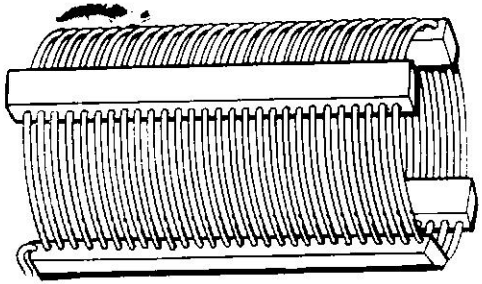


R.F. Coil

No more hit-or-miss coil

WHILE there's nothing wrong with the time-honored cut-and-try technique of winding coils for a receiver or transmitter, you can save yourself a lot of time and trouble by building this simple "R.F. Coil Frequency-Finder" for use with an external signal source such as an r.f. signal generator, a VFO, or a grid dipper.

The design of the unit is straightforward. The unknown coil is connected in parallel with *C2*, a midget 140-$\mu\mu$f. variable capacitor, through *J2* and *J3*. The only power required is the r.f. furnished by the signal source through *J1-C1*. When the coil and *C2* resonate with the external r.f. source, energy is absorbed by the circuit and rectified by *D1*, giving a reading on the 50- or 100-μa. meter, *M1*.

Construction. Cut a hole for *M1* near one end of the $2\frac{1}{4}$" x $2\frac{1}{4}$" x 4" Minibox. Drill a hole to mount *C2* close to the other end of the box. Locate holes for the coil jacks, *J2* and *J3*, in the end of the box near *C2*. Terminal *J1* is mounted at the opposite end near the meter. Both *J1* and *J2* must be insulated from the metal box. Wiring is done point-to-point, keeping leads as short as possible; use a heat sink when soldering *D1*.

Although a 100-μa. meter was used in the author's model, a 50-μa. movement will give better sensitivity (although possibly at greater cost). In any case, a miniature meter of the relatively inexpensive imported variety should prove perfectly satisfactory.

Install a knob with a pointer on *C2*'s shaft, and calibrate *C2*, marking the minimum point (*C2* fully open) 10 $\mu\mu$f. and the maximum point 150 $\mu\mu$f. (*C2* fully closed). From these two points, estimate the 75 and 100 $\mu\mu$f. points

External r.f. source—signal generator or VFO—is the only power required to operate the unit.

Frequency-Finder

winding—all it takes is a meter, a few parts, and r.f. source

By LEON A. WORTMAN

and mark them on the panel. Decals, if available, will make a professional-looking scale. The markings (slightly greater than *C2*'s maximum and minimum capacities to compensate for the unit's internal capacity) will be only roughly accurate, but quite adequate in this application.

Operation. To use the Frequency-Finder with an r.f. generator, simply connect the center conductor of the output cable to *J1*, leaving the shield unconnected. Connect the unknown coil to *J2-J3*, keeping leads as short as possible. If the coil is to be used with a capacitor of any type, set *C2* to that value; otherwise, at minimum.

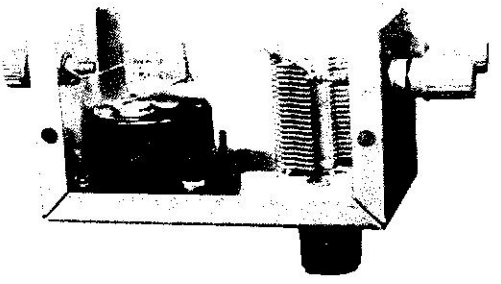
Sweep across the desired frequency range with the r.f. signal generator until you find the resonant point indicated by a maximum reading on *M1*. The resonant frequency of the coil and *C2* can then be read directly on the dial of the r.f. generator. Keep the output low, consistent with a readable indication on *M1*. A VFO can be used in the same manner. If the r.f. source is poorly calibrated, you can double-check by tuning its signal in on an accurate receiver.

To use the Frequency-Finder with a grid-dip oscillator, plug the appropriate coil into the dipper, set it in the oscillating mode, and bring it to within a few inches of the unknown coil. Adjust the tuning dial of the grid dipper for peak indication on *M1*. Read the resonant frequency from the dial of the grid dipper, ignoring, for this test, the dipper's own meter and sensitivity control.

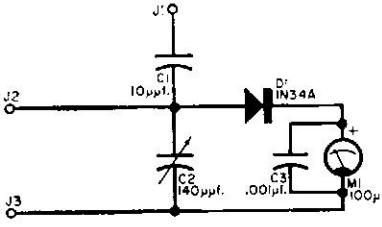
Other Uses. Another method of using the Frequency-Finder is to set the r.f. source at a predetermined frequency, and adjust *C2* to determine how much capacitance is required to make the unknown coil resonate.

The value of a small capacitor can be estimated with the unit. Connect a coil to *J2-J3*, set *C2* at 150 *μμf.*, and tune the r.f. source for maximum indication. Connect the unknown capacitor in parallel with the coil at *J2-J3*, and reset *C2* for maximum indication. The value of the unknown capacitor is approximately equal to the maximum value of *C2* (150 *μμf.*) minus the new setting of *C2* that restores *M1* to maximum reading.

Coils are easy to add to, or subtract from, if you use the Frequency-Finder first—try it. —30—



Frequency-Finder is mounted in small Minibox; all wiring is done point-to-point to keep leads short.



PARTS LIST

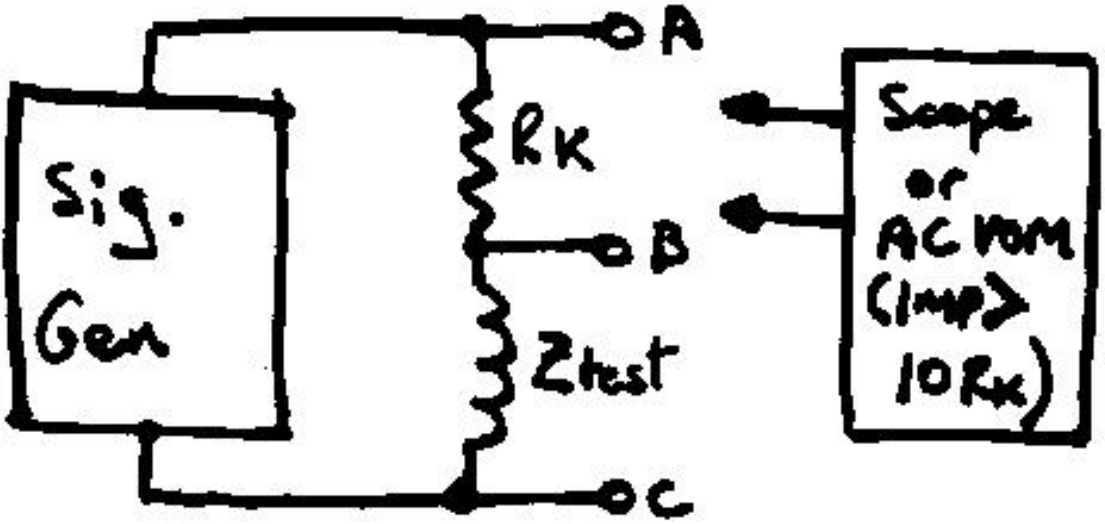
C1 10 μμf. mica or ceramic capacitor
C2 140 μμf. midget variable capacitor
C3 .001 μfd. ceramic disc capacitor
D1 1N34A diode or equivalent
J1, J2, J3 Insulated binding posts or jacks
M1 -50 or 100 μa. d.c. microammeter
1 -2¼" x 2¼" x 4" aluminum box
1 Knob with pointer

INDUCTANCE MEASURING

How about an Inductance Measuring circuit? Say 1uH to 100mH.

G. C. Goode, Kelowna BC

Here's how to measure inductance:



Set the signal generator to some frequency, keep trying new values of Rk until voltage between B and C equals voltage between A and B. If R has to be very large, then reduce frequency, if it has to be very small then increase frequency.

Now with the two voltages equal, Ztest = Rk (at the set frequency. Since L=Z/6.28f and we know Z = R thus L = R/6.28f.

Eg. Sig. Gen. f = 10 kHz and Rk = 1k to make the two voltages equal. Thus L = 1k/(6.28 x 10k) = 16 mH.