PILOT 455

Four valve, plus rectifier and barretter, three waveband table model superhet for operation from A.C. or D.C. mains of 200-250 volts. Made by Pilot Radio, Ltd., 31-33, Park Royal Road, London, N.W.10.

Circuit.—On each waveband transformer coils link the aerial to V1, the frequency-changer. The primaries are switched and each secondary has a trimmer. An unusual feature is that the S.W. grid circuit becomes in series on M. and L.W. It does not then, of course, have any tuning effect. A.V.C. is applied on M. and L.W. only.

The oscillator section is very similar, although in this case the S.W. trimmer remains operative on M. and L.W. Regenerative coupling is inductive on S. and M.W., but capacitive, by means of the padder T9, on L.W.

Both I.F. transformers are trimmer tuned, although the first has iron-core coils. V2 is the I.F. amplifier and V3 a double-diode triode.

Only one diode is used, the volume control forming the diode load for both demodulation and A.V.C. A jack provides a pick-up connection. The self-biasing triode section is resistance-capacity coupled to V4, the output pentode, the arrangement including a shunt tone control.

H.T. is drawn, through a conventional smoothing arrangement, from a half-wave rectifier, V5. This is actually a full-wave type with strapped anodes.

The valve heaters are series run through a barretter and the pilot lamps. These have a shunt safety resistance. Mains noise filter chokes are included in the supply leads.

Valves.—A table of voltages is not given, as these vary considerably with the supply voltage. The valves are: V1, 6K8G; V2, 6U7G; V3, 6Q7G; V4, 25A6G; V5, 25Z6G; V6 (barretter), 304. Pilot lamp, 7.3 v., .25 amp. 12 mm. type.

GANGING

I.F. Circuits.—Inject 451 kc. to V1 grid and adjust I.F. trimmer for maximum, reducing the input as the circuits come into line.

S.W. Band.—Inject 16.8 m. to aerial, tune to this wavelength, and adjust T1 and T2. Set T1 at the peak first obtained from full out. Padding (T3) is fixed.

M.W. Band.—Tune to 214 m., inject this wavelength and adjust T4 and T5. Tune to and inject 500 m. and pad with T6.

L.W. Band.—Tune to 1,100 m., inject this wavelength and adjust T7 and T8. Tune to and inject 1,900 m. and pad with T9.

RESISTANCES

R	Ohms.	R	Ohms.
1	33,000	9	1 meg.
2	33,000	10	9.5 meg.
3	270,000	11	1 meg.
4	4,700	12	470
5	47,000	13	270,000
6	1 meg.	14	220
7	220	15	100
8	47,000	16	120

CONDENSERS

C	Mfds.	C	Mfds.
4	.00006	22	25
6	.00015	23	.002
9	.05	24	8+16
12	.05	25	.0004
13	.006	26	.01
16	.05	27	8
17	.05	28	.0001
18	.00015	29	.025
20	.001	30	.05
21	.01	31	.025
		32	.1

All trimmers are accessible from the top of the Pilot chassis. The aerial trimmers are on the rear face of the coil can.
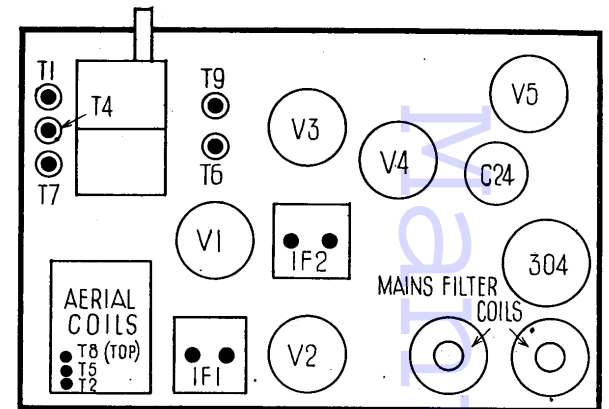
Wattage of Replacement Resistors

WHEN replacing resistors it must be remembered that a suitable wattage is just as important as a suitable ohmage. The production of heat is an integral part of the process of breaking down voltages by the introduction of resistances. The power expended in the resistance is developed in the form of heat.

The resistance used in any particular position must be of such a design that the heat is dissipated fast enough to prevent an undue rise in temperature—*i.e.*, the wattage must be right.

Wattage is the product of current and voltage, *i.e.*, $W = C \times E$. Since, in any particular circuit, C and R are definitely related to voltage $\left(C = \frac{E}{R}\right)$ we can also say that $W = C^2 \times R$ or $W = \frac{E^2}{R}$.

In radio work, the service data usually give us the value of the resistance and the current flowing, hence $W = C^2 \times R$ is the formula most useful. For example,
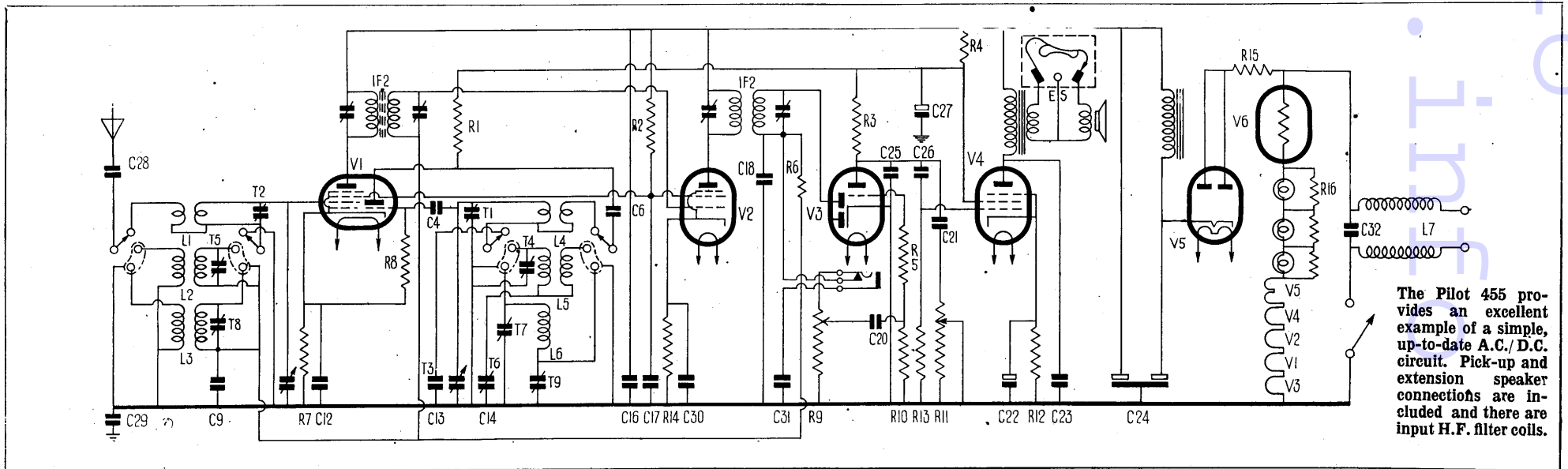
The Pilot 455 provides an excellent example of a simple, up-to-date A.C./D.C. circuit. Pick-up and extension speaker connections are included and there are input H.F. filter coils.