THE FISHER AUDIO AMPLIFIER

INSTALLATION AND OPERATING INSTRUCTIONS

MODEL 70-AZ
WITH Z-MATIC

PRICE: $1.00

FISHER RADIO CORPORATION • NEW YORK
The Z-Matic Control automatically makes the correct adjustments necessary for producing ideal sound at all volume settings, eliminating the need for any compromise in sound reproduction.

IMPORTANT NOTE: THE FISHER Z-Matic Control does not eliminate the need for a separate tone control. It merely provides an additional means of correcting the equalization of the speakers, thus reducing the distortion caused by the speakers themselves. The Z-Matic Control is designed to complement rather than replace the tone control used with conventional amplifiers.
It should be noted that the three positions described were arbitrary, for the purposes of the discussion. There are an infinite number of intermediate positions available, according to your tastes and needs. May we suggest that you experiment with the Control so familiarize yourself with its tremendous possibilities for increasing the enjoyment of your equipment.

IMPORTANT NOTE: With some speakers, rotating the Z-MATIC Control may result in an overall volume change. This condition is caused by a slight mismatch between speaker and amplifier. (A nominal 16-ohm voice coil may not be exactly 16 ohms at mid-frequencies.) As long as the change in volume is not severe, the Z-Matic circuit will operate effectively.

**PHASE INVERTER BALANCE ADJUSTMENT**

The phase inverter balance adjustment, positioner 8-6, is inside the side apron of the chassis. This positioner has been carefully pre-set at our factory. Adjustment is required only when components in the phase inverter circuit are replaced and should never be attempted unless a low distortion audio generator, and a wave analyzer or distortion analyzer, are available. If this adjustment becomes necessary, proceed as follows:

1. Connect the audio generator to the amplifier input.
2. Disconnect the speaker and connect a 16-ohm, 20 watt resistor to "OUI" and "8 or 16".
3. Switch impedance selector to "16".
4. Rotate Z-MATIC Control fully counterclockwise.
5. Connect the wave analyzer or distortion analyzer across the 16-ohm resistor.
6. Set the audio generator to 1000 cycles and adjust the attenuator so that the amplifier produces 20 watts output (17.83 volts RMS) across the 16-ohm resistor.
7. Tune the wave analyzer to the second harmonic of 1000 cycles, or, if a distortion analyzer is used, tune it for minimum reading at 1000 cycles.
8. With extreme care adjust the phase inverter balance control for minimum distortion.

**TECHNICAL SPECIFICATIONS**

**HIGH OUTPUT**, with less than 5½% distortion at 25 watts (less than 0.15% at 20 watts): less than 0.05% at 10 watts;
INTERMODULATION DISTORTION less than 5½% at 20 watts and less than 0.2% at 10 watts; see FIGURE 3. FREQUENCY RESPONSE is uniform within 0.1 db from 20-20,000 cycles and within 1 db from 10-50,000 cycles; see FIGURE 3. POWER OUTPUT is constant within 1 db or 25 watts from 15-55,000 cycles; see FIGURE 5. MUSICAL NOISE LEVEL is better than 95 db below full output. INTERNAL IMPEDANCE with Z-MATIC Control counterclockwise is 0.01 ohms, or 1 ohm operation, giving a damping factor of 25. PHASE SHIFT is less than 15° at 20 cycles and less than 18° at 20,000 cycles; see FIGURE 2. A schematic diagram is shown in FIGURE 7. LINEARITY RESPONSE (input versus output) is plotted in FIGURE 4.

**GENERAL SPECIFICATIONS**

The entire amplifier and power supply are built on one compact, steel chassis, thus simplifying installation. Handsome, professional styling includes black, bakelite control panel. TUBE COMPLEMENT: 112AT7, 112AU7, 8581, 5V4G. OUTPUT IMPEDANCES: 8 or 16 ohms. Instantly accessible fuse. SIZE: 4½" deep, 14¼" wide, 6¾" high. SHIPPING WEIGHT: 21½ pounds.

**AT YOUR SERVICE**

It is the constant desire of Fisher Radio Corporation to have your FISHER equipment give you its best possible performance. Toward that objective, we solicit your correspondence on any special problems that may arise. After you have had an opportunity to familiarize yourself with THE FISHER equipment you purchased, we would appreciate your letting us know how it is meeting your requirements.

SPECIAL NOTE: To maintain your equipment at peak performance, may we suggest that you avail yourself of the facilities and factory trained personnel at our Service Department.

**FISHER RADIO CORPORATION**

21-21 Forty-fourth Drive
Long Island City 1, N.Y.