

CORAL

PROFESSIONAL SERIES

15inch WOOFER

15L-100

*© beim Hersteller
Archiv Michael-Otto*



FEATURES

• Corrugated Cone Paper

The cone paper, albeit simple in structure, is the most vital part of a bass speaker and directly affects the quality of reproduced sound. Pulp produced in northern Europe and North America, the best available today, has been specially processed for the cone paper used in Coral's 15L-100. Its audio characteristics are the best around.

• Edge

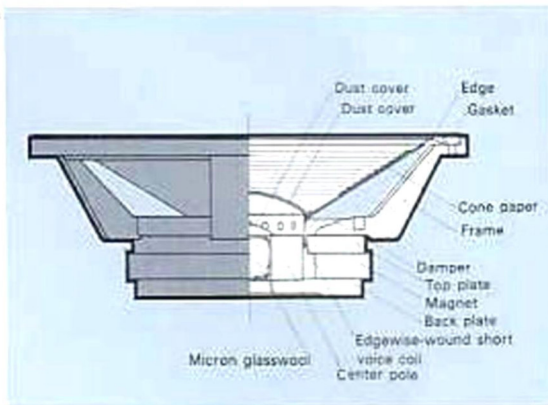
A newly developed material made by mixing special resin, boasting excellent resistance to changes in weather, with animal fiber, then expansion-molding the mixture is employed with the result the cone paper can move linearly sans distortion in response to music signals. Thus the most ideal compliance and improved linearity.

• Voice Coil

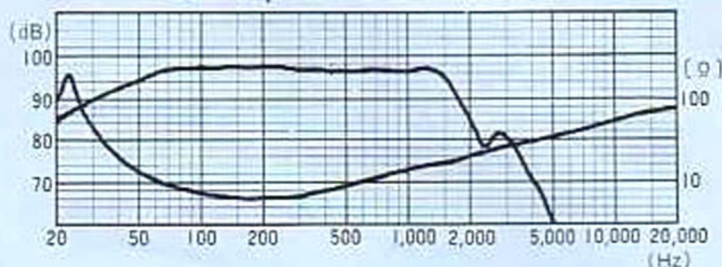
A voice coil must have high stability to drive the cone paper. The voice coil of the 15L-100, which features edgewise winding rendering it advantageous for a higher air gap ratio, and its bobbin, which uses polymer fiber paper, are treated with special resin via a newly developed method. Thermal resistivity during continuous operation, in which the temperature reaches almost 200°C, and excellent heat radiation maintain the program source input of 150W, ensuring outstanding linearity.

• Magnetic Circuit

A large high-performance ferrite magnet has a total magnetic flux of 532,000 Maxwell. Its powerful magnetic energy provides reliable drive and brake force for the vibration system, enabling the system to perform its full capacity.



Sound pressure characteristics



SPECIFICATIONS

- Frequency response fo - 1,500Hz
- Lowest resonance frequency 25Hz
- Program source input 150W
- Output sound pressure level 96dB
- Impedance 8 or 16 Ohms
- Total magnetic flux 532,000 Maxwell
- Baffle cut opening dia. 350mm (front mounting)
- Weight 15.3kg
- a = 168mm (effective diaphragm radius)
- $m_0 = 110g$ (vibration system effective mass)
- $C_0 = 0.25$

NOTE:

Since this unit is designed for professional use, the mounting pitch is the same as 38mm-dia. JBL, or ALTEC woofers.

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EXAMPLES OF SYSTEM COMPOSITION



Basic system components using the 15L-100 woofer are shown at right. Although the 2-way system combining a driver unit and a sectoral horn guarantees properly controlled flat frequency response, the H-100 tweeter used at a crossover frequency of 7,000Hz may be added for a 3-way system. A designated network should be properly used so as not to reduce the characteristics of each unit.

NOTE: Since the impedance of the proper network is 8 Ohms, the impedance of each unit must be also 8 Ohms. The CORAL professional level controller AT-100 is recommended for use in level regulation of the mid-high range units and tweeter.

MOUNTING

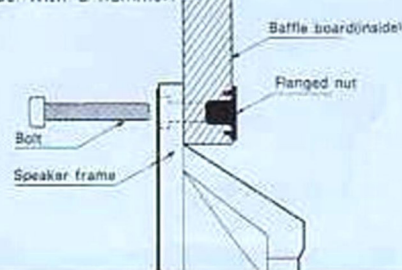
- Firmly mount the accessory absorber strip in the groove located in the back of the speaker frame to assure tight fitting of the unit and the baffle board (see figure).
- The speaker may be mounted on the baffle board using either the accessory flanged nuts and bolts or wood screws - select either according to the enclosure used. (The flanged nuts and bolts are used as illustrated at far right.)



Absorber strip mounting



■ Mounting with flanged nuts: Drill eight 8mm ϕ holes in the baffle board and knock in the flanged nuts from inside with a hammer.



ENCLOSURE

However good a speaker system is, its characteristics can hardly be demonstrated to their fullest if its enclosure is imperfect. Only exhaustive research and design can produce an enclosure worthy of the world's finest speaker systems. The performance of a speaker cannot be discussed without also considering its enclosure.

The 15L-100 may be used in a bass-reflex, an air-tight, or a back-loaded horn enclosure. Whatever the preference, But selection should be made only after fully understanding the advantages of each type enclosure.

Bass-Reflex Type

This type enclosure recovers the sound emitted from the rear of the speaker and projects it in front through a duct. Since the phases of sounds reproduced from the front and the back of the speaker do not coincide, it is necessary to convert the phase of the sound emerging from the duct. The enclosure therefore must have proper volume (130–230ℓ), accurate duct dimensions and position, and correct overall shape. The enclosure must be completely sealed except for the duct opening. Low-frequency reproduction is ideally enriched. Standard dimensions for a bass-reflex enclosure (170ℓ) to be used with the 15L-100 are shown in the drawing at right.

NOTE: This enclosure can also be used with JBL woofers PRO-4331 and PRO-4333.

The 106mm-dia. hole shown in the drawing is for mounting the CORAL H-100 tweeter.

Air-Tight Type

The sound emitting from the back of the speaker is completely shut off in this type enclosure, achieving an ideal infinite baffle. The enclosure enables reproduction of the lowest range of the effective frequency response of a speaker, however, the cone paper of the speaker is exposed to pressure owing to the fact the speaker is totally enclosed, thus adversely affecting the reproduction of low sounds. In order to solve this problem, a large air-tight enclosure should be used, the dimensions of which may vary freely, unlike with the bass-reflex enclosure. See table for the relationships between enclosure volume and the lowest resonance frequency.

Relationships between air-tight enclosure volume & f_0

f_0	Width	Height	Depth	Volume
35Hz	760	1,100	500	420 ℓ
40Hz	650	950	430	260 ℓ
45Hz	570	790	400	180 ℓ
50Hz	550	700	350	135 ℓ

Inner dimensions(mm)

Material & Reinforcement

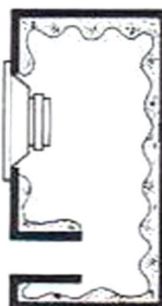
Enclosure material may be lauan plywood or homogenized holt, both of which are readily available. However, Douglas fir plywood is an ideal material to obtain harmonious sound. Although the differences in sound caused by different materials cannot be disregarded, woodworking accuracy and tuning after completion are important factors that largely affect sound reproduction. Stiffeners are employed to effectively connect the baffle board and backboard. How much reinforcement is required should be determined according to the results of hearing tests, because it is more or less dependent on the type of enclosure and the material used.

Application of Acoustic Material

Acoustic material must be used on the interior of the enclosure in order to prevent standing waves. Soft felt or glass wool is normally used. Method of application and amount of acoustic material used differ depending upon the type of enclosure. Typical examples are shown below.

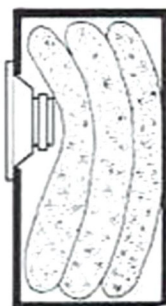
Bass-reflex enclosure:

Acoustic material is adhered on the inside walls in a wave form. The material should be used sparingly, because enclosure efficiency is decreased if material is used to excess.

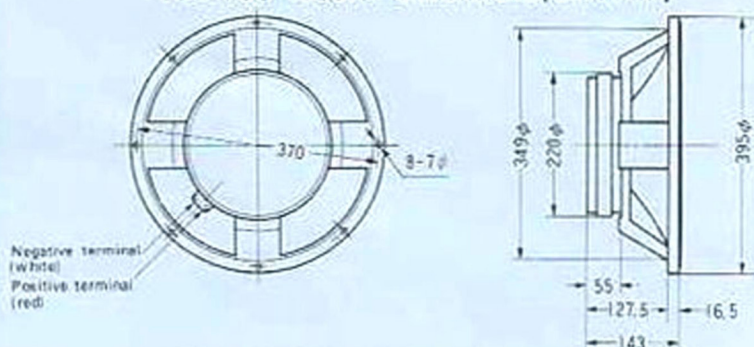


Air-tight enclosure:

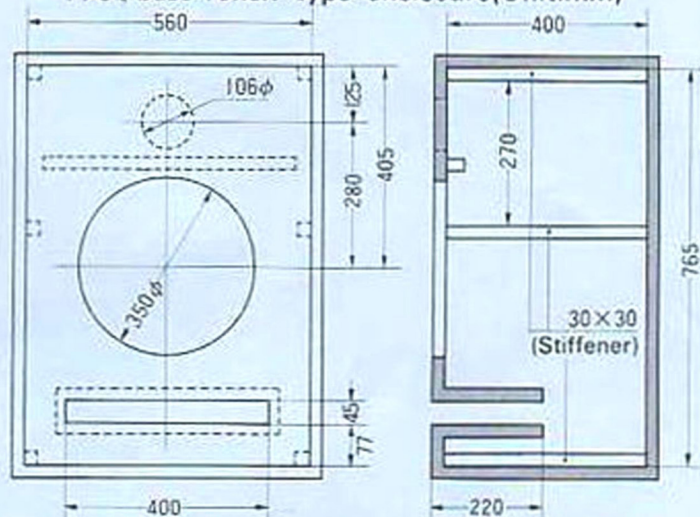
Acoustic material is loosely and fully filled inside the enclosure. In a large-volume enclosure, it is effective to attach the material in a wave pattern.



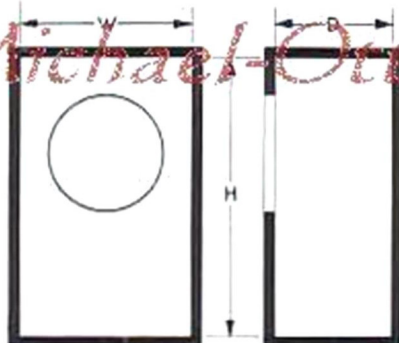
15L-100 Woofer dimensions(Unit:mm)



170ℓ bass-reflex type enclosure(Unit:mm)

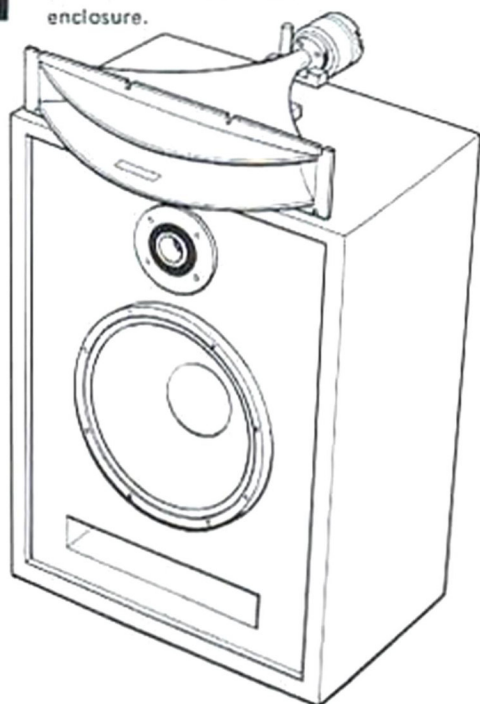


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Completed 3-way system

A 3-way system incorporating the 15L-100 woofer, the H-100 tweeter, the combination of the M-100 mid-high range driver and the AH-501 horn unit, and the standard 170ℓ bass-reflex enclosure.



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