y throats and non expanding "constant directivity" throats had proved conclusively that these devices introduced up to 4dB increased distortion. The F-1H has an output level 3dB greater than single driver horns of comparable size.

14. F-1M mid range horn. Use of two proprietary 30cm (12") mid cone driver of unusually high sensitivity and power handling makes this  $65^{\circ}$  mid horn the best we have produced to date (see also "M" series mid group data).

15. F-1B bass horn. The design for this bass bin is identical to our 215 MKIII. Such differences as exist are embodied in the design revision to accommodate rigging points and rear tilt facility, together with a grille to maintain visual continuity with the mid and high. The bass drivers for the F-1B are radically different. Each driver is rated at 750 watts programme (with high pass filtering at 35Hz). A typical LF driver has 7 sq.ins. of magnet dissipation area immediately adjacent to the voice coil (voice coil circumference and top plate thickness  $\times 2 =$  dissipation area). The SL1540 driver has 20 sq.ins. In consequence, the coil is able to easily withstand 500 W continuous average sine wave power. In addition, the moving assembly of the SL1540 is excursion limited via a sophisticated triple suspension system. A conservative 750 W programme power per driver is realised in practice by driving each cabinet (8 ohms) from a power amp rated 1000 W continuous, bridge mode, in 8 ohms (500 W/channel). This endows the F-1B with an unequalled 1500 W programme power rating.

16. The F-1 system has been carefully dimensioned to suit both U.S. and European trailers. In common with the RS-1200, two of the three dimensions have been chosen so as to be truck compatible. With the F-1 however the alternative dimension (height) has been chosen to allow four of either F-1B or F-1M and one F-1H to be packed edgewise across a typical U.S. trailer.

17. It is no coincidence that the F-1B bass and F-1H mid horns are compatible with Martin 115 and 215 bass bins and "M" series mid horns. The F-1H is not compatible but may be used with any high frequency horns currently in use providing that the compression drivers are aligned. This compatibility allows full use to be made of existing Martin equipment, for example in large outdoor P.A. systems.

In summary, the F-1 system provides the creative live sound engineer with a sound system that is incredibly powerful in relation to its occupied volume. Extreme versatility of operation results from a radical departure from conventional flying techniques\*\* whilst these same techniques allow rapid rigging and convenient trucking.

\*\* the rigging system is the subject of a British Patent application.

SPECIFICATION - F-1 SYSTEM MODULES

F-1B BASS HORN

Horn Type ..... modified hyperbolic  
Frequency Response ..... 35 - 500Hz  
Recommended Crossover Frequency .. 250Hz  
Drivers ..... 2 Martin SL1540 38cm (15")  
Impedance ..... 8 ohms, for mono bridge amplifier  
Rated Power ..... 1000 W continuous average  
Maximum Programme Power ..... 1500 W  
1 watt/1 metre axial  
Sensitivity<sup>1</sup> ..... 107dB av. 60-250Hz, half space (2 stacked  
bass bins)  
Maximum SPL at Rated Power<sup>2</sup> ..... 138dB at 1 M for 2 stacked  
Input Connector ..... Cannon EP-4 (alternatives available)  
Dimensions (WxHxD)<sup>3</sup> ..... 113cmx48.5cmx91cm (44.5"x19.2"x35.8")  
Weight ..... 126.5Kg (279lbs)

F-1M MID HORN

Horn Type ..... compound exponential semi constant  
directivity  
Frequency Response ..... 180Hz - 2KHz  
Recommended Crossover Points ..... 250Hz, 1.5KHz  
Lowest/Highest Crossover ..... 200Hz, 1.8KHz  
Drivers ..... 2 Martin M1230  
Impedance ..... 4 ohms  
Rated Power ..... 400 W continuous average sine wave  
Maximum Programme Power ..... 800 W  
1 watt/1 metre axial  
Sensitivity<sup>1</sup> ..... 109dB av. 250 - 1.5KHz  
Maximum SPL at Rated Power<sup>2</sup> ..... 133.5dB  
Input Connector ..... Cannon EP-4 (alternatives available)  
Dimensions (WxHxD)<sup>3</sup> ..... 113cmx48.5cmx91cm (44.5"x19.2"x35.8")  
Weight ..... 122.5Kg (270lbs)

F-1H HIGH FREQUENCY HORN

Horn Type ..... dual exponential semi constant directivity  
Frequency Response ..... 800Hz - 18KHz  
Recommended Crossover Points ..... 1.5KHz  
Lowest Crossover Point ..... 1.0KHz (at reduced power)  
Drivers ..... 2 JBL 2445J 5cm (2") throat  
Impedance ..... cabinet input impedance 8 ohms effective  
combined driver impedance 14 ohms  
Rated Power ..... 150 W  
Maximum Programme Power ..... 300 W (manufacturers rating)  
1 watt/1 metre axial  
Sensitivity<sup>1</sup> ..... 112dB  
Maximum SPL at Rated Power<sup>2</sup> ..... 132.5dB  
Input Connector ..... Cannon EP-4 (alternatives available)  
Dimensions (WxHxD)<sup>3</sup> ..... 113cmx32.5cmx91cm (44.5"x12.8"x35.8")  
Weight ..... 103Kg (227lbs)

<sup>1</sup> Measured on axis at 4 m, and referenced to 1 metre using inverse square law.

<sup>2</sup> Calculated from reference sensitivity, allowing for 1.5dB power compression after 20 secs. of continuous pink noise input in stated band.

<sup>3</sup> Add 12.7cm (5") to height for 100m plate castors.