

STEREO
GRAPHIC
EQUALIZER

GE-80

STEREO
REVERBERATION
AMPLIFIER

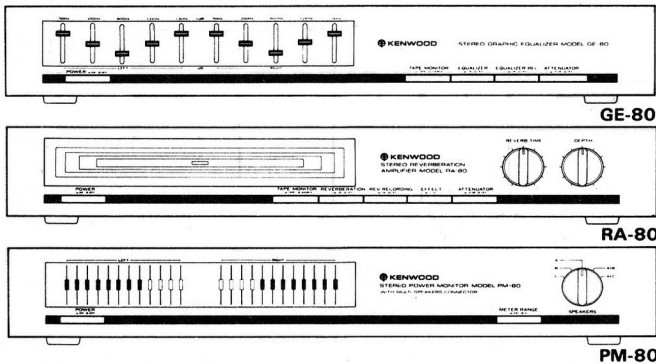
RA-80

STEREO
POWER
MONITOR

PM-80



INSTRUCTION MANUAL



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DEAR AUDIO FAN

The purpose of this manual is to acquaint you with the operating features of your new amplifier. You will notice that in every detail of planing, engineering, styling, operating convenience, and adaptability, we have sought to anticipate your needs and desires.

We suggest that you read this manual carefully. Knowing how to set up your amplifier to the best advantage will enhance your listening pleasure right from the start. You will also become aware of the ease with which you can adjust your amplifier to meet your special requirements.

FOR YOUR RECORDS

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your Kenwood dealer for information or service on this product.

Model GE-80 Serial number _____
 Model RA-80 Serial number _____
 Model PM-80 Serial number _____

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

UNPACKING

Unpack the unit carefully and make sure that all accessories and cables are put aside so they will not be lost.

Examine the unit for any possibility of shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.

We recommend that you retain the original carton and packing materials for use should you transport or ship the unit in the future.

INSTALLATION PRECAUTIONS

- a) Avoid locations subject to direct sunlight.
- b) Avoid high or low temperature extremes.
- c) Keep the unit away from heat radiating sources.
- d) Choose a location that is relatively free of vibration or excessive dust.
- e) Make sure power is off before making any system connections.

SAFETY INSTRUCTIONS

1. **Read Instructions** — All the safety and operating instructions should be read before the appliance is operated
2. **Retain Instructions** — The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** — All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** — All operating and use instructions should be followed.
5. **Water and Moisture** — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. **Ventilation** — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
7. **Heat** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves or other appliances (including amplifiers) that produce heat.
8. **Power Sources** — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
9. **Power Cord Protection** — Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
10. **Cleaning** — The appliance should be cleaned only as recommended by the manufacturer.
11. **Nonuse Periods** — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
12. **Object and Liquid Entry** — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
13. **Damage Requiring Service** — The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.

14. **Servicing** — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

IMPORTANT!

U.S.A. AND CANADA

Units shipped to the U.S.A. and Canada are designed for operation on 120 volts AC only. These units are not equipped with an AC Voltage Selector switch and the discussion of such a switch that follows should be disregarded.

ALL OTHER COUNTRIES

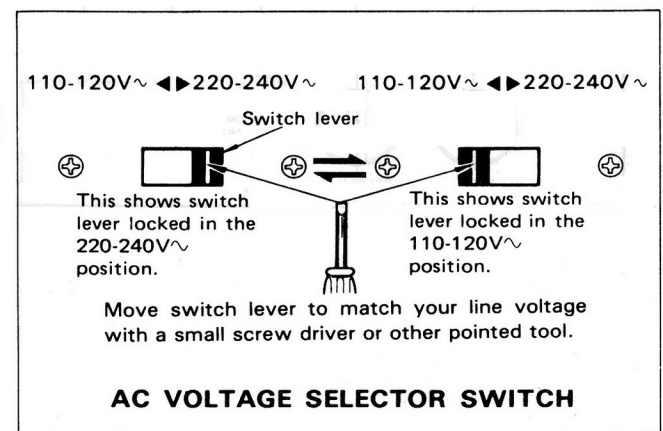
Units shipped to countries other than the U.S.A. and Canada are equipped with an AC Voltage Selector switch on the rear panel. Refer to the following paragraph for the proper setting of this switch.

AC VOLTAGE SELECTION

This unit operates on 110-120 volts or 220-240 volts AC. The AC Voltage Selector Switch on the rear panel is set to the voltage that prevails in the area to which the unit is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of this switch matches your line voltage. If not, it must be set to your voltage in accordance with the following direction.

Note:

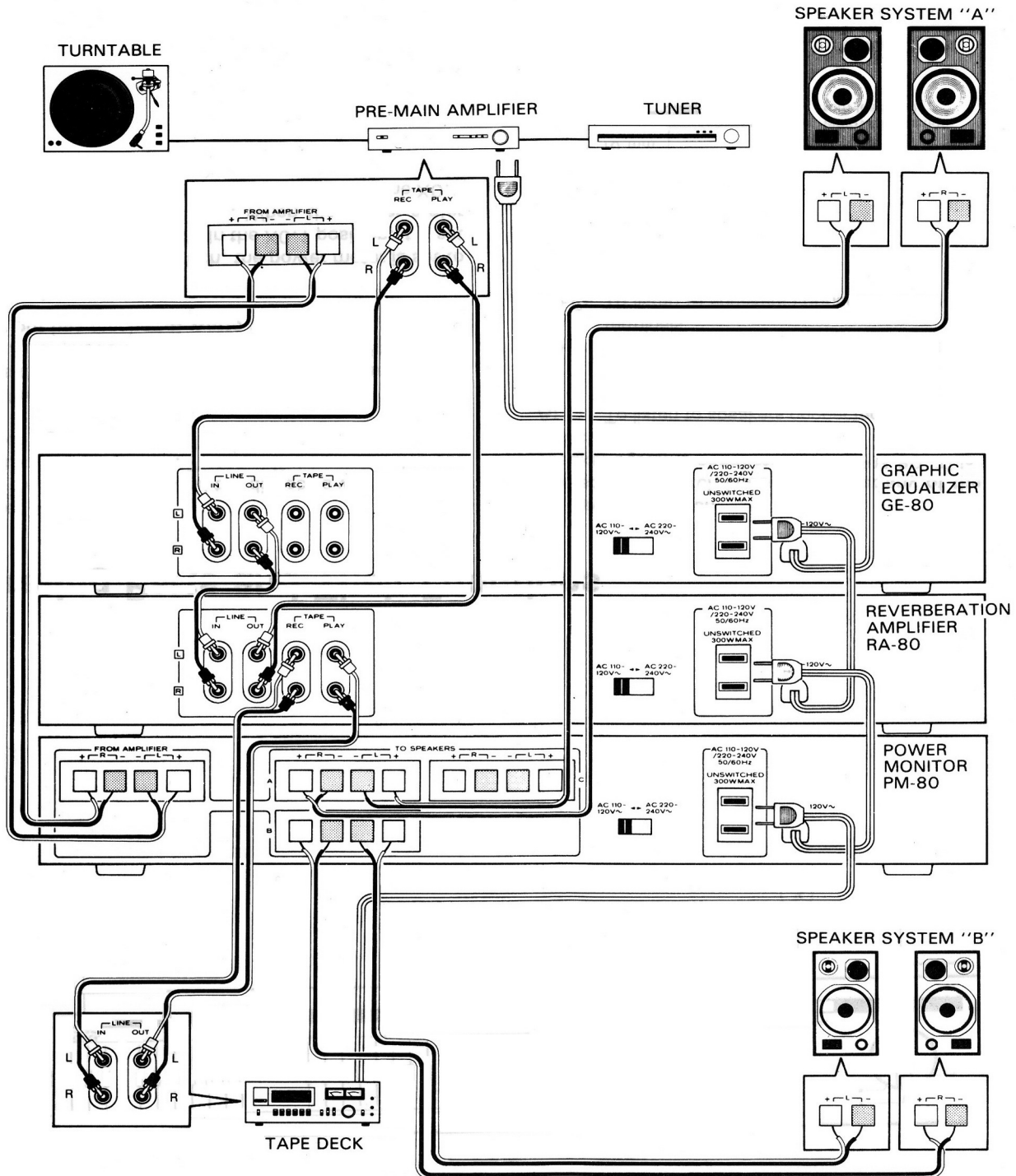
Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC Voltage Selector Switch.



CLEANING

Do not use volatile solvents such as alcohol, paint thinner, gasoline, benzene, etc. to clean the cabinet. Use a silicone cloth or a clean dry cloth.

SYSTEM CONNECTION



Connect the amplifier, graphic equalizer, reverberation amplifier and power monitor as shown in the illustration.

Caution

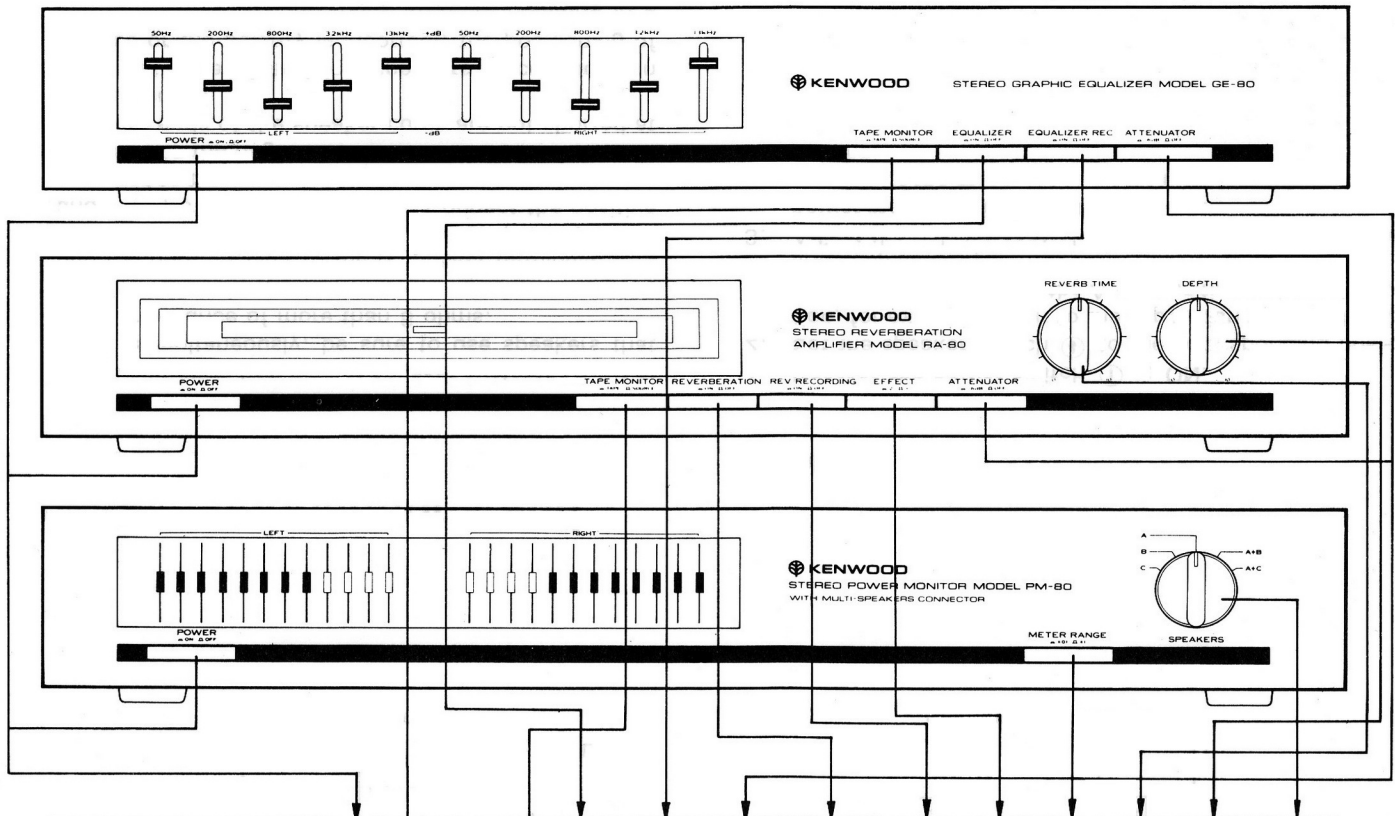
When operating two speaker systems (A+B or A+C) simultaneously, be sure to use speakers that have impedance of more than 8 ohms.

Tape Deck Connection

If you wish to use a tape deck, connect it as follows:

1. To obtain equalization and reverberation effects during playback, connect the tape deck to the graphic equalizer (GE-80). This connection will provide equalization of sound during playback.
2. To obtain equalization and reverberation effects during recording, connect the tape deck to the reverberation amplifier.

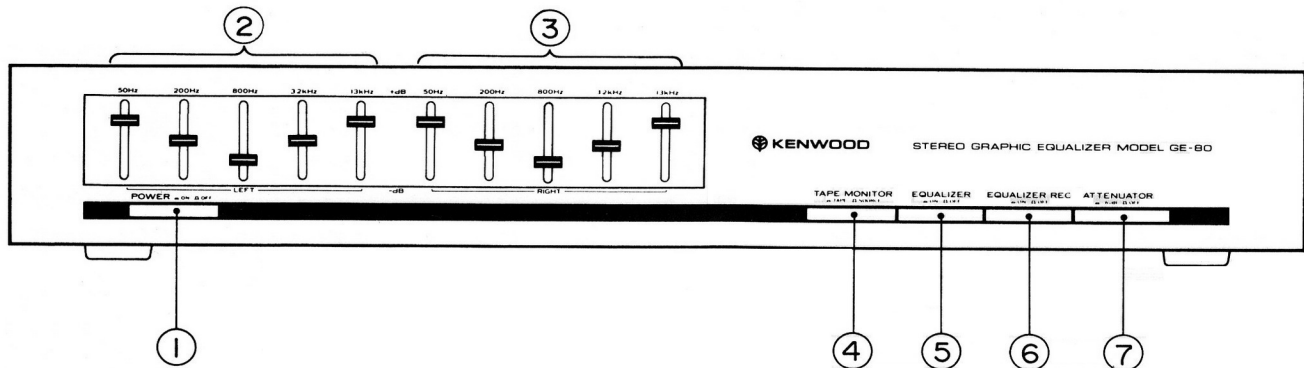
SYSTEM OPERATIONS



Purpose	Switch	TAPE MONITOR		EQUALIZER	EQUALIZER REC	ATTENUATOR -6dB	REVERBERATION	REV. RECORDING	EFFECT	METER RANGE	REVERB TIME	DEPTH	SPEAKERS
		GE-80	RA-80										
1	Controlling sound by equalizer	ON	-	ON	-	-	-	-	-	-	-	-	-
2	Recording sound controlled by equalizer	ON	-	ON	ON	-	-	-	-	-	-	-	-
3	Recording source sound while listening to equalized sound	ON	-	ON	OFF	-	-	-	-	-	-	-	-
4	Listening to tape deck connected to GE-80	ON	ON	OFF	-	-	-	-	-	-	-	-	-
5	Making source signal pass through GE-80	ON or OFF	-	OFF	-	-	-	-	-	-	-	-	-
6	When a large input causes distortion	ON	-	-	-	ON	-	-	-	-	-	-	-
7	Listening to sound enhanced by reverberations	ON	-	-	-	-	ON	-	-	-	-	-	-
8	Recording sound enhanced by reverberations	ON	-	-	-	-	ON	ON	-	-	-	-	-
9	Recording source sound while listening sound enhanced by reverberations	ON	-	-	-	-	ON	OFF	-	-	-	-	-
10	Listening to tape deck connected to RA-80	ON	OFF	ON	-	-	-	-	-	-	-	-	-
11	Making source signal pass through RA-80	ON or OFF	-	-	-	-	OFF	-	-	-	-	-	-
12	Controlling delay time	ON	-	-	-	-	ON	-	-	-	Adjust	-	-
13	Controlling reverberation time	ON	-	-	-	-	ON	-	-	-	-	Adjust	-
14	Obtaining duet effect	ON	-	-	-	-	ON	-	Set to 2	-	-	-	-
15	Reading exact peak power at relatively low output	ON	-	-	-	-	-	-	-	Set to X0.1	-	-	-
16	Reading exact peak power at relatively high output	ON	-	-	-	-	-	-	-	Set to X1	-	-	-
17	Switching over between speaker systems	ON or OFF	-	-	-	-	-	-	-	-	-	-	Select
18	Disabling power monitoring	OFF	-	-	-	-	-	-	-	-	-	-	-
19	Applying equalization and reverberations to input signal and recording it (with tape deck connected to RA-80)	ON	OFF	Turn ON when monitoring of recorded signal is necessary.	ON	-	ON	ON	Set to 1	-	Adjust	Adjust	-

Note: The above table shows only basic applications of the graphic equalizer. Further applications can be achieved by combining the above operations.

STEREO GRAPHIC EQUALIZER GE-80 INSTRUCTIONS



Operating Parts and Their Functions

① Power Switch

Depress the power switch and the dial scale will light to indicate that the power is on. To turn off the power, depress the switch again.

② Left Channel Equalizer Controls

③ Right Channel Equalizer Controls

Using these controls will allow you to adjust frequencies in the range of 50 Hz, 200 Hz, 800 Hz, 3.2 kHz and 13 kHz as much as ± 10 dB.

50 Hz: Moving this control in upward direction will boost low frequency sounds such as from a pipe organ. Moving the control in downward direction will help to reduce unpleasant hum noise associated with certain music.

200 Hz: This control is used to adjust the level of low frequency signals. Moving the control in upward direction will help to increase bass tones from small size speakers.

800 Hz: This control is mainly used to adjust level of vocal sounds. Move the control up and down to obtain suitable vocal sounds.

3.2 kHz: This control adjusts the level of high frequency signals. Move the control up or down to obtain treble tone that matches your listening preference.

13 kHz: This control adjusts very high frequency sounds such as from cymbals. To eliminate tape hiss noise, move the control downward.

④ Tape Monitor Switch

TAPE: To playback a tape deck connected to the amplifier or to monitor the sounds being recorded.

SOURCE: To listen to program sources (FM/AM, turntable, microphone, etc.) connected to the amplifier.

⑤ Equalizer Switch

Turn this switch to ON and the frequency characteristic will be modified by passing through the graphic equalizer. In the OFF position, the frequency characteristic remains unchanged.

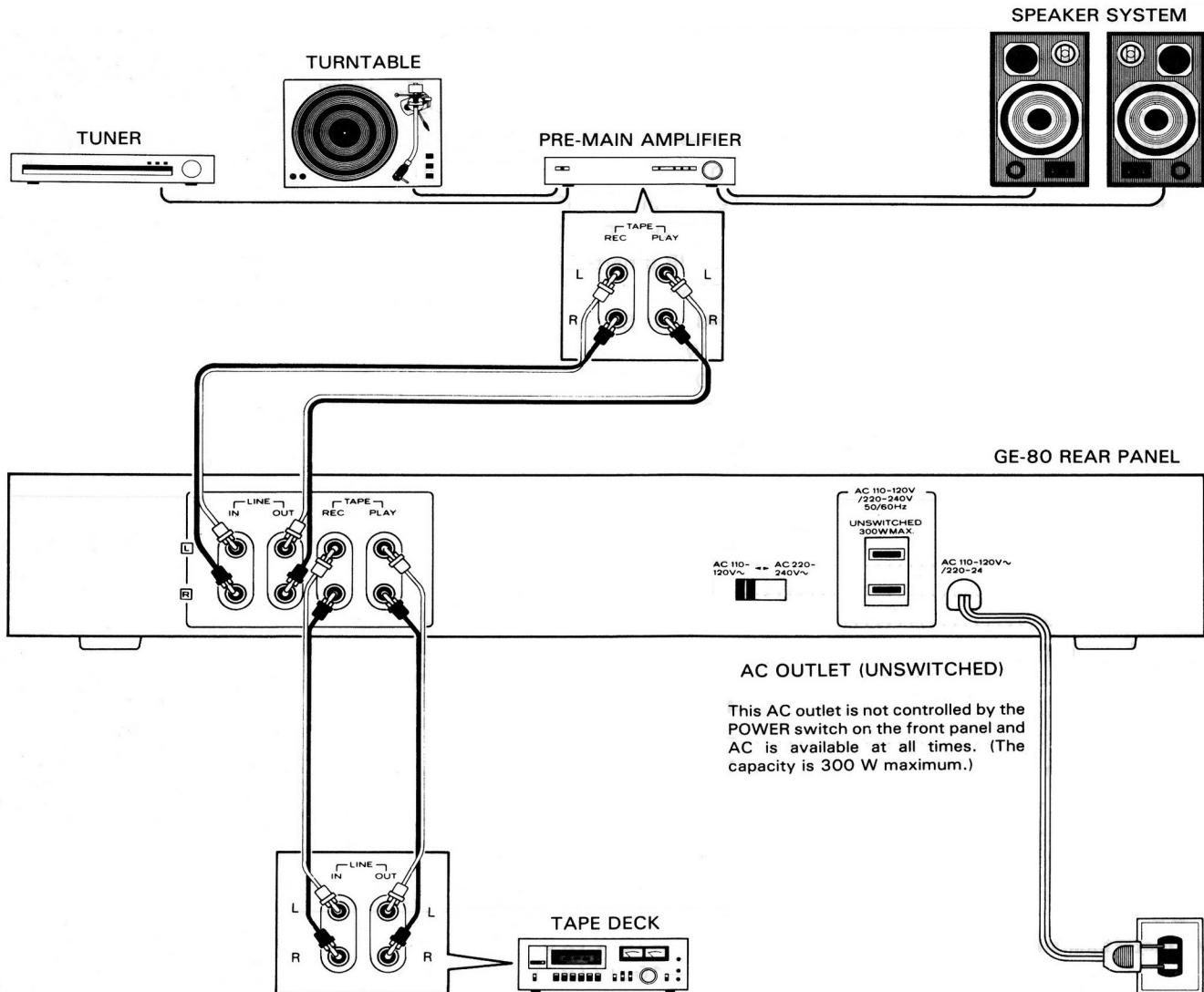
⑥ Equalizer Recording Switch

Depress this switch and equalizer switch ⑤ to ON signals will allow equalized to be recorded on tape. If you wish to record non-equalized signals with the equalizer switch in the ON position, turn the equalizer recording switch to OFF. This will allow you to hear the equalized signals while recording non-equalized signals.

⑦ Attenuator Switch

Note that the volume level is often increased when the equalizer controls are set to high positions or the equalizer switch is in the ON position. When this occurs, depress the attenuator switch and the volume level will be decreased by -6 dB. The volume level thus obtained is essentially the same as the level with the equalizer switch in the OFF position. This switch is also used to eliminate any possibility of distortion due to high input signals.

STEREO GRAPHIC EQUALIZER GE-80 INSTRUCTIONS



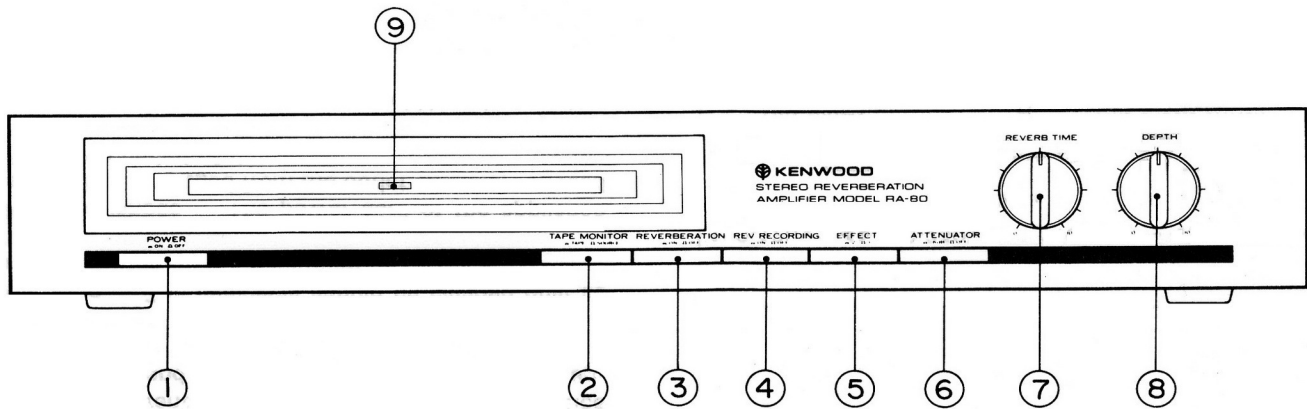
Connections and Precautions

1. Each connecting cord must be connected securely to the corresponding terminals (R to R and L to L). Poor connection can result in noise.
2. Before connecting or disconnecting any cord, be sure to turn off the power switches of the GE-80 and pre-main amplifier.
3. Do not bind the input/output cords together with the power cord and speaker cord. Do not extend the input/output cords unnecessarily to avoid the possibility of noise or deterioration of tone quality.

Operating Procedure

1. Depress the power switch to turn on the power.
2. Set the amplifier TAPE MONITOR switch to "TAPE" or "ON".
3. To listen to tape, set the TAPE MONITOR switch (4) to TAPE. To listen to other program sources (turntable, FM, etc.), set the switch to SOURCE.
4. Set the EQUALIZER switch ⑤ to ON and adjust the equalizer controls to suit your listening preference.
5. To record equalized programs on tape, follow the procedures noted in the above items 1, 2, 3 and 4, then set the EQUALIZER REC switch ⑥ to ON. If it is desired to record non-equalized programs, simply set the EQUALIZER REC switch ⑥ to OFF.

STEREO REVERBERATION AMPLIFIER RA-80 INSTRUCTIONS



Operating Parts and Their Functions

① Power switch

Depress the power switch and the lamp at the center of the reverberation indicator ⑨ will light, indicating that the power is ON. To turn off the power, depress the switch again.

② Tape Monitor Switch

TAPE: To playback a tape deck connected to the amplifier or to monitor the sound being recorded.

SOURCE: To listen to other program sources (FM/AM, turntable, microphone, etc.) connected to the amplifier.

③ Reverberation Switch

This switch turns the reverberation unit ON and OFF.

④ Reverberation Recording Switch

To add the reverberation effect on to tape, set both the reverberation recording switch and reverberation switch ③ to ON.

If only the reverberation switch ③ is ON, the tape is recorded without the reverberation effect but the sound being played is heard with the reverberation effect.

⑤ Effect Switch

To obtain a normal reverberation effect, set this switch to the "1" position (OUT). To obtain a duet effect, set the switch to the "2" position (IN).

⑥ Attenuator Switch

This switch is used to reduce the input level to 1/2, eliminating any possibility of distortion due to high input signals.

⑦ Reverberation Time Control

Adjusts the reverberation time. With the effect switch in the "1" position, the reverberation time is adjustable from 0 to 2.5 sec., and in the "2" position, from 30 to 100 msec.

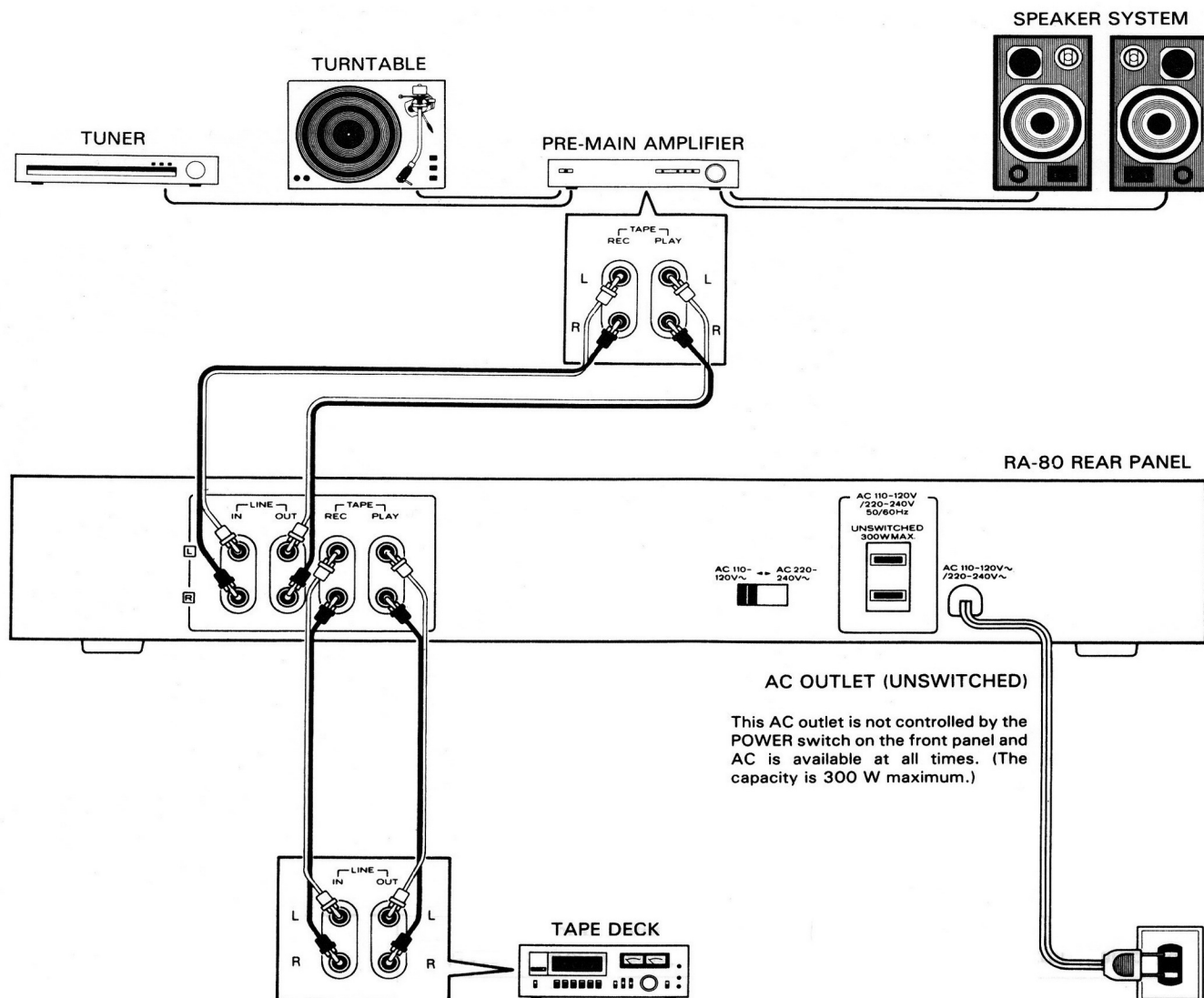
⑧ Depth Control

Adjusts the amount of reverberation. Turning the control clockwise will emphasize the reverberation.

⑨ Reverberation Indicator

This is used to visually check the reverberation effect. The lights of the indicator lamps will spread to left and right according to the strength of reverberation.

STEREO REVERBERATION AMPLIFIER RA-80 INSTRUCTIONS



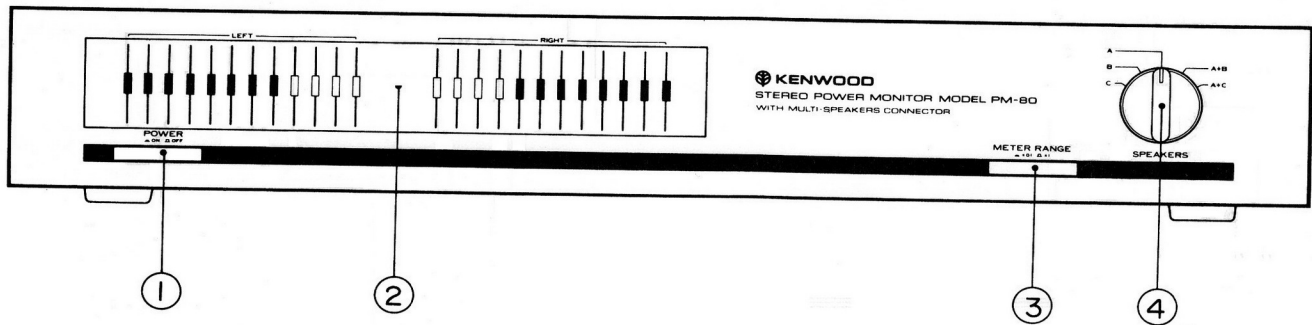
Connections and Precautions

1. Each connecting cord must be connected securely to the corresponding terminals (R to R and L to L). Poor connection can result in production of noise.
2. Before connecting or disconnecting any cord, be sure to turn off the power switches of the RA-80 and pre-main amplifier.
3. Do not bind the input/output cords together with the power cord and speaker cord. Do not extend the input/output cords unnecessarily to avoid the possibility of producing noise or deterioration of tonal quality.

Operating Procedure

1. Depress the power switch ① to turn on the power.
2. Set the pre-main amplifier TAPE MONITOR switch to TAPE or ON.
3. For playback of tape, set the RA-80 TAPE MONITOR switch ② to TAPE. For listening to other program sources, set the switch to SOURCE.
4. Set the reverberation switch ③ to ON.
5. Set the effect switch ⑤ to the desired position.
6. Adjust the reverberation control ⑦ and depth control as required.
7. After setting the above switches and controls, if you desire to add the reverberation effect on to tape, set the reverberation recording switch ④ to ON. To eliminate the reverberation effect during recording, simply set the reverberation recording switch to OFF.

STEREO POWER MONITOR PM-80 INSTRUCTIONS



Operating Parts and Their Functions

① Power Switch

Depress the power switch and the dial scale will light to indicate that the power is on. To turn off the power, depress the switch again.

② LED Peak Power Meter

Indicates the peak power of the left and right channels. For instance, illumination of 8 watts red LED indicates the amplifier out has reached 8 watts (peak value)

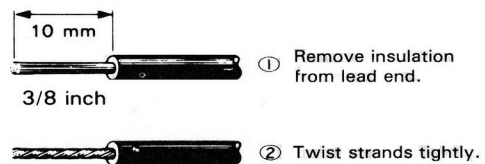
③ Meter Range Switch

In the X1 position of the switch, the power meter is set to the high range (0.01-100 W). In the X0.1 position, it is set to the low range (0.001-10 W). When the power meter lights insufficiently, depress and set the switch to the X0.1 position.

④ Speaker Switch

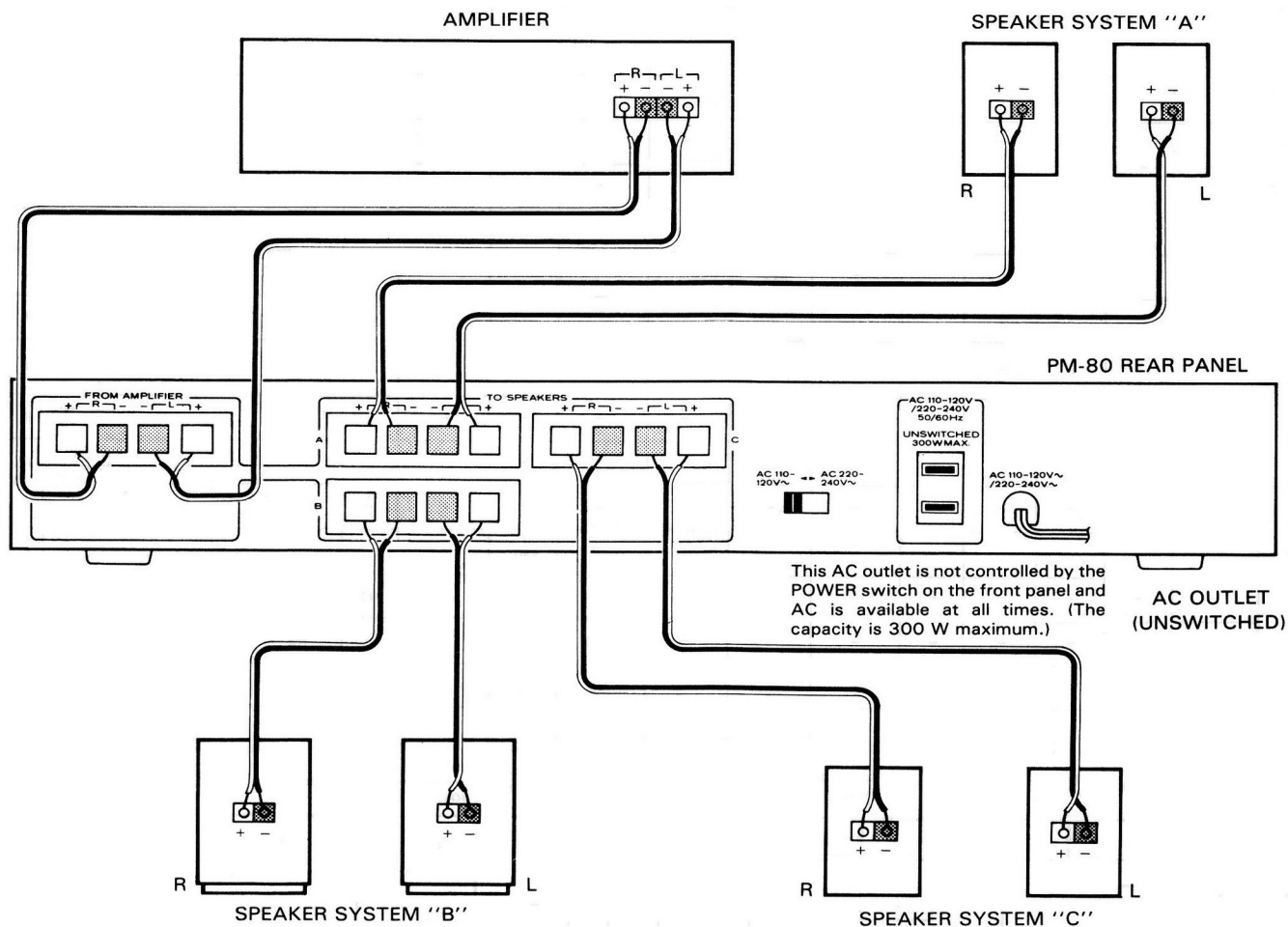
The speaker switch is used to select any of the 3 sets of speaker systems connected to the PM-80. This 5-position switch functions as follows:

- A: To listen to speakers connected to the "A" terminals.
- B: To listen to speakers connected to the "B" terminals.
- C: To listen to speakers connected to the "C" terminals.
- A + B: To listen to speakers connected to the "A" and "B" terminals.
- A + C: To listen to speakers connected to the "A" and "C" terminals.



SPEAKER LEAD TIPS

STEREO POWER MONITOR PM-80 INSTRUCTIONS



Speaker Connections and Precautions

1. When operating two sets of speaker systems (A + B or A + C) simultaneously, be sure to use speakers that have impedance of more than 8 ohms.
2. Connect the left speaker to the L speaker terminals, and the right speaker to the R speaker terminals.
3. When connecting speakers, observe the polarity ("+" and "-") of the speaker cords. Connect the positive (+) cord to the positive (+) terminal, and the negative (-) cord to the negative (-) terminal. Make sure that the bare ends of the speaker cords are not shorted at the terminals.
4. Note that if the left and right speakers are connected in reverse or the polarity is incorrect, the positioning of instruments will be adversely affected resulting in a lack of separation.

Operating Procedure

1. Depress the power switch ① to ON.
2. Set the speaker switch ④ to the corresponding position; for example, set it to the A position to hear the A speaker systems, or to the A + C position to hear the A and C speaker systems.
3. Adjust the volume control of the amplifier and the LED power meter will indicate the output power. Select the position of the meter range switch ③ according to the volume.

IN CASE OF DIFFICULTY

If your unit should not perform as expected, consult the table below to see if the problem can be corrected before seeking help from your Kenwood dealer or service representatives.

SYMPTOM	CAUSE	REMEDY
No sound although AC is switched on. Indicator not illuminated.	Poor AC plug connection.	Check plug contact.
No sound from LEFT and RIGHT.	Speaker cords disconnected. (PM-80)	Check speaker connections.
	Volume control of amplifier fully ccw.	Turn up volume control.
	TAPE MONITOR switch of amplifier set to SOURCE. (GE-80, RA-80)	Set TAPE MONITOR switch of amplifier to TAPE.
	TAPE MONITOR switch of GE-80 or RA-80 set to TAPE.	Set TAPE MONITOR switch to SOURCE except when using tape deck.
Sound from one side only.	Speaker cords disconnected. (PM-80)	Check speaker connections.
	Input or output cables disconnected. (GE-80, RA-80)	Check input or output connections.
	Balance control of amplifier set to one extreme or the others.	Adjust balance control of amplifier.

SPECIFICATIONS

GE-80

Equalizer characteristic

Variable range	± 10 dB (L & R independently adjustable)
Center frequencies	50 Hz, 200 Hz, 800 Hz, 3.2 kHz, 13 kHz
Attenuation	- 6 dB at 1 kHz
Frequency response	10 Hz-60 kHz + 0 dB, - 1 dB
Harmonic distortion	Less than 0.006% (20 Hz-20 kHz, all controls flat, output 1 V)
Maximum output	5 V (1 kHz, THD 0.01%, RL 47 kohms)
S/N ratio	110 dB (Short-circuited IHF-A network)
Input impedance	47 kohms
Gain	0 dB ± 1 dB
Power consumption	12 W
Dimensions	440(W) × 74(H) × 160(D) mm
Weight	2.7 kg (net), 3.1 kg (gross)

RA-80

Reverberation time

Effect 1	0-2.5 sec.
Effect 2	30-80 msec.
Frequency response	15 Hz-60 kHz, + 0 dB, - 1 dB
Harmonic distortion	Less than 0.008% (20 Hz-20 kHz, output 1 V)
S/N ratio	100 dB (Short-circuited IHF-A network)
Input impedance	47 kohms
Attenuation	- 6 dB at 1 kHz
Power consumption	12 W
Dimensions	440(W) × 74(H) × 160(D) mm
Weight	2.7 kg (net), 3.1 kg (gross)

PM-80

Power meter indication range	0.001-10 W (× 0.1) 0.01-100 W (× 1)
Power meter accuracy	± 1 dB (× 0.1) ± 1 dB (× 1)
Frequency response	20 Hz-20 kHz, ± 1 dB
Response time	7 msec. (1 kHz)
Speaker switch	Selects any of 3 sets of speaker systems, A, B, C plus A + B and A + C
Power consumption	13 W
Dimensions	440(W) × 74(H) × 160(D) mm
Weight	2.7 kg (net), 3.1 kg (gross)



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