

Fig. 1—Simplified schematic diagram of the Standard Coil Rainbow tuner.

Circuitry and analysis of Standard Coil's new color TV tuner

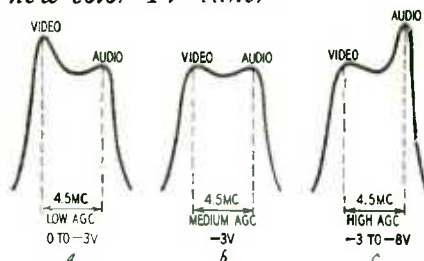


Fig. 2—Diagram shows the tilt characteristics of earlier tuner designs.



By E. D. LUCAS, Jr.

FRONT ends of television receivers have long been identified by colorful code names both within the industry and in consumer advertising. Thus it is no surprise that Standard Coil Products should introduce a new TV tuner called the "Rainbow."

What is surprising is that just one simple refinement in the well known cascode tuner circuitry should achieve such notable improvements in performance. There are many engineering advances in the Rainbow design. But the major feature is a novel circuit which ties the cathode of the second triode of the cascode amplifier to the cathode of the pentode mixer stage (Fig. 1) so that the two stages operate in parallel so far as d.c. level is concerned and in series with the first input triode of the 6BQ7-A cascode amplifier. As a result, a.g.c. applied directly to the grid of this first triode is also applied indirectly to both the second triode and to the mixer.

The r.f. signal input from the secondary of the antenna coil strip (L2) and the a.g.c. voltage are both applied to the grid of the first triode. As the amount of a.g.c. voltage is increased, over a range from about 0 to -8 volts, the plate voltage of this triode rises while the amplification or gain of this stage is reduced. Since this first triode plate is tied through L7 to the cathode of the second cascode triode and thence through R3 to the cathode of the pentode mixer section of the 6BR8, the two cathodes will also rise in voltage. Consequently the voltage across both the second triode and the pentode will be reduced and the gain of these two stages lowered in proportion.

Thus the basic advances in the Rainbow circuitry consist of relatively simple modifications which result in the indirect application of a.g.c. voltage for gain reduction of both the second cascode stage and the mixer.

Advantages of new circuit

1. Improved tilt characteristic over the entire a.g.c. range. Fig. 2 shows typical response curves of previous

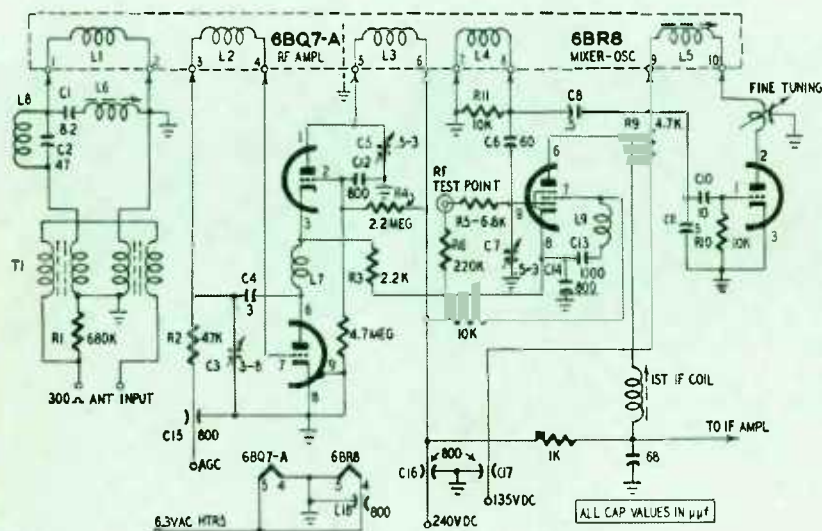


Fig. 3—Schematic diagram of the Standard Coil type TD-B Rainbow tuner.

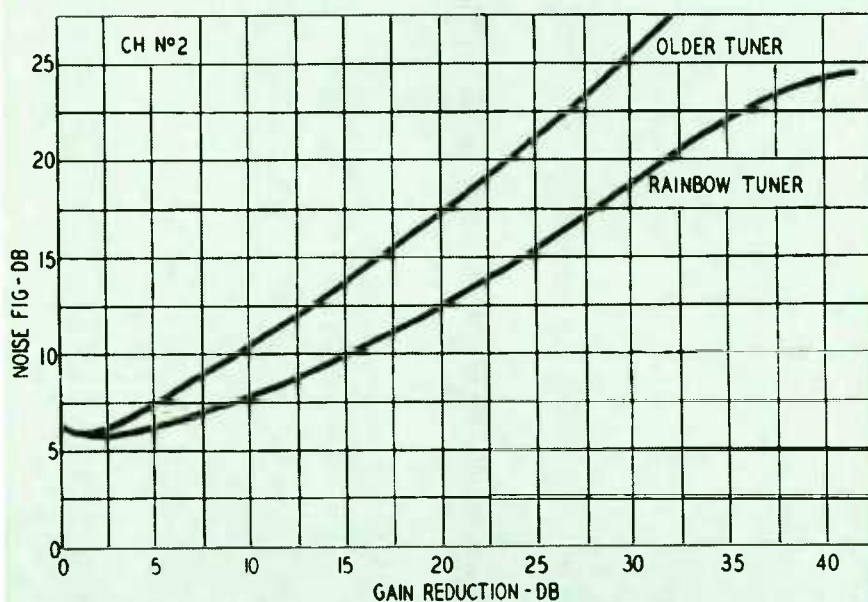


Fig. 4—Graph of noise figure vs. gain reduction in Standard Coil tuners.