

M-506RS

Super Servo Stereo Power Amplifier

*****WARNING*****

**TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS UNIT TO RAIN
OR MOISTURE.**

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.

Instruction Manual

ONKYO

For Safety

Please read the following safety instructions before using this unit.

1. Read Instructions — All the safety and operating instructions should be read before the unit is operated.
2. Retain Instructions — The safety and operating instructions should be retained for future reference.
3. Heed Warnings — All warnings on the unit and in the operating instructions should be observed.
4. Follow Instructions — All operating and use instructions should be followed.
5. Water and Moisture — The unit should not be used near water, for example, near a washbowl, fishbowl or in a damp basement.
6. Carts and Stands — The unit should be used only with a cart or stand that is recommended by the manufacturer.
7. Wall or Ceiling Mounting — The unit should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation — The unit should be situated so that its location or position does not interfere with proper ventilation. For example, it should not be placed 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 unit should be situated away from heat sources such as radiators, heat outlets or other appliances that produce heat.
10. Power Sources — The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the rear panel.
11. Grounding or Polarization — Be sure the unit is properly grounded and that polarization is correct.
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 cords at plugs, convenience receptacles and the point where they exit from the unit.
13. Cleaning — To keep the unit looking like new, wipe the cabinet every now and then with a silicon cloth or other suitable soft material. To remove heavier stains and smears, dip a soft cloth in a weak solution of neutral cleanser, wring out well and then wipe clean. Wipe dry with a separate dry soft cloth. Do not use a rough cloth or solvents since these tend to mar the appearance and even remove panel lettering.
14. Periods of Nonuse — The power cord of the unit should be unplugged from the outlet when the unit is left unused for a long period of time.
15. Spillage — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through the openings.
16. Damage Requiring Service — The unit should be serviced by qualified service personnel when:
 - A. The power supply cord or plug has been damaged;
 - or
 - B. Objects have fallen or liquid has been spilled into the unit; or
 - C. The unit has been exposed to rain; or
 - D. The unit does not appear to operate normally or exhibits a marked change in performance; or
 - E. The unit has been dropped, or the enclosure damaged.
17. Servicing — The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

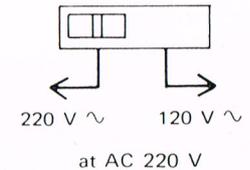
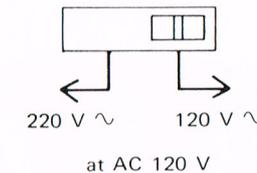
Note:

● AC Fuse

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

● Voltage Selector (Rear Panel)

The M-506RS is equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by sliding the groove in the switch with a screwdriver or similar instrument to right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



Features

The M-506RS is the result of extensive research not only in electronics, but also in the science of how sound is reproduced and perceived in a variety of sound fields. One outcome is that distortions resulting from time domain inaccuracies have been dramatically reduced. Large, independent left and right power supplies with large capacity chemical capacitors have been provided, and power supply impedance is extremely low. Super Servo on both the hot (signal) and ground sides reduces the variations in the power supply for large inputs to under 1/100th (-40dB), creating a nearly ideal power supply. Also, the output stage uses high f_T transistors in a 3-stage Darlington configuration. Distortion usually associated with class B amplifiers is virtually eliminated, and Onkyo's unique Linear Switching radically reduces both switching and crossover distortions. In addition, an auto-tracking bias system is used to prevent instabilities in the bias current due to thermal variations. Advanced protection circuits and parts carefully selected not only for their specifications, but also for their sonic characteristics, further add to the state-of-the-art performance of the M-506RS.

Specifications

Power output:	150 watts per channel, min. RMS, at 8 ohms, both channels driven, from 20 Hz to 20 kHz, with no more than 0.002% total harmonic distortion
Total harmonic distortion:	0.002% at rated power 0.002% at 1 watt output
Intermodulation distortion:	0.0015% at rated power
Frequency response:	1 Hz to 100 kHz, +0, -1.5dB
Input sensitivity:	1 volt
Input impedance:	47 kohms
Damping factor:	180 (8 ohms, 1 kHz)
S/N ratio:	122 dB
Power supply:	AC120V, 60Hz or AC220V, 50Hz
Outputs:	SPEAKERS 1 & 2, PHONES
Inputs:	INPUT
Semiconductors:	8 FETs, 47 transistors, 54 diodes, 6 ICs
Dimensions:	480(W) x 175(H) x 422(D) mm 18 7/8" x 6 7/8" x 16 5/8"
Weight:	20.5 kg, 45.2 lbs.

Specifications and features are subject to change without notice.

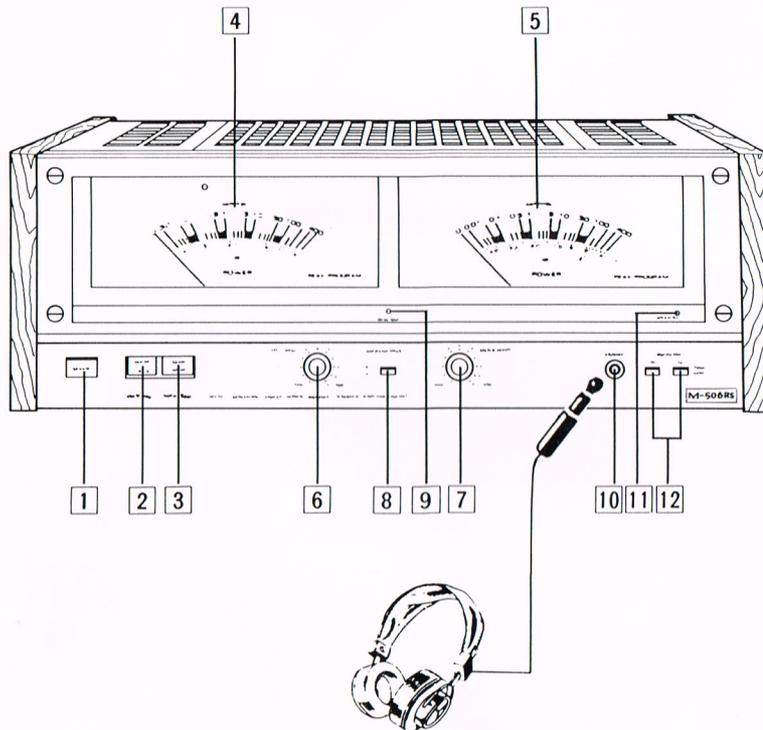
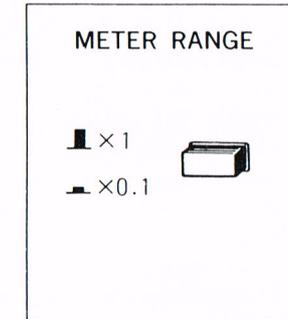
Front Panel Facilities

In order to obtain all the benefits of the Super Servo circuitry in this power amplifier, it should be used with the Onkyo P-306RS pre-amplifier.

Before turning the M-506RS power switch on, set the output level controls (both left and right) to the maximum positions (fully clockwise) for maximum power output and set the preamplifier volume control to the minimum position (fully counterclockwise) for zero output level. When the power switch is turned on, the power meters will be illuminated by a pale red light for a short time. During this period, the muting circuit will be on and no output signal is produced. When the meter illumination switches to plain white a few seconds later, the audio system is ready for use. Only then should the preamplifier volume control be turned up to a suitable listening level.

Meter Range Selector

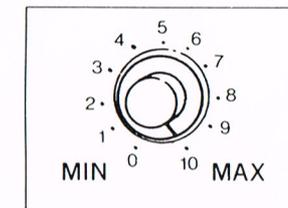
The power meter sensitivity is selected by using this selector. Depress () to the x 0.1 position to increase the meter sensitivity by 10. In this mode, the 100W graduation will correspond to an output level of 10W. Leave the selector out () in the x 1 position to read output levels directly from the meter scale. When the meters are in the high sensitivity (x 0.1) mode, be careful not to let the indicators move past the end of the scale.



- 1 Power switch
- 2 Power indicator
- 3 Super Servo indicator
- 4 Left channel power meter (illuminated)
- 5 Right channel power meter (illuminated)
- 6 Left channel level control
- 7 Right channel level control
- 8 Meter range selector
- 9 Meter range selector indicator
- 10 Headphones jack
- 11 Speaker indicators
- 12 Speaker selectors

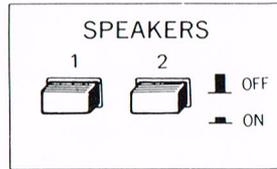
Output Level Controls

This unit is equipped with separate left and right channel output level controls. Normally, both controls should be turned fully clockwise to the MAX positions and subsequent volume level adjustments made using the pre-amplifier volume control. If, however, there is a noticeable difference between the volume levels of the left and right speakers, readjust these controls to obtain the same volume level in both speakers.

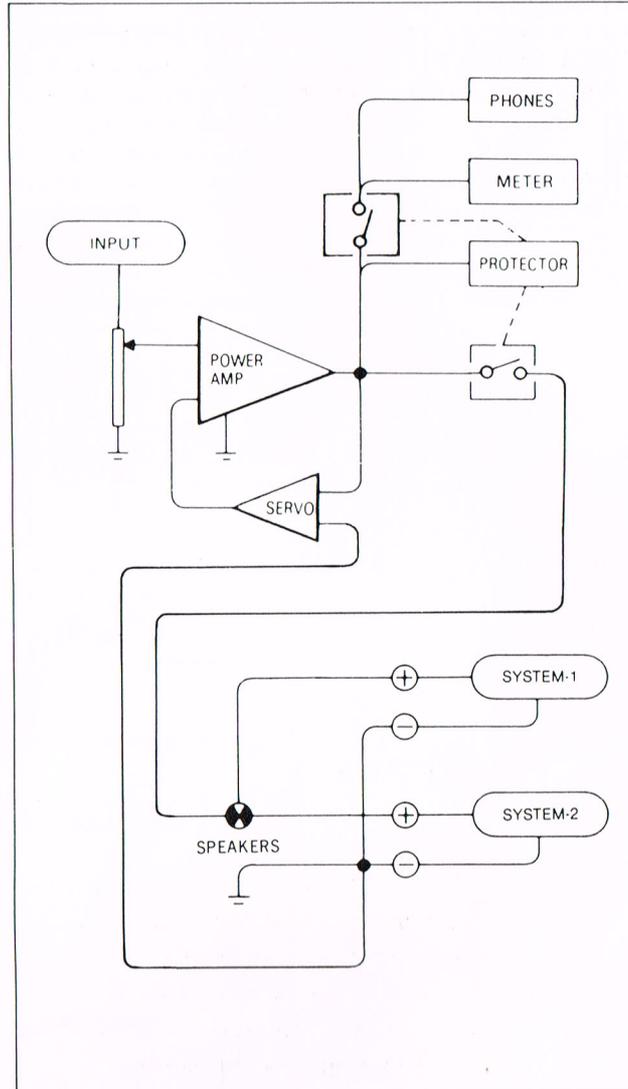


Speaker Selector

Use these selectors to switch output between speaker systems 1 and 2 or to use both speaker systems at once. To listen to speaker system 1, depress only the SPEAKER-1 selector. To listen to speaker system 2, depress only the SPEAKER-2 selector. To listen to both speaker systems, depress both speaker selectors.

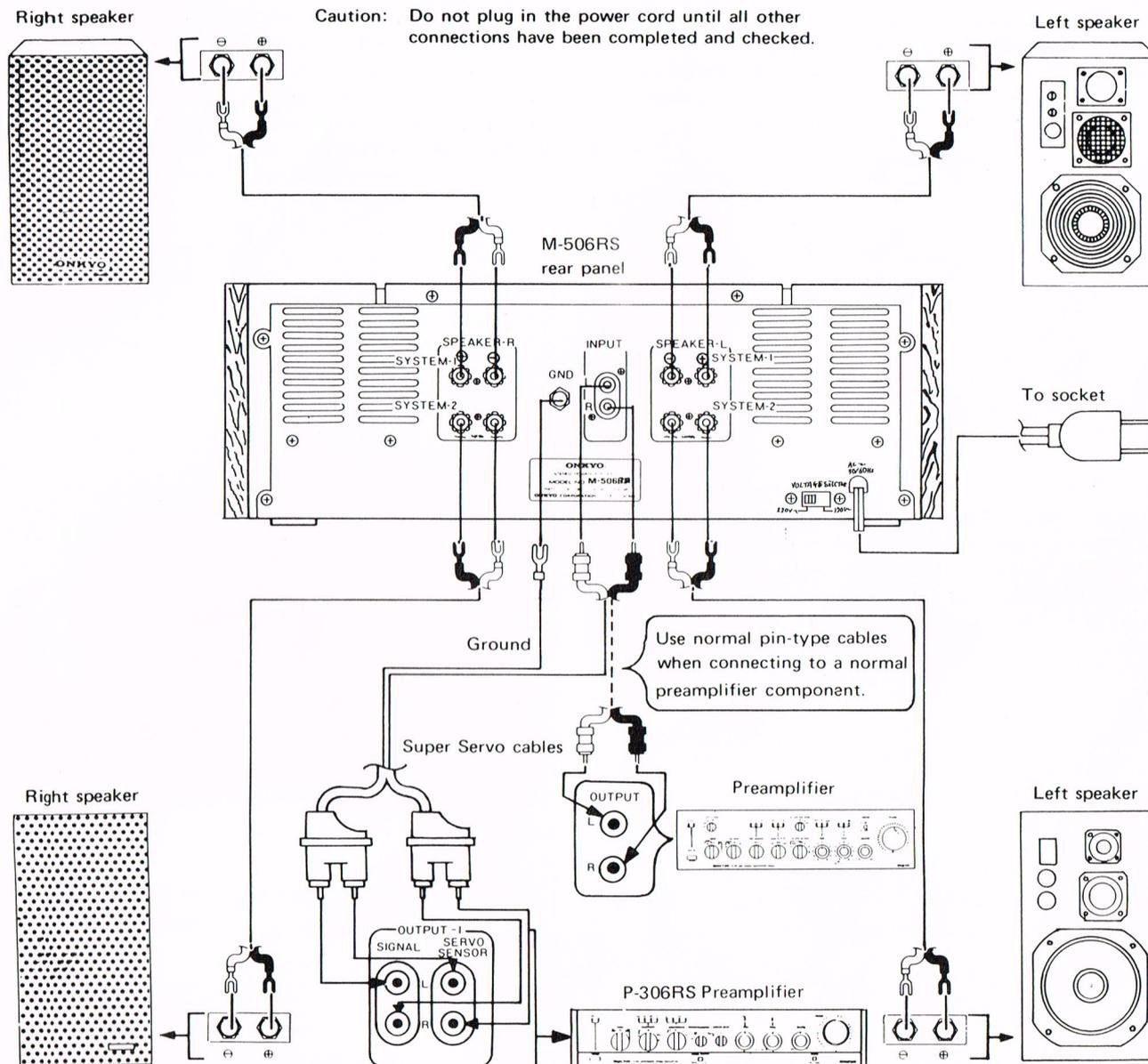


Block Diagram



System Connections

- It is recommended that the Onkyo P-306RS preamplifier be used with the M-506RS because the P-306RS employs the same Super Servo Integral circuitry. Connect the M-506RS and P-306RS to each other using the special Super Servo cables supplied with the P-306RS. If a different preamplifier is connected to the M-506RS, use normal pin-type connecting cables.
- Since the M-506RS is a high grade high power amplifier, use only high grade speaker systems capable of doing justice to the excellent quality of sound reproduction achieved by this unit.
- Note that although the allowable speaker impedance range is 4 to 16 ohms, the speaker systems selected for use with this unit should have a high power handling capacity. If speaker systems having a low maximum input power rating are used and the volume level is raised to a high level, the speakers may be damaged. Check the maximum input power rating before connecting speakers to the M-506RS.
- Use sturdy coaxial speaker cables for the speaker connections. The use of thin leads is not recommended because the resulting higher speaker lead impedance will adversely affect sound quality.
- To protect the speakers from possible damage, always turn the M-506RS power switch off before connecting or disconnecting speaker systems.
- Be particularly careful not to short circuit the speaker cables at any time.
- Keep the power cord away from the pin-type cables and speaker cables since close proximity can result in induction hum.



Protection Circuits

Protection circuits in high power amplifiers such as the M-506RS play an important role in protecting both the speaker systems and the amplifier itself from damage. A relay incorporated in the M-506RS 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 power meter illumination will switch to pale red and the Super Servo indicator lamp will turn off. If this happens, turn the power switch off immediately, locate the cause of the problem and correct it before turning power back on.

In order to prevent the protector relay from affecting sound quality, this unit employs a silver contact relay having a low contact resistance. A few seconds after the power switch is turned on, a metallic click will be heard when the relay closes. This will also serve as an indication that the amplifier is ready for use.

When an excessive current reaches the speaker terminals

If an excessive current appears at the speaker terminals, the protector relay will initially switch on and off about three times and then permanently switch off to indicate 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 a DC voltage reaches the speaker terminals

Since the M-506RS is a DC amplifier incorporating Super Servo Integral circuitry, DC voltages are not normally generated by the amplifier itself. However, in the unlikely event that a malfunction occurs and a DC voltage does reach the speaker terminals, the protector relay is activated to cut off the speakers from the amplifiers. Since speakers electrically consist of no more than a coil where the DC impedance is very low, a DC voltage could cause excessive heat if it reached the speaker coil.

Although the left and right channels are completely separated from each other in the M-506RS, both channels are shut down automatically even if trouble occurs in only one channel. Note that sound is always muted 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 connected to the M-506RS, such pop noises could activate the protection circuit. If this is a problem, always turn the M-506RS power switch on last after the other components.

Trouble-shooting Guide

If the M-506RS 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 has been turned on and that the power cord has been properly plugged into the socket.

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 that there is an input signal from the preamplifier. The speaker output selector must also be in the correct position. If the protective circuitry has been activated (the Super Servo indicator goes out and the power meter illumination switches to pale red), turn the power switch off immediately, locate the problem, and correct it.

3. Generation of hum, howling and other noise

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.

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