



YAMAHA EQ-550

Natural Sound Stereo Graphic Equalizer

10 Bands of ± 12 dB EQ per Channel

10-Band Frequency Spectrum Analyzer

Built-in Pink Noise Generator

Electret Condenser Microphone Supplied

Thank you for selecting the YAMAHA EQ-550 Stereo Graphic Equalizer.

OWNER'S MANUAL

IMPORTANT

Please record the serial number of this unit in the space below.

Model:

Serial No.:

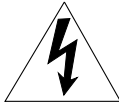
The serial number is located on the rear of the main unit. Retain this Owner's Manual in a safe place for future reference.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.


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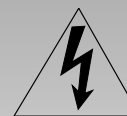
CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

• Explanation of Graphical Symbols




The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SAFETY INSTRUCTIONS

- 1** Read Instructions – All the safety and operating instructions should be read before the product is operated.
- 2** Retain Instructions – The safety and operating instructions should be retained for future reference.
- 3** Heed Warnings – All warnings on the product and in the operating instructions should be adhered to.
- 4** Follow Instructions – All operating and use instructions should be followed.
- 5** Cleaning – Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 6** Attachments – Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- 7** Water and Moisture – The product 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.
- 8** Accessories – Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- 9** A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn. 
- 10** Ventilation – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 11** Power Sources – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
- 12** Grounding or Polarization – This product may be equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
- 13** 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 product.
- 14** Lightning – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- 15** Power Lines – An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
- 16** Overloading – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- 17** Object and Liquid Entry – Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- 18** Servicing – Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 19** Damage Requiring Service – Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a) When the power-supply cord or plug is damaged,
 - b) If liquid has been spilled, or objects have fallen into the product,
 - c) If the product has been exposed to rain or water,
 - d) If the product does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in dangerous and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - e) If the product has been dropped or damaged in any way, and
 - f) When the product exhibits a distinct change in performance – this indicates a need for service.
- 20** Replacement Parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- 21** Safety Check – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- 22** Wall or Ceiling Mounting – The unit should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 23** Heat – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

CAUTION: READ THIS BEFORE OPERATING YOUR UNIT

- 1 To ensure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.
- 2 Install your unit in a cool, dry, clean place — away from windows, heat sources, and too much vibration, dust, moisture or cold. Avoid sources of hum (transformers, motors). To prevent fire or electrical shock, do not expose to rain and water.
- 3 Do not operate the unit upside-down. It may overheat, possibly causing damage.
- 4 Never open the cabinet. If a foreign object drops into the set, contact your dealer.
- 5 Do not use force on switches, knobs or cords. When moving the set, first turn the unit off. Then gently disconnect the power plug and the cords connecting to other equipment. Never pull the cord itself.
- 6 Do not attempt to clean the unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.
- 7 To prevent lightning damage, pull out the power cord and remove the antenna cable during an electrical storm.
- 8 Be sure to read the "Troubleshooting" section on common operating errors before concluding that your unit is faulty.

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE : DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. IMPORTANT : When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE : This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures: Relocate either this product or the device that is being affected by the interference. Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s. In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable. If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6660 Orangethorpe Ave, Buena Park, CA 90620. The above statements apply **ONLY** to those products distributed by Yamaha Corporation of America or its subsidiaries.

WARNING: CHEMICAL CONTENT NOTICE!

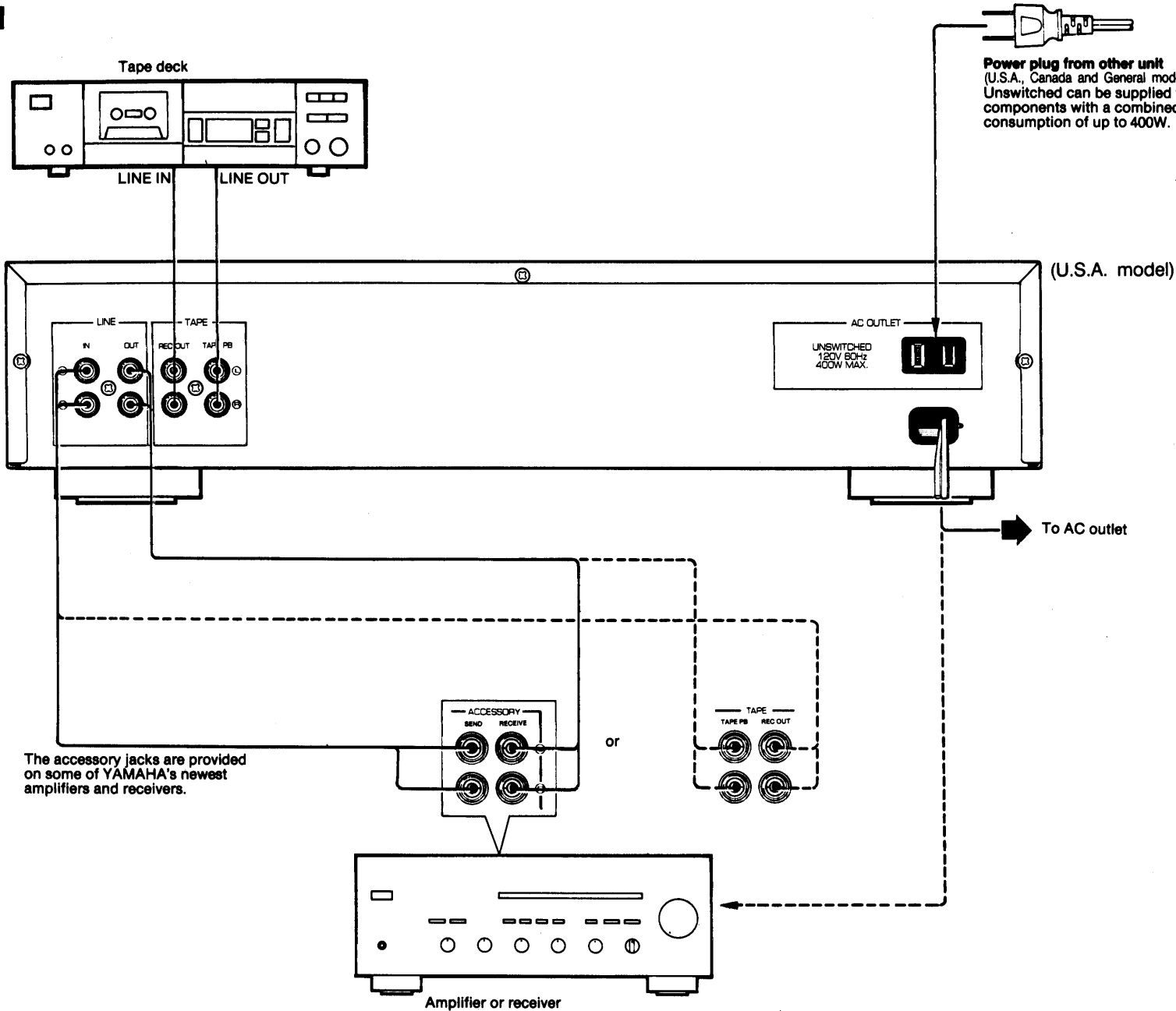
The solder used in the manufacture of this product contains LEAD. In addition, the electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT REMOVE ANY ENCLOSURE COMPONENTS! There are no user serviceable parts inside. All service should be performed by a service representative authorized by Yamaha to perform such service.

IMPORTANT MESSAGE:

Yamaha strives to produce products that are both user safe and environmentally "friendly". We sincerely believe that our products meet these goals. However, in keeping with both the spirit and the letter of various statutes we have included the preceding messages and others in various locations in this manual.

1



Power plug from other unit
(U.S.A., Canada and General models only)
Unswitched can be supplied to other components with a combined power consumption of up to 400W.

(U.S.A. model)

UNSWITCHED
120V 60Hz
400W MAX.

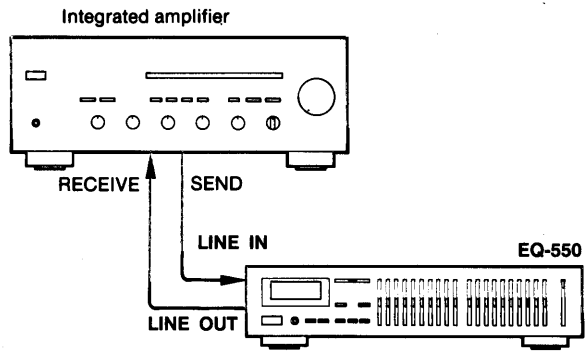
To AC outlet

Connect to an AC outlet or to the amplifier or receiver auxiliary power outlet. The power consumption of this unit is 15W. Check the power rating of the amplifier or receiver outlet before use.

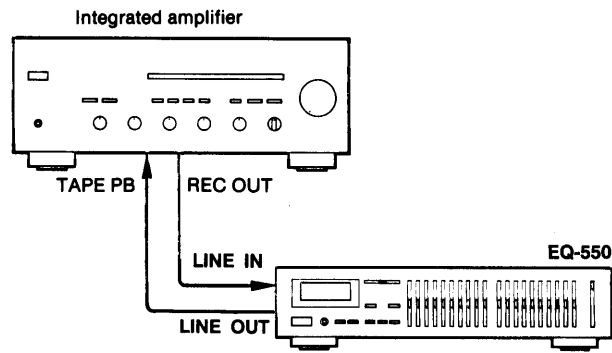
The accessory jacks are provided on some of YAMAHA's newest amplifiers and receivers.

Amplifier or receiver

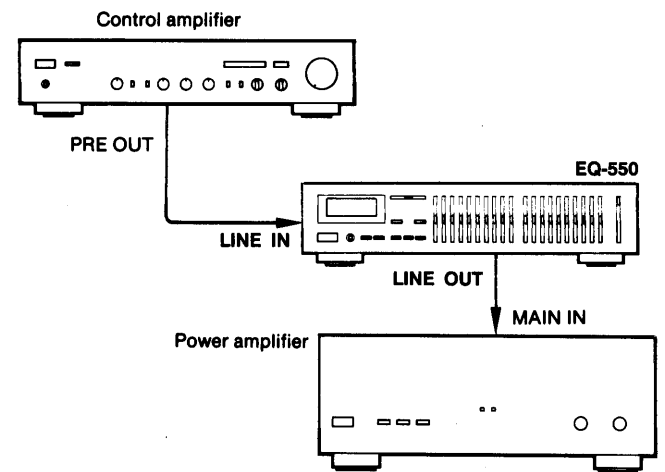
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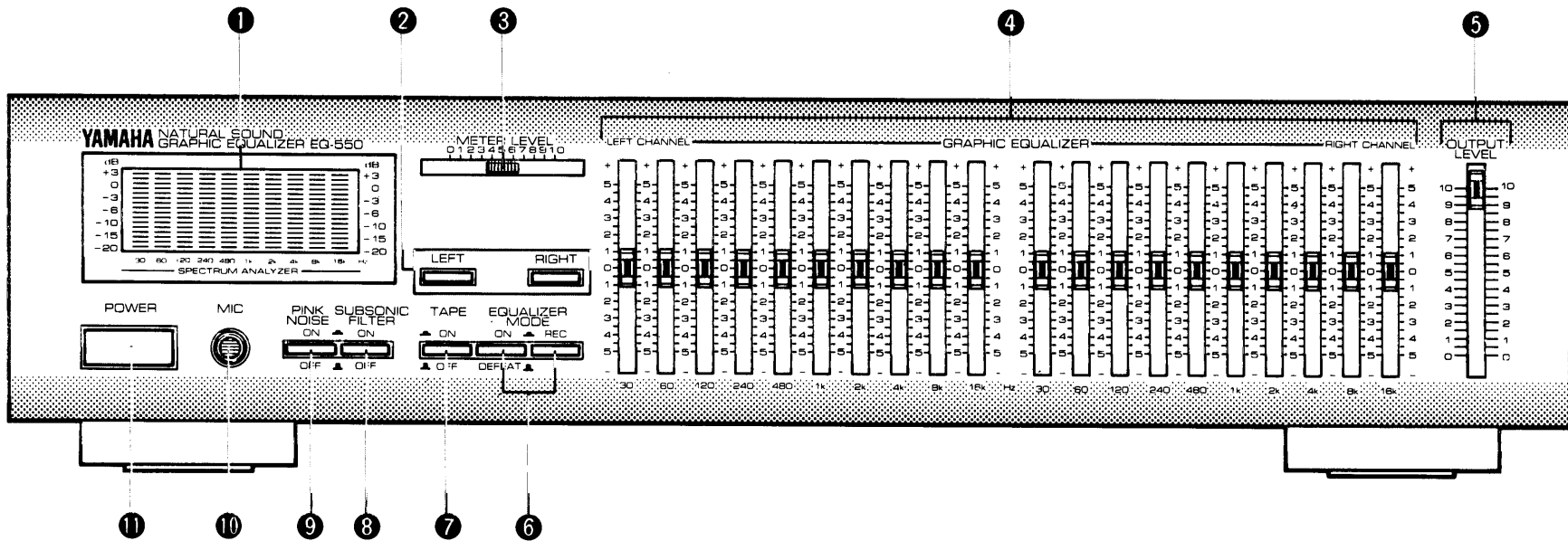
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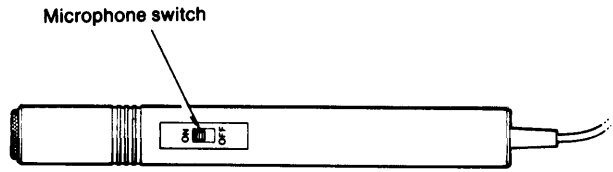
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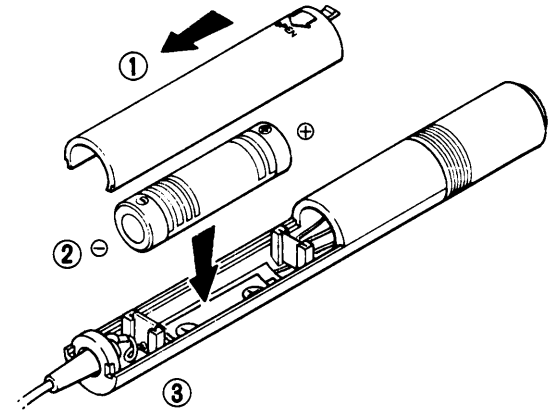
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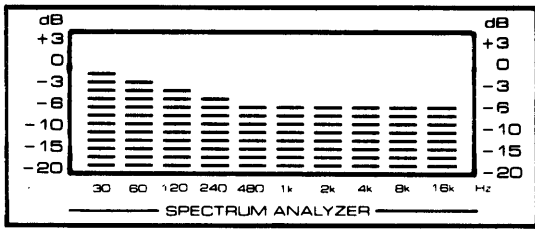
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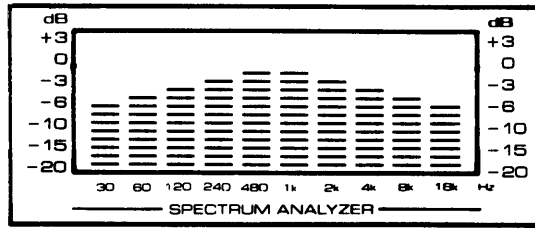
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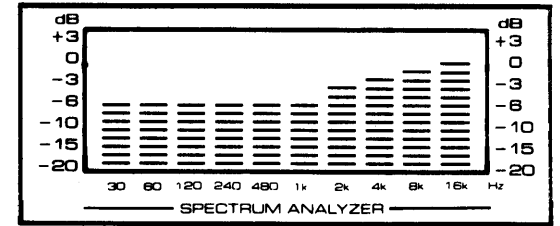
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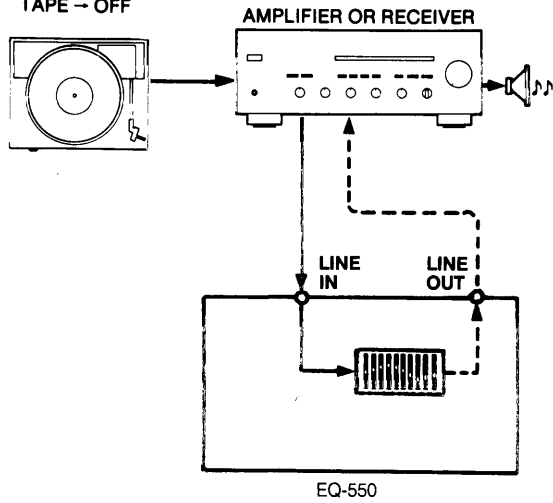
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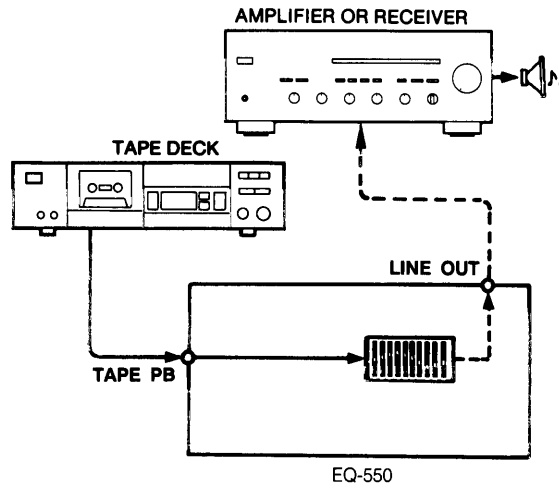
10



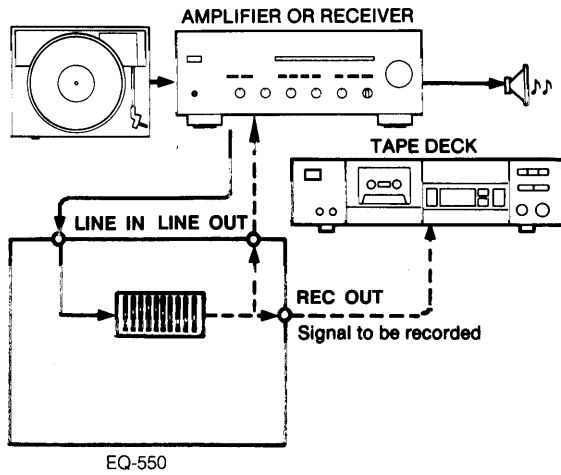
11 EQUALIZER MODE → ON
TAPE → OFF



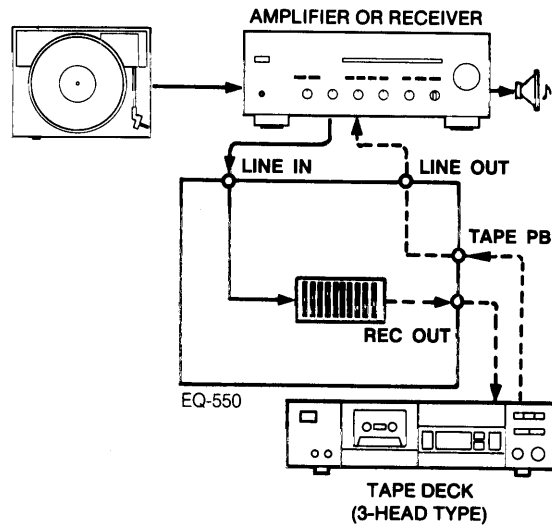
12 EQUALIZER MODE → ON
TAPE → ON



13 EQUALIZER MODE → ON, REC
TAPE → OFF

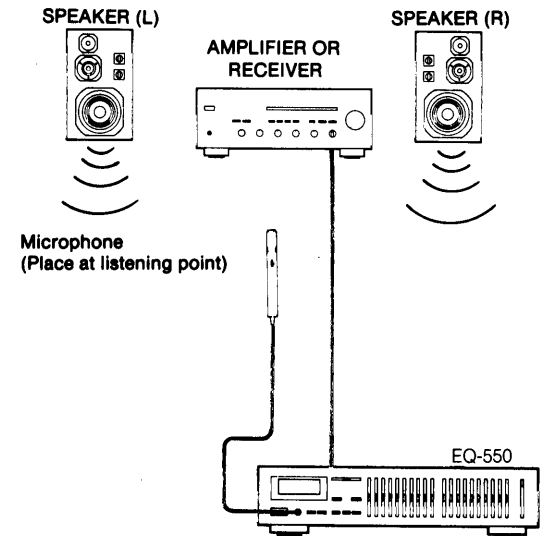


14 EQUALIZER MODE → ON, REC
TAPE → ON



← Unequalized signal
← - - - Equalized signal

15



CONNECTIONS

(See Fig. 1.)

- When connecting your equipment, turn the power to each unit off and make sure that you have correctly connected the Left (L) and Right (R) channels.
- For the amplifier or receiver connections, please refer to the amplifier or receiver owner's manual.

■ CONNECTING AN AMPLIFIER OR RECEIVER

Check from the connection diagram that you have made the correct connections. Please note that input procedures and program source selection may vary according to the capabilities of the amplifier or receiver and the connections between it and this unit.

● To connect an integrated amplifier or receiver using the ACCESSORY jacks (See Fig. 2.):

The ACCESSORY jacks are provided on some of Yamaha's newest amplifiers and receivers.

1. Connect the SEND jacks of the ACCESSORY jacks to the LINE IN of this unit.
2. Connect the RECEIVE jacks of the ACCESSORY jacks to the LINE OUT of this unit.

The program source selected with the integrated amplifier's or receiver's input selector can be equalized.

● To connect an integrated amplifier or receiver without using the ACCESSORY jacks (See Fig. 3.):

1. Connect the REC OUT jacks of the TAPE jacks to the LINE IN of this unit.
2. Connect the TAPE PB jacks of the TAPE jacks to the LINE OUT of this unit.

The following operations can be carried out via the amplifier or receiver:

Amp	Program Source	Setting
With a REC OUT selector.	Selected with the REC OUT Selector.	Set the INPUT SELECTOR to TAPE.
With a TAPE MONITOR switch.	Selected with the input selector.	Turn the TAPE MONITOR switch ON.

● To connect a separate amplifier or receiver (See Fig. 4.):

1. Connect the PRE OUT jacks of the control amplifier to the LINE IN jacks of this unit.
2. Connect the MAIN IN jacks of the power amplifier to the LINE OUT jacks of this unit.

In this way, you will be able to equalize the program source selected with the control amplifier input selector. The pink noise level cannot be adjusted with the control amplifier's volume control. Adjust the volume level with the OUTPUT LEVEL control of this unit.

■ CONNECTING A TAPE DECK

Connect the tape deck to the TAPE jacks. Connect the TAPE PB jacks to the tape deck's LINE OUT terminal, and the REC OUT jacks to the tape deck's LINE IN jacks.

■ AUXILIARY POWER OUTLET (AC OUTLET)

(U.S.A., Canada and General models)

This is an unswitched auxiliary outlet which can be used to supply power to other audio equipment. The other equipment must have a power consumption rating less than 400W. Power will be supplied even if this unit is turned off.

CAUTION:

Always be sure to check that the power consumption of the unit you are connecting is less than 400W.

FRONT PANEL PARTS AND FUNCTIONS

(See Fig. 5.)

1 FREQUENCY SPECTRUM ANALYZER

This frequency spectrum analyzer divides a 30 Hz — 16 kHz frequency range into 10 bands and displays the relative signal level of each band. Since the frequency of each band corresponds to an equalizing control frequency, you can check the equalizing effect directly.

2 Meter select switches

These switches are used to select the SPECTRUM ANALYZER display mode.

These buttons allow you to independently select a spectrum analyzer display of output level on the left and right channels, respectively. When both buttons are pressed, the spectrum analyzer displays a combined output level of both channels.

* When the PINK NOISE switch is ON, the LEFT and RIGHT switches can be used to display the pink noise level.

3 METER LEVEL control

This is used to control the level displayed by the spectrum analyzer. No display will appear when the knob is at the "0" position. The variable level display it provides facilitates monitoring a wide range of relative output levels with ease.

4 GRAPHIC EQUALIZER controls

Independent level controls for both the left and right channels are provided for each of the ten frequency bands. These are sliding type controls, and in the center position provide no level boost or cut. A ± 12 dB range of equalization is available on each frequency band. Red LED indicators on each control light when the left EQUALIZER MODE switch is set to ON, providing visual confirmation of level settings at a glance. When the left EQUALIZER MODE switch is set to DEFEAT, these controls will have no effect, regardless of their settings.

• 30 Hz slide control

Moving this slide control down reduces very low frequency rumble, or compensates a warped disc. Moving the slide control up emphasizes the very low frequencies.

• 60 Hz slide control

Moving this slide control down reduces AC line hum and (reduces) the lower tone. Moving slide control up emphasizes low tones such as pipe organ, drums, bass, etc.

• 120 Hz slide control

This range supports the lower end of the music and controls overall depth. The slide control may be moved down to eliminated "boomy bass" caused by room acoustics.

• 240 Hz slide control

This is the middle-to-lower tone range, but it has an effect on the overall sound. Mainly, the richness of the strings can be controlled. When strings are overly warm under actual listening conditions, moving the slide control down may help.

• 480 Hz slide control

This range is the foundation of music including both instruments and the human voice and it controls the overall power of the sound. As the slide control is moved up, midrange sounds will become more forward.

• 1 kHz slide control

This range affects the presence of the music (depth of tone), and is especially effective when playing back vocals. Moving the slide control up and down will cause the vocals to be more "up front" or more reserved.

• 2 kHz slide control

This is the frequency range where the human ear is most sensitive. Boosting the level slightly will add brilliance, crispness, etc. to instruments. Cutting the level slightly makes for easy listening.

• 4 kHz slide control

The human ear is also highly sensitive in this range. Mainly effective for increasing/decreasing the harmonics of the primary tone. Boosting this range a bit makes strings more intense. Over-intense, tiresome music becomes easy listening when the slide control is moved down.

• 8 kHz slide control

High frequency range. Strings, horns, etc. will be emphasized and this gives a slight difference in tone glaze and quality. Moving the slide control down reduces over-emphasized consonants in vocals and objectionable tape hiss. Moving the slide control up, on the other hand, improves the sharpness of such instruments as cymbals.

• 16 kHz slide control

Super-high frequency range. This affects high harmonics rather than the fundamental tones of the instruments themselves, and has an effect on the delicacy and atmosphere of the music. Moving the slide control up adds a delicate, fresh sound to cymbals, triangles, etc.

5 OUTPUT LEVEL control

This controls LINE OUTPUT level of this unit.

* REC OUT level cannot be changed.

6 EQUALIZER MODE switches

Selects the equalization mode.

DEFEAT: No equalization — flat response is achieved.

ON: The equalizer control indicators light up and equalization can be effected.

REC: The signal routed to the Rec Out terminals is equalized.

7 TAPE monitor switch

Used to select a tape deck for tape monitoring.

8 SUBSONIC FILTER switch

This switches the subsonic filter on and off to cut frequencies in the 15 Hz range as selected by the SUBSONIC FILTER controls.

9 PINK NOISE switch

Pink noise, which is emitted by a built-in generator, is a random noise signal which is distributed at an even level at all frequencies, and when monitored through the supplied microphone, allows you to measure the acoustic response characteristics of the listening environment.

⑩ MIC Jack

This is the input terminal for the microphone to be used with the spectrum analyzer to measure the acoustic response characteristics of the listening environment.

⑪ POWER switch

This switch turns the power to this unit on and off. The switch is pressed once to turn the power on, and a second time to turn the power off.

■ THE MM-110 ELECTRET CONDENSER MICROPHONE (See Fig. 6.)

An electret condenser microphone for use in measuring the acoustic response characteristics of the listening environment is provided with this unit. Microphone input will be displayed on the spectrum analyzer when the microphone is connected to the front panel MIC jack, the MIC switch is turned on, and a signal of level high enough to be measured is output through the speakers.

* Remove the battery from the microphone if you do not expect to be using it for some time.

Changing the battery (See Fig. 7.)

- ① Remove the cover.
- ② Insert AA "R06" battery, or equivalent making sure that the positive and negative poles are facing in the right direction.
- ③ After the battery has been changed snap the lid back on.

If the battery runs down, the sensitivity of the microphone will decrease. Change the battery as soon as it starts to run down.

Battery Cautions

If the battery is replaced incorrectly, dangerous leakage or collosion may result. Be especially careful of the following points:

When replacing:

- Insert the battery with correct (+) and (-) indications correctly into the battery compartment.

Rechargeable batteries:

- There are two types of batteries; rechargeable and nonrechargeable. Check the cautions label on the battery before use.

To avoid accidents:

- Never disassemble, heat or throw a battery into a fire. When disposing, deal with batteries as inflammable matter.
- Do not short the (+) and (-) terminals directly.

When battery leakage occurs:

- Wipe off the liquid in the battery compartment and replace the battery with new one.

■ THE SPECTRUM ANALYZER

The spectrum analyzer displays the frequency dispersion of signals for direct monitoring. Monitor levels can be adjusted with the METER LEVEL control for enhanced readability of the level adjustment.

Enhancing Sound Quality

As the equalizer control frequencies are in agreement with the frequency divisions of the spectrum analyzer, equalization effects can be verified visually.

Frequency Dispersion Differs According to the Program Source

- Frequency dispersion in a source with numerous low frequency components (See Fig. 8.)
- Frequency dispersion in a source with numerous middle frequency components (See Fig. 9.)
- Frequency dispersion in a source with numerous high frequency components (See Fig. 10.)

OPERATIONS

This unit provides control of 10 bands for a total range of 30 Hz to 16 kHz. Thus, the GRAPHIC EQUALIZER controls can be used to finely adjust each frequency as desired.

In addition, by using the built-in pink noise generator and the spectrum analyzer together, the acoustic characteristics of the listening room can be measured and compensated for.

Before operation:

- Refer to the respective owner's manuals on how to operate the amplifier, receiver, tape deck, and so on.
- Set the tone controls of the connected amplifiers or receiver to FLAT or DEFEAT.

■ START PLAY BACK OF THE PROGRAM SOURCE WHICH IS TO BE EQUALIZED

1. Press the POWER switch.
2. Set the left EQUALIZER MODE switch to ON.
3. Select the program source.

When playing back a program source which is connected to the amplifier or receiver, turn the TAPE monitor switch of this unit to OFF. (For signal path refer to Fig. 11.)

(The procedure for selecting a program source from the amplifier or receiver will differ according to the amplifier or receiver. Refer to the section on "Connecting an Amplifier or Receiver.") When using a tape deck connected to this unit, set the TAPE switch to ON.

4. Start playback of the program source, and adjust the volume with the amplifier's or receiver's volume control.
5. Operate the GRAPHIC EQUALIZER while listening to the sound in order to obtain the optimum frequency response of the signal.

- * Check the effect by alternately pressing the EQUALIZER MODE switch ON and DEFEAT positions.

Equalizing record play, etc. (See Fig. 11.)

Equalizing a playback from tape deck (See Fig. 12.)

■ RECORDING AN EQUALIZED PROGRAM SOURCE

An equalized program source can be recorded on a tape deck connected to the REC OUT jacks of this unit.

1. Press the POWER switch.
2. Press the left EQUALIZER MODE switch to ON.
3. Turn the TAPE monitor switch to OFF.
4. Operate the amplifier or receiver and select the program source to be recorded.
5. Operate the GRAPHIC EQUALIZER controls to obtain the optimum equalization of the signal.
6. Set the right EQUALIZER MODE switch to REC.
 - * To record without equalization, set the EQUALIZER MODE switch to off.
7. Adjust the recording level on the tape deck and then begin recording.

Recording an Equalized Program Source (See Fig. 13.)

Tape Monitoring (See Fig. 14.)

If you are using a 3-head tape deck, it will be possible to monitor the result of an equalized recording in real time. Set the tape deck's monitor selector to Tape, and the TAPE monitor switch of this unit to ON.

■ MEASURING AND ENHANCING THE CHARACTERISTICS OF A SOUND ENVIRONMENT

Every room has its own, unique acoustic response characteristics, and your listening environment does influence the sound you are hearing. This unit lets you boost or cut the output level of your music signal at different points of the frequency spectrum, before it reaches your speakers, in anticipation of what the room is going to do it, so the effect of room acoustics on the output signal will be effectively negated.

How to Measure the Acoustic Characteristics of the Listening Room (See Fig. 15.):

1. Connect the microphone supplied as an accessory. Microphone placement is crucial to proper equalization. The microphone position should correspond as closely as possible to where your ears will be when listening. Height of the microphone is thus also a factor.
2. Set the control knobs to the following positions:

AMP	Volume control	→ Lowest
	Tone control	→ Flat
EQ-550	OUTPUT LEVEL control	→ Maximum (10)
	EQUALIZER controls	→ Center (0)
	SUBSONIC FILTER switch	→ OFF
	EQUALIZER MODE switch	→ DEFEAT
	Meter select switches	→ LEFT, RIGHT on
	PINK NOISE switch	→ ON
	METER LEVEL control	→ Maximum (10)
	TAPE monitor switch	→ OFF
Mic	Mic switch	→ ON

3. When the volume of the amplifier or receiver is gradually raised, a buzz will be heard from the speakers. This is pink noise. Set the volume at an acceptable listening level. At this point, if the level indicated by the spectrum analyzer is too high, turn the METER LEVEL knob down bit by bit, and adjust until all displayed levels are a little above the center.

Compensating for deficiencies in the Listening Environment

1. Set the control knobs and switches to the following positions:
 - OUTPUT LEVEL control → Maximum (10)
 - EQUALIZER controls → Center (0)
 - SUBSONIC FILTER switch → OFF
 - EQUALIZER MODE switch → DEFEAT
 - Meter select switches → LEFT, RIGHT on
 - PINK NOISE switch → ON
 - TAPE monitor switch → OFF
2. Press the left EQUALIZER MODE switch to ON.
3. Turn the LEFT meter select switch off. (Equalizing adjustment is carried out channel by channel with a final overall adjustment.)
4. Start playback through the RIGHT channel. The spectrum analyzer will indicate the response of that channel.
5. Operate the GRAPHIC EQUALIZER controls for the RIGHT channel, adjusting them until the spectrum analyzer display is flat.
6. Turn the RIGHT meter select switch off and the LEFT switch on.
Operate the GRAPHIC EQUALIZER controls for the LEFT channel, adjusting them until the spectrum analyzer display is flat.
7. Turn the Meter select switches for both channels on.
8. Start playback through both channels simultaneously, and recheck and readjust the spectrum analyzer. This completes the overall sound enhancement procedure.

SPECIFICATIONS

Input Sensitivity/Impedance

LINE IN, TAPE, 1 kHz 1V/47k-ohms
MIC 0.3 mV/47k-ohms

Rated Output/Impedance

LINE OUT, REC OUT, 1 kHz
(OUTPUT LEVEL → Max.) 1V/600-ohms

Frequency Response 10 Hz — 35 kHz,
 ±0.5 dB

Center Frequencies 30 Hz, 60 Hz, 120 Hz,
 240 Hz, 480 Hz, 1 kHz, 2 kHz,
 4 kHz, 8 kHz, 16 kHz,

Equalizer Control Range ±12 dB

Signal-to-Noise Ratio (Input short, IHF A Network)

At 1V output More than 105 dB

Total Harmonic Distortion

(1 kHz, 1V output) Less than 0.005%

Maximum Output (20 Hz — 20 kHz) More than 7V

Subsonic Filter Cutoff

Frequency 15 Hz
 (12 dB/Oct)

Pink Noise Output 150 mV RMS

Display 10 bands
 Switchable between L or R, L + R

Power Requirements

General model 110-120/220-240V, 50/60 Hz

Europe model 220V, 50 Hz

Australia and U.K. models 240V, 50 Hz

U.S.A. and Canada models 120V, 60 Hz

Power Consumption 15W

Dimensions (W x H x D) 435 × 102 × 232 mm
 (17-1/8" × 4" × 9-1/8")

Weight 3.7 kg (8 lbs. 2 oz.)

Accessories Pin plug cords (2)
 MM-110 Electret Condenser Mic
 Mic stand
 Dry battery "AA" (R06) type (1)

* Specifications subject to change without notice.

TROUBLESHOOTING

Before assuming that your amplifier or receiver is faulty, check by following troubleshooting list which details corrective action which you can take yourself. If the fault persists, or is not mentioned in the list, turn off and disconnect the unit immediately, and get in touch with your nearest Yamaha dealer.

Fault	Cause	Cure
Power is not supplied even through the Power switch is turned on.	<ul style="list-style-type: none"> ● The power plug is not securely plugged in. 	<ul style="list-style-type: none"> ● Plug it in securely.
No sound is heard.	<ul style="list-style-type: none"> ● The TAPE Monitor switch is not set correctly. ● Improper connections to INPUT jacks. ● The OUTPUT LEVEL control is set too low. 	<ul style="list-style-type: none"> ● Set the switch correctly. ● Make sure all connections are properly done. ● Move the OUTPUT LEVEL control.
There is no sound from one speaker.	<ul style="list-style-type: none"> ● The pin plug is not properly connected. 	<ul style="list-style-type: none"> ● Check the connections.
Sound quality cannot be enhanced.	<ul style="list-style-type: none"> ● The EQUALIZER MODE switch is in the DEFEAT position. 	<ul style="list-style-type: none"> ● Set the switch to ON.
Spectrum analyzer will not light up.	<ul style="list-style-type: none"> ● The METER LEVEL control is set to 0. 	<ul style="list-style-type: none"> ● Slide the METER LEVEL control to the right.
	<ul style="list-style-type: none"> ● The meter select switches are not set properly. 	<ul style="list-style-type: none"> ● Set these switches correctly.



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