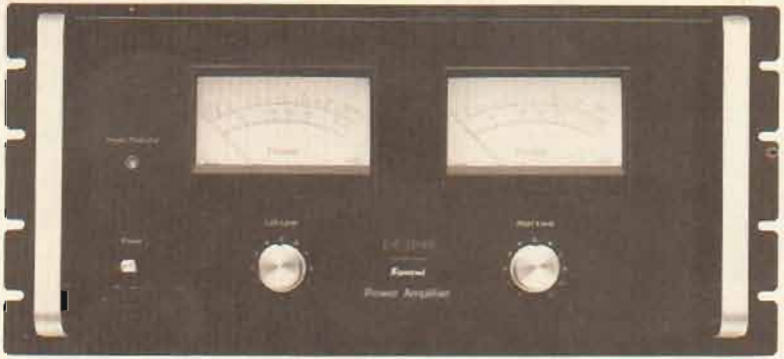
SANSUI

BA-5000

MODE D'EMPLOI
BETRIEBSANLEITUNG
OPERATING INSTRUCTIONS



AMPLIFICATEUR DE PUISSANCE
ENDVERSTÄRKER
POWER AMPLIFIER

Sansui SANSUI ELECTRIC CO., LTD.

We are grateful for your choice of the BA-5000 stereo power amplifier. Before you begin operating your BA-5000, we suggest that you read this booklet of operating instructions once carefully. You will then be able to connect and operate it correctly, and enjoy its unusual performance for years.

Table of contents

ATTENTION: Pour éviter les danger d'electrocution ou d'incendie, ne pas exposer cet appareil à la pluie ou à l'humidité.

WARNUNG: Setzen sie dieses Gerät zur Verhütung von Feuer- und Stromschlaggefahr weder Regen noch Feuchtigkeit aus.

WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

IMPORTANT PRECAUTIONS

Installation

* Do not expose the unit to rain or sun. Such exposure may eventually be the cause of circuit burnout, fire, or give electric shock to whoever touches the unit.
* Avoid extremely dusty locations or close proximity to heating appliances.
* Never remove the side and bottom plates. Such removal is both physically and electrically dangerous.

Rack mounting

Never mount the unit by its front panel alone; always support it with a solid shelf or metal bracket. When mounting the unit on a special rack, use supporting metal and boards designed specifically for heavy items. The slits on the front panel are pitched according to the EIA standard.

Heat dissipation

There are ventilation outlets on the top and bottom plates, and on the side and rear panels. Leave enough space around these ventilation outlets, and take extra care about ventilation when mounting the unit on a rack.

As the temperature rises, the rear panel fan automatically begins to rotate. Cool air is taken in from the rear panel intake and heated air is exhausted from the outlets on the side panels. However, since the fan, though scarcely audible, generates noise, it is advisable to allow a free, not fan-forced, flow of air by leaving space around the ventilation outlets. Should the internal temperature rise to a dangerously high level, the built-in protection circuit will operate, cutting the output temporarily.

AC outlet

The UNSWITCHED AC outlet on the rear panel has a 150-watt capacity. Never connect a component which consumes power more than 150 watts.

Connection of speaker systems

Before you connect any speaker system to the unit, be sure to check its maximum handling power (shown in watts) and its impedance (in ohms), specified on the speaker system itself or its operating manual.

Maximum handling power

The rated output power of the unit is 300 watts per channel into 8 ohms in stereo operation or 600 watts into 8 ohms in mono operation. If your speaker system has a lower handling power than the unit, do not increase the volume beyond the system's maximum handling power.

Impedance

In STEREO operation:

The speaker systems to be connected may have any impedance between 2 and 8 ohms. Though you cannot have the unit's rated (maximum) output power, a system with a 16-ohm impedance may also be connected.

In MONO operation:

The speaker system may have any impedance between 4 and 16 ohms.

Note on speaker connection: Since the unit has the output transformer at the speaker output, connections are simple: Use the rear-panel SPEAKER SYSTEM terminals corresponding to the impedance of your speaker system (2, 4, 8 or 16 ohms). If your system has a impedance between 2 and 4 ohms, use the terminals with a smaller figure. For instance, use the "2 ohms" terminal when connecting a system with a 3-ohm impedance.

IMPEDANCE D'ENCEINTE ACOUSTIQUE
LAUTSPRECHERIMPEDANZ
SPEAKER IMPEDANCE

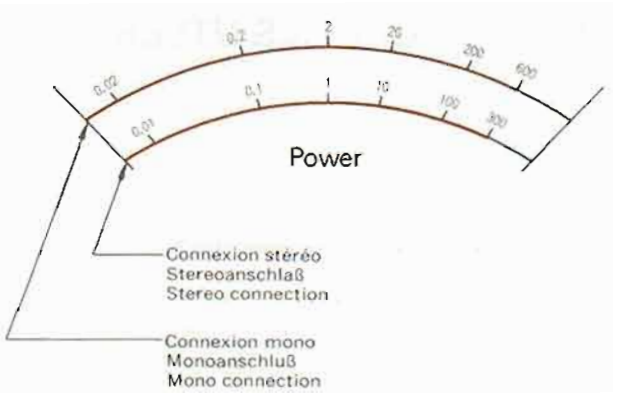
Mode de fonctionnement	Position du commutateur de MODE	Les enceintes acoustiques doivent avoir une IMPEDANCE
Betriebsart	Betriebsartenschalterstellung (MODE)	IMPEDANZ der angeschlossenen Lautsprecher
Operation mode	MODE switch position	IMPEDANCE connected speakers should have
Stéréo Stereo	2 canaux (2-CH) 2-CH	Plus de 2 ohms Mehr als 2 Ohms More than 2 ohms
Mono	MONO	Plus de 4 ohms Mehr als 4 Ohm More than 4 ohms

POWER meter calibration

The POWER meters indicate the rms power output obtained when the unit is connected for stereo operation.

In mono operation (connection), however, you can obtain the correct power output by doubling the indicated watts. For instance, when the meters are indicating 10 watts in mono operation (connection), you have actually 20 watts.

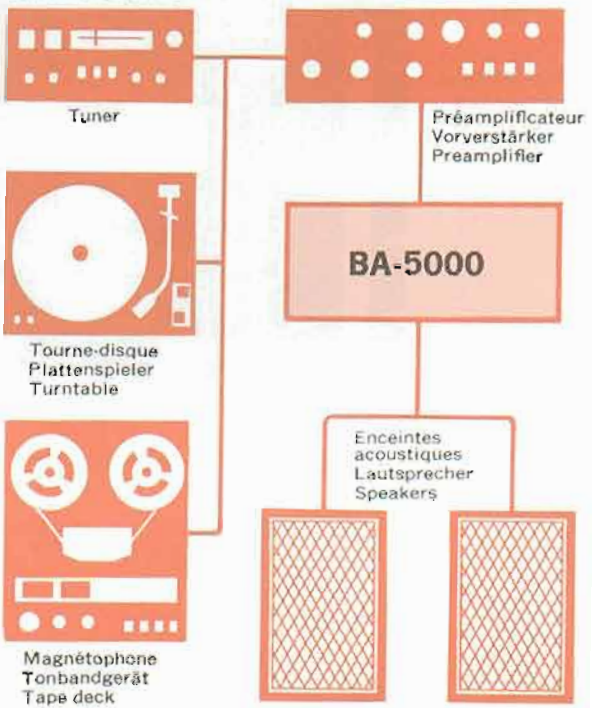
The decibel (dB) calibrations show the relative output in reference to the unit's rated (maximum) output power. Thus the 0dB level means a 300-watt (rated) output in stereo operation or a 600-watt (rated) output in mono. Read the dB calibrations when you adjust the volume in relation to the unit's rated output.



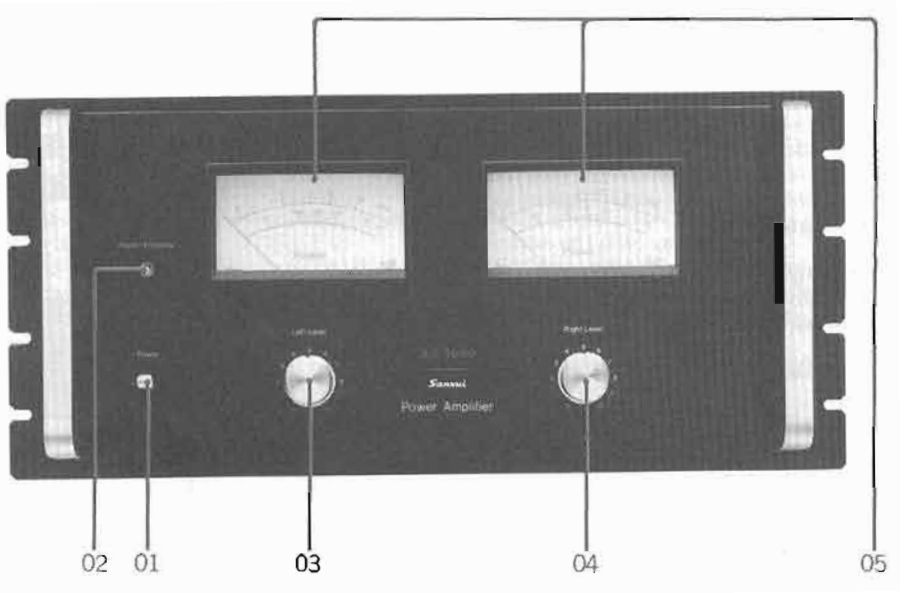
FUNCTIONAL FEATURES

- 300 watts per channel power
  Very high degree of musical reproduction at all times under any listening condition. Your unit offers power of 600 watts in mono operation.
- Two-color LED power/protector indicator
  The POWER/PROTECTOR indicator of your unit glows green when the unit is operating safely. It turns red when the heat sink is overheated or when other malefunctions occur, indicating the built-in protection circuits have activated.
- Built-in power meters
  You can read directly the correct output power from 0.01 watts to 300 watts without resourse to usual sensitivity controls. These meters are calibrated in both watts and decibels.
- Level controls
  They adjust the input levels to achieve the output level adjustments.
- Complete protection circuits
  Your unit and speakers are fully protected from possible damage due to overheat and overcurrent. The output transformer prevents the DC current from generating at the speaker terminals.

MONTAGE D'UNE CHAINE AUDIO
AUFBAU EINES AUDIOSYSTEMS
CONSTRUCTION OF AN AUDIO SYSTEM



INDICATIONS SUR LE PANNEAU/SCHALTTAFELINFORMATION/ PANNEL INFORMATION



- Les nombres entre parenthèses se réfèrent aux pages dans lesquelles figurent les descriptions correspondantes.

01 Bouton interrupteur (POWER) (pages 20, 21)
02 Indicateur protection protection/puissance (POWER/PROTECTOR) (pages 20, 21)
03 Bouton de niveau gauche (LEFT LEVEL) (pages 22, 23)
04 Bouton de niveau droit (RIGHT LEVEL) (pages 22, 23)
05 Indicateurs de puissance (POWER) (pages 22-25)

- Die Zahlen in Klammern bezeichnen die Seiten, auf denen die Beschreibung gegeben ist.

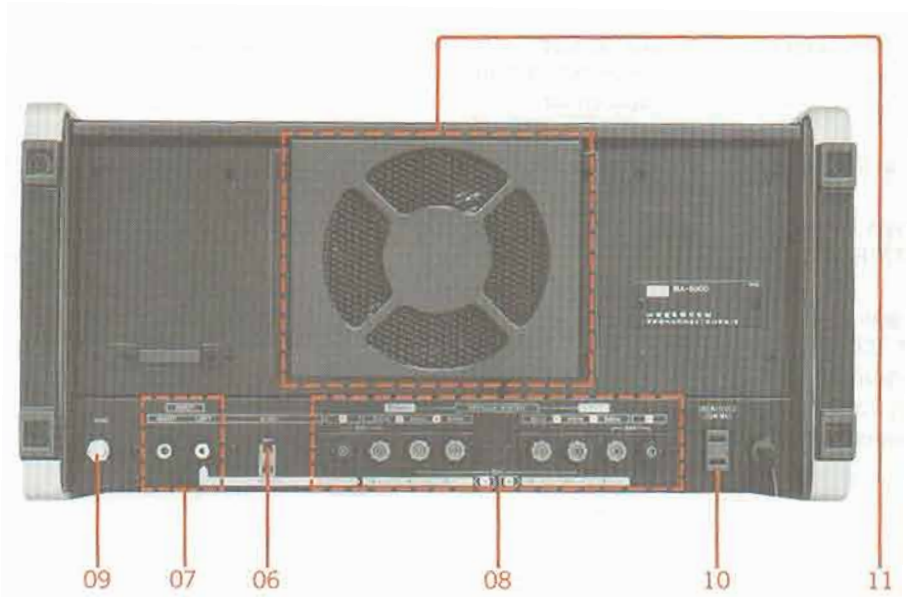
01 Netzschalter (POWER) (Seiten 20, 21)
02 Netz/Schutzstromkreisanzeige (POWER/PROTECTOR) (Seiten 20, 21)
03 Linker Pegelregler (LEFT LEVEL) (Seiten 22, 23)
04 Rechter Pegelregler (RIGHT LEVEL) (Seiten 22, 23)
05 Leistungsmesser (POWER) (Seiten 22-25)

- Numbers in parentheses refer to pages on which related description appears.

01 POWER Switch (pages 20, 21)
02 POWER/PROTECTOR Indicator (pages 20, 21)
03 LEFT LEVEL Control (pages 22, 23)
04 RICHT LEVEL Control (pages 22, 23)
05 POWER Meters (pages 22-25)

INDICATIONS SUR LE PANNEAU/SCHALTTAFELINFORMATION/ PANNEL INFORMATION

10



- Les nombres entre parenthèses se réfèrent aux pages dans lesquelles figurent les descriptions correspondantes.

06 Commutateur de mode (MODE) (pages 14, 15)
07 Bornes d'entrée (INPUT) (pages 16-19)
08 Bornes de haut-parleurs (SPEAKER SYSTEM) (pages 16-19)
09 Borne de terre (GND) (pages 16, 17)
10 Prise de courant non commandée (UNSWITCHED) (pages 4, 5)
11 Ventilateur de refroidissement d'air (pages 2, 3)

- Die Zahlen in Klammern bezeichnen die Seiten, auf denen die Beschreibung gegeben ist.

06 Betriebsartenschalter (MODE) (Seiten 14, 15)
07 Eingangsklemmen (INPUT) (Seiten 16-19)
08 Lautsprecherklemmen (SPEAKER SYSTEM) (Seiten 16-19)
09 Erdungsklemme (GND) (Seiten 16, 17)
10 Gerätesteckdose (UNSWITCHED) (Seiten 4, 5)
11 Kühlventilator (Seiten 2, 3)

- Numbers in parentheses refer to pages on which related description appears.

06 MODE Switch (pages 14, 15)
07 INPUT Terminals (pages 16-19)
08 SPEAKER SYSTEM Terminals (pages 16-19)
09 GND (Grounding) Terminal (pages 16, 17)
10 UNSWITCHED AC Outlet (pages 4, 5)
11 Air-Cooling Fan (pages 2, 3)

CONNECTION

Notes

- When you connect the unit to the power line or speaker systems, or re-locate it, be sure to turn the POWER switch of the unit to OFF or unplug its power cable from the wall AC outlet.
- Connection cables should be as thick as possible and be of the low-capacitance, low-resistance type.
- Noise and breakdown may be caused when connection is imperfectly made or when exposed leads of cables are in contact with the unit or other equipment. Therefore, when connections are completed, check that connections are correctly made and that the plugs and connection cables are in proper working condition.
- When connecting speakers, first check their power handling capacity and impedance (refer to pages 4, 5).

Power consumption

The unit consumes more than 1KW of power (more than 10A of current) when driven at its rated power. Therefore, when the unit and another power-consuming appliances are used at the same time, the safety fuse on the house wiring may be blown or the power breaker may operate. Danger is great especially when you drive the unit near its rated power. Consult with your nearest electrical shop if fuses are blown or if the breaker has activated frequently. Be sure not to use a thin AC extension cord with current capacity of less than 15A or connect the unit to an auxiliary outlet on another component.

Stereo connection vs. mono connection

When using more than two speaker systems in mono operation, it is recommended that you connect them as if for stereo operation.
When connecting two speaker systems with an 8-ohm impedance, you can connect them in parallel using the SPEAKER SYSTEM 4 OHMS terminals. But since the total volume (output) is the same whether the unit is in its mono or stereo connection, it is convenient to undertake stereo connection when using a number of speakers even in mono operation; switch the mode to mono with the switch on your preamplifier and feed mono signals to both the left and right channels. It is advisable to undertake mono connection only when you connect mono components to the unit and when you need extra large power.

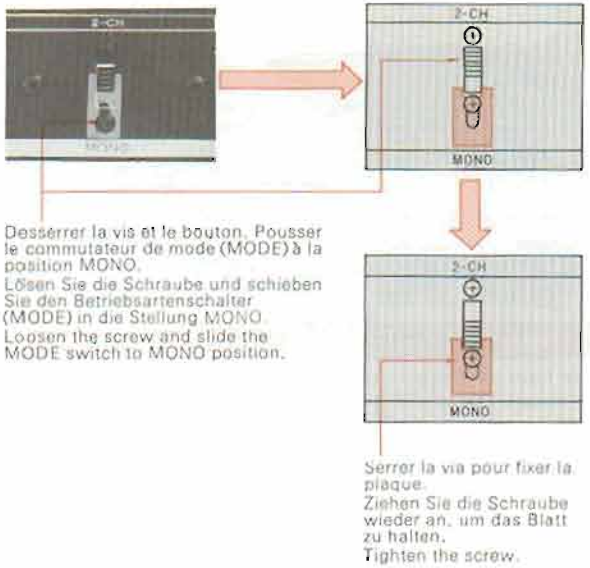
Stereo vs. mono

Connection changeover

In mono operation, the MODE switch on the rear panel must be changed over and the input/output terminals re-connected, since your unit is shipped from our factory adjusted for stereo operation (the MODE switch set to 2-CH).
When you change over the operation mode from stereo to mono or vice versa, observe the following instructions.

1. Set the POWER switch to OFF and turn the LEVEL controls to minimum (0).
2. Disconnect cables if they are already connected to the INPUT and SPEAKER SYSTEM terminals.
3. Loosen the screw fixing the mode switch holder and change the MODE switch over to 2-CH for stereo operation or to MONO for mono operation.
4. Connect output cables from your preamplifier to the unit's INPUT terminals and signal cables from your speaker systems to the unit's SPEAKER SYSTEM terminals. For details, refer to the section "Connection for stereo operation" or "Connection for mono operation."

CHANGEMENT DU COMMUTATEUR DE MODE
UMSCHALTEN DES BETRIEBSARTENSCHALTERS (MODE)
MODE SWITCH CHANGEOVER



Desserrer la vis et le bouton. Pousser le commutateur de mode (MODE) à la position MONO.
Lösen Sie die Schraube und schieben Sie den Betriebsartenschalter (MODE) in die Stellung MONO.
Loosen the screw and slide the MODE switch to MONO position.

Serrer la vis pour fixer la plaque.
Ziehen Sie die Schraube wieder an, um das Blatt zu halten.
Tighten the screw.

Connection for stereo operation

When you use your unit for stereo operation, be sure that the rear-panel MODE switch is set to 2-CH.

Connecting a preamplifier

Output cables from your preamplifier must be connected to the rear-panel INPUT terminals; check that left output cable is connected to the LEFT INPUT terminal and the right output cable to the RIGHT INPUT terminal.

Connecting speaker systems

Refer to the illustration on the right for connection; be careful not to confuse the plus polarity for the minus and vice versa. Also check the impedance of the connected speakers (see pages 4, 5).

Grounding

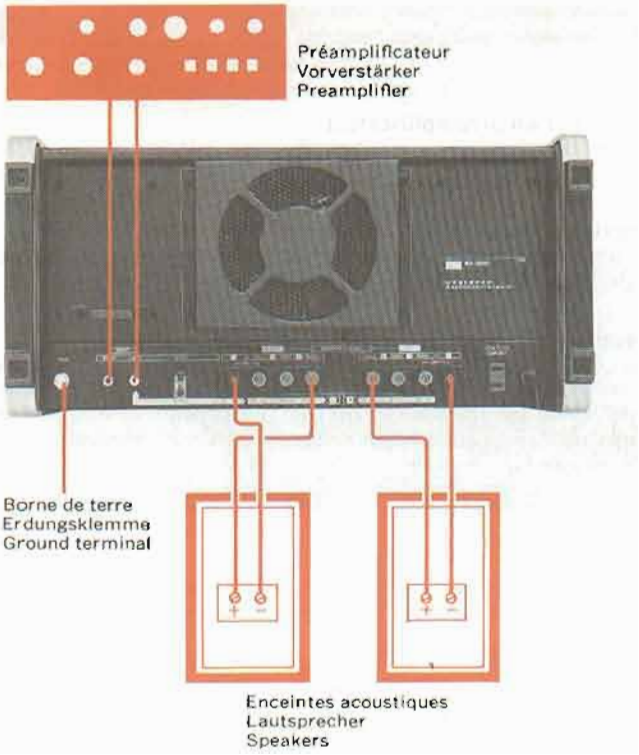
Grounding the unit may reduce hum during record playback and noise during AM reception.

Grounding the unit with other components

Grounding of audio equipment such as amplifiers is made with their chassis directly. Therefore, when connecting and grounding audio components, care must be taken that the chassis of each component is of the same potential. Since proper grounding is done when the input and output terminals of the components are connected via grounding cables, it is usually unnecessary to ground the unit with other component.

Grounding the unit to earth

Connect one end of a vinyl cord or enammeled cord to the GND terminal of the unit and the other end to a copper plate or carbon bar. Then bury the plate or bar deep under the ground. The other end of the cord may be connected to a water pipe unless it's made of vinyl. NEVER connect it to gas pipe, since it is dangerous. Earth grounding of the unit is unnecessary when one of the connected components is already grounded to earth.



Connection for mono operation

When you use the unit for mono operation, be sure that the rear-panel MODE switch is set to MONO.

Connecting a preamplifier

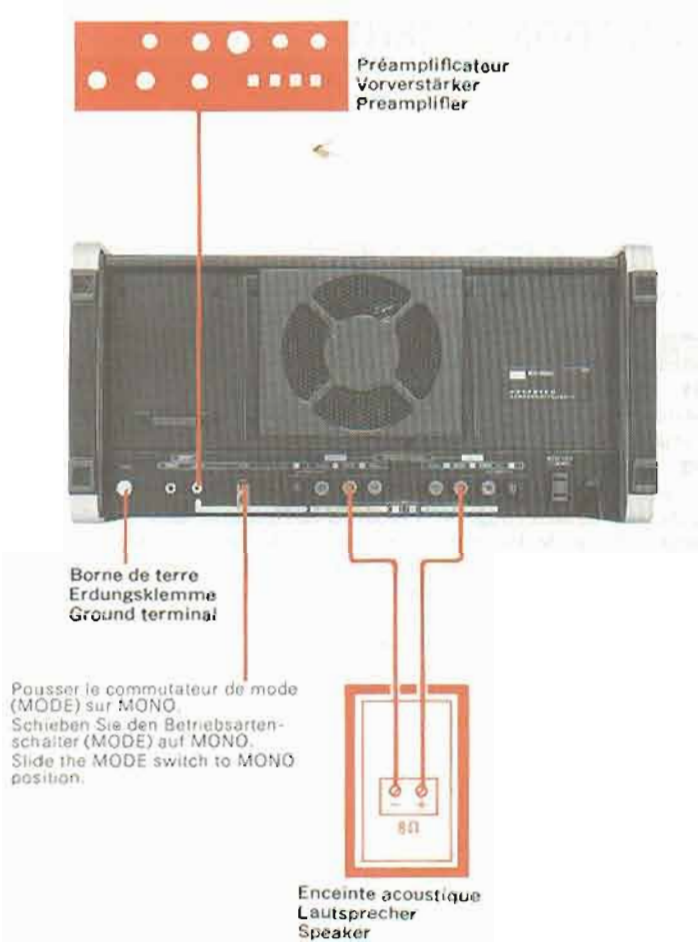
An output cable from your preamplifier must be connected to the INPUT LEFT terminal; no cable should be connected to the INPUT RIGHT terminal.

Connecting speaker systems

As shown in the illustration on the right, use only the plus terminals of the SPEAKER SYSTEM LEFT and RIGHT terminals, never use the minus terminals in mono operation.

Caution

Do not connect cables between the SPEAKER SYSTEM minus terminals and the GND terminal (or any other minus-polarity terminal). When measuring output power, do not make the minus terminals common; undertake separate connections as if for speakers.



OPERATION

The unit's LEVEL controls should be set at a position where the connected speakers will not be fed with a power exceeding their capacity even when the preamplifier's volume control is set at its maximum position.

1. Power

01 POWER Switch

Raise the switch to ON to turn the unit on, flip it down to OFF to turn it off.

02 POWER/PROTECTOR Indicator

When the POWER switch is set to ON, this indicator glows red, and it turns green a few seconds later to indicate safe operation of the unit. Where there is some breakdown somewhere in the unit's circuitry during operation, the indicator turns red.

If the indicator turns red during operation, turn the power off and check for possible cause. Causes of most often-experienced breakdowns include: inefficient heat dissipation, speaker terminal shorts, etc.

2. Adjusting power levels

03 LEFT LEVEL Control
04 RIGHT LEVEL Control
05 POWER Meters

- Adjust the levels of inputs applied to the unit with the LEVEL controls. Be careful when you use them, for output power may result in causing speaker damage when the controls are turned too far in the clockwise direction. Watch the POWER meter reading when you adjust the LEVEL controls; take care they do not indicate a watt calibration beyond the maximum handling power of the connected speakers or the rated output of the unit. Refer to pages 24, 25 for meter reading.

Adjusting input levels and overall volume

Adjustment should be carried out to obtain the normal listening level with the preamplifier output set at its rated level. Then you can enjoy the best performance of each connected component and also avoid accidental breakdown of connected component such as speakers. Adjustment should be undertaken in the following manner.

1. Turn the LEFT and RIGHT LEVEL controls to the minimum position (0).
2. Reproduce a program source and operate controls of the preamplifier for playback. Adjust the level controls of the preamplifier to obtain its rated output. If your preamplifier is not equipped with level meters (and you don't know the output voltage), turn its volume (level) control to its maximum position and then turn it 90 degrees counterclockwise.
3. Adjust the unit's LEVEL controls until the volume is a little louder than the normal listening level. Watch the POWER meters and be careful not to drive the speakers with power over their maximum handling capacity.
4. Fine-adjust the volume and balance with controls on the preamplifier.

Connecting two or more speaker systems

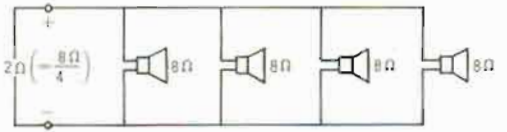
When connecting two or more speaker systems, for instance, to fill a spacious room with sound, they should all be of the same model if possible. Can must be taken regarding the speaker systems' impedance. Always remember that the speakers should be connected to the unit for stereo operation (connection) and that the load impedance per channel should be more than 2 ohms.

When more than one speaker is connected in parallel per channel—and suppose they have the same impedance—you can have the composite impedance (the unit's load impedance) by dividing the impedance by the number of the connected speakers. Thus you can connect up to 4 speaker systems to the SPEAKER SYSTEM 2 OHMS terminals on the rear panel if they have an impedance of 8 ohms. Thus in stereo operation (connection), you can connect a total of 8 speakers with an impedance of 8 ohms. When connecting a total of more than 5 speaker systems per channel, combine parallel connection and series connection as the illustration shows.

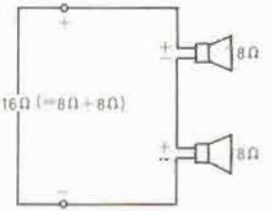
Unit's other uses

Not only can your unit be used for driving speakers in stereo and mono operations, but it is also suitable for driving low-frequency speakers in electronic crossover (multi-amplifier) system or front-channel speakers driving in a 4-channel stereo setup. For details, ask your nearest Sansui Authorized Service Station or the dealer from whom you have purchased the unit.

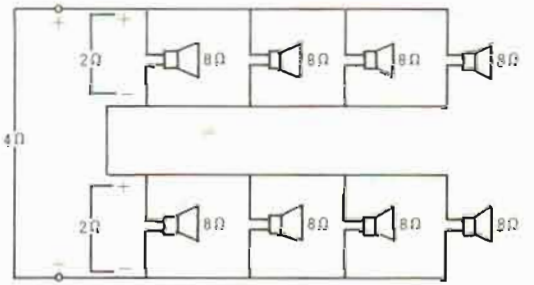
CONNEXION EN PARALLELE
PARALLELANSCHLUSS
PARALLEL CONNECTION



CONNEXION EN SERIE
SERIENANSCHLUSS
SERIES CONNECTION



CONNEXION COMBINEE EN SERIE/EN PARALLELE
(8 ENCEINTES ACOUSTIQUES)
KOMBINIERTER SERIEN/PARALLELANSCHLUSS (8 LAUTSPRECHER)
SERIES/PARALLEL COMBINED CONNECTION (8 SPEAKERS)



SPECIFICATIONS

Power output

Min. RMS, both channels driven, from 20 to 20,000Hz, with no more than 0.1% total harmonic distortion in stereo operation.

300 watts per channel into 2 ohms
300 watts per channel into 4 ohms
300 watts per channel into 8 ohms

Min. RMS, both channels driven, at 1,000Hz, with no more than 0.1% total harmonic distortion in stereo operation.
320 watts per channel into 2 ohms
320 watts per channel into 4 ohms
320 watts per channel into 8 ohms

Min. RMS, from 20 to 20,000Hz, with no more than 0.1% total harmonic distortion in mono operation.

600 watts into 4 ohms
600 watts into 8 ohms
600 watts into 16 ohms

Min. RMS, at 1,000Hz, with no more than 0.1% total harmonic distortion in mono operation.
640 watts into 4 ohms
640 watts into 8 ohms
640 watts into 16 ohms

Load impedance
In stereo operation . . . . . 2, 4, 8 ohms
In mono operation . . . . . 4, 8, 16 ohms

Power bandwidth . . . . . 20 to 20,000Hz at or below rated min. RMS, power output and total harmonic distortion

Total harmonic distortion . . . . . less than 0.1% at or below rated min. RMS power output

Intermodulation distortion
(70Hz:7,000Hz=4:1 SMPTE method) . . . . . less than 0.1%

Frequency response
(at 1 watt) . . . . . 15Hz to 30kHz $^{+0}_{-2}$ dB

Damping factor . . . . . approximately 10 at 8 ohm load

Channel separation	
(at rated output, 1 kHz)	better than 60dB
Hum and noise (IHF)	better than 100dB
Input sensitivity and impedance	
(1 kHz, for rated output)	700mV 50 Kilo-ohms
General	
Power voltage	100, 120, 220, 240V 50/60Hz 120V (Usable 110–130V) (for U.S.A. & Canada only)
Power consumption	1,350 watts (max.) 490 watts (rated)
Dimensions	482mm (19") W 222mm (8-3/4") H 466mm (18-11/32") D
Weight	49kg (108.0 lbs) net 56kg (123.5 lbs) packed

* **Design and specifications subject to change without notice for improvements.**

SANSUI ELECTRIC CO., LTD.
14-1, 2-chome, Izumi, Suginami-ku, Tokyo 168, Japan.
TELEPHONE: (03) 323-1111/TELEX: 232-2076

Printed in Japan (75M1) (9208940)