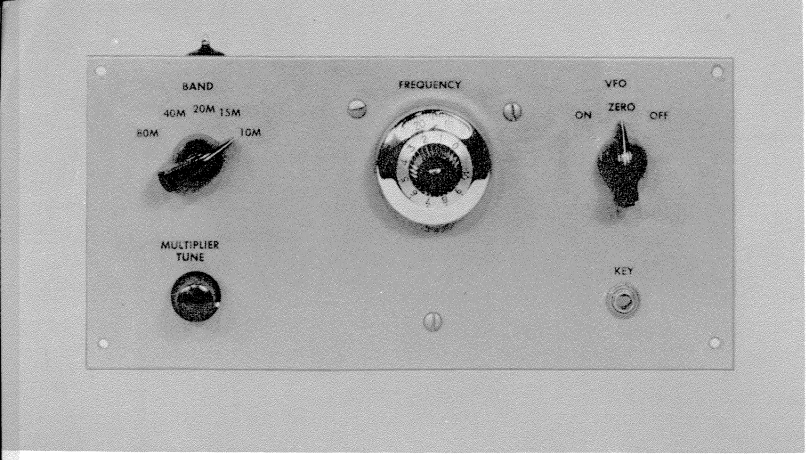
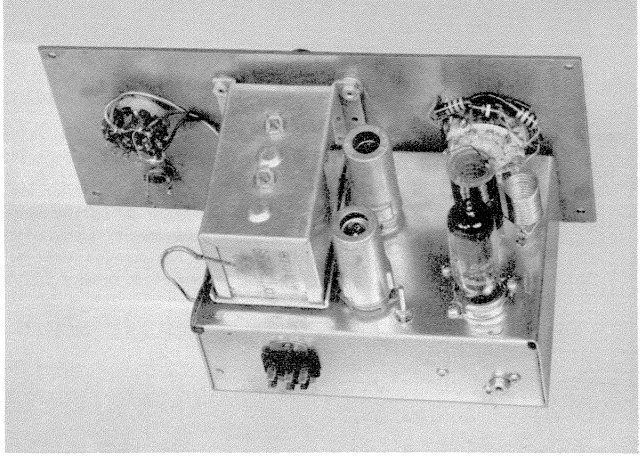


FRONT PANEL VIEW of K9ODE's inductive-tuned exciter. The counter type tuning dial is described in the text. The panel is 9⅞ inches wide, and 5 inches high, to fit a cabinet that Jack had on hand.



TOP VIEW of the exciter, showing the Inductuner with shields in place at hte left. Coils L_5 and L_6 for the 6CL6 output stage are mounted on small pillar insulators fastened to the chassis.

INDUCTIVE TUNING (continued from page 5)

CONSTRUCTION of the complete VFO-exciter was accomplished on a standard 4 x 6 x 2-inch deep aluminum chassis (*Bud* AC-431, or equivalent). The odd-size panel on K9ODE's model shown in the pictures was made to fit an available cabinet in which the unit was housed. Major parts were fastened in the locations shown in the chassis diagram, Fig. 4.

By following good construction practices the aluminum chassis will be found to be adequate for excellent mechanical stability inasmuch as the rugged Inductuner eliminates most of the common mechanical problems. All frequency components should be mounted on *one surface* of the chassis so that flexing of the chassis sides will not change their relative positions. As hammered home many times: anchor everything solidly!

All wiring and components in and around the oscillator circuit should be cemented or waxed to the chassis to prevent movement and vibration. The author used low melting point wax of the type used to impregnate coils. It is easy to flow around components and does a good job of holding things in place.

TUNEUP — With the components shown in TABLE I — PARTS LIST the VFO tuning range will be close to 1.75 — 2.0 megacycles. Some adjustment of inductance or capacity may be required. A considerable variation in toroid inductance can be made by simply spreading or compressing the turns on the form. To increase the tuning range, reduce the inductance by spreading the toroid turns. This will also move the range higher in frequency and it may be necessary to add fixed capacity across the inductances to bring the range down to the desired frequency. If the frequency spread is too great, increase the toroid inductance and decrease the fixed capacity across the inductances to bring the range back to the desired frequency.

The slug-tuned coils used in the oscillator plate and doubler plate circuits were made from a 4.5-megacycle interstage transformer found in the junk box. Standard commercial counterparts can be used, of course.

The 6CL6 plate circuit components are tailored to take into consideration the capacity introduced by 18" of RG58U cable feeding the grid of a 6L6 stage in the transmitter. If a short, direct connection is used from the 6CL6 plate to the following grid, the inductances will have to be increased in value to resonate at the desired bands. If low impedance output is required, links can be wound over the plate coils and switched by an additional section of the bandswitch.

PERFORMANCE — Many tests of the high "C" Colpitts oscillator show that short-term instability, or drift, is caused by two factors. The first is RF heating of the voltage divider capacitors which results in approximately 200 cycles positive (lower frequency) drift during the first ten minutes of operation.

The second cause is thermal heating of the tuned circuit caused by heat from the oscillator tube socket reaching these components via the connecting leads. This second effect can be minimized by using an oscillator circuit and tube which require a minimum of heater and plate power. In addition, components are located far enough away from the socket to prevent efficient thermal transfer. This thermal heating effect is most pronounced on the inductance in the tuned circuit and in this design the Inductuner plus the toroid are positioned so very little, if any, heat can be conducted to them from the oscillator tube socket.

Heating of the voltage divider

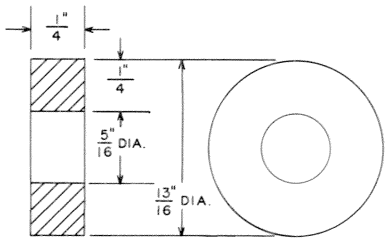


FIG. 3. DIMENSIONS of toroid coil core used for oscillator inductance L_2. Material is powdered iron.

G-E HAM NEWS TUBES

***presents* HOW-TO-DO-IT IDEAS *from the 999 radio amateurs at* GENERAL ELECTRIC**

A bi-monthly publication of the RECEIVING TUBE DEPARTMENT
Owensboro, Kentucky, U. S. A. • Editor — E. A. Neal, W4ITC

G-E HAM NEWS is available **free** from authorized **G-E Tube** distributors. Some distributors mail copies locally to their customers.

A low-cost direct-mail subscription plan is available to persons residing in the United States and its possessions (including APO and FPO numbers).

Subscription rates are:

One Year (6 issues)	$1.00
Two Years (12 issues)	$2.00
Three Years (18 issues)	$3.00
Five Years (30 issues)	$4.00

Enclose check or money order for U. S. currency for the proper amount above made payable to "General Electric Company."

Residents of Canada may subscribe to **G-E HAM NEWS** for $1.00 per year from the Canadian General Electric Company, Ltd., Electronic Tube Marketing Section, 189 Dufferin Street, Toronto 3, Ontario, Canada. Enclose check or money order made payable to: "Canadian General Electric Company, Ltd."

Distribution of **G-E HAM NEWS** in more than 40 foreign countries is handled through the International General Electric Company. A listing of outlets is available from the **G-E HAM NEWS** office. Or, write to: Customer Inquiry Section, International General Electric Company, 150 East 42nd Street, 7th Floor, New York 17, New York, U. S. A.