

YAMAHA MX-70

Natural Sound Stereo Power Amplifier

Amplificateur stéréophonique de puissance de la série "Natural Sound"

Natural Sound Stereo-Endverstärker

Stereoeffektförstärkare med naturligt ljud

Amplificatore di potenza stereo a suono naturale

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Thank you for purchasing the YAMAHA MX-70 stereo power amplifier.

ABOUT THIS MANUAL

To obtain the finest performance from your new power amplifier, please read this manual carefully, keeping it handy for future reference. After you know which PRECAUTIONS to take, the section CONNECTIONS will show you how to hook up the MX-70 to your control amplifier and speakers. Operation of this power amplifier is explained under FRONT PANEL CONTROLS AND THEIR FUNCTIONS. If you have any trouble, the final section on TROUBLESHOOTING tells you what to do before contacting your YAMAHA dealer.

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IMPORTANT:

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

Model: MX-70

Serial No.:

FEATURES

- *Hyperbolic Conversion Amplification Circuit*
- *Advanced Power Supply (APS) Circuitry*
- *Three-Pair Speaker Support*
- *LCD (Liquid Crystal Display) Power Level Meters*
- *Overload Protection Circuitry*

Hyperbolic Conversion Amplification Circuit

This new kind of circuitry, developed by Yamaha, eliminates the only serious drawback of previous Class A operation amplifiers. These had to switch to non-linear class AB operation above a certain load current, causing a slight deterioration in the otherwise excellent sound quality. The new Hyperbolic Conversion Amplification Circuit does away with this problem, allowing your Yamaha MX-70 to deliver superior performance constantly, without switching or cut-off, over its entire power range.

Advanced Power Supply Circuitry (APS)

An amplifier is only as good as its power supply — this simple truth has prompted Yamaha to develop the APS circuitry incorporated in your new MX-70. The problem with conventional power sources was their tendency to produce pronounced voltage ripples during medium to large amplitude music signals, particularly under low impedance loads, together with voltage fluctuations in the power transistors. APS solves this problem by providing an active power source that ensures stable voltage in the final transistor stage under all operating conditions, thus greatly improving power supply to the amplifier.

PRECAUTIONS

OWNER'S MANUAL

Keep this manual in a safe place for future reference.

LOCATION

Avoid placing your MX-70 in direct sunlight or close to a source of heat. Also avoid locations in which the device is likely to be subjected to excessive dust, cold or moisture.

VENTILATION

The openings on the cabinet ensure the ventilation of the amplifier. If these openings are obstructed, the temperature inside the cabinet will rise rapidly and eventually damage the circuits. Therefore, avoid placing objects against these openings and do not install your amplifier in a place such that the flow of air through the ventilation openings could be impeded.

HANDLING

■ Power cord

When removing the power plug from the wall outlet, always pull directly on the plug. Never yank the cord as this may result in damage to the cord and possibly a short-circuit.

If you do not intend to use this unit for an extended period of time, it is advisable to unplug the power cord.

■ Switches and knobs

Avoid applying excessive force to the switches and knobs.

■ Relocation

Before moving your amplifier, be sure to unplug the power cord and remove all other connecting cables.

IN CASE OF TROUBLE

■ Troubleshooting Chart

Consult the Troubleshooting Chart for advice on the common operation errors before concluding that your amplifier is faulty.

■ Servicing

Do not open the cabinet or attempt to make repairs by yourself, as this may aggravate the damage and expose you to an electrical shock.

■ Object and liquid entry

See to it that foreign objects or spilled liquids do not enter inside the cabinet. Should this case arise, consult your YAMAHA dealer.

CLEANING

Wipe off dust with a dry soft cloth. To remove dirt or fingerprints, use a soft damp cloth then dry immediately with a clean cloth. Do not use alcohol, thinners or other chemical solvents since they may damage the finish or remove the panel lettering.

Do not use any aerosol sprays near this unit as these products can easily get into the unit and damage the circuitry.

Special instructions for the U.K.

THE WIRES IN THE MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

Blue: NEUTRAL

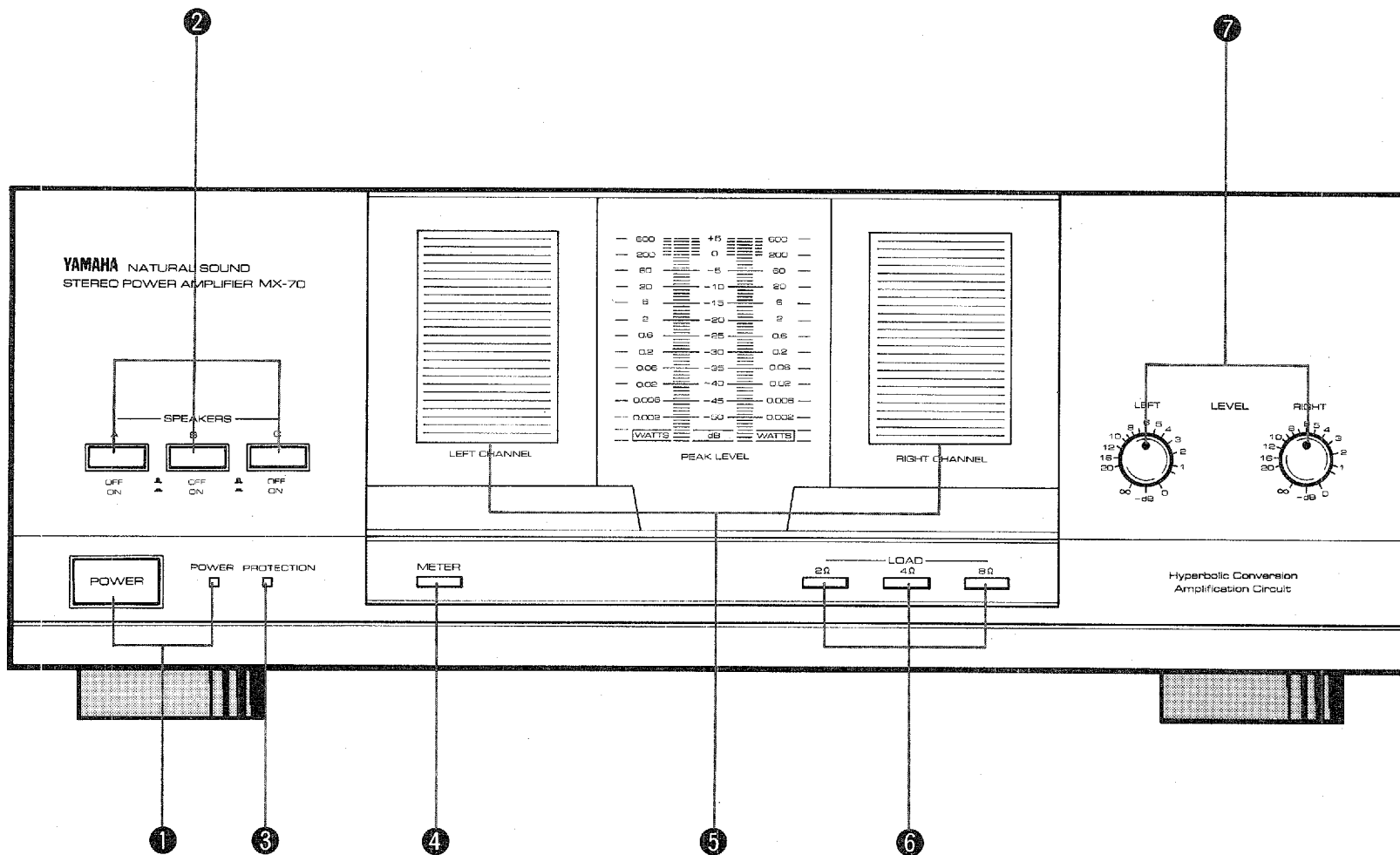
Brown: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows. The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

FRONT PANEL ILLUSTRATION
ILLUSTRATION DU PANNEAU AVANT

ABBILDUNG DER VORDERSEITE
ILLUSTRATIONEN PÅ FRAMSIDAN

ILLUSTRAZIONE DEL PANNELLO ANTERIORE
ILLUSTRATIONEN PÅ FRAMSIDAN



FRONT PANEL CONTROLS AND THEIR FUNCTIONS

The Front Panel illustration is provided on page 3.

- ① **POWER switch and indicator:** Pressing this switch turns power on, causing the POWER indicator to light. To turn the unit off, press again.
- ② **SPEAKERS selectors:** Allow you to select any of the speaker pairs connected to the A, B and/or C terminals by pushing the appropriate switch(es) to the ON position.

NOTE:

If speakers are connected to terminals B, but not to terminals C, be sure to press only the B SPEAKERS selector when listening via pair B. Pushing in selector C as well will cut off the sound from pair B since B and C are connected in series. (The same holds true if speakers are connected to C and selector B is pressed.)

- ③ **PROTECTION indicator:** Lights for several seconds after power is turned on, showing that the internal protection circuitry is currently activated. This mutes the output signal to the speakers, preventing the loud noise otherwise heard when switching on the amplifier.
- ④ **METER switch:** Switches the power peak meter OFF. (This power display is not illuminated when the METER switch is pressed in.)
- ⑤ **Power peak meter:** indicates the power output on a logarithmically compressed scale from 0.002 to 600 watts (-50 to +5dB), independently for the left and right output channels. Readings are accurate for the load determined by the LOAD selectors.

- ⑥ **LOAD selectors:** These three switches let you adjust the peak power display according to the speaker load impedance. When using more than one pair of speakers at the same time, you can work out their combined impedance with the following formula where X and Y are the impedance values of each speaker pair

- 1) 2 pairs in parallel (A + B or A + C)

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

Example for 2 pairs of 8 ohm speakers:

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

- 2) 2 pairs in series (B + C)

$$X + Y = \text{combined impedance}$$

- 3) 3 pairs (A + B + C)

Same formula as 1), with A = X and (B + C) = Y

If the combined impedance does not correspond exactly to one of the three LOAD settings, select the closest one.

- ⑦ **LEFT and RIGHT LEVEL controls:** These give you independent control over the power output levels to the L and R speakers. This allows you to preset speaker balance for optimum stereo imaging. These controls can also serve to protect speakers with power handling capacity lower than this amplifier's rated output.

CONNECTIONS

The connection diagram is provided on page 32.

- ① CONTROL AMPLIFIER
- ② SPEAKERS A
- ③ SPEAKERS B
- ④ SPEAKERS C

Make sure the left (L) and right (R) channels are connected consistently between components.

NOTE:

Before making or altering any of the connections described below, be sure to turn off the power of the MX-70.

CONNECTING A CONTROL AMPLIFIER

Making sure that the control amplifier is also turned off, connect the output jacks of your control amplifier to the corresponding INPUT jacks on the rear panel of this unit. Always check that

- a) the RCA plugs of the connecting cord are clean,
- b) the left and right channels of both units correspond,
- c) connections are secure, and
- d) both units are properly grounded.

CONNECTING SPEAKERS

The MX-70 can drive up to three pairs of speakers (A, B and C) at the same time. Those connected to terminals A are in parallel with pairs B and C, which are in series. The following table shows the minimum load impedances per speaker for all possible connections.

Number of speakers	MX-70 terminals	Minimum speaker load impedance
1 pair	A or B or C	4 ohms
2 pairs in parallel	A + B or A + C	8 ohms
2 pairs in series	B + C	2 ohms
3 pairs	A + B + C	A: 8 ohms B,C: 4 ohms

Be sure to use only speakers within the rated impedance range and with adequate power handling capacity. Driving speakers with extremely low impedance (or several low-impedance pairs simultaneously) at continuous full power may cause the protection circuit to activate.

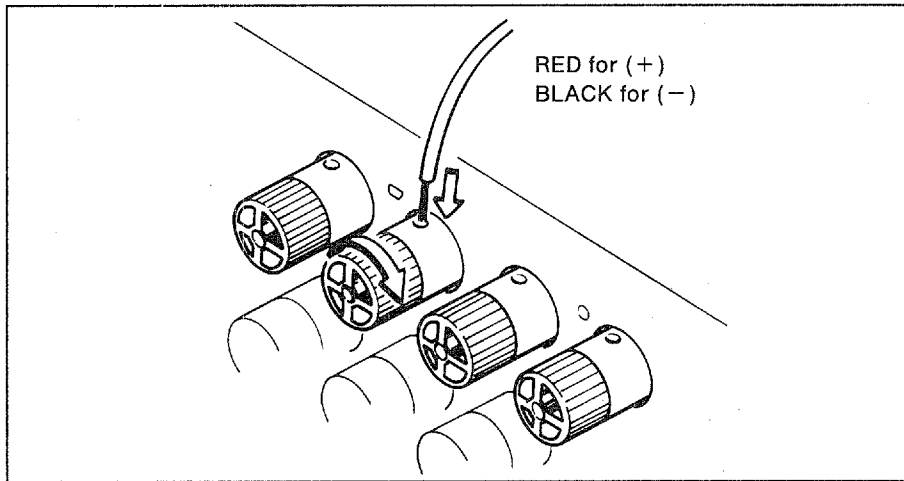
When connecting the speaker cords, observe the “+” and “-” markings on the backs of the speakers and MX-70. If the “+” and “-” polarities are reversed, the sound will be unnatural and lack bass.

Speaker cords should be cut as short as possible. Do not coil up excess cord or bundle it with cables from other components.

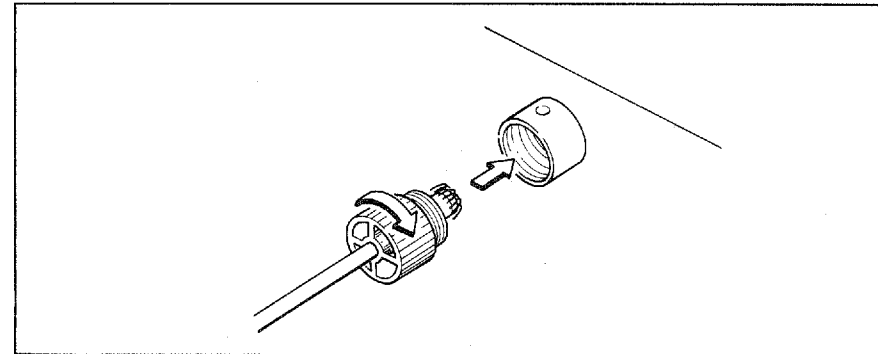
Strip approximately 10 mm (3/8”) insulation from the ends of the speaker cords and connect them as explained on the next page:

A. Light-gauge Speaker cords

Partly unscrew the plastic wire holders. Insert the stripped ends of the speaker cords as shown and retighten the holders.

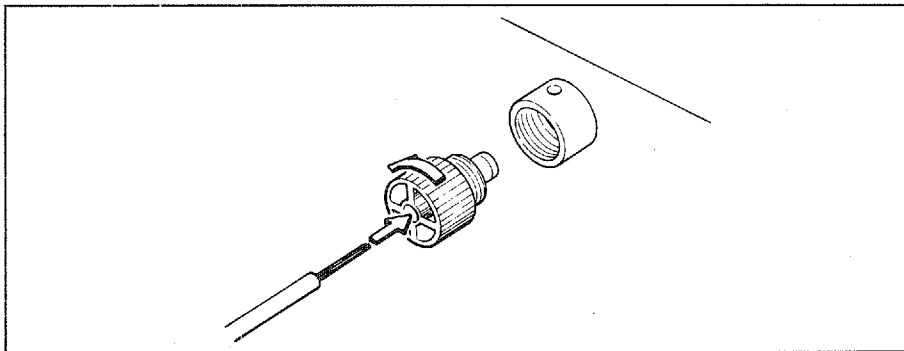


Splay the strands as shown, then screw the wire holders back



B. Heavy-gauge speaker cords

First, unscrew and remove the plastic wire holders. Insert the stripped ends of the speaker cords into the holders until they protrude on the other side.



TROUBLESHOOTING

Before assuming that your amplifier is faulty, check the following list. If you still have any doubts or questions, contact your nearest YAMAHA dealer.

Symptom	Possible cause	Remedy
No power even when the POWER switch is ON.	● The power cord is not plugged in securely.	● Plug in securely.
No sound is heard from the left and/or right speaker(s).	● The speaker cords are not properly connected.	● Check speaker connections and correct them.
	● Either or both LEVEL controls are set to $-\infty$ dB.	● Adjust the appropriate LEVEL control(s).
	● The cords from the control amplifier are not secure.	● Connect them securely.
	● The control amp's balance is set to the extreme left or right.	● Adjust the control amp's balance control.
The sound ceases suddenly, and the PROTECTION indicator is lit.	● The speaker protection circuit has activated.	● Turn power OFF, then ON again to reset the speaker protection circuit. Also see CONNECTING SPEAKERS on p. 5.
	● There is a malfunction in the amplifier.	● Consult your YAMAHA dealer.
Unnatural sound lacking bass.	● The speaker polarities are reversed.	● Connect the speaker wires with the correct + and - polarity.

SPECIFICATIONS

Minimum RMS Output Power Per Channel		
20Hz ~ 20kHz	0.003% THD, 8 ohms	170W
	0.007% THD, 6 ohms	195W
	0.02% THD, 4 ohms	230W
Dynamic Power Per Channel (by IHF Dynamic Headroom measuring method)		
	8 ohms	270W
	6 ohms	330W
	4 ohms	440W
	2 ohms	570W
	1 ohms	600W
DIN Standard Output Power Par Channel		
	1kHz, 1% THD, 4 ohms	250W
Power Band Width		
	0.03% THD 85W, 8 ohms	10Hz ~ 60kHz
Damping Band Width		
	1kHz, 8 ohms	90
Input Sensitivity/Impedance		
	MAIN IN	1.32V/60kΩ
Frequency Response		
		(20Hz ~ 20kHz) +0, -0.2dB
Total Harmonic Distortions (20Hz ~ 20kHz)		
	MAIN IN to Sp Out, 85W/8Ω	0.003%

Intermodulation Distortion	
Rated Output/8 ohms	0.003%
Signal to Noise Ratio (IHF-A-Network)	
MAIN IN (shorted)	124dB
MAIN IN (5.1 kΩ terminated)	120dB
Residual Noise (IHF-A-Network)	
	21μV
Channel Separation	
Input shorted, terminated, 1kHz/10kHz	89dB/72dB
Power Supply	
	Europe AC220V, 50Hz U.K. AC240V, 50Hz
Power Consumption	
	1,150W
Dimensions (W x H x D)	
	435 x 165 x 425mm (17-1/8" x 6-1/2" x 16-47/64")
Weight	
	14.5kg

Specifications subject to change without notice.

MX-70