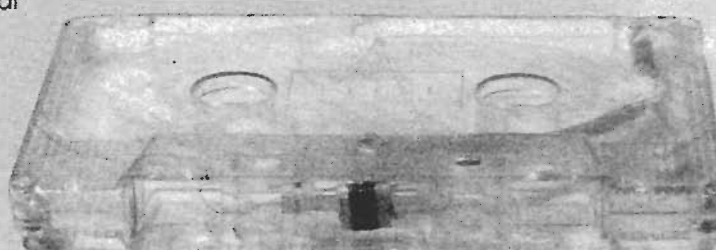
Build The AUDIO COUPLER



Add an audio input to any cassette deck without altering the unit in any way

BY GREGORY R. MCINTIRE

What modern semiconductor technology has done to miniaturize electronic devices in recent years is quite amazing. Take small handheld scanners and ham transceivers for instance. Handheld units will do most everything that the larger table models will do. But, there is one area where they are lacking, at least for some applications.

I recently bought a handheld two-meter ham transceiver, which I decided to use as a mobile rig. It has one drawback though: The audio output and the tiny little speaker work just fine in a relatively quiet environment; but there is nowhere near enough sound coming out of the little rig to overcome vehicle noise and road noise for mobile applications. What could I do?

The first thought to come to mind was to build a small amplifier and speaker unit to be mounted somewhere in my small automobile. Bad idea, the car is too cramped already. Then another thought struck: simply mount some kind of switch and jumpers in the existing radio/tape-player so I could use the audio amplifier and speakers already in the car; that was another bad idea. The car's radio/tape-player is miniaturized, and permanently mounted. Putting a switch and input wiring into the unit would be a big job. Finally I arrived at the perfect solution: Simply input the handheld's audio into the existing tape player at the same place that a cassette tape does—via the tape head!

All that is required, is to place a small coil of wire in an audio cassette-tape body. The small coil must be mounted so that it fits snugly against the tape head in the tape-player. The wires from the ends of the coil are then connected to the audio output of the scanner, handi-talkie, or any other audio device that needs a little more power.

Construction. You'll need to find an old cassette tape held together with small screws. Also the cassette cartridge must have a small flat metal tab with foam or felt on it (normally used to press the tape against the tape head) as opposed to the type that only has a piece of thick foam glued to the cartridge body. Hunt for a bargain since you won't need the tape itself. (I found cassette tapes at three for a dollar at the local discount store.)

To begin, the metal tab will be used to mount the coil. Next, take the cartridge apart and throw out the tape and little rollers, etc. If there is a small flat metal plate behind the metal tab, throw it away too. Next, remove the small metal tab that the foam pad is glued to, and wrap one layer of masking tape, or any thin adhesive-type tape, around the foam or felt pad. The purpose of that is to cover the sharp edges of the attached metal piece. Next, wind between 200 and 400 turns of no. 36 or no. 40 enameled wire around the tab and pad. It takes about about 1-½ feet of wire. That wire is very fine and very easy to break, so be careful. You can salvage some out of an old speaker, earphone, a small toy motor, or even a small audio transformer. It may not be necessary to use wire as small as I used. Larger wire may require more turns though, and there is not a whole lot of room for the coil if it is too large. After the coil is wound, apply a small amount of quick-drying epoxy cement to hold the coil in its place.

Next prepare a length of two-lead wire or shielded cable by connecting a phone plug on one end and tinning the leads on the other. With a small file, saw, or hot knife, cut a small notch in the cassette cartridge in a spot where the wire can enter/exit the cartridge without interference from the tape player. Also, it should be located so that when the tape cartridge is plugged into the tape player, the cable will protrude from the end of the cartridge that is closest to the player opening. Most automobile tape players that I have seen leave one end of the cassette sticking out in the open. If your tape player completely consumes a cassette, you may be able to use a thin flat wire that can be routed so that it exits the tape-player opening without too much stress.

Now drill a small hole in the cassette cartridge right behind the metal tab so that the tiny wires from the coil can pass through it into the body of the cartridge.

Remove the enamel coating at the coil ends by passing them through a

(Continued on page 101)

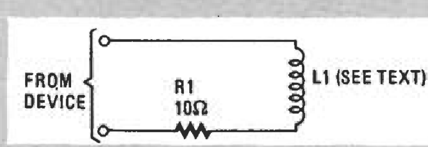
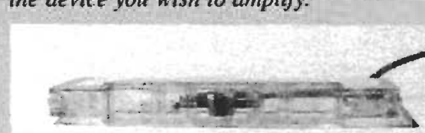


Fig. 1. The terminals to the unit should be connected to the appropriate plug for the device you wish to amplify.



This is the proper position for the coil.

PARTS LIST FOR THE AUDIO COUPLER

L1—200–400-turns of No. 36 or 40 enameled wire
R1—10-ohm, ¼-watt resistor
Cassette-tape housing (see text), fast-drying epoxy cement, shielded audio cable, phone plug (if necessary), etc.