ASK R-E

WRITE TO:

ASK R-E
Radio-Electronics
500-B Bi-County Blvd.
Farmingdale, NY 11735

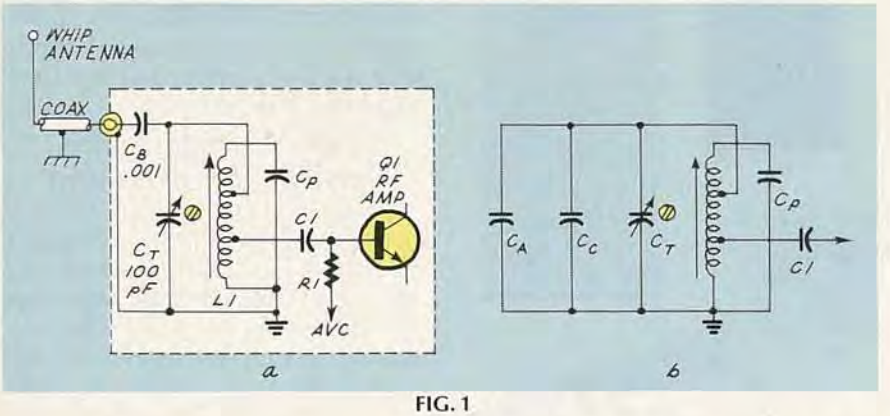

FIG. 1

TRIMMING AM AUTO RADIO

Recently, I replaced the AM radio in my car with an AM/FM stereo model and installed a new antenna designed for AM/FM operation. FM performance is fine, but AM reception is miserable and doesn't compare with that of the set it replaced. Sensitivity is low, selectivity is poor, and there is a great deal of cross-talk from co-channel and adjacent-channel stations. What's wrong? Is there a defect in the AM section of the radio, or is the trouble in the installation?--R. U. P., Long Beach, CA

Figure 1-*a* shows a typical automotive AM antenna input circuit. A small padder capacitor, C_P, is connected across the coil, which is permeability tuned. That capacitor, along with stray circuit capacitance, ensures high selectivity.

The highest frequency is tuned when the slug (the powdered-iron or ferrite core) is out of the coil; tuned frequency decreases as the core moves into the coil. The inductance of the coil is chosen so that the coil can be tuned to the highest frequency (1550 or 1600 kHz) by adjusting a trimmer.

The antenna is connected to a tap on the high (i. e., high-impedance) end of the antenna coil through a shielded cable and a DC-blocking capacitor, C_B. A trimmer capacitor, C_T, is connected between the tap and ground.

Figure 1-*b* shows how various stray capacitances must be considered part of the circuit. Capacitor C_A represents the capacitance between the antenna and the body of the car, and C_C is the capacitance of the shielded connecting cable. Blocking capacitor C_B is not shown because it is effectively in series with C_t and, because it is much larger than C_A and C_C, can be ignored. Note that C_A and C_C affect the resonant frequency of the circuit; their effect is most pronounced at high frequencies.

When a new antenna is installed (or the radio is replaced), trimmer C_T must be adjusted. Use a service manual, the manufacturer's instructions, or, lacking those, follow this procedure:

1. Extend the antenna to full length.

2. Tune in a weak station between 1200 and 1500 kHz.

3. Adjust the volume control for maximum output.

4. Locate C_T. You can usually adjust it through a hole in the case near the antenna's input jack.

5. Use a non-conductive alignment tool and adjust the trimmer for maximum output, as heard through the speaker. If you can't tune in a signal at the high-frequency end of the band, adjust the trimmer for maximum background noise. Now, assuming your radio has no other problems, reception should be drastically improved.

Here's a cheap-and-dirty trick you can use to check alignment. Tune in a weak high-end station and turn up the volume. While standing on dry ground, grasp the antenna near the tip. If the volume drops, alignment of the antenna-circuit is probably OK. The reason is that you are detuning the circuit by adding capacitance between the antenna and the car body.

FLUORESCENT LIGHTS

How does a fluorescent lamp work? I know that it usually needs a ballast and a starter, but I can't find any information on its principles of operation.—D. A.

A good article on the subject appeared in the March 1976 issue of *Popular Mechanics*. The article is called "What You Should Know About Fluorescent Lamps;" it appears beginning on page 120 of that issue. Your local library may have that issue on file, or it may be able to borrow a copy for you from another library.

Another good source of information is the booklet *Fluorescent Lamps* (TP-111R, Dec. 1978), published by General Electric Company, Lamp Products Division. You may be able to get a copy of that booklet from General Electric, Lighting Business Group, Nela Park, Cleveland, OH 44112. **R-E**