Artistry in Sound ONKYO

M-504

Stereo Power Amplifier

Instruction Manual

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

ONKYO

- The serial number is written on the rear panel of this unit. Copy the serial number and model number onto your warranty card and keep it in a safe place.
- On units equipped with decorative side panels, the side panel material is vinyl overlay particleboard.

Important Safeguards

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, and the like.
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, placed in a built-in installation, such as a bookcase 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, heat registers, stoves, or other appliances (including amplifiers) 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. Grounding or Polarization — The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. 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 the cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning — The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. 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.
17. 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.

Care

From time to time you should wipe off the front and rear panels and the cabinet with a silicon or other soft cloth. For heavier dirt, dampen a soft cloth in a weak solution of mild detergent and water, wring it out dry, and wipe away the dirt. Following this, dry immediately with a clean cloth. Do not use rough material, thinner, alcohol or other chemical solvents or cloths since these may damage the finish or remove the panel lettering.

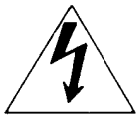
Note:

AC Fuses

The fuses are located inside the chassis and are not user serviceable. If power does not come on, contact your Onkyo dealer.

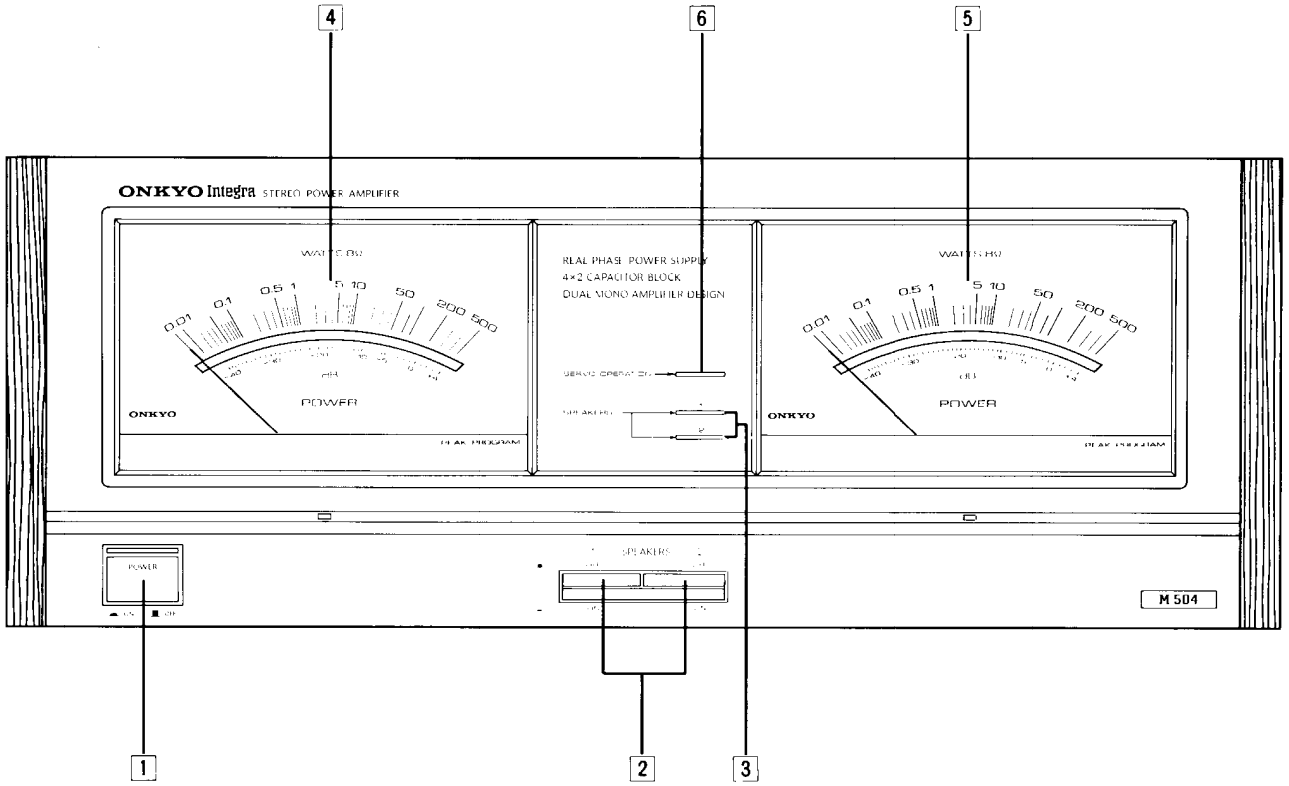
"CAUTION"

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



- The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user 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 the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Front Panel Facilities



1 Power Switch (POWER)
Press once to turn power on and once again to turn power off. When power is turned on, the orange band over the power switch lights. After turning the switch on there is a delay of a few seconds to allow the circuitry to stabilize before power output commences.

2 Speaker Selector Switches (SPEAKERS)
Turn the output to the speaker terminals on and off using these switches. Press 1 to select speaker system 1 (2 for speaker system 2). Both sets of speakers can be driven at the same time by pressing 1 and 2.

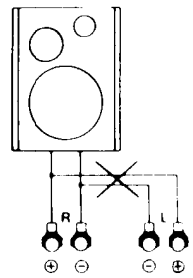
3 Speaker Selector Indicators (SPEAKERS)
These indicators light to indicate when speaker selector switch 1 or 2 [2] has been turned on.

4 5 Peak Power Meters
The large peak power meters have been designed so that the indicator needles move up to the peak level quickly and then return more slowly. This makes it easier to read transient power levels which last for only a fraction of a second. The number of watts indicated on the meters corresponds to the actual output level when driving speakers rated at 8 ohms. When driving speakers rated at 4 ohms, the output is actually twice that shown on the peak power meters.

6 Servo Operation Indicator (SERVO OPERATION)
When the power is turned on there is a delay of a few seconds while the servo circuitry stabilizes. This indicator lights when the amplifier is ready for operation. No sound can be heard from the speakers until it lights. It goes out again if the protection circuits are activated. (See page 6, "Protection Circuits.")

System Connections

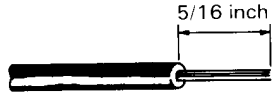
- The M-504's power consumption is very high, so be sure to plug it into a wall socket with sufficient output capacity.
- As the M-504 is a high grade high power amplifier, use only speaker systems of a similar caliber capable of doing justice to the excellent quality of sound reproduction that this unit offers.
- Only use speakers with an impedance rating of 4 ohms or more with this unit. If you wish to listen to two speaker systems simultaneously, use speakers rated at 8 ohms or more. Never connect more than one speaker to one set of output terminals as this may cause the unit to malfunction. (Total impedance should not be less than 4 ohms.) Speakers used with this unit should have a high power handling capacity. Speakers with a low maximum input power rating may be damaged if the volume level is raised too high, so be sure to check the maximum power rating of your speakers and to set the volume to an appropriate level.
- Use speaker cables of as heavy a gauge as possible. (For example, cable with 30-50 strands in suitable.) Thin leads are not recommended because the resulting higher speaker lead impedance will adversely affect sound quality. The left and right leads should be the same length and as short as possible.
- Be careful not to short-circuit the speaker cables. In particular, make sure that the uninsulated portions of the speaker cables do not come in contact with neighboring terminals or the rear panel when connecting speaker cables to the output terminals.
- When using only one speaker or when listening monaurally, a single speaker should never be connected in parallel to both the right and left channel terminals at once. Doing so could very easily cause permanent damage to the unit.



- Do not bundle the input connector cables together with the speaker leads or the power cord. Doing so can produce induction hum or noise.
- It is not generally necessary to connect a ground lead to the GND terminal. However, it may be necessary to connect one to correct hum or noise caused by some types of preamplifiers or the positioning of the input connector cables.

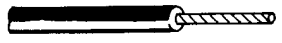
Connecting Speaker Cables
1. Remove about 5/16 inch of insulation from the end of the speaker cable.
2. Twist the exposed copper strands together tightly.
3. Unscrew the speaker terminal part way by turning it counter-clockwise.
4. Insert the exposed copper portion of the cable all the way into the opening in the speaker terminal.
5. Tighten the terminal screw by turning it clockwise.
6. Check to make sure that none of the uninsulated copper portion of the cable is exposed.

[1]



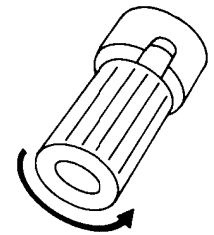
remove insulation

[2]



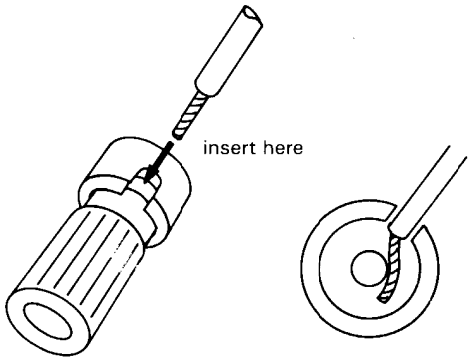
twist copper strands together

[3]



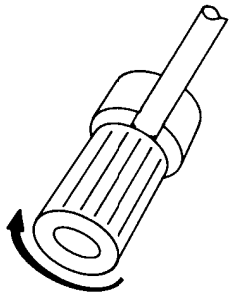
unscrew

[4]

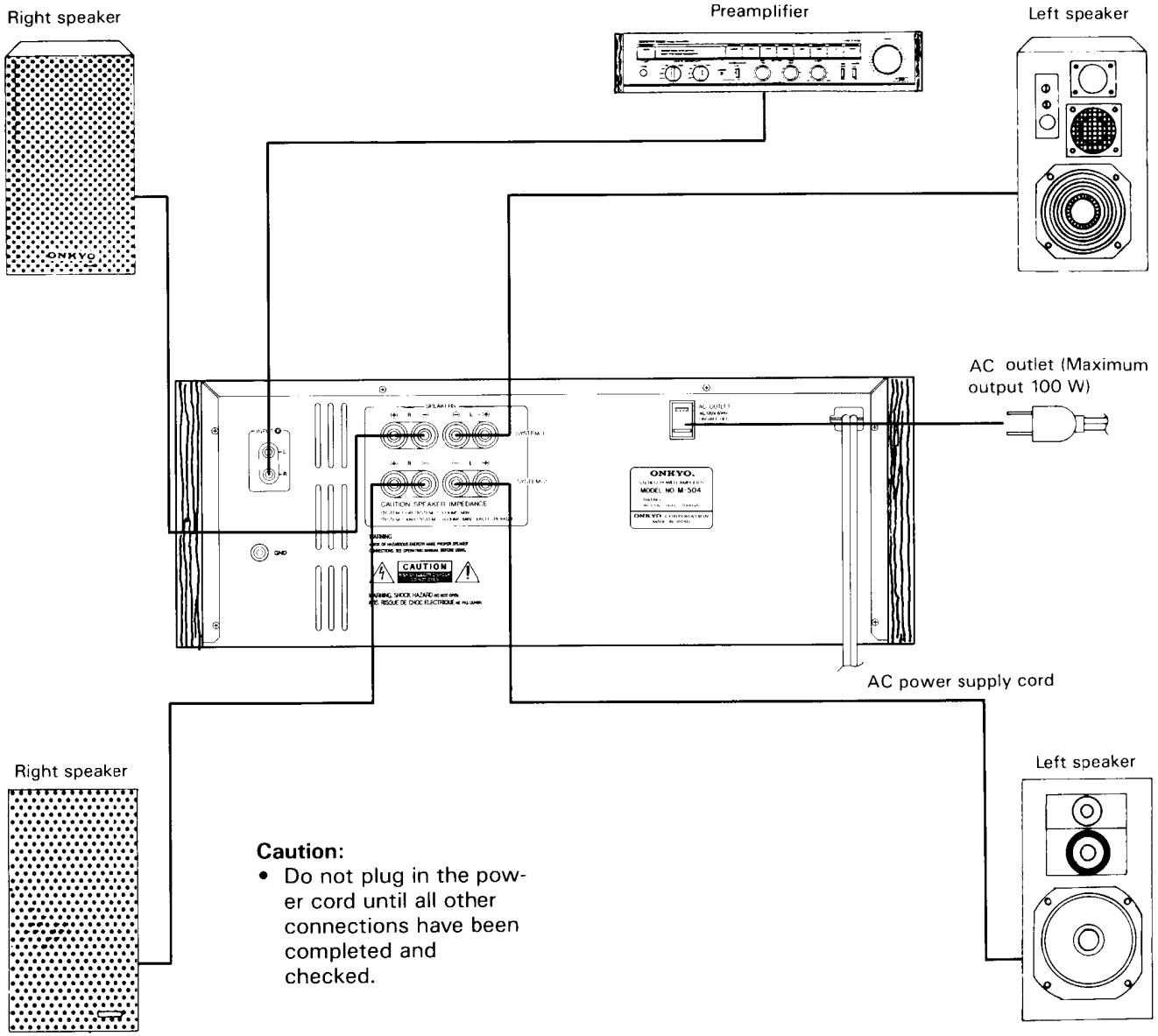


insert here

[5]



tighten



Caution:

- Do not plug in the power cord until all other connections have been completed and checked.

Protection Circuits

Protection circuits in high power amplifiers such as the M-504 play an important role in protecting both the speaker systems and the amplifier itself from damage. A relay incorporated in the M-504 speaker output circuit is designed to cut off the output terminals as soon as an abnormal situation (described below) occurs. If this relay is activated, the servo operation indicator lamp will go out. If this happens, turn the power switch off immediately, locate the cause of the problem and correct it before turning the power back on.
In order to prevent the protector relay from affecting sound quality, this unit employs a silver contact relay with a low contact resistance. A few seconds after the power switch is turned on, this relay produces a soft clicking sound that serves as an indication that the amplifier is ready for use. The protective relay will be activated in the following cases:

When an excessive current reaches the speaker terminals
If an excessive current appears at the speaker terminals, the protector relay will initially switch off and on and then finally switch off altogether indicating that a problem has occurred. The problem may be due to short-circuiting of the speaker cables or it may be the result of the output power being increased when speakers of low impedance are being used. In any case, turn the power switch off immediately, locate the cause of the problem and correct it.

When DC voltage reaches the speaker terminals
Since the M-504 is a DC amplifier incorporating a Super Servo system, DC voltage is not normally generated by the amplifier itself. However, if a failure occurs in the amplifier resulting in the appearance of DC voltage at the output terminals, the speakers could be damaged. Therefore, if DC voltage is detected, the relay is activated to isolate the speakers from the amplifier.

Although the left and right channels are completely separated from each other in the M-504, both channels will be cut automatically even if trouble occurs in only one channel. Note that there is always no sound from the speakers for the first few seconds after the power switch is turned on. This is not a malfunction of the unit.
Some preamplifiers and tape decks generate a "pop" noise when the power is turned on. If such pop noises reach the M-504, they could activate the protection circuit. If this is a problem, always turn the M-504 power switch on last after the other components.

Trouble-shooting Guide

If the M-504 fails to function normally, first check the following points before contacting your Onkyo dealer. If the problem is not solved after going through the following list, unplug the power cord and contact your Onkyo dealer.

1. **No power**
   Check that the power switch [1] has been turned on and that the power cord has been properly plugged into the socket.
   Also note that when the power cord is plugged into one of the power outlets (switched) on the rear panel of the preamplifier, the preamplifier power must also be turned on.

2. **No sound when power is turned on**
   Check that the speaker cables and the pin-type connecting cables have been properly connected. Then check to make sure that there is an input signal from the preamplifier. The speaker selector [2] must also be in the correct position. If the protective circuitry has been activated (indicated by the servo operation indicator [6]), turn the power switch off immediately, locate the problem, and correct it.

3. **Generation of hum, howling and other noises**
   Connect a ground lead. Also keep the input connector cables well away from the power cord and power transformer since these are possible sources of induction noise.

Specifications

Power output:	165 watts per channel, min. RMS, at 8 ohms, both channels driven, from 20 Hz to 20 kHz, with no more than 0.003% total harmonic distortion 165 watts per channel, into 8 ohms at 1 kHz, 0.003% THD
Total harmonic distortion:	0.003% at rated power 0.003% at 1 watt output
Intermodulation distortion:	0.003% at rated power 0.003% at 1 watt output
Frequency response:	+0, −1.5 dB at 1Hz − 100 kHz
Input sensitivity:	1V
Input impedance:	20 kohms
Damping factor:	140 (8 ohms, 1 kHz)
S/N ratio:	120 dB (IHFA, Shorted)
Outputs:	SPEAKERS 1 & 2, AC OUTLET (UNSWITCHED X1)
Inputs:	INPUT
Power supply:	AC120V, 60Hz
Dimensions:	465(W) x 185(H) x 422(D)mm 18-5/16'' x 7-5/16'' x 16-5/8''
Weight:	22.5Kg, (49.5 lbs.)

Specifications and features are subject to change without notice.