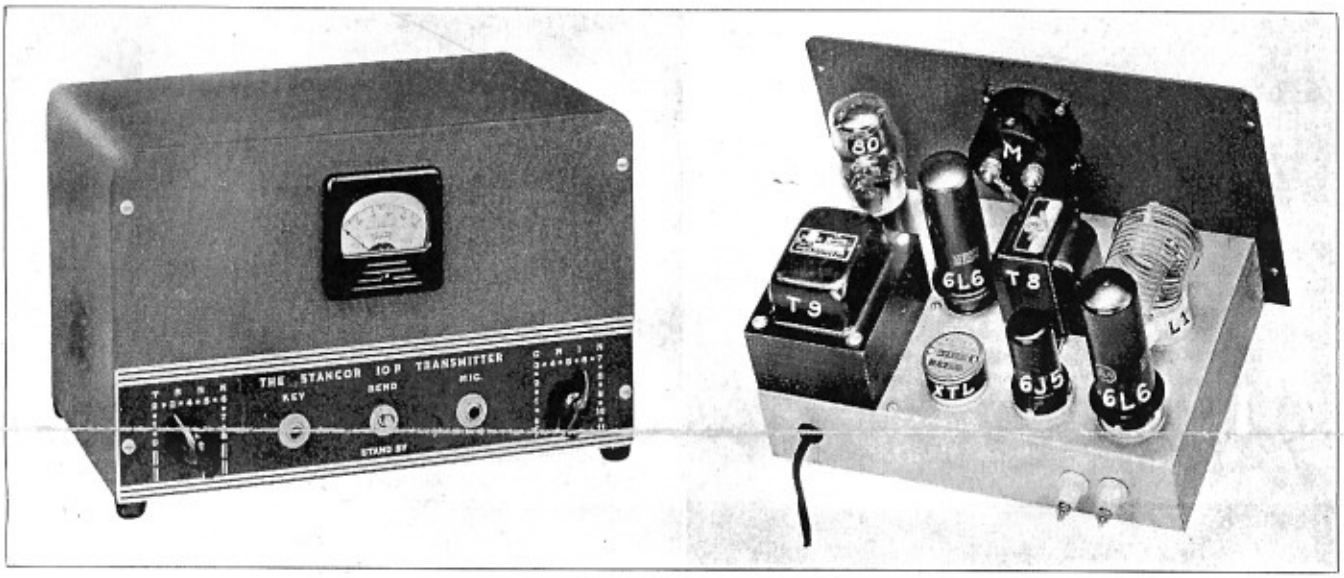
Stancor 10-P Transmitter

A COMPACT, LOW POWER, PHONE-CW TRANSMITTER COVERING FOUR BAND OPERATION



Instructions

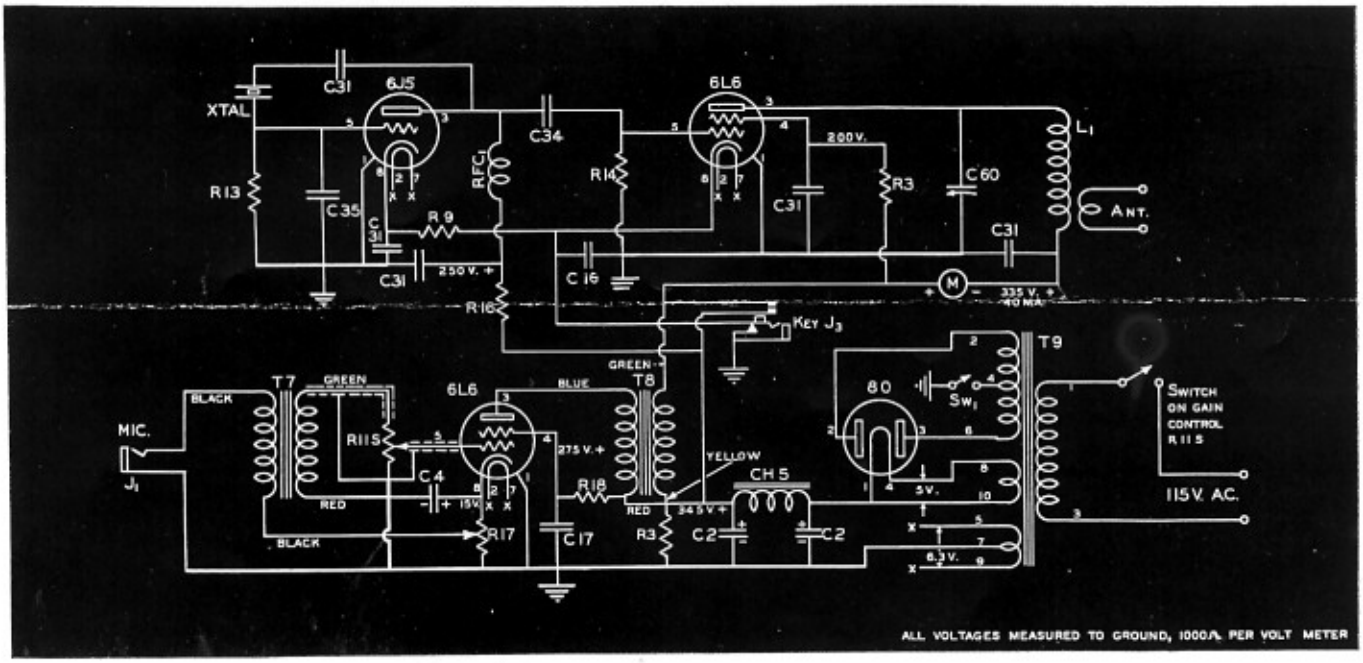
Both radio and audio frequency channels of the 10-P transmitter are accommodated by a single small chassis, offering an extremely compact, phone-CW unit. Ease of operation and a minimum of controls were of prime consideration in its design. The use of a 6J5 tube in an untuned crystal oscillator circuit and a 6L6 as a radio frequency amplifier involves but one tuned circuit. Consequently, in shifting frequency from one amateur band to another it is necessary to change but one plug-in coil. These coils are midget air-wound inductors recently marketed by several manufacturers and their adoption eliminates the tedious labor of coil construction by the amateur.

CONSTRUCTION

Assembly of the Stancor 10-P transmitter is relatively simple. Sockets must be mounted in their proper positions on the chassis and oriented to permit short direct leads. The bottom view picture is helpful in showing these positions, with the exception of the 6L6 modulator socket, whose key faces the back of the chassis, and the 6J5 oscillator socket, whose key faces the 6L6 radio frequency amplifier socket. In mounting steatite sockets, a large ring washer is used between the flange of the socket and the chassis to take up play before the retainer spring is fastened below.

With the provided hardware, the transformers and choke are also mounted for wiring convenience. Power transformer, T9, is placed in the chassis knock-out so its high voltage and 5 volt windings terminate toward the nearest side of the chassis. Microphone transformer, T7, sets with its secondary leads facing the modulator tube socket. Filter choke, CH5, has its leads coming out toward the crystal socket. Finally, the modulation transformer, T8, which is mounted on top, has its primary leads come through the chassis holes nearest the modulator socket and its secondary leads through the slot near the coil socket.

The front panel and escutcheon are secured to the chassis by mounting of the tank tuning condenser, the key jack, toggle switch, the microphone jack, and the audio gain control.



C2	4 mfd. 450 volt tubular electrolytic condenser
C4	10 mfd. 25 volt tubular electrolytic condenser
C16	.01 mfd. 400 volt tubular paper condenser
C17	.1 mfd. 400 volt tubular paper condenser
C31	.002 mfd. 500 volt mica condenser
C34	250 mmfd. 500 volt mica condenser
C35	50 mmfd. 500 volt mica condenser
C60	100 mmfd. variable condenser
R3	25,000 ohm 10 watt wirewound resistor
R9	1,000 ohm ½ watt carbon resistor
R11S	500,000 ohm potentiometer with switch
R13	25,000 ohm ½ watt carbon resistor
R14	100,000 ohm 1 watt carbon resistor
R16	5,000 ohm 1 watt carbon resistor
R17	300 ohm 10 watt variable resistor
R18	25,000 ohm 1 watt carbon resistor
T7	S.B. mike to grid transformer—**STANCOR A4706**
T8	Modulation transformer—**STANCOR A3871**
T9	Power transformer—**STANCOR P6335**
CH5	Filter choke—**STANCOR C2303**
RFC1	2.5 mh. 125 ma. r.f. choke
SW1	S.P.S.T. toggle switch
J1	Open circuit jack
J3	Two circuit control jack

ACCESSORIES

L1	5 prong air-wound plug-in coil with end link
M	0-100 D-C milliammeter—small square type
XTAL	Mounted crystal for desired frequency
TUBES	1-6J5, 2-6L6's, 1-80
MIC.	Single button microphone
KEY	Telegraph key

Filament leads, which may be wired first, should be twisted and placed close to the chassis, using the push-back wire provided in the kit. The No. 14 bare tinned wire is used for the radio frequency tank circuit from the tuning condenser to the coil socket to the plate of the 6L6 R.F. amplifier tube. It also grounds the rotor of the condenser to the chassis.

Most small parts are self-supported by their leads, which connect directly to the proper tube socket terminals. Spare socket contacts make convenient mounting lugs for small parts, such as, joining the B + terminal, one of the filter condensers, C2, one lead of filter choke Ch5, and the screen resistor R18. The crystal connections are made to the plate and cathode contacts of the provided 5 prong steatite socket.

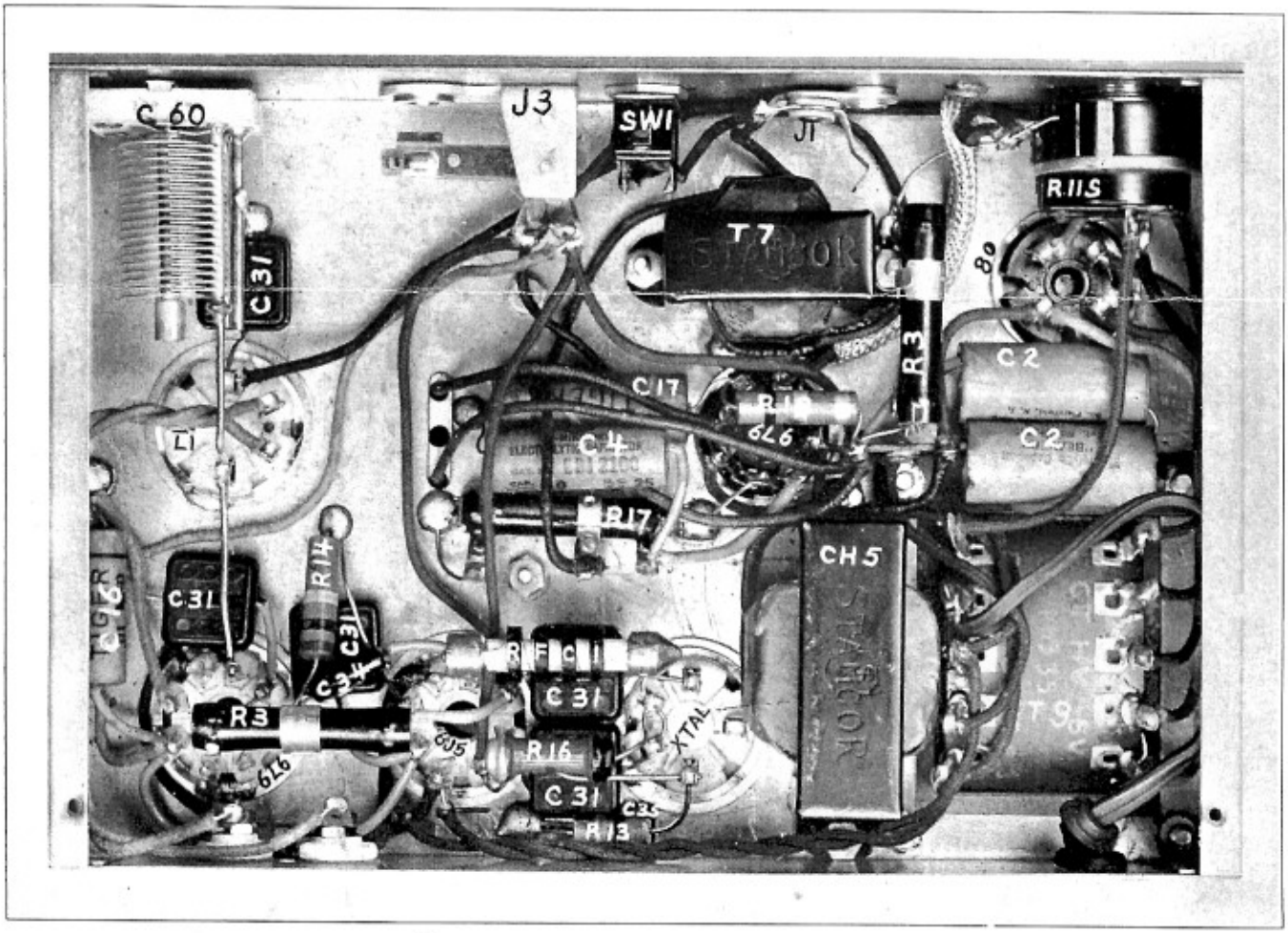
Although the photographs are very useful for determining the positions of the various parts, it is advisable to wire strictly by the schematic diagram. Be careful that electrolytic condensers, C2 and C4, are connected into the circuit with the proper polarity.

Shielding is used on the grid leads of the modulator stage. The green lead of the microphone transformer and the lead from the rotor of the potentiometer to the grid of the 6L6 are housed in a single piece of shielding for simplicity. R.F. output is connected by a twisted line of push-back wire from the link coil of the amplifier tank circuit to the feed-thru insulators mounted on the provided holes on the rear of the chassis.

ADJUSTMENT AND OPERATION

Assuming that the 6J5, 6L6's and 80 have been placed in their respective sockets, the proper coil and crystal for the desired frequency of emission are inserted. Filament voltage is applied to the heaters of the tubes by closing the A.C. switch located on the potentiometer. The first few degrees of rotation operates the switch and the remainder of the traversable arc graduates the audio signal to the modulator. Plate Voltage is not imposed upon the tubes until the "stand-by" toggle switch is placed in the "send" position.

Upon closing the plate power switch, the plate current meter of the 6L6 R.F. amplifier will show a high value in the vicinity of 65 MA. The tank tuning condenser should be immediately adjusted for resonance as denoted by a sharp dip in plate current. The meter may now show between 5 and 15 MA. The low impedance output terminates at the feed-thru insulators on the rear of the chassis where antennae connections are made. These terminals will work directly into any radiating system fed by a low impedance line or may be link-coupled to an external tuning circuit for other



types of antennae. The application of an antenna system will cause the plate current of the R.F. amplifier to rise to a level depending upon the imposed load of the antenna. This loading should be adjusted to allow the amplifier to draw no more than 40 MA. for radiotelephony and 55 MA. for CW.

Microphone current is derived internally by tapping the 6L6 modulator cathode bias resistor, obviating the necessity for batteries. The slider on this resistor is adjusted once for optimum operation and need not be touched again. Raising the tap from the ground end of the resistor increases the microphone current. Bringing the tap too close to the cathode end of the resistor makes the microphone current too high and at the same time decreases the automatic bias of the 6L6 modulator below the proper operating level. The position of the slider should never be higher above ground than the mid-point of the resistor with most single button microphones. The correct setting provides maximum audio output at minimum distortion. The audio gain control permits selection of the desired speech level.

A high percentage of modulation may be obtained with a Class C radio frequency amplifier input of 12 to 14 watts. Should overmodulation, greater than 100%, occur, it will be indicated by an abrupt flickering of the R.F. amplifier plate current on modulation peaks. Reducing the audio gain control or/and increasing the power input to the R.F. amplifier will rectify this condition.

For CW operation, a higher amplifier input up to 20 watts is allowable and break-in procedure is accommodated by the simultaneous keying of both oscillator and amplifier. Introducing the key plug into the provided jack opens the keying circuit and, in addition, excludes the modulator from the plate circuit of the R.F. amplifier.

Two band operation with this transmitter may be enjoyed with each crystal used; i.e., a 160 meter crystal permits operation on the 160 meter band when a 160 meter coil is used at L1, or operation on the 80 meter band when an 80 meter coil is used at L1. Further, an 80 meter crystal permits operation on the 80 meter band when using an 80 meter coil at L1, or operation on the 40 meter band when using a 40 meter coil at L1. Similarly, a 40 meter crystal and a 40 meter coil works on the 40 meter band, or a 40 meter crystal and a 20 meter coil works on the 20 meter band. Thus only two crystals, a 160 and a 40 meter type, will allow operation on all amateur bands from 1.7 to 14.4 megacycles. The proper amplifier tank coil to resonate at the desired output frequency is inserted for each band.