

P-306RS

Super Servo Stereo Preamplifier

*****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[®]

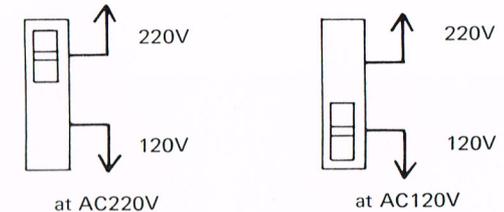
For Safety

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 P-306RS 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 the up or down position. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



Useful to Know

- Since the P-306RS is a high gain amplifier and is thus susceptible to induction noise, keep it away from TV sets and other audio components equipped with large power transformers.
- Hum and other induction noise may be produced if cables are too close to the power cord and power transformer.

Features

Super Servo Circuitry

Internally generated DC and ELF signal components can seriously affect amplifier performance. In addition, the common ground impedance between the amplifier stages and between the preamp output and power amp input reduces stereo separation. The unique Onkyo Super Servo circuitry eliminates these problems by cancelling DC and ELF with a subsonic servo loop between the signal line input and output. Differences in ground potential are shorted out by a second servo loop in the ground line. The only signal left is the audio signal itself.

Full MM/MC Compatibility

A variable gain phono equalizer provides complete cartridge compatibility with no additional MC pre-preamp or step-up transformer. The cartridge selector has five positions to provide the correct input impedance for virtually all MC and MM cartridges.

Separate Power Supplies

Completely independent left and right channel power supply circuitry and heavy copper bus feeder grounds with low impedance to prevent interference between amplifier stages improve low frequency damping and virtually eliminate dynamic crosstalk distortion.

High Density Cabinet Reinforcement Eliminates the Microphonic Effect.

Sound waves can conceivably cause mechanical resonances in a pre-amp cabinet which can audibly affect fidelity. Onkyo eliminates this "microphonic effect" by installing a heavy slab of high density material, carbon coated for electrical conductivity, which raises the mass and lowers the resonance point of the cabinet to way below the audible range.

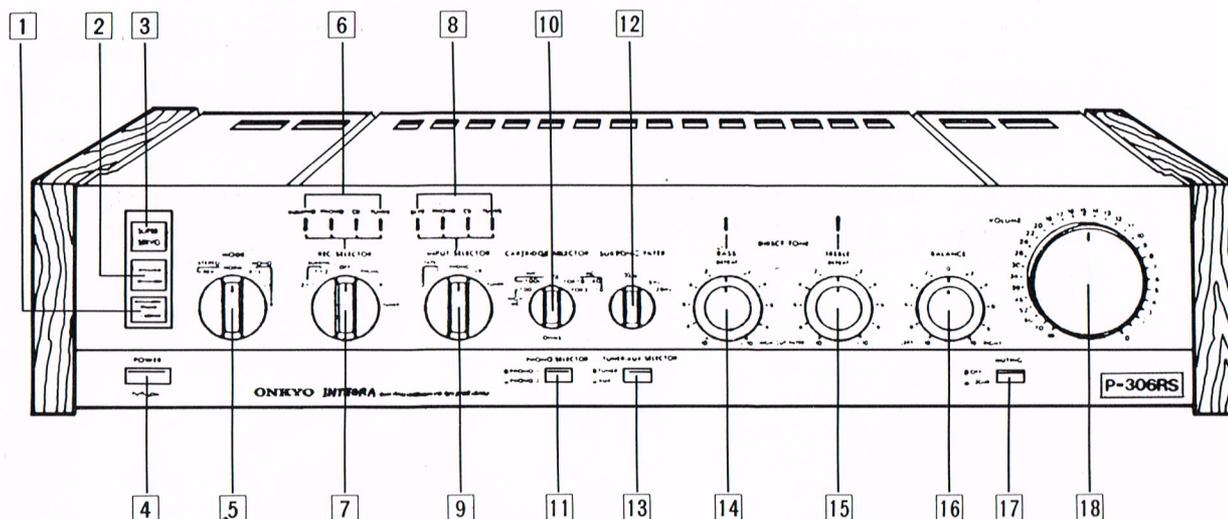
Specifications

Input Sensitivity and Impedance:	PHONO MC: HIGH MC 2.5mV/100 ohms 130 μ V/(100/220)ohms PHONO MM: 2.5mV/(47kohms/100kohms) CD, TUNER, TAPE PLAY, AUX: 150mV/47 kohms
Rated Output and Impedance:	TAPE REC: 150mV/560 ohms (PHONO) OUTPUT: 1.0V/220 ohms Max. 20V
RIAA Deviation:	± 0.2 dB, 20 – 20,000Hz
Frequency Response (TUNER):	+0, –3dB, 0.8Hz – 170kHz
Phono Overload:	PHONO MM: 300mV RMS at 1 kHz, THD 0.05% 1400mV RMS at 10 kHz, THD 0.05% PHONO MC: 17mV RMS at 1 kHz, THD 0.05% 82mV RMS at 10 kHz, THD 0.05%
Total Harmonic Distortion:	0.002% at PHONO MM, 3V output 0.003% at PHONO MC, 3V output 0.0015% at TUNER, AUX and TAPE, 3V output
Intermodulation Distortion:	0.0015% (70Hz: 7kHz = 4:1)
Signal to Noise Ratio:	PHONO MC: 83dB PHONO MM: 92dB TUNER: 103dB
Tone Control (Vol. –20dB):	BASS: ± 8 dB at 70Hz TREBLE: ± 8 dB at 20kHz
Filters:	HIGH CUT (Vol. min.): 6dB/oct, 7 kHz SUBSONIC: 6dB/oct, 15Hz/20Hz
Audio Muting:	–20dB
Rated Output Voltage:	1.0V

Power Supply Rating:	AC120V, 60Hz or AC220V, 50Hz
Inputs:	PHONO 1 & 2, CD, TAPE PLAY 1 & 2, TUNER, AUX
Outputs:	TAPE REC OUT 1 & 2 OUTPUT: –1 (for super servo cable) –2 (for normal cables)
Semiconductors:	48 transistors, 37 diodes, 6 FETs, 4 ICs
Dimensions:	480(W) x 100(H) x 403(D) mm 18 7/8" x 3 15/16" x 15 3/4"
Weight:	10.5 kg, 23.2 lbs.

Specifications and features are subject to change without notice.

Front Panel Facilities



1 Connection Lamp

This lights when the Super Servo cable is connected to the power amplifier. This lamp will not light up if you use a cable other than the supplied Super Servo cable or if the Super Servo cable is incorrectly connected.

2 Power Lamp

The power lamp lights when the power switch **4** is depressed, indicating that the power is on.

3 Super Servo Integral Lamp

This lamp lights when the power is on and the Super Servo integral circuit is operating normally. However, this lamp does not light until a few seconds after the power has been switched on. Even if the power lamp is on, no sound will be heard unless this lamp is on, too.

4 Power Switch

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

5 Mode Selector

REV: Left and right channel signals are reversed.

NORM: Use this position for normal stereo reproduction.

R+L: The left and right channel signals are mixed so that you hear a combined (mono) sound from both the left and right speakers. This mode is used for monaural reproduction and for checking left and right balance.

L: Only the left channel signal is sent to both speakers.

R: Only the right channel signal is sent to both speakers.

6 Recording Source Indicator Lamps

These light in accordance with the position of the recording source selector **7**.

7 Recording Source Selector

2 ▶ 1 : Use for tape dubbing. For details, refer to 1 ▶ 2 : the section on tape dubbing.

OFF: Leave in this position when not using the system for recording or tape dubbing.

PHONO: For recording from phonograph records

CD: For recording from the CD player

TUNER: For recording from the tuner or the component connected to the AUX terminals. Use the TUNER/AUX selector **13** to switch between the tuner and AUX component.

8 Input Selector Indicator Lamps

These light in accordance with the position of the input selector **9**.

9 Input Selector

TAPE 1: For playback from the tape deck connected
TAPE 2: to the rear panel TAPE-1 or TAPE-2 terminals.

PHONO: For listening to phonograph records. Note that it is also necessary to set the cartridge selector **10** and phono selector **11** to the proper positions.

CD: For listening to the CD player.

TUNER: For listening to the tuner or the component connected to the AUX terminals. Use the TUNER/AUX selector **13** to switch between the tuner and AUX component.

10 Cartridge Selector

Switch this selector to match the type of phono cartridge being employed. Because of the sudden increase in volume level that can occur when changing the position of this selector, always turn the volume control **18** down before switching to a different setting.

MM: When using an MM type cartridge, switch to either of the MM positions depending on the cartridge impedance. If the impedance is not specified, switch to the 47 kohms position.

MC: When using an MC type cartridge, switch to either of the MC positions depending on the

cartridge impedance. If a step-up transformer is used, switch to one of the MM positions.

HIGH MC: Some MC cartridges produce an output voltage of about the same level as MM cartridges. This position is recommended when using such cartridges.

11 Phono Selector

Set to the out position to listen to the turntable connected to the rear panel PHONO-1 input terminals and depress to the in position to listen to the turntable connected to the PHONO-2 input terminals.

12 Subsonic Filter Switch

This equalizer subsonic filter is designed to cut unwanted low frequencies generated by record warps and motor rumble. Frequencies below 15 Hz are cut when set to the 15 Hz position while frequencies below 20 Hz are cut when set to the 20 Hz position. However, since both of these positions insert a capacitor in the signal path, the effect of the Super Servo system will be reduced. It is therefore recommended that the OFF position be used as much as possible to ensure optimum sound quality.

13 Tuner/Aux Selector

Set to the out position to listen to the tuner and depress to the in position to listen to the component connected to the rear panel AUX terminals.

14 Bass Control

Turn clockwise for bass emphasis and counterclockwise for reduced bass response to match the listening room acoustics and personal preferences.

15 Treble Control

Turn clockwise for treble emphasis and counterclockwise for reduced treble response to match the listening room acoustics and personal preferences. In addition, when turned fully counterclockwise to the (-10) position, a 7 kHz high-cut filter is switched in to eliminate unwanted high frequency noise such as record scratches and tape hiss.

16 Balance Control

The sound image is shifted to the right when turned clockwise and to the left when turned counterclockwise. The left and right output levels are equal when set to the center position.

17 Muting Switch

When this switch is depressed to the -20dB position, the volume level is reduced to 1/10th of the level set by the volume control. This muting function is convenient for temporary reduction of volume level and for suppressing unpleasant click noises generated, for example, when the stylus is lowered onto a record.

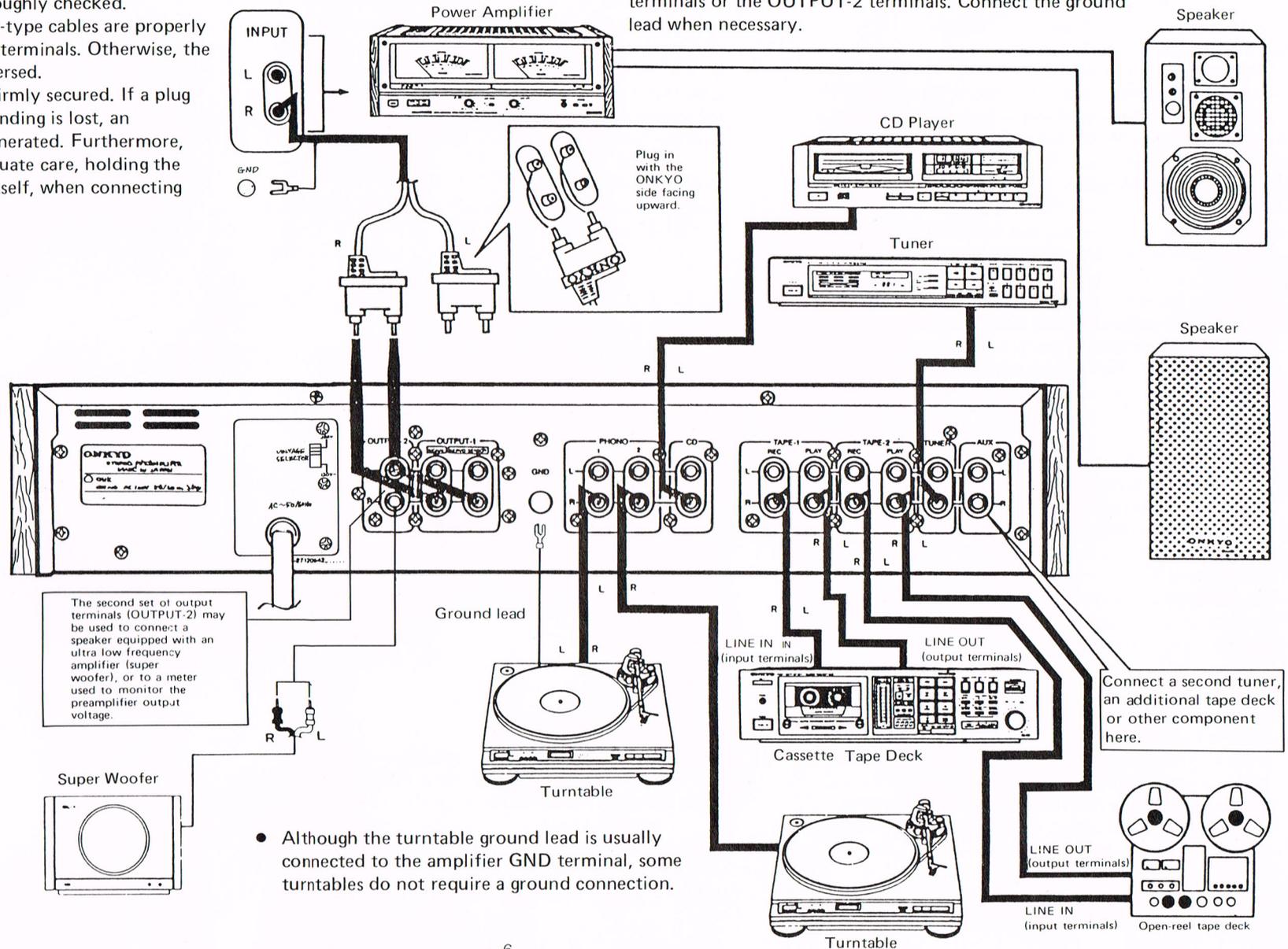
18 Volume Control

Volume is set to the level shown by the dB indications.

System Connections

- Do not plug in the power cord until all connections have been completed and thoroughly checked.
- Make sure that the L and R pin-type cables are properly connected to the left and right terminals. Otherwise, the left and right sound will be reversed.
- Confirm that all pin-plugs are firmly secured. If a plug becomes loose and proper grounding is lost, an unpleasant booming noise is generated. Furthermore, always handle cables with adequate care, holding the plug at its base, not the cable itself, when connecting and disconnecting.

Although the P-306RS can be connected to the power amplifier with normal pin-type cables for normal audio amplifier performance, it will not be possible to take advantage of the Dual Super Servo circuit. If the use of ordinary cables is unavoidable, connect to the power amplifier input terminals via the OUTPUT-1 SIGNAL terminals or the OUTPUT-2 terminals. Connect the ground lead when necessary.



Results Obtained Using the Super Servo Cables

In general, the preamplifier and power amplifiers are connected to each other by pin-type cables. But, as can be seen from figure 1 below, even though the left and right channels may be carried in independent cables, the grounding for both cables is common. Therefore, due to cable impedance and pin terminal contact resistance, the right channel signal will tend to flow back through the left channel cable ground lead, and the left channel signal flow back through the right channel cable ground lead. On the other hand, when the accessory Onkyo Super Servo cables are used, the super servo circuit shown in figure 2 completely eliminates the left/right mutual interference present in normal pin-type cables. Deterioration in the quality of sound when pin-type cables are used is thus non-existent.

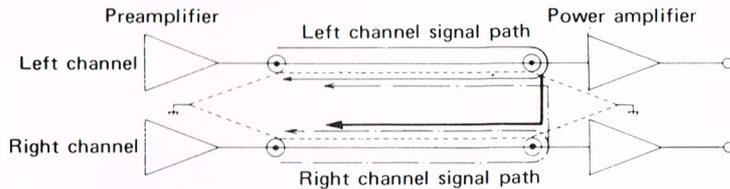


Fig. 1 Normal Pin-Type Cable Connections

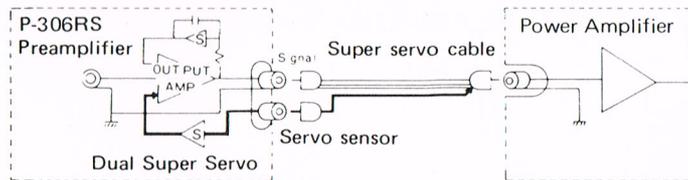


Fig. 2 Dual Super Servo Amplifier Connection Super Servo Cable

Common Modes of Operation

First check that the following controls are set to the following positions before turning the power switch [4] on. Set the mode selector [5] to NORM, the recording source selector [7] to OFF, the subsonic filter switch [12] to OFF and the bass [14], treble [15] and balance [16] controls to

the center positions. Turn the volume control [18] down to minimum and switch the muting switch [17] to OFF. When the power switch [4] is depressed, the power indicator lamp [2] will light. However, a muting circuit operates so that no sound is heard until the Super Servo Integral lamp [3] lights a few seconds later. Operation can begin only after the Super Servo Integral lamp [3] lights. Connection lamp [1] lights to indicate that the Super Servo cable is connected to the power amplifier.

Turntable Operation

Set the input selector [9] to the PHONO position and the cartridge selector [10] and phono selector [11] to the positions corresponding to the cartridge and turntable being used. Start to play a record on the turntable and then turn up the volume control [18] to a suitable level, adjusting the tone controls if necessary.

Compact Disc Player Operation

Set the input selector [9] to the CD position and operate the CD player. Adjust the volume and tone controls as desired.

Tuner Operation

Set the input selector [9] to the TUNER position, the TUNER/AUX selector [13] to the TUNER position and tune to the desired radio station. Adjust the volume and tone controls as desired.

Tape Deck Operation

The P-306RS can be connected to two separate tape decks. Set the input selector [9] to the TAPE-1 position for playback from the deck connected to the rear panel TAPE-1 terminals and to the TAPE-2 position for playback from the deck connected to the TAPE-2 terminals.

Recording Operations

Set the recording source selector [7] to the program source to be recorded (for example, to record a phonograph record switch to the PHONO position). Then start the tape deck in the recording mode after setting the recording level to the appropriate level using the input level control on the tape deck.

When recording with a 3-head tape deck, the just-recorded program can be monitored by switching the input selector [9] to the corresponding tape deck position (TAPE-1 or TAPE-2).

Note: Do not change the mode selector [5] and balance control [16] settings while recording.

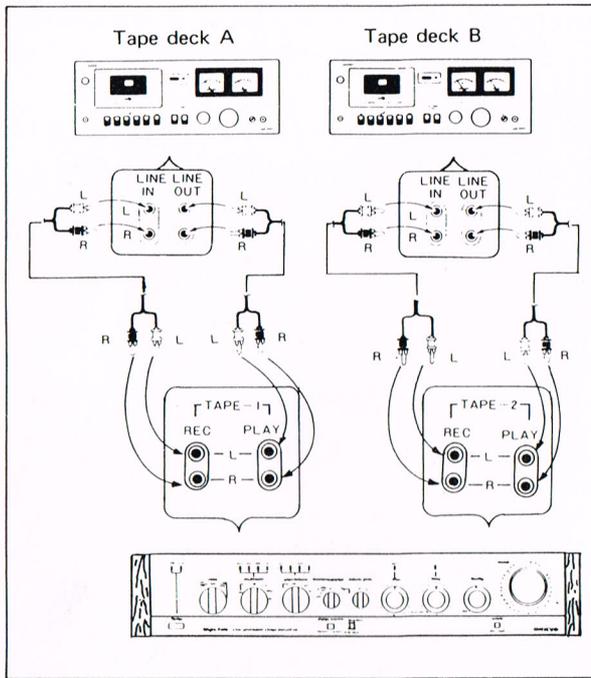
Tape Dubbing

When two separate tape decks are available, programs previously recorded onto a tape can be copied directly onto another tape, a process which is called dubbing. Perform the following procedure to copy a tape from tape deck 1 (connected to the rear panel TAPE 1 terminals) to tape deck 2 (connected to the rear panel TAPE 2 terminals).

1. Set the recording source selector to the 1 ► 2 position.
2. Start deck 1 in the playback mode and deck 2 in the recording mode.
3. If deck 2 is a 3-head deck, the program can be monitored either before or after it is recorded. The signal from deck 1 prior to being recorded is monitored by setting the input selector [9] to the TAPE 1 position. The just-recorded signal from deck 2 is monitored by setting the input selector [9] to the TAPE 2 position.

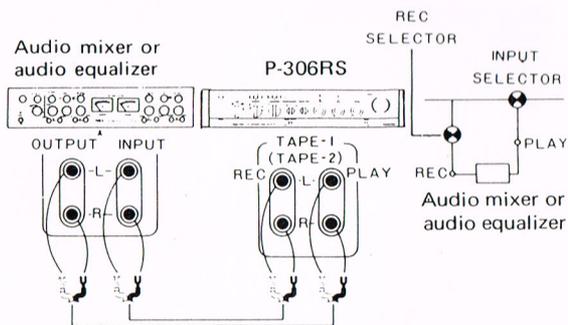
Tape dubbing from 2 to 1

1. Set the recording source selector to the 2 ► 1 position.
2. Start deck 2 in the playback mode and deck 1 in the recording mode.
3. If deck 1 is a 3-head deck, the program can be monitored either before or after it is recorded. The signal from deck 2 prior to being recorded is monitored by setting the input selector [9] to the TAPE 2 position. The just-recorded signal from deck 1 is monitored by switching the input selector [9] to the TAPE 1 position.



Connecting an Audio Mixer or Graphic Equalizer

When the P-306RS is used with an audio mixer (mixing console) or a graphic equalizer, connect the mixer or equalizer to the TAPE-1 or TAPE-2 terminals and set the input selector [9] to the TAPE-1 or TAPE-2 position. Then set the recording source selector [7] to the source to be mixed or equalized.



Interconnected Volume and Tone Adjustment

The P-306RS has been designed so that when the volume is raised above a certain level, any bass or treble tone emphasis will be gradually decreased as the volume is raised.

This interconnected volume and tone adjustment function operates when the bass [14] and/or treble [15] control has been set above the center 0 position and the volume control [18] is raised above the "15" position (center position of the volume range). As the volume control is raised beyond the "15" position, the amount of bass and/or treble emphasis is gradually decreased. When the volume control [18] is turned fully clockwise, the frequency response will be completely flat. For settings below "15", changes in the volume level have no effect on tone control settings. Furthermore, when the bass [14] and treble [15] controls are turned counterclockwise to the low-cut and high-cut positions, changes in volume settings will no longer have any effect on the tone control settings.

Trouble-shooting Guide

If the P-306RS fails to function normally, first check the following points before calling for professional servicing. If the problem still persists or is of a different nature than the problems listed, disconnect the power cord and contact your Onkyo dealer.

1. No power

Has the power cord been properly plugged into the wall socket?

2. No sound when power is switched on

Check the power amplifier or speaker systems to be sure the problem is not located there.

Check that the input selector [9], phono selector [11] and muting switch [17] have all been set to the correct positions. Also check for possible incorrect connection of input and output cables and other breaks or short circuiting. Note that as long as the Super Servo Integral lamp remains off, muting circuits are activated to prevent the output of sound.

3. Generation of hum, howling or other unwanted noise

Check for loose connection of the ground line in the input and output cable connections. Also check the ground connections to the power amplifier and turntable.

Howling can be generated when the speaker systems are too close to the turntable. Noise can also be picked up if a power transmitter is used nearby. Hum can be induced if connecting cables pass too close to the power cord or power transformer.

4. Very low level output sound when playing records

The output level will be too low if the cartridge selector [10] is set to the MM position when using an MC cartridge. Check the type of cartridge being used.

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