marantz

Model 8B Stereophonic

Power Amplifier

INSTRUCTION MANUAL

The Marantz Model 8 Stereophonic Power Amplifier consists of *two completely separate* power amplifiers on one chassis with one common power supply.

WARRANTY:

A warranty card, bearing the serial number of the unit you purchased and listing warranty terms, is enclosed with each unit that leaves our plant. For your protection, it is most important that you properly fill in this card and return it promptly after purchase. Should you not find this card enclosed, it is the responsibility of the dealer, from whom you purchased the unit, to supply this card to you.

OPERATING LINE VOLTAGE:

117 Volts, 50–60 cycles (for A.C. operation only). All specifications are based on this voltage. The usable range is 105 – 125 volts.

PLACEMENT OF AMPLIFIER:

For ventilating purposes, it is advisable to locate the amplifier chassis so as to provide airflow around all surfaces.

INPUT CONNECTIONS:

The standard "INPUT" jacks are recommended for most uses. At these connections subsonic filters roll off frequencies below 20 cycles so as to suppress speaker "breathing" and other subsonic disturbances. A 1.3 volt signal will drive each amplifier to its full output.

The "TEST" inputs bypass the subsonic filter, carrying the low frequency response flat to below 2 cycles, and have the same input sensitivity as the "INPUT" connections.

OUTPUT CONNECTIONS:

Use "COM" (Common return) on amplifier output terminal strips together with the corresponding impedance tap which matches each speaker impedance.

For maximum efficiency and lowest distortion, it is generally advisable to match the rated speaker impedance with the closest designated output impedance terminals on the amplifier, i.e.:

16 or 15 ohm speaker to Amp. 16 ohm tap 8 ohm speaker to 8 ohm tap 4 or 3 ohm speaker to 4 ohm tap

The correct amplifier output impedance for multiple speakers connecting to either one of the amplifiers should be chosen after determining the total speaker impedance of all speakers combined (either in parallel or series connection), i.e.:

two 16 ohm speakers in parallel - 8 ohm tap
two 8 ohm speakers in parallel - 4 ohm tap
two 8 ohm speakers in series - 16 ohm tap
two 4 ohm speakers in series - 8 ohm tap

Other speaker impedance totals resulting somewhere between the available amplifier impedance speakers should be connected to the closest impedance value.

When in doubt, it is always preferrable to connect a speaker of an in-between impedance rating to a *lower*, rather than higher, amplifier impedance tap. When matched to much lower amplifier taps, some loss in power capability will occur, but this is harmless. If speaker is wired to a higher amplifier tap, distortion can result.

To obtain other damping factors, see instructions under "INSTALLATION OF OTHER DAMPING FACTORS."

METERED TESTS AND ADJUSTMENTS:

Each amplifier is carefully adjusted at the factory for proper operation. Nevertheless, the owner should check the operating conditions after 15 minutes when first placed in service and again after the tubes have "aged," perhaps 12 hours. *Recheck every few months.*

The test and adjustment section of the amplifier is comprised of the following:

A. An accurate meter calibrated to indicate the proper 50 milliampere BIAS condition on each tube.

B. BIAS screwdriver adjustments situated next to each corresponding output tube which are protected from accidental shifting of calibration by black plastic screw-on caps. These should be removed *before* warming up for test to avoid burning hands on hot tubes.

C. A test switch having four test positions, two above and two below, with spring return to normal (playing position). The best positions correspond to the meter readings and adjustments listed in A and B above.

TEST PROCEDURE:

Before making these tests be sure to turn the preamp volume control fully down.

A. Move the Test Switch to the A1 test position. The meter pointer will swing to the right, indicating the current drawn by tube EL34/6CA7 designated A1. Turn the corresponding adjustment carefully with a screwdriver until the meter reading is on the BIAS line. (This reading will normally vary slightly with line voltage and during warmup. In installation, the BIAS may have to be reset. A current setting much in excess of the "BIAS" mark will tend to decrease tube life.)

B. Repeat the same test and adjustment for each of the other positions, being careful to set exactly to the same point.

C. It may be necessary to repeat all tests because of slight interaction of adjustments. Inability to obtain satisfactory adjustments usually indicates faulty output tubes.

PARALLEL OPERATION:

This dual amplifier can be operated as a single amplifier with twice the power output. However, there will not be an equivalent 16 ohm output tap.

To parallel the two amplifiers, both the *inputs* and the *outputs* must be connected in parallel. Use either external cables or internal connection across the input jacks. Be sure to connect the two output impedance taps selected with good low resistance wire.

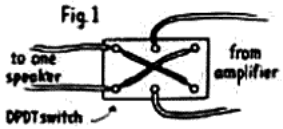
Connecting the two "16" taps will produce an 8 ohm output impedance; the two "8" taps — 4 ohms; and the two "4" taps — 2 ohms equivalent output impedance. Do not connect dissimilar output taps together.

LOUDSPEAKER CONNECTION AND PLACEMENT:

Ordinary 18 gauge lamp cord may be used for connection between an amplifier and loudspeaker if the distance is short. If more than 25 or 30 feet is required, it would be advisable to use a heavier gauge to reduce power losses and damping factor deterioration.

"Phasing" of two loudspeakers will be made easier if each lead wire can be coded for identification. One wire in each pair can be coded at both ends with a knot, tape or other device. The coded wires can be used for identical connections. As an example, the coded wires may be connected between the "common" terminals of each speaker and the common or ground terminals of their amplifiers. The uncoded wires may then be connected between the remaining speaker terminals and the recommended impedance tap on the amplifiers. This procedure will normally insure speaker phasing if the speakers are identical.

Fig. 1



A Simple phase-reversal switch can be wired as shown in one of speaker leads and will make phase adjustments easier.

Speaker placement cannot be determined by fixed rule. Generally, it is better to place speakers symmetrically in relation to corners to avoid unbalanced wall reflections. For rectangular rooms, speaker placement usually seems best along a short wall.

Spacing between stereo speakers depends entirely upon room size and listening distance. Wider spacing does not necessarily produce the so-called "hole in the middle". A good compromise should be determined by experiment in order to achieve the most natural-sounding spread. Some experiment with angling of the speakers may be rewarding. Sometimes the best effect can be secured by directing or beaming the sound from both speakers so as to cross in front of the listening area.

THE FOLLOWING ADJUSTMENTS AND MODIFICATIONS SHOULD BE DONE BY A PERSON AT LEAST PARTIALLY VERSED IN ELECTRONICS:

A.C. BALANCE ADJUSTMENTS:

There are adjustments for the A.C. balance (drive balance) of each amplifier located under the chassis directly in line with the A2 and B2 controls and accessible by removal of bottom grille.

Experience has shown little need for readjusting these settings unless a driver tube (6CG7) is replaced or vastly different output tubes are installed. These adjustments have been carefully made at the factory prior to shipping.

If it should appear necessary to check the A.C. balance, a variable source of sinusoidal voltage anywhere from 50 to 1000 cycles is necessary. This should preferably be low in distortion (less than 1%), although attenuated line voltage can be used if it hasn't too much distortion. In addition, use of a dummy load resistor is preferable (a resistor approximately equal to one of the output impedances and capable of temporarily dissipating 35 W.)

WARNING: OPERATION OF THIS UNIT WITH THE BOTTOM PLATE REMOVED CAN BE A VERY DANGEROUS SHOCK HAZARD. CARE SHOULD BE TAKEN NOT TO TOUCH ANY OF THE ELECTRICAL CONNECTIONS. SOME ARE AT A POTENTIAL OF NEARLY 500 VOLTS!

1. First warm up the amplifier at least 15 minutes and make the BIAS adjustments, being careful to see that they are very closely in balance with each other. This is done, of course, with *no signal* input.

2. For each amplifier, connect the input signal source and, if available, the dummy load. If no dummy load is available, short the output terminals from "COM" to "16 ohms" (note that a very small input signal will be needed in this case). Now, carefully turn up the input signal while testing with switch in A1 (or B1) position until the indicator reaches the little dot on the meter face to the far right. Quickly throw test switch to A2 (or B2) position and check whether indicator is to same point. If not, a slight rotation of A.C. balance control (screwdriver adjustment located under chassis is described above) one way or the other will bring it closer (but will disturb A1 [or B1] reading in opposite direction.) Several trials of setting the level of input signal in combination with tests and adjustments of A.C. balance control should bring both readings closely in balance at the dot.

   NOTE: If output has been shorted, instead of using dummy load, care must be taken to put signal in only briefly (for only 10 or 15 seconds at a time) because the output tubes are over-dissipating in this position, and prolonged test will reduce the life of these tubes.

TRIODE OPERATION:

These amplifiers can be made into excellent triode amplifiers with 20 Watts output capability. It is necessary to unsolder one end of each of the four 100 ohm resistors (R 20A, R 20B, R 21A and R 21B) from the solder terminal strips mounted near the output tube sockets and reconnect them to pin 3 of their socket base. (This will leave resistors from pin 4 to pin 3 on each output tube socket. The screen tap wires — green and green/white — remain dead-ended at each terminal strip.)

INSTALLATION OF OTHER DAMPING FACTORS:

Although it is felt most loudspeakers will deliver their best performance with a very high damping factor, some speaker manufacturers seem to feel that under certain conditions their speakers will operate better with lower damping factors. If the owner has any questions about this, he should consult speaker specifications.

For each amplifier: by removal of the two jumper wires from the side terminals corresponding to "COM" and "4" ohms, and replacing them with the resistors listed below, damping factors of 2, 1 or ½ are obtainable at the corresponding output terminal.

The resistor connected to "COM" terminal in most cases is made up of a series or parallel combination of IRC BW½W or 1W wire-wound resistors carried by many jobbers. If substitution is made, total watt dissipation should be at least equivalent. The resistor connected to the "4" ohm terminal should be 1 watt carbon composition preferably Ohmite carried by most jobbers. Tolerance on these parts should be 10% or better.

FOR APPROXIMATE DAMPING FACTOR OF:

		2	1	½
FOR 16 OHM LOADS	Res. from "COM" terminal	1-0.27Ω ½W	2-0.82Ω ½W in par. (0.41Ω)	1-0.56Ω 1W or 2-0.27Ω ½W in ser. (0.54Ω)
	Res. from "4" ohm terminal	820Ω 1W	1600Ω 1W	3900Ω 1W
FOR 8 OHM LOADS	Res. from "COM" terminal	2-0.39Ω ½W in par. (0.195Ω)	2-0.56Ω ½W in par. (0.28Ω)	3-1.2Ω ½W in par. (0.40Ω)
	Res. from "4" ohm terminal	820Ω 1W	1600Ω 1W	3900Ω 1W
FOR 4 OHM LOADS	Res. from "COM" terminal	2-0.27Ω ½W in par. (0.135Ω)	3-0.62Ω ½W in par. (0.207Ω)	2-0.56Ω 1W in par. (0.28Ω) or 4-0.27Ω ½W in series-parallel (0.27Ω)
	Res. from "4" ohm terminal	820Ω 1W	1600Ω 1W	3900Ω 1W

(Note: If the amplifiers are run in parallel and with installation of above damping factors, it would be preferable to internally parallel the two feedback wires in addition to the other parallel connections.)

REPLACEMENT PARTS:

Requests for replacement parts should be accompanied where possible with the *part number* shown on diagram, together with the *serial number* of the unit for which replacement is intended.