



SPEAKER SYSTEM KIT

50W/3-WAY 3-SPEAKER

10SA-7

MANUAL



eller
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CORAL AUDIO CORPORATION

Thank you very much for your purchase of the CORAL Speaker System Kit 10SA-7.

It is representative of our high-quality SA-7 series speaker kits, all of which have been designed and manufactured in accordance with our own speaker-making know-how and peripheral technology, based on the latest acoustic materials and theories, as well as on our long experience in the manufacture of such speaker kits as the TS-series, introduced in 1963, and the SA-1 series and SA-3series.

The fun of the kit lies in the fact that you can economically assemble a speaker system with your own hands and to your own liking—and you can obtain a better performance than you can from equivalent speaker systems available on the market!

Speaker cabinets for the SA-7 series kits may be selected from two designs (large and small) provided for your convenience. And with the design data provided for the cabinet for the woofer you can enjoy the pleasures of designing and experimenting on your own. You will not only be able to enjoy the creative acts of assembling, designing, and experimenting, but will be further rewarded with a high-quality speaker system that provides superior musical richness.

The 10SA-7 3-way 3-speaker system kit comes equipped with a 25-cm woofer for the low-range sound, a mid-range dome speaker, and a hard dome super-tweeter for the high-range reproduction, resulting in a superb combination of intense super low sounds, rich medium sounds, and sharp super high sounds.

The CORAL Speaker System Kit 10SA-7 allows you to use your hands to create enjoyment for your ears.

WOOFER

- The rigid aluminum diecast non-resonant frame prevents even very weak resonance and completely rules out distortion resulting from the frame. The mechanical appearance of the hair-line-machined frame gives a stylish touch to the whole system.

- A large 110φ(mm) ferrite magnet equipped with a holed pole piece is furnished in the magnetic circuit, minimizing distortion caused by non-linearity at the time of large amplitude and permitting powerful low-sound reproduction with effective damping.

- The cone paper, which is made of a special impregnating agent and choice pulp, is specially pressed—disregarding the possible profitability that could otherwise result from mass-production—and this ensures the most appropriate internal loss and a strength that remains unaffected by the air pressure inside the cabinet. The edges are sufficiently hand-coated with damping material over a layer of the same material and completely filled to improve the linear movement and damping efficiency. These features in combination ensure a smooth sound reproduction from the super low to the medium range with low distortion.

- The special heat-proof resin-treated voice coil guarantees a high input-resisting capability.

MID-RANGE SPEAKER

- The ideal diaphragm requires an elastic material that is free of specific resonance. For this reason, a special textile has been woven from select fibers exclusively for use as the material for the 10SA-7 diaphragm. The textile is coated with two layers of damping material and further hand-coated. This procedure achieves a damping efficiency that cannot be realized by machining, and brings about beautiful sound reproduction from the mid to the high range with a low distortion factor.

- The interior of the magnetic circuit and the vibrating area are filled with a different acoustic materials in order to eliminate standing waves

and unwanted resonance. Furthermore, the Low resonance frequency (fo) is restricted to an extreme minimum to minimize distortion.

- The strong magnetic circuit that uses a large 90φ(mm) ferrite magnet brings powerful criving and damping forces to bear on the vibration system in order to reproduce clear tones.

- CCAW is used to make the voice coil light in weight, and to maintain the optimum mass balance with the diaphragm, thereby expanding the limit of the high sound range, and greatly improving transient characteristics and resolution. The voice coil also possesses a high input-resisting properties since it receives the same special heat-resisting resin-treatment as the woofer.

- The distinctive and elegant color of the circular aluminum panel results from spin-machining followed by special treating.

TWEETER

- The diaphragm uses ultra-thin 18-micron-thick super Duralumin, which has been heat-treated in a precision electric furnace, in order to meet the requirements for light-weight and rigidity, and to provide a maximum high-range frequency that exceeds the audible frequency range.

- A wide-diffusion equalizer is equipped to provide outstanding directivity and high-range characteristics.

- A light-weight voice coil with an edge-wise winding of high-conduction aluminum alloy ribbon wire fully and effectively utilizes the high magnetic flux density of the precision magnetic circuit. The voice coil—in combination with the rigid, light-weight diaphragm—functions with high efficiency and provides excellent transient characteristics and resolution.

- The circular aluminum panel has been spin-machined and specially treated in the same manner as the mid-range speaker, with the result that its color also has an eye-pleasing elegance.

DIVIDING NETWORK

- A full-fledged constant-impedance, continuously-variable attenuator is employed exclusively for the tweeter as well as the mid-range speaker, permitting smooth level control.

- A large ferrite core with a high permeability and an impedance-compensating circuit are used for the woofer, preventing non-linear distortion at the time of a large input and providing outstanding transient characteristics.

- A metalized polyester condenser, which has a high quality factor, low loss characteristics, and high input-resistibility, is employed for the tweeter and the mid-range speaker, providing excellent transient characteristics and creating a sound quality with a high resolution ability.

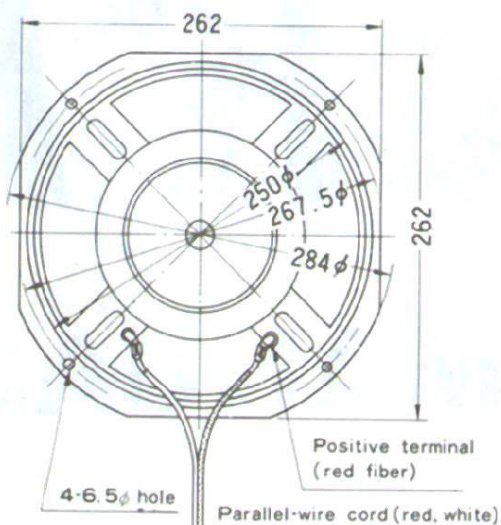
- A printed circuit board is used to ensure high reliability.

- AMP tips are equipped at the wire ends to make connections to each speaker easy and firm without soldering.

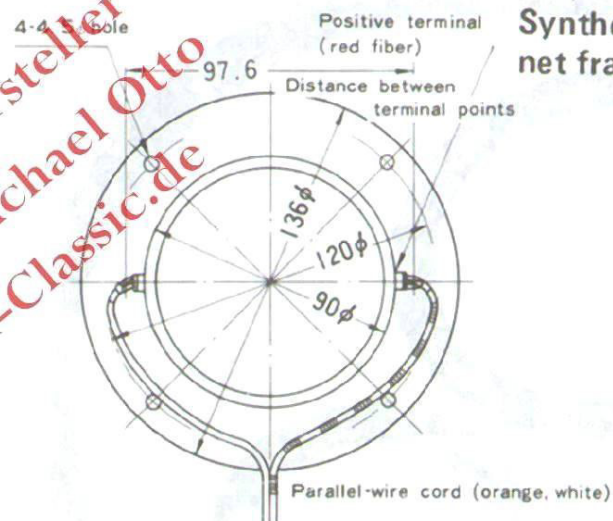
CABINET

The cabinet is built on a “do-it-yourself” basis. Drawings are found in this manual for two different types (A and B). An enclosure kit (Model EK-45) and a baffle board (Model 45B-10A), both equivalent to the Type A cabinet, are separately available.

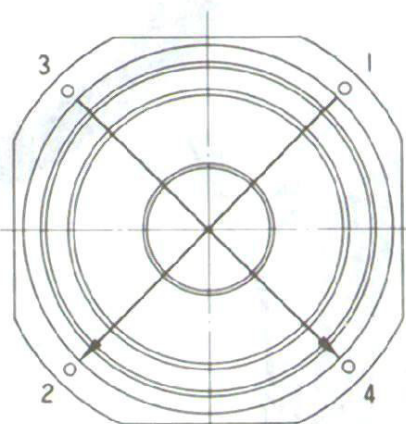
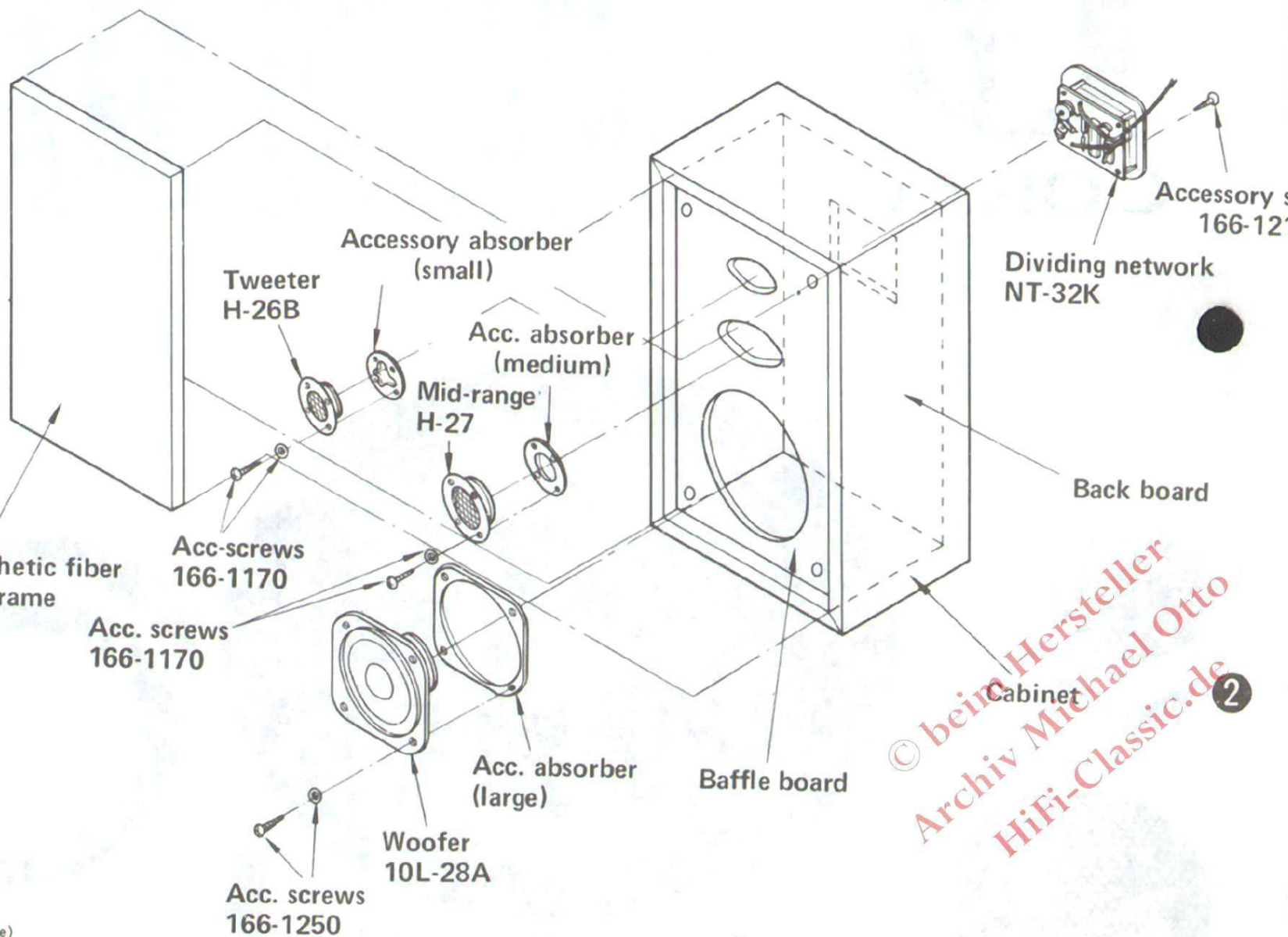
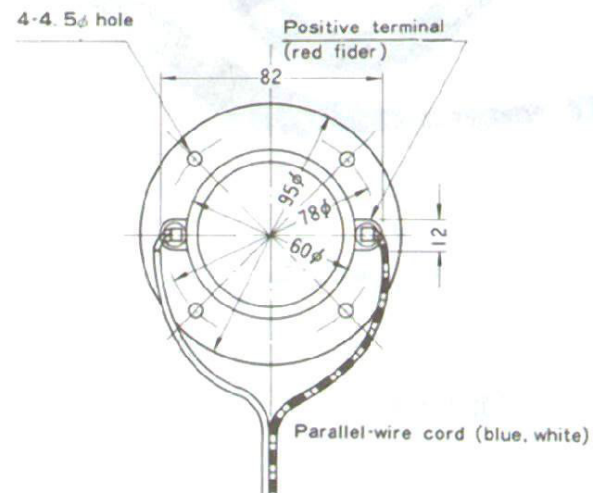
4 Woofer 10L-28A



Mid-range H-27



Tweeter H-26B



3

★ HOW TO ASSEMBLE THE 10SA-7 SPEAKER SYSTEM

CABINET-MAKING

1. Drawings are shown in Fig. 1 for the two types of cabinets designed for the 10SA-7 system.
2. Luan plywood board or particleboard with a thickness of more than 18mm is ideal.
3. Be sure to use woodworking bond and assemble in the proper manner so as not to cause any disparity.
4. To fix the synthetic fiber net over the frame, use a piece approximately 10cm larger (vertically and horizontally) than the size of the frame, wrap the frame with the net by folding the edges over the back of the frame, and fix the folded edges in place with staples. Care should be taken to stretch the net fully in all directions without distorting the flow

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of the fabric pattern and leaving sags, which could cause unwanted vibration. Cut off the excess edge portions of the net after stapling. The net may be moistened by spraying water on it prior to the application to help achieve a good result.

5. The net can affect the performance of the speakers. A good material with proper sound permeability should be used to prevent the net from flapping in the low-sound range and unfavorably damping high-range sound.

The net frame should be mounted on the baffle board by means of fasteners that are commercially available.

7. Glass wool or felt should be used as the acoustic material. It should be applied on the four sides of the cabinet interior (top, bottom, right, and left) and on the backboard by bonding in a thickness of approximately 25mm.

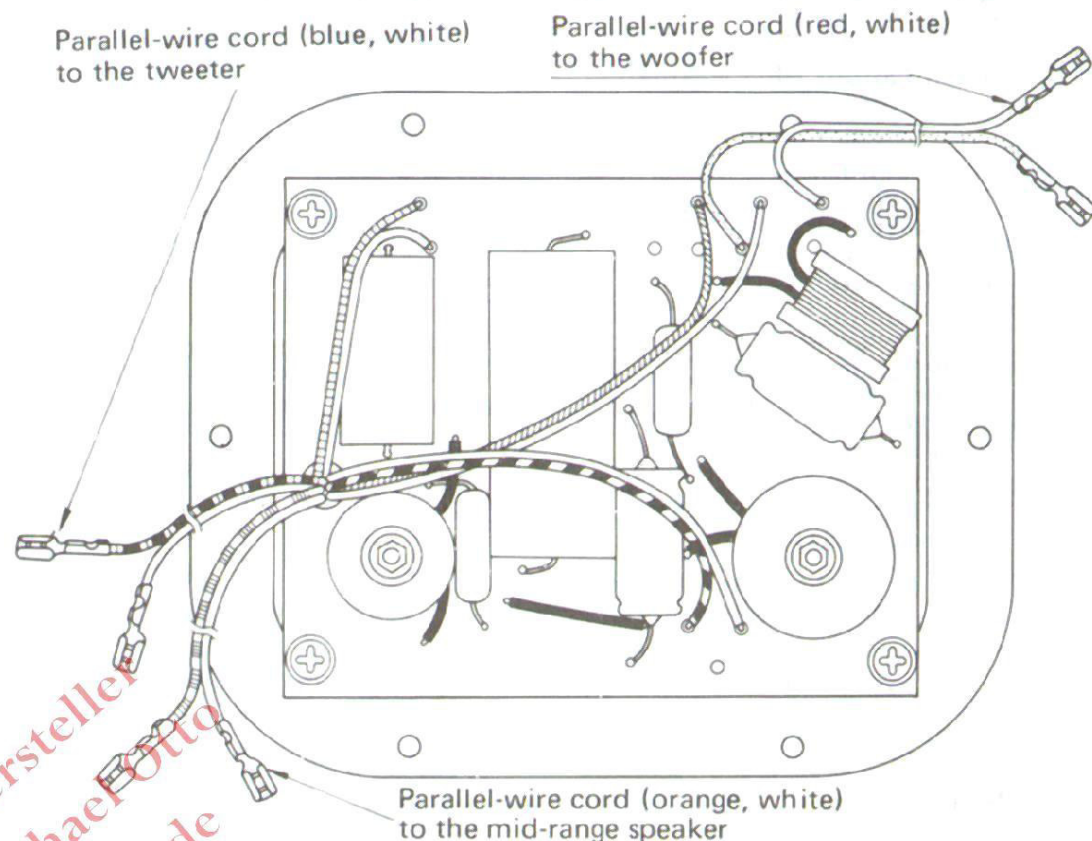
WIRING AND SPEAKER-MOUNTING

(Refer to Figs. 2 to 5)

1. Paste the accessory absorbers on the back of each speaker after peeling off the backstrip.
2. Fix the network on the backboard with the accessory screws.
3. Insert the proper wiring cord (identified by colors) into the hole for the corresponding speaker and pull it out.
4. Complete the wiring first for the tweeter and then for the mid-range speaker and the woofer, and firmly mount them as illustrated in Fig. 2.
5. Wiring should be made by firmly inserting the AMP tip of each cord to its corresponding lug terminal after confirming the polarity and the color of the parallel-wire cord as shown in Figs. 4 and 5. The white colored wire of each cord is for the negative connection.
6. Each speaker should be clamped with the accessory wood screws and washers in diagonal positions, as shown in Fig. 3.

PERFORMANCE TEST

1. The 10SA-7 is designed for an impedance of 8 ohms. The amplifier should therefore have an optimum load impedance of approximately the same value.
2. Connect the input terminals of the speaker system to the output terminals of the amplifier with the accessory cord after confirming the proper polarities.
3. Set both tweeter and mid-range speaker level control knobs on the dividing network at their MIN (minimum) positions.
4. Using a musical source of good quality (tape, record, FM broadcast, etc.), set the volume of the amplifier at its MINIMUM position, and then turn on the amplifier.
5. Gradually increase the volume of the amplifier and check to determine if sound comes out of the woofer. Then gradually turn the level



control knob of the dividing network clockwise to check whether sound is reproduced through the mid-range speaker. Repeat the same procedure to test the tweeter.

6. Set the level control knobs at their NORMAL positions and check to determine whether well-balanced sound is reproduced by the tweeter and the mid-range speaker. If satisfactory, set the level control knob at the position of your preference.
7. If no sound comes out of the speakers, or if an abnormality is detected, turn off the amplifier and check all the connections and wiring.

CAUTION

1. When using the system in combination with another system, such as a stereophonic system, the polarities of the connections between the amplifier and the speaker systems must definitely conform. If they do not, and thus supply different phases to the systems, not only will the performance of the speakers be marred, but the stereophonic effect will also be adversely affected.
2. Do not use the speakers when they are in an unmounted position. If it is absolutely necessary to do so, keep the input power at an appropriately low level.

Specifications contained herein are subject to change without notice in order to effect improvements.

SPECIFICATIONS & CHARACTERISTICS OF 10SA-7

Specifications of Speakers

Model	Woofer 10L-28A	Mid-range H-27	Tweeter H-26B
Input impedance	8Ω	8Ω	8Ω
Low resonance frequency (fo)	27Hz	—	—
Output sound pressure level (1W 1M)	94dB	94dB	96dB
Rated frequency response	fo~4,000Hz	1,200~20,000Hz	8,000~40,000Hz
Magnetic flux density	11,600 gauss	15,000 gauss	13,000 gauss
Total magnetic flux	126,000 Maxwell	85,000 Maxwell	20,000 Maxwell
Weight	2,100g	975g	360g

* JIS C-5531

woofer specifications (for reference)

Effective radius of diaphragm:	10.65cm
Effective mass of vibrating system:	27g
α (impedance-increasing ratio at fo):	10.0 (mean)
Q _m :	3.5 (mean)
Q _o :	0.35 (mean)

Performance of 10SA-7 in Recommended Cabinets

	Cabinet A	Cabinet B
Cabinet type	Closed box	
Speaker system	25cm 3-way 3-speaker	
Input impedance	8Ω	
Low resonance frequency (for reference)	57Hz	65Hz
Output sound pressure level (1W 1M)	93dB	
Frequency response	35~40,000Hz	40~40,000Hz
Music power input	50W	
Crossover frequency	1,200 : 10,000Hz	

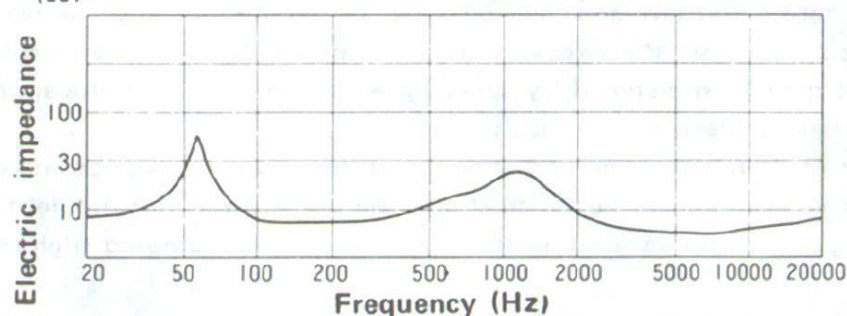
* Variable depending on the quality and quantity of the acoustic material used.

PARTS LIST FOR 10SA-7 KIT

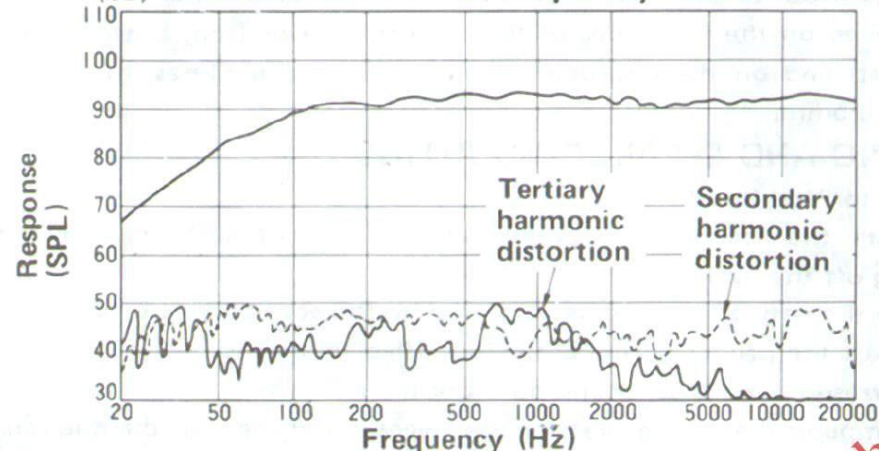
Item	No./Spec.	Q'ty	Code, etc.
Woofer	10L-28A (8Ω)	1	
Mid-range	H-27 (8Ω)	1	
Tweeter	H-26B (8Ω)	1	
Dividing network	NT-32K	1	
Accessory cord	Grey, parallel	1	
Acc. screw (1)	For tweeter	1	166-1170
" (2)	For mid-range	1	166-1170
" (3)	For woofer	1	166-1250
" (4)	For dividing network	1	166-1210
Acc. absorber (1)	For tweeter	1	Small
" (2)	For mid-range	1	Medium
" (3)	For woofer	1	Large
Emblem	Coral mark	1	
Name plate		1	

CHARACTERISTICS OF 10SA-7 IN TYPE-A CABINET

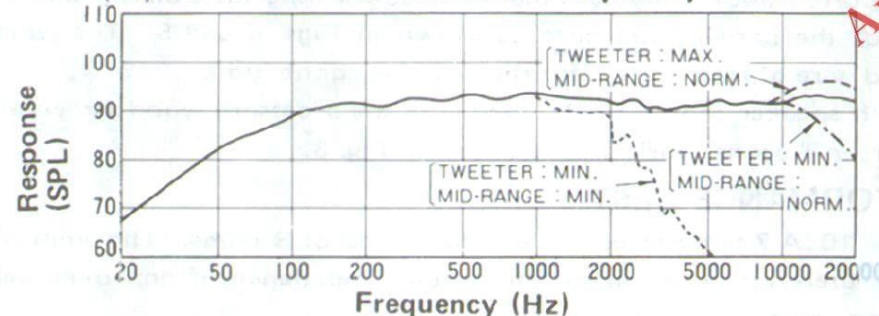
(Ω) Electrical impedance/frequency characteristic



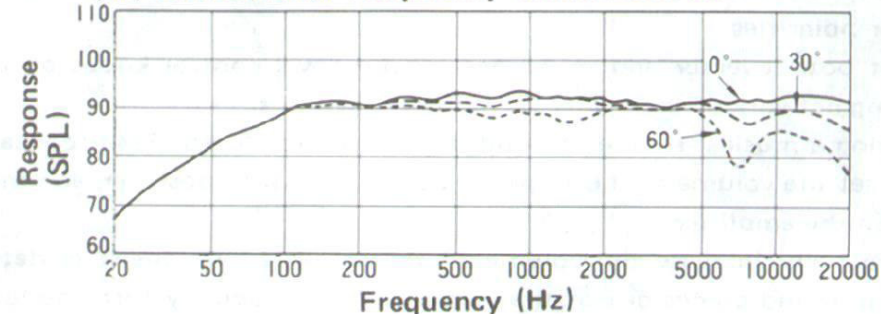
(dB) Harmonic distortion/frequency characteristic



(dB) Level control variation/frequency characteristic



(dB) Directional frequency characteristic



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