Low-Power Cathode-Coupled Amplifier

RAYMOND H. BATES
Lt. Col., CAC

THE amplifier described below is the result of an arduous two year search for an inexpensive, low power, good quality audio amplifier for home use with an FM and AM tuner and a phonograph reproducer.

The circuit illustrated below represents the results of experimentation with many conventional circuits that have been published in the available magazines. All were discarded one by one until the author, in desperation, tried the cathode-follower output shown. The results were completely satisfactory.

According to the limited literature available in various publications, a cathode-follower output stage, in comparison with a conventional output stage, will provide.

1. Improved low frequency response.
2. Improved high frequency response
3. Damping out of peaks in both the output transformer and speaker.
4. Less distortion at the same rated power output.
5. 100% degenerative feedback with all its benefits.

The circuit is simple and straightforward with no special tricks to reduce hum, although the amplifier constructed has no audible hum at full gain.

The primary of the output transformer, T_2, was selected so that its d-c resistance was approximately equal to the normal cathode bias resistor, or approximately 250 ohms. The primary impedance should be 5,000 ohms, with the secondary impedance selected to match the speaker to be used. The plate and screen of the 6V6 are tied together, and to the B supply. The power transformer, T_3, has a secondary voltage of 250-300 v. each side of center tap, and the choke L_1 is a ten-henry, 70-ma unit.

When used with the new RCA 45-rpm record attachment or a good FM tuner, together with a Jensen extended-range twelve-inch speaker in a bass reflex enclosure, the results are astonishing, and the power output more than meets the requirements for small living room use. It will be noted that the gain is not adequate for use with low-level magnetic pickups, but the simplicity of the amplifier makes it well suited for small, high-quality installations.