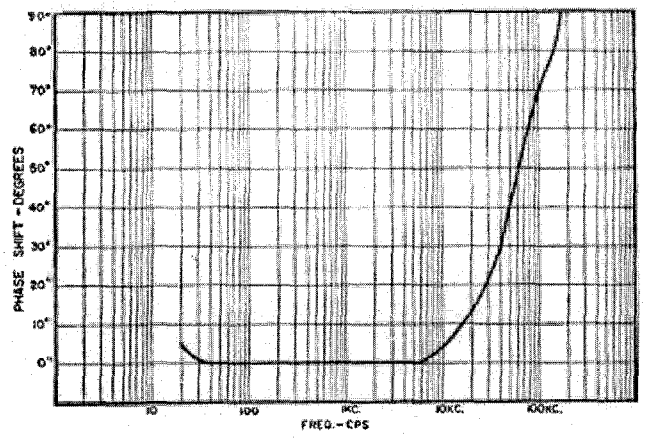
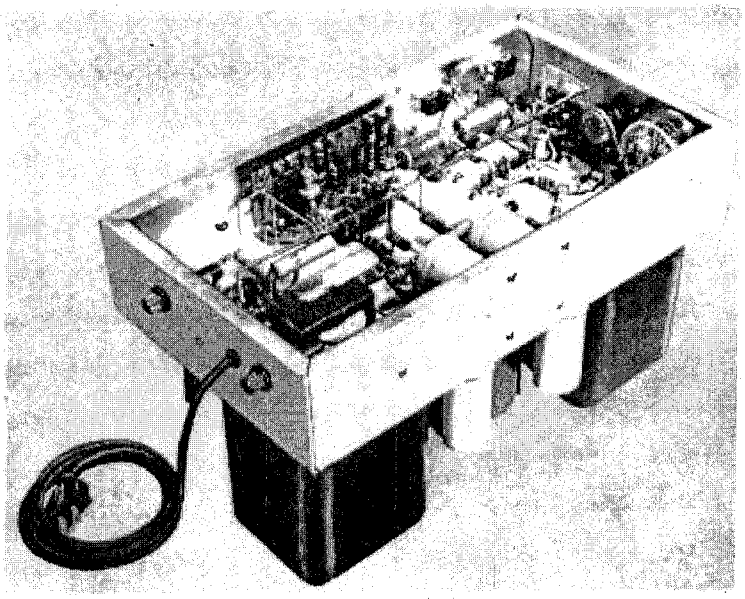
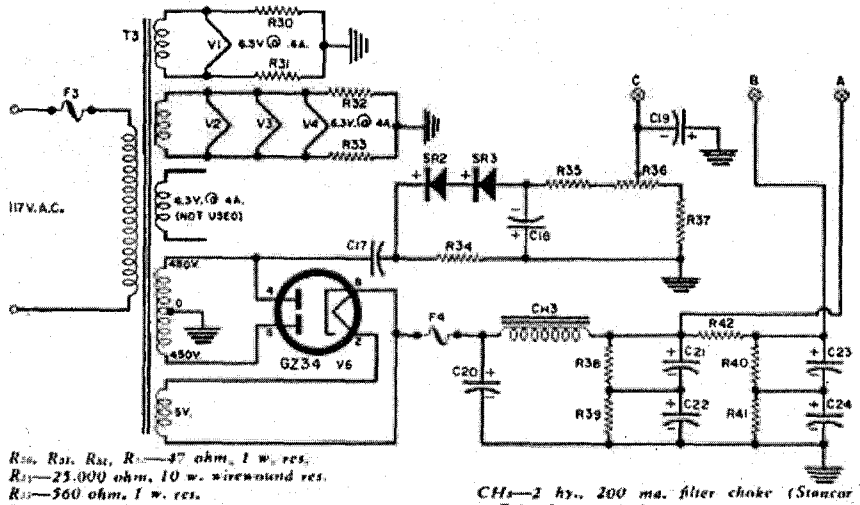


Fig. 3. Phase characteristics of the high-fidelity amplifier as measured between frequencies of 20 cps and 200 kc. by author.



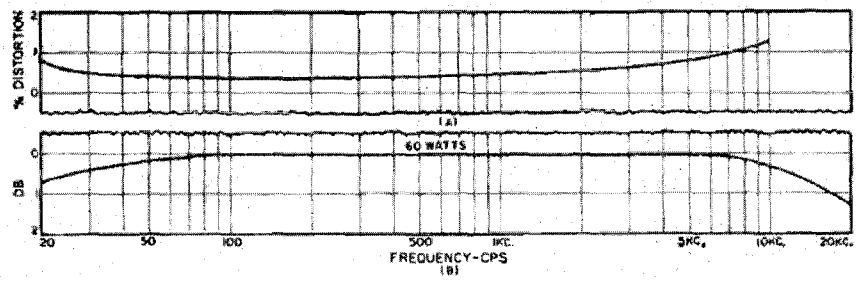
Under-chassis view of the home-built unit showing the use of a ground bus, laced wiring, and the terminal board construction. ▶



R_{30}, R_{31}, R_{32}, R_{33}—47 ohms, 1 w. res.
R_{34}—25,000 ohm, 10 w. wirewound res.
R_{35}—560 ohm, 1 w. res.
R_{36}—30,000 ohm pot.
R_{37}—27,000 ohm, 1 w. res.
R_{38}, R_{39}, R_{40}, R_{41}—68,000 ohm, 2 w. res.
R_{42}—600 ohm, 2 w. res.
C_{16}—.075 µf., 600 v. capacitor
C_{20}—40 µf., 250 v. elec. capacitor
C_{21}—50 µf., 150 v. elec. capacitor
C_{22}—20 µf., 600 v. elec. capacitor
C_{23}, C_{24}, C_{25}, C_{26}—80 µf., 350 v. elec. cap.
CH_3—2 hy., 200 ma. filter choke (Stancor C-2325 or equiv.)
SR_2, SR_3—20 ma., 130 v. selenium rectifier
F_3—2 amp. fuse
F_4—225 ma. fuse
T_3—Power trans., 450-0-450 v. @ 200 ma.; 6.3 v. @ 4 amps.; 6.3 v. @ .6 amp.; 5 v. @ 2 amps. (Chicago Standard PSC 205 or equiv.)
V_2—GZ34 tube

Fig. 4. Circuit of the capacitor-input power supply used to obtain the higher voltage necessary for the 60-watt version of the amplifier. Filter capacitors are series-connected and bleeder resistors are used to equalize voltage drops. Because of this arrangement, the negative terminals (usually the cans) of C_{20} and C_{23} must be insulated from the chassis and these capacitors must be separate units. Also for safety they should be mounted beneath the chassis. The 47-ohm resistors across the 6.3-volt heater windings are required since the windings are not center-tapped.

Fig. 5. (A) Total harmonic distortion of the 60-watt amplifier at an output within ± 1 db of full output. (B) Power-response curve of the 60-watter. Full-power response of the 40-watt version is just a little flatter at the frequency extremes.



with a highly capacitive load, such as an electrostatic speaker and a woofer calling for a low damping factor, it might be advantageous to omit R_{34} and C_{16}. This leaves out the over-all feedback loop, but there will still be 11 db of feedback in the output stage where it is most needed. This will give a lower damping factor and an amplifier that is very sensitive.

Construction

Construction of the amplifier is fairly standard, being built on a single 8½" x 15" x 3" chassis. Most of the parts are mounted on a terminal strip to facilitate testing and easy access. All signal-carrying leads, including the feedback loop, were kept as short as possible. A ground bus was used and connected to the chassis at one point.

In the top chassis view of the amplifier you will notice a meter mounted on the side panel, with push-buttons by each output tube for balancing the current in the output stage. The meter is connected so as to read the voltage drop across the tertiary winding. A 1-ma. meter is used and R_{38} selected so that with 100 ma. flowing through the tertiary winding the meter will read full-scale. In this way the tertiary winding acts as the meter shunt. The value of R_{38} will vary, depending on the d.c. resistance of the tertiary winding and the meter used. This was an extra "frill" on the original amplifier but can be very handy if you have an old meter in the junk box that can be utilized.

The parts list calls for some 4-watt carbon resistors. The 8000-ohm unit was made up of two 16,000-ohm, 2-watt resistors in parallel. The 25,000-ohm unit is 12,000- and 13,000-ohm, 2-watt resistors in series while the 30,000 ohms is made up of two 15,000-ohm, 2-watt resistors, also in series.

All of the parts are conservatively rated and should give long, trouble-free performance. The "B+" supply bus was fused to prevent damage to the

(*Continued on page 91*)