

# YAMAHA M-85

*Natural Sound Stereo Power Amplifier  
Auto Class A Power Circuitry  
Zero Distortion Rule Amplification  
Three-Pair Speaker Support  
Range-Selected LED Power Level Meters  
Overload Protection Circuitry*

## OWNER'S MANUAL



*Thank you for purchasing the YAMAHA M-85 stereo power amplifier.*

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### IMPORTANT

Please check your unit's rear panel serial number and record it in the space below.

Model: **M-85**

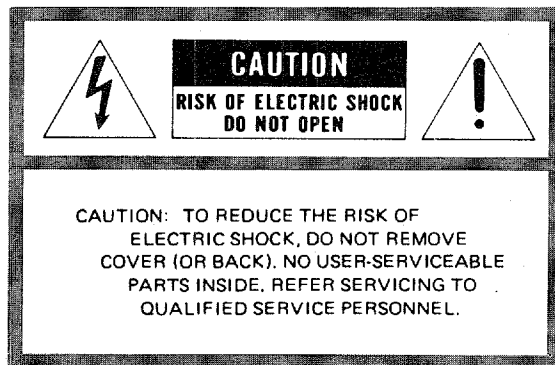
Serial No.:



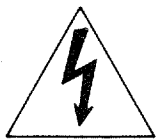
Keep this owner's manual in a safe place for future reference.

### WARNING

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



• **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 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 other 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 **Carts and Stands** — The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 7 **Wall or Ceiling Mounting** — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8 **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 cabinet that may impede the flow of air through the ventilation openings.
- 9 **Heat** — The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.
- 10 **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.
- 11 **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.
- 12 **Cleaning** — The appliance should be cleaned only as recommended by the manufacturer.
- 13 **Nonuse Periods** — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 14 **Object and Liquid Entry** — Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the appliance.
- 15 **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 cabinet damaged.

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

**17 Power Lines** — An outdoor antenna should be placed away from power lines.

**18 Grounding or Polarization** — The precautions that should be taken so that the grounding or polarization of an appliance is not defeated.

**CAUTION: READ THIS BEFORE  
OPERATING YOUR M-85**

**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 amplifier 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 place records or other objects on top of the amplifier; this will block the ventilation holes, cause the internal temperature to rise and may result in a failure.

**6**  
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.

**7**  
Do not attempt to clean the unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.

**8**  
Be sure to read the “troubleshooting” section on common operating errors before concluding that your unit is faulty.

**9**  
Do not connect audio equipment to the AC outlets on the rear panel if that equipment requires more power than the outlets are rated to provide.

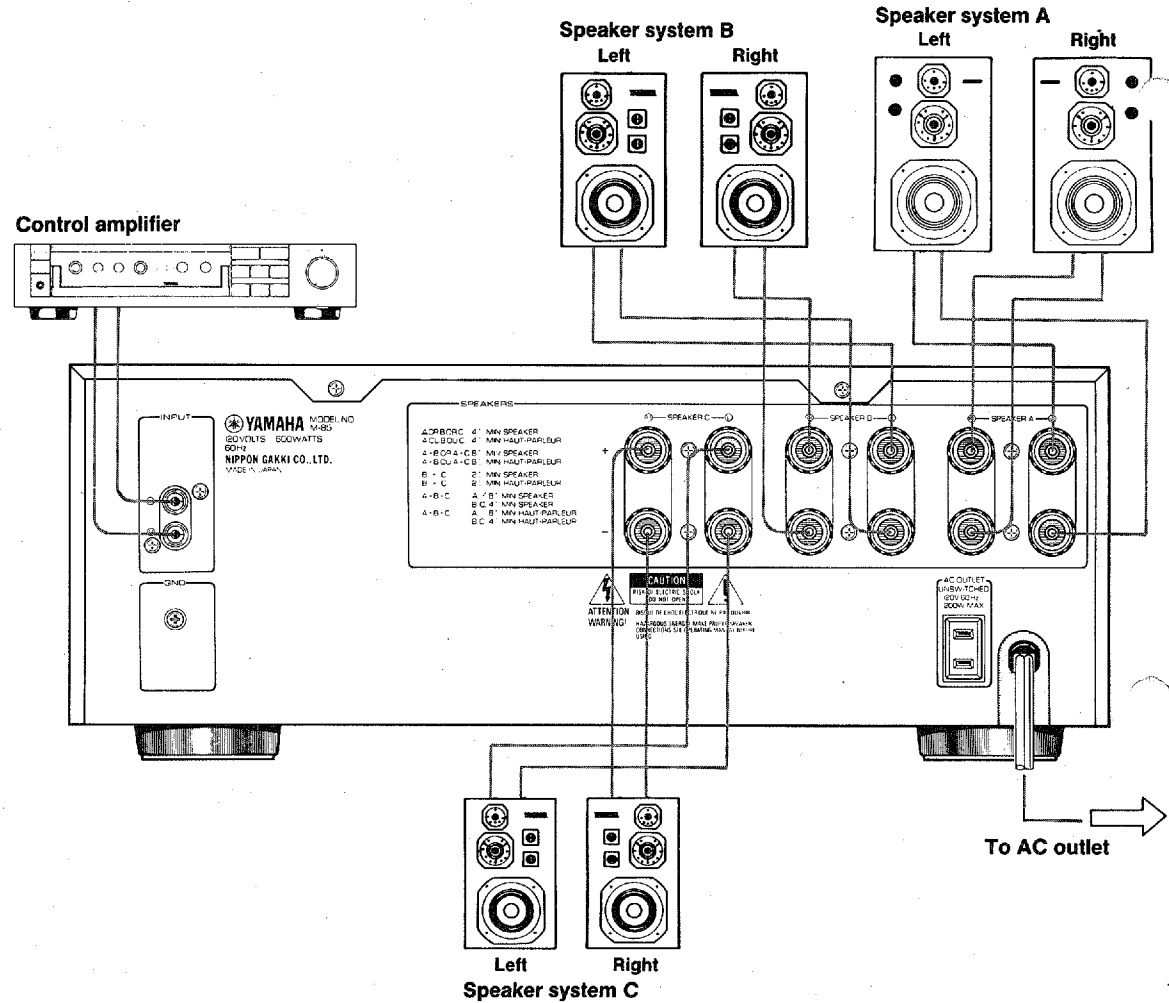
# M-85

## CONNECTIONS

### CONNECTING A CONTROL AMPLIFIER

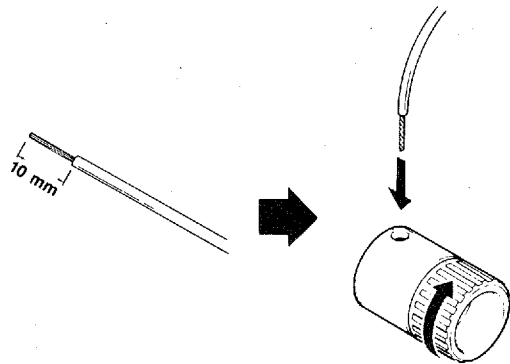
Connect the output jacks of the control amplifier to the INPUT jacks on the rear panel of this unit. The phono-plug pins on both ends of the connecting cord should be clean. Connect firmly and securely. Make sure that both the control amplifier and the unit are properly grounded. Always turn off the power switches of both units when connecting or disconnecting the power and control amplifiers.

Be sure to connect the left (L) and right (R) channels consistently from component to component.

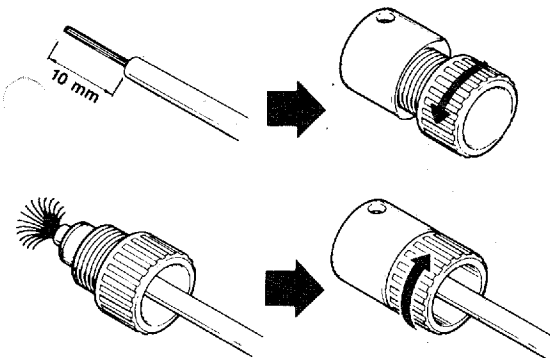


## ■ CONNECTING SPEAKERS

Strip approximately 10 mm (3/8") insulation from the speaker cords (whatever their gauge). Connect the it-gauge speaker cord as shown below.



For heavy-gauge speaker cord, refer to figure below.



In connecting the R and L speaker cords, observe the "+" and "-" markings. If the "+" and "-" cords are reversed, the sound will be unnatural and will lack bass. Speaker cords should be cut as short as possible; do not coil up excess cord on the floor. Also, do not bundle with cords from other system components.

Speakers connected to A will be in parallel with speakers connected to B and/or C. In making any chosen hookup, observe the following minimum speaker load impedances:

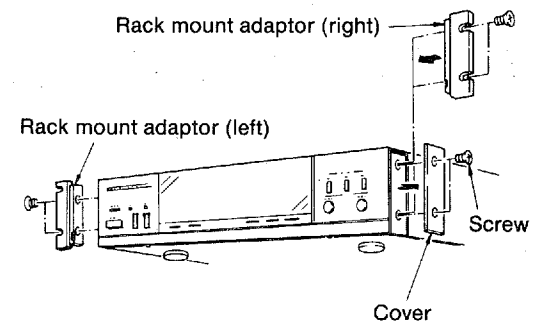
- (1) **One speaker pair —**  
A or B or C: 4 ohms minimum per speaker
- (2) **Two speaker pairs in parallel —**  
A + B or A + C: 8 ohms minimum per speaker
- (3) **Two speaker pairs in series —**  
B + C: 2 ohms minimum per speaker
- (4) **Three speaker pairs —**  
A + B + C: 8 ohms minimum for A  
4 ohms minimum for B and C

## ■ AC OUTLET

For your convenience, the unit is equipped with UNSWITCHED AC OUTLET on the rear panel. The maximum power consumption accepted is 200 watts.

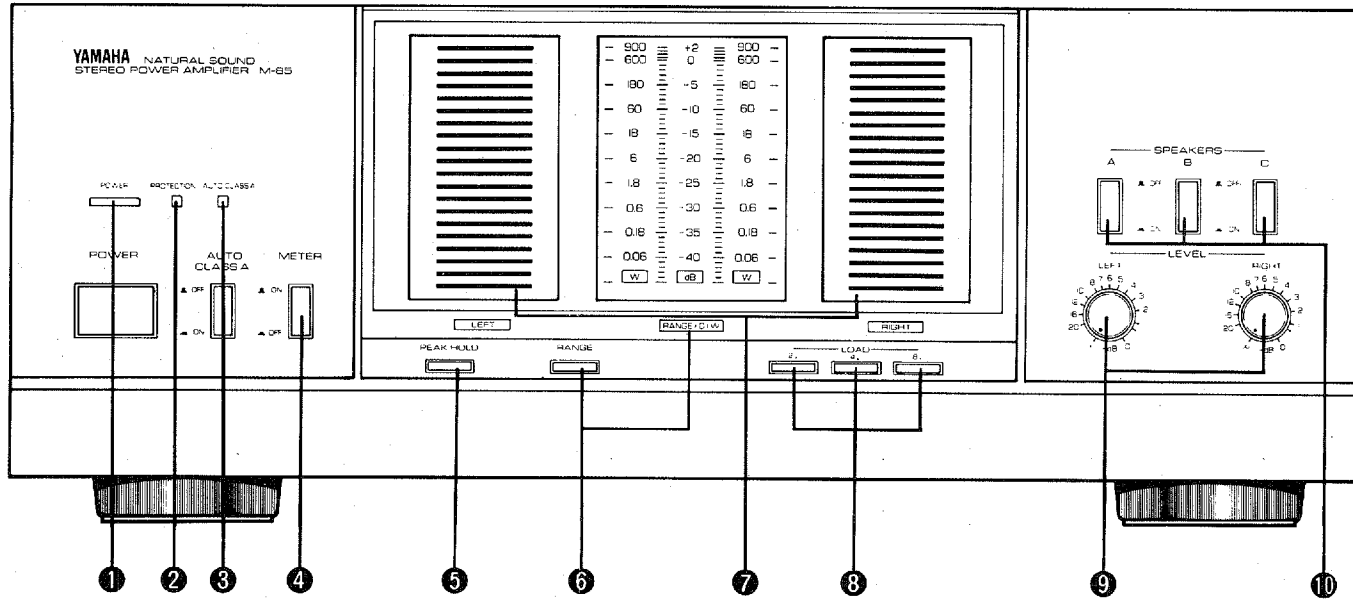
## ■ ATTACHING THE RACK MOUNTING ADAPTORS (Optional)

- 1) Remove the screws on each side of the unit as shown in the diagram and take off the covers which conceal the adaptor mounting holes.
  - 2) Verify that the resulting mounting centers of the adaptors will match the width of your rack, then attach the adaptors firmly with screws.
- \* Using these adaptors allows the unit to be used with EIA standard racks.



# M-85

## FRONT PANEL CONTROLS AND THEIR FUNCTIONS





## 1 POWER switch and indicator

Press this switch to turn the power on. Press the switch again to turn the power off.

## 2 PROTECTION indicator

After the POWER switch is turned on, the PROTECTION indicator will light. To prevent a loud "pop" noise through the speakers, the built-in protection circuitry mutes output for several seconds after power is turned on. While the PROTECTION indicator is lit, no signal is fed to the speakers. If the PROTECTION indicator lights and output ceases during normal play, disconnect the plug from the AC outlet at once. Your speaker connections may be faulty. Turn off power to all audio components and check connections. Then restart the system at low volume.

## 3 AUTO CLASS A switch and indicator

Press this switch to activate the Auto Class A circuitry. The AUTO CLASS A indicator will light. This circuitry provides pure Class A power amplification for output with low power requirements. To provide high power for transient peaks, the circuit shifts to Class B operation while the peak lasts. When the switch is OFF, this unit operates as Class AB.

\* Make sure that the top and sides of the unit have room to vent heat during Class A operation.

## 4 METER switch

This switch activates the power display. When this switch is depressed, the power display is activated. When this switch is released, the power display is not illuminated.

## 5 PEAK HOLD switch

With this switch pressed, the peaks displayed by the high bars of the power display stay lit a second longer, making it easier to read peak levels.

## 6 RANGE selector switch and indicator

When this switch is pressed, the RANGE indicator lights, and the power display reading becomes a tenfold conversion. Then 2 watts of actual output is shown on the scale as 20 watts. Pressing the switch again returns the power display to the normal scale.

## 7 Power display

When the POWER switch is set to ON, the power display will light. The left and right bar indicators correspond to the left and right output channels, and indicate power output on a logarithmically compressed scale from 0.06 W to 900 W. Power output level readings are accurate for the impedance load chosen with the LOAD selector switches — 2, 4 or 8 ohms.

## 8 LOAD selector switches

These three switches adjust power display readout for 2, 4 or 8 ohms speaker load impedance. Select according to your preferred speaker configuration. To work out combined impedance of your speaker sets, use the following formula:

$$(X \times Y) / (X + Y) = \text{combined impedance}$$

$$\text{Example: } (8 \times 8) / (8 + 8) = 4 \text{ ohms}$$

If three speaker sets A, B and C are connected, then  $A = X$  while  $B + C = Y$ ; now apply the formula above. Set the LOAD selector switches to the position closest to the combined impedance.

## 9 LEVEL controls

These controls give you independent L and R channel control over the input levels of the unit. This lets you compensate for variances between different speaker pairs, or change the effect by modifying the output level between channels. It can also serve to protect speakers with lower power handling capacity.

## 10 SPEAKERS selector switches

The B SPEAKER and C SPEAKER terminals are configured in series. When using either the B or C SPEAKER terminals independently of the other, it is necessary that the terminals not being used are turned OFF with the front panel SPEAKERS selector switch.

\* If the PROTECTION indicator is lit, no signal will be fed to the speakers regardless of the SPEAKERS selector switch setting.

## TROUBLESHOOTING

Before assuming that your amplifier is faulty, check following troubleshooting list which details the corrective action you can take yourself without having to call a service engineer. If you have any doubts or questions, get in touch with your nearest YAMAHA dealer.

Symptom	Possible cause	Remedy
Power is not supplied even when the POWER switch is turned ON.	<ul style="list-style-type: none"> <li>The power cord is not securely plugged in.</li> </ul>	<ul style="list-style-type: none"> <li>Plug it in securely.</li> </ul>
No sound is heard from one, two or various speakers.	<ul style="list-style-type: none"> <li>The cords from the control amplifier to the unit are not connected securely.</li> </ul>	<ul style="list-style-type: none"> <li>Connect them securely.</li> </ul>
	<ul style="list-style-type: none"> <li>The balance control is set to the extreme left or right on the control amplifier.</li> </ul>	<ul style="list-style-type: none"> <li>Adjust the control amplifier's balance control.</li> </ul>
The sound suddenly goes off. The PROTECTION indicator is lit.	<ul style="list-style-type: none"> <li>The speaker protection circuit has activated.</li> </ul>	<ul style="list-style-type: none"> <li>Turning the unit OFF and then ON will reset the speaker protection circuit.</li> </ul>
The sound suddenly goes off.	<ul style="list-style-type: none"> <li>Driving speakers outside the rated impedance range at high power for an extended period has activated the speaker protection circuit.</li> </ul>	<ul style="list-style-type: none"> <li>Turning the power OFF and then ON will reset the speaker protection circuit. Use speakers inside the rated impedance range.</li> </ul>
	<ul style="list-style-type: none"> <li>There is a malfunction in the amplifier.</li> </ul>	<ul style="list-style-type: none"> <li>Consult your YAMAHA dealer.</li> </ul>
Unnatural bass with no ambience.	<ul style="list-style-type: none"> <li>The speaker polarities are reversed.</li> </ul>	<ul style="list-style-type: none"> <li>Correct the speaker polarities.</li> </ul>

## SPECIFICATIONS

<b>Minimum RMS Output Power Per Channel</b>	
20 ~ 20,000 Hz 0.003% THD, 8 ohms	260W
0.007% THD, 6 ohms	295W
0.02% THD, 4 ohms	330W
<b>Auto Class A Operation Range (8 ohms)</b>	30W
<b>Dynamic Headroom (IHF, 8 ohms/6 ohms/4 ohms)</b>	2.18 dB/2.38 dB/3.11 dB
<b>Dynamic Power per channel (by IHF Dynamic Headroom measuring method)</b>	
8 ohms/6 ohms/4 ohms/2 ohms	430/510/660/850W
<b>Power Bandwidth (0.03% THD, 130W/8 ohms)</b>	10 ~ 60,000 Hz
<b>Total Harmonic Distortion</b>	
MAIN IN to SP out, 130W/8 ohms	0.002%

<b>IM Distortion Ratio (8 ohms)</b>	0.003%
<b>Damping Factor (1,000 Hz, 8 ohms)</b>	230
<b>Frequency Response (20 ~ 20,000 Hz)</b>	+0, -0.2 dB
<b>Input Sensitivity/Impedance</b>	1.55V/20 k-ohms
<b>Signal-to-Noise Ratio (IHF-A-Network) (MAIN IN Shorted/5.1 k-ohms Terminated)</b>	128 dB/122 dB
<b>Residual Noise (IHF-A-Network)</b>	16 $\mu$ V
<b>Channel Separation (Input shorted) 1,000 Hz/10,000 Hz</b>	89 dB/76 dB
<b>Power Supply</b>	120V, 60 Hz

<b>Power Consumption</b>	600W
<b>AC Outlet</b>	
Unswitched x 1	200W
<b>Dimensions (W x H x D)</b>	435 x 165 x 421
	(17-1/8" x 6-1/2" x 16-5/8")
<b>Weight</b>	23 kg
	(50 lbs. 10 oz.)

Specifications subject to change without notice.

SINCE 1887



# YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

BWgb,Y Printed in Japan