Service Manual

Linear Phase Speaker System

SB-E200
(XG), (XGE), (XGF)

SPECIFICATIONS

Type: 3 way, 3-speaker system
Speakers: Woofer 30cm (12") cone type
Midrange: Horn type
Tweeter: Horn type
Impedance: 6 ohms
Input Power: 150W, Music
100W, DIN (RMS)
Output sound-pressure level: 94dB/W (at 1m)
Crossover Frequency: 1500Hz, 6500Hz
Frequency Range: 37~22000Hz
Dimensions: 63.3(W)×61.8(H)×44.1(D) cm
24-7/8"(W)×24 3/8"H)×17 3/8"(D)
Weight: 27.5kg (60.6 lbs)

TECHNISCHE DATEN

Typ: System mit 3 Lautsprechern
und 3 Bereichen
Lautsprecher: 30cm-Tiefentonsprachker
Kurzzeit
Impedanz: 6 ohms
Spitzenleistung: 150W, Music 100W, DIN (RMS)
Abgegebener Schalldruckpegel: 94dBW (im Abstand von 1m)
Überschneidungs-Frequenz: 1500Hz, 6500Hz
Überschneidungsfrequenz: 37~22000Hz
Abmessungen: 63.3(W)×61.8(H)×44.1(D) cm
24-7/8"(W)×24 3/8"H)×17 3/8"(D)
Gewicht: 27.5kg (60.6 lbs)

CARACTERISTIQUES TECHNIQUES

Type: Système à 3 haut-parleurs et
3 canaux
Haut-parleurs: Woofers 30cm à cône
Impédance: 6 ohms
Entrée maximale instantanée: 150W, Music 100W, DIN (RMS)
Pression du niveau sonore de sortie: 94dBW (à 1m)
Fréquence de commutation: 1500Hz, 6500Hz
Gamme de fréquences: 37~22000Hz
Dimensions: 63.3(W)×61.8(H)×44.1(D) cm
24-7/8"(W)×24 3/8"H)×17 3/8"(D)
Poids: 27.5kg (60.6 lbs)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan
■ FEATURES

- High efficiency, high input resisting 30cm woofer
  In order to make the most of the horn type speaker system, the woofer is required to be highly efficient and to have a frequency characteristic to go smoothly with the mid-range. In this respect, the system uses Canadian coniferous pulp and cones with liner elements combined, thus assuring a high efficiency of 95dB/W(1.0m). Also, to improve the linearity coping with a large input, well-ventilated high compliance dampers and non-directional urethane edges are employed. Furthermore, polyester insulator and polyamide layers are used for the voice coils, and extra-high heat resisting resin film is used for the bobbins so that the system is able to withstand continuous since waves of as high as 100 Watts (DIN RMS).

- Wide-directional radial horn mid-range
  Frequency characteristics with wide-band and excellent directivity are obtained with a radial horn widening at 150 deg. from aluminum die-cast horn throat and newly developed shell type equalizer (mid-range). The driver section is made of extra-thin aluminum alloy of 35µ, 30µm thick, and the edge, provided with slits, employs perforated pole pieces to improve the low-range characteristic, and is high input resisting with heat radiating aluminum bobbin of µm, CCAW (copper coated aluminum wire), and heat resisting voice coils.

- Wide-directional radial horn tweeter
  This wide-directional radial horn, widening at 150 deg., is of high precision solid type made of aluminum diecast. The driver section consists of metalized polyester film vibrating reeds and employs a powerful magnetic circuit using a large aluminum magnet, and is high input resisting with use of heat resisting voice coils.

- Linear phase network
  Linear phase characteristics are obtained by a dividing network combining 12 dB/oct and inductive M types, thus making reliable transfer of waves possible. Also, low-distortion filament cores are employed for choke coils.

- Control tower
  It is equipped with a thermal relay protection circuit in order to protect the mid-range and tweeter from excess input or abnormal signals. Also, to use it as a multiamp system, it is provided with multi-amp input terminal along with a multi-amp switching connector. Besides these functions, dividing network, level control and input terminal are concentrated at the control tower which also serves to secure drivers of the mid-range and tweeter, thus improving the controllability.

■ POWER HANDLING CAPACITY

The power handling capacity of this speaker system is 150 watts (music), and 100 watts DIN (RMS).
If the following special types of signals are applied to the speaker system, be sure to reduce the volume level of the amplifier.
1. Interstation hiss on the FM broadcast band.
2. Output from a tape deck during fast forward or rewind.
3. Acoustic feedback from a microphone or an electric musical instrument.
4. "Shock" noise which occurs when the power switch of amplifier, etc, is turned on or off, when input or output connection cords are connected or disconnected, or when a phono cartridge is replaced.
**LOCATION OF CONTROLS**

- Control tower
- Tweeter horn
- Midrange horn
- Woofer
- Woofer input
- Midrange input
- Multi-amp system input
- Multi-amp connector
- System input
- Reset button
- Level control (Tweeter)
- Level control (Midrange)

**MULTI-AMP SYSTEM**

- The impedance of each unit of woofer, midrange and tweeter is 6Ω. Therefore, make sure that the load impedance of the amp used ranges from 4Ω to 16Ω.
- When the multi-amp switching connector is set to “multi-amp system”, the network, level control and protection circuit of this system are disconnected. The sound volume of each unit can be adjusted by turning the volume knob of each amp.
- It is recommended to use the system with crossover frequencies between speakers as follows:
  - Woofer – Midrange: 1.2kHz ~ 2kHz
  - Midrange – Tweeter: 5kHz ~ 10kHz
- In order to protect the speaker unit against low-range noise from the amp, connect a bipolar condenser of about 68μF between amp and speaker, and about 10μF to tweeter respectively in series.

**SPEAKER PROTECTION CIRCUIT**

This system is equipped with a speaker protection circuit to protect the speaker from excess input or abnormal signals. If excess input is applied to the speaker, it will be automatically cut off by the protection circuit.

- When the tweeter or midrange stops producing sounds (treble or mean) during playing:
  1. Turn down the volume of the amp,
  2. Check for abnormality in the system,
  3. If the system is normal, wait for 20 sec.,
  4. And then push the reset button to cancel the protection circuit.
- After resetting the protection circuit, do not increase the volume of the amp.
**H ow to Remove Each Unit**

* Connections of each unit

<table>
<thead>
<tr>
<th>Woofer</th>
<th>Midrange</th>
<th>Tweeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Red</td>
<td>+ Orange</td>
<td>+ Yellow</td>
</tr>
<tr>
<td>- Green</td>
<td>- Blue</td>
<td>- Black</td>
</tr>
</tbody>
</table>

*Woofers*
1. Woofer can be detached by removing 4 hexagon socket head bolts (XVES6B25X1).

*Midrange*
1. Remove 4 set-screws (XVES5B10X1S & XVES5B70X1S) to detach tower.
2. Remove woofer section.
3. Remove 2 set-screws (XSN4+12S) of horn angle.
4. Remove 4 set-screws (XSN4+45S) of midrange horn. Then take out midrange horn.
5. Unit can be detached by removing midrange set-screws (XSN4+12S).

*Tweeter*
1. Detach tower section.
2. Remove 2 set-screws (XSN4+12S) of horn angle.
3. Unit can be detached by removing 4 tweeter set-screws (XSN4+12S).

**Replacement Parts List**

*NOTE: 1 Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.*

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Part No.</th>
<th>Part Name &amp; Description</th>
<th>Ref No.</th>
<th>Part No.</th>
<th>Part Name &amp; Description</th>
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<tbody>
<tr>
<td>1 1</td>
<td>SK4B200G</td>
<td>Cabinet (Walnut)</td>
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<td>XWS404</td>
<td>Washer Flange</td>
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<td>1 2</td>
<td>SY189</td>
<td>Screw, Nut</td>
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<td>XWS4X4</td>
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<td>1 3</td>
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<td>2</td>
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<td>Spacer, Mid Range horn</td>
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<td>2 2</td>
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<td>3</td>
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**6**
1. Amplitude/Frequency Response and Phase/Frequency Response (MIC-SP, 2m, Input Voltage 2.45V)

2. Harmonic Distortion Characteristics (MIC-SP, 2m, Input Voltage 2.45V)

3. Directional Characteristics and Impedance Response (MIC-SP, 2m, Input Voltage 2.45V)
--- PACKINGS ---

--- REPLACEMENT PARTS LIST ---

NOTES: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. SB-E200(XGE) → (XG) SB-E200(XGF) → (XGE)

<table>
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<td>SGF10049</td>
<td>Instruction Book</td>
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<td>A2</td>
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<td>ACCESSORY PARTS</td>
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