



Fig. 10-5—Receiving demodulator for f.s.k. Teletype signals. Unless otherwise noted, resistors are $\frac{1}{2}$ -watt composition; capacitors of 0.01μ f. or less may be mica or ceramic; larger values are 450 -volt paper. Capacitors with polarities indicated are electrolytic.

- CR₁, CR₂—Silicon diode, 50 volts or more p.i.v.
 J₁—Phone jack.
 L₁, L₂—TV width coils, about 30 mh. (Miller 6319, Thor-
 darson WC-19, Meissner 20-1034).
 M₁—0-100 milliammeter.
 P₁—Chassis-mounting a.c. connector, male.
 R₁—50,000-ohm control, linear taper.
 R₂—50,000-ohm control, linear taper, 4 watts.
 S₁—S.p.s.t. toggle.
 S₂—D.p.d.t. toggle.
 T₁—Power transformer, 700 volts c.t., 100 ma.; 6.3 volts,
 3 amp.; 5 volts, 2 amp. (Stancor PC8409 or
 PC8411).

omitted to save cost, but if it is, a 0-100 milliammeter should be connected in series with the lead to the machine magnets, for initial testing. The shack v.o.m. may be used.

When power is applied to the converter the neon lamps should first fire, and then die out as V_2 starts to draw current. An audio oscillator should be connected to J_1 and the tuned circuits adjusted for resonance on the frequencies chosen. (If the shack doesn't have an audio oscillator check with the local hi-fi bugs — they often have one.) For v.h.f., where the keying is audio frequency, the standard frequencies of 2125 and 2975 c.p.s. should be used. However, if operation is intended only on the h.f. bands, the tones may be any pair that can be passed by the receiver audio section without attenuation, are separated by 850 cycles, and are not harmonically related. Several sets of frequencies were tried with this converter, and all seemed to work equally well. As each tuned circuit is resonated, its associated neon lamp should first.

Connect the machine magnets to the converter and adjust R_2 for 30 or 60 ma., depending on whether the magnets are in series or parallel. Then tune in a signal on the receiver with the b.f.o. on, to provide an audio beat with the incoming signal. Set the balance control, R_1 , so that the lamps have equal brightness. If the signal is correctly tuned, both neons should be flickering on and off with the Teletype pulses. If the machine prints garbled letters, throw the reversing switch to the other position and try again. If you still can not copy anything, the station may have a shift other than 850 cycles, or some other speed than 60 w.p.m. Many commercial services do not use these standards any more, but most amateur stations do. After a few days' practice, one can guess whether a station has the correct shift and speed by listening to the audio output of the receiver.