



***knight-kit* 12-Watt High Fidelity Amplifier**

THIS 12-watt high fidelity amplifier uses one of the finest circuits ever designed for home construction. Many deluxe features are included to assure performance that compares very favorably with that of commercially built amplifiers.

The amplifier will deliver full 12 watts output from either a radio tuner or a record player with a crystal cartridge plugged into the input marked J-1; or from a record player with magnetic cartridge (G.E., Pickering, Audax, etc.) plugged into the input marked J-2. The switch, S-1, selects either input and grounds the one not in use, to prevent cross-talk between the inputs. Resistor R-1 is the terminating resistor for magnetic cartridges.

The circuit of V-1 (12AX7 tube) provides preamplification and equalization for magnetic cartridges. The two sections of the tube are connected in cascade to provide the high gain needed. Both cathodes are grounded for better shielding and to reduce hum. Bias is derived from grid-leak resistors R-2 and R-7. Equalization is achieved by plate to plate feedback

through capacitors C-3 and resistor R-4, with resistor R-5 limiting the bass boost to prevent rumble.

V-2, the second 12AX7 tube, is connected in a circuit which provides phase inversion. Here the incoming signal is split into two signals 180° out of phase with each other, as required to drive the push-pull output stage. Phase inversion takes place because the cathode of V-2A is connected to the cathode of V-2B, and the grid of V-2B is in effect grounded. V-2A operates as a conventional amplifier, with a positive-going signal at the grid appearing as a negative-going signal at the plate, and a positive-going signal at the cathode. Since the cathodes are connected together, the cathode of V-2B will also go positive, and the grid of V-2B will go negative with respect to the cathode. This results in a positive-going output signal at the plate of V-2B at the same time the output signal of V-2A is going negative.

One signal from V-2 is coupled through capacitor C-11 to the grid of V-3. The other signal from V-2, 180° out of phase with the signal going to V-3, is

