

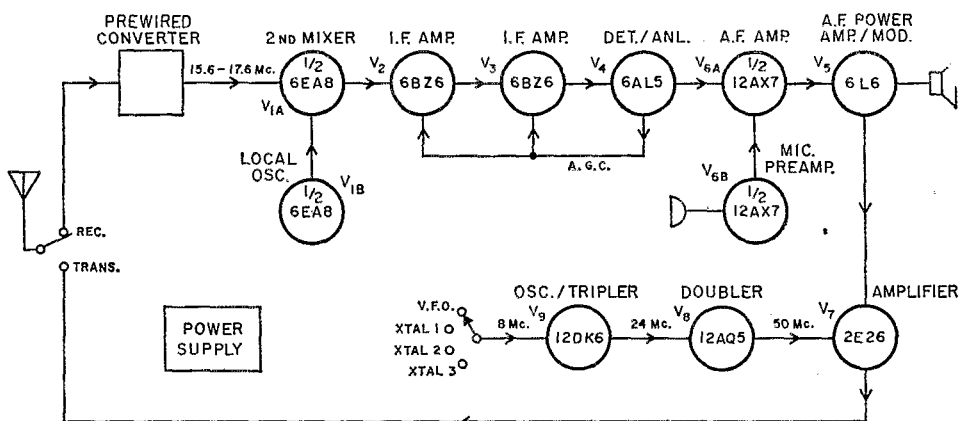


Fig. 1 — Block diagram of the TR-106

amplifier, V_{6A} , the a.f. power amplifier, V_5 , and finally to the speaker. Low-impedance earphones may be used at the front-panel jack, thus muting the speaker. The remaining half of V_6 serves as a microphone preamplifier which feeds V_{6A} . The modulator is designed for 300 to 3000 c.p.s. frequency response.

A note of interest for the home constructor concerns the mounting of the a.f. power amplifier. To lower overall cabinet height the socket for this tube is mounted below the chassis level using metal spacers. This also gives added ventilation to the amplifier circuit components as well as the tube.

Three complete turns of the receiver tuning knob are required to cover 50 to 52 Mc. Dial markings are every 100 kc., with special marks for the 49.980-Mc. MARS frequency and 50.0 to 50.1 Mc. for the c.w. portion of the band. To align the receiver two v.t.v.m.s. and a 1650-kc. r.f. source are needed for the i.f. section. One v.t.v.m. is used to monitor the a.g.c. bias, and the other is used across the speaker for a more accurate output indication than using your ear. Eight-megacycle crystals can be used to align the r.f. section. No adjustment of the converter should be needed or attempted.

This and That

A spotting switch is located on the front panel; this switch removes the B plus from the doubler and final tubes. The signal from the remaining stage is sufficient for spotting the crystal or v.f.o. frequency.

Power for the transceiver is supplied by a voltage-doubler circuit using a special transformer. For a.c. the transformer functions as a normal step-up. For 12-volt d.c. operation the transformer and two transistors function as an inverter. Two power cords are supplied, one the standard a.c. type, and the d.c. cord which is supplied with a cigar-lighter plug. Changing power cords automatically switches the correct fuse into the circuit.

Transmit-receive switching can be controlled from the front panel or by a p.t.t. switch on the noise-canceling microphone supplied.

The circuits used are standard types with most of the wiring accomplished through a harness. The use of the harness cuts wiring time in half. The kit is packaged so that all parts are right at hand.

— WIDEJ

Knight-Kit TR-106 Transceiver

Height: 5½ inches.

Width: 13¼ inches.

Depth: 11 inches.

Power Requirements:

110-130 volts a.c., 90 watts receive, 105 watts transmit.

12-15 volts d.c., 6.8 amp. receive, 8.1 amp. transmit.

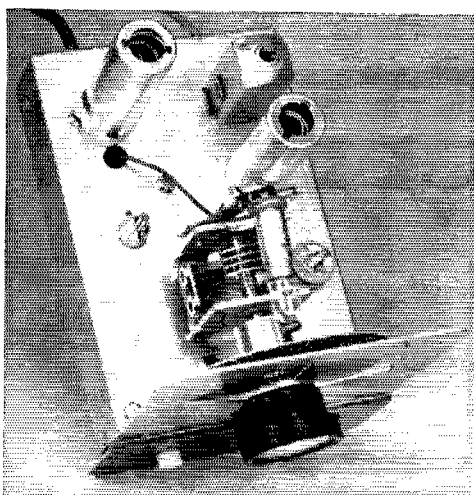
Price Class: \$140.

Manufacturer: Allied Radio, Chicago, Illinois.

The Knight-Kit V-107 V.F.O.

The Knight-Kit V-107 is a v.f.o. with 8-Mc. output for transmitters in the 6- and 2-meter bands. The actual output is from 8 to 8.22 Mc. (144-148 Mc.) for 2 meters or 8.333 to 8.666 Mc. (50-52 Mc.) for 6 meters. The v.f.o. must be recalibrated each time the band is changed. To

do this, the set screw holding the dial in place must be loosened and the dial rotated 180 degrees and the set screw tightened. The coil and capacitor used to determine the high and low ends of the band, respectively, are then adjusted for correct dial calibration.



Top view of the V-107 v.f.o.

The circuit is a standard Clapp oscillator using a variable capacitor in the grid circuit of a 12DK6. The plate coil is slug tuned to obtain

maximum drive to the transmitter. No multiplying is done in the v.f.o. The usual precautions are taken to obtain good stability. No power supply is included since the matching transceivers have sockets for the v.f.o. power plug.

A neon indicator is used in the B plus line to show when power is on. Power is controlled by the OPERATE/STANDBY switch on the front panel.

The circuit is designed to operate at low power to keep heating effects to a minimum. A voltage regulator tube is used in the screen circuit.

The cabinet matches the TR-106 and TR-108 transceivers.

— WIDEJ

Knight-Kit V-107 V.F.O.

Height: 5½ inches.

Width: 1¾ inches.

Depth: 6½ inches.

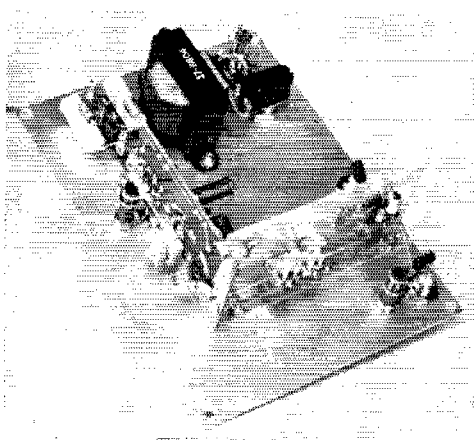
Power Requirements: 200 volt d.c. at 30 ma. and 12.6 volts at 0.15 amp.

Price Class: \$20.

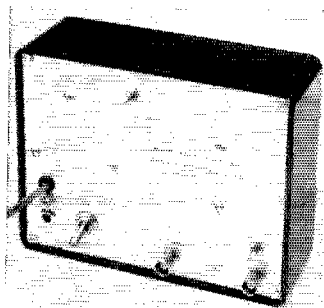
Manufacturer: Allied Radio, Chicago, Illinois.

The Parks 432-3 Converter

BIG news in 432-Mc. circles in recent months has been the development of inexpensive transistors that are capable of beating anything but a parametric amplifier when it comes to weak-signal u.h.f. reception. Here is a crystal-



The oscillator-multiplier stages are on the circuit board at the left. R.f. and mixer circuits are on a silver-plated brass plate, lower right, with the mixer side showing.



controlled 432-Mc. converter that uses some of them to provide outstanding performance.

At first glance the Parks 432-3 Converter seems to have very little inside its shiny black and silver box, but closer examination shows that there is plenty for the job at hand. Transistors and diodes throughout, and neatly-designed line circuits for the u.h.f. stages, result in this air of seeming simplicity. To eyes accustomed to vacuum-tube devices for this frequency range the layout is almost devoid of parts and wiring, but the performance exceeds the best obtainable with tubes.

The r.f. amplifier and mixer transistors are T1XMO5s or 6s, or possibly others of the TI u.h.f. series, so long as they meet the manufacturer's specifications for noise figure: 4 db. or better. The oscillator and first multiplier stages also use transistors, and two crystal diodes in parallel multiply to the injection frequency. The converter tested has a 67.333-Mc. crystal multiplying to 404 Mc., for an i.f. output frequency of 28.0 Mc. and for a signal frequency of