PYE PU

Three-valve, plus rectifier, three-waveband push-button superhet, suitable for 200-250 volt A.C. or D.C. supplies. Made by Pye, Ltd., Cambridge.

Circuit.—Transformer coils link the aerial to V1, the frequency-changer. L1 is a common M. and L.W. coupling coil, and L4, L5 are the S.W. coils. The oscillator circuit is parafeed tuned anode with separate grid coupling coils on each band.

On push-buttons, the aerial circuit is tuned by pre-set condensers switched across the coils, and the oscillator circuit consists of permeability-adjusted coils tuned by C24 and coupled to the grid circuit by the common reactance of C25.

Inductance-adjusted I.F. transformers link up V1 and V2, the I.F. amplifier, and V3, the double-diode pentode. R10, the signal diode load, feeds the triode section through C31 and R12, the volume control. Tone compensation for volume change is provided by C32, R11.

A.V.C. is obtained in the usual way via C35 and R17. The output section of the valve has a shunt tone switch.

V4 is a half-wave rectifier and all the heaters are run in series together with the dial lamps.

Notes.—Average mains consumption, 70 watts. An extension speaker should have 2-4 ohms impedance. The fuses are the 5/8-in. 1-amp. type.

GANGING

I.F. Circuits.—Inject 465 kc. to V1 grid. Adjust outer coils only of I.F.1 and seal with coil dope. Adjust iron cores of I.F.2 with non-magnetic screwdriver.

M.W. Band.—Inject 210 m. to aerial, tune to 210 m. and adjust T1, T2.

Check calibration at 500 m. and compromise with trimming if necessary.

L.W. Band.—Inject 1,300 m. and tune to 1,300 m. Adjust T3, rocking gang slightly.

S.W. Band.—Inject and tune to 15 m. Adjust T4, rocking gang. Inject and tune to 50 m., and adjust tracking if necessary by altering spacing of L5, and calibration by spacing of L11.

Push-buttons.—Connect to aerial on which set will be used, wait till set is thoroughly warm. Then adjust first oscillator trimmer, then aerial trimmer of appropriate button, checking by manual reception that correct programme is obtained.

VALVE READINGS

V	Type	Electrode	Volts	Ma.
1	TH30C	Anode	175	2.9
		Screen	86	4.4
		Osc. anode	65	5.2
		Cathode	2.5	12.5
2	VP13C	Anode	175	7.7
		Screen	176	2.6
		Cathode	1.6	10.3
3	Pen40DD	Anode	168	27.5
		Screen	176	4.0
		Cathode	15	31.6
4	UR1C	Anode	207 A.C.	—
		Cathode	208	85

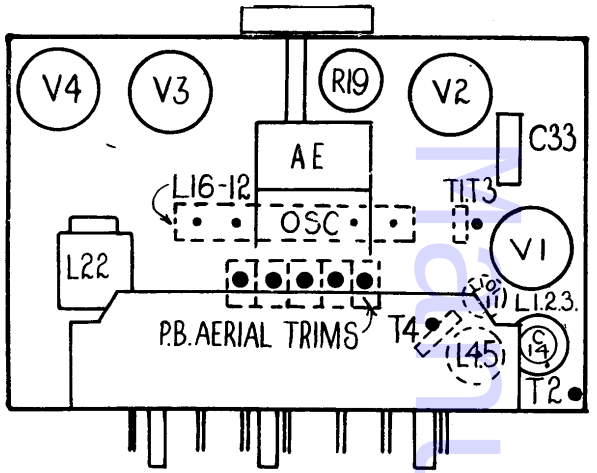
Dial lamps, 6.2 v., .3 amp. M.E.S.

CONDENSERS

C	Mfds.	C	Mfds.
12	.0003	26, 27	150 mmfds.
13	.05	28	.1
14	6 mmfds.	29	.00015
15	.00015	30	.00015
16	.1	31	.005
17	.1	32	.005
18, 19	100 mmfds.	33	.1
20	.00015	34	20
21	657 mmfds.	35	20 mmfds.
22	5,000 mmfds.	36	.05
23	.00015	37	16
24	300 mmfds.	38	8
25	300 mmfds.	39	.1
		40	260 mmfds.

RESISTANCES

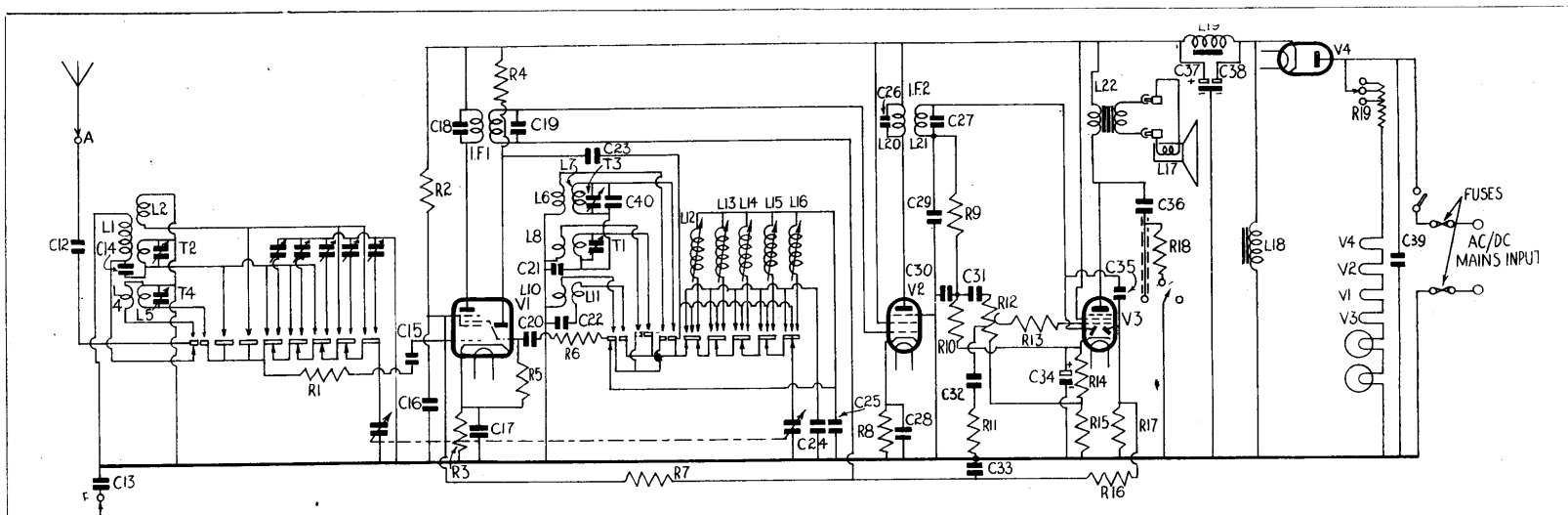
R	Ohms.	R	Ohms.
1	50	11	60,000
2	20,000	12	1 meg.
3	200	13	100,000
4	20,000	14	200
5	20,000	15	300
6	50	16	1 meg.
7	250,000	17	1 meg.
8	150	18	10,000
9	60,000	19	650 tapped 100 and 200
10	500,000		



Fly-wheel and push-button tuning are features of this Pye set. The trimmers, although all shown in this diagram, are mostly below deck.

WINDINGS

L	Ohms.	L	Ohms.
1	75	9	1.5
2	14	10	11
3	2.5	12–16	Below 1
4	V. low	17	2
5	V. low	18	6,500
6	2	19	543
7	2	20, 21	6.75
8	13	22	350



Pre-set condensers in the aerial circuit and permeability coils in the oscillator circuit provide the push-button stations. L18 is the speaker field coil and L19 is a low-resistance series smoothing choke.

Using Substitute Valves

SOMETIMES when replacing a valve, especially an L.F. type drawing a considerable current, the exact replacement is not available and we use a substitute which requires lower voltages. We lower the voltage by a dropping resistance in the H.T. line. This may operate the valve correctly, but if the current taken is smaller than by the old valve the H.T. line voltage will rise and may upset the rest of the circuit. In this case we use a "bleeder" resistor across the H.T. positive-to-negative lines.

In certain cases we can obtain a similar valve to one required except that the heater voltage is different. If the voltage is greater they sometimes work satisfactorily, although with reduced gain. A separate transformer (try a bell type for 4 and 6 volts when in a jam) is otherwise required.

If the set heater voltage is higher than that required by the valve, try using a short length of thin gauge D.C.C. wire. Use about 2 yds. to start with and an A.C. voltmeter with the valve in circuit. Spread out the wire when the correct length is obtained and the slight heat will be dissipated.—F. D. L.