PYE RS4

Three-valve, plus rectifier, superhet covering four wavebands and for use on 200–250 volt A.C. mains. Made by Pye, Ltd., Cambridge.

Circuit.—The aerial is coupled by transformer coils on each of four wavebands to V1, the frequency-changer. There is a common primary on medium and long waves, and the inductive coupling is reinforced by capacity (C1) formed by two wires twisted together.

The triode oscillator section of V1 is tuned anode with separate grid coupling coils on each band.

An I.F. transformer links V1 to V2, the I.F. amplifier, and a similar unit leads on to V3, a combined double diode and output pentode.

R7 is the signal diode load with R6-C23-C24 forming an H.F. filter. L.F. is passed on by C25 to the top of the volume control (R9), the bottom of which goes to an intermediate bias position in the cathode circuit (R10, R14).

Pick-up sockets are provided across the volume control, which also has a tapping taken to C27-R11, which modify the tone to present apparent balance as volume is reduced.

The slider of R9 passes the L.F. to the grid of V3 via a stabilising resistance, R8.

C26 applies I.F. energy to the A.V.C. diode of V3. Rectification is delayed by the volt drop across R10, R14, and takes place across R13. The control voltage is fed back to V1 and V2 via R12.

Switched tone control is given by C31 and R15 in parallel with the output valve.

The H.T. is drawn from a full-wave rectifier, V4, and is smoothed by a choke (the speaker field) and two electrolytics.

The power consumption is 66 watts and the output 2.5 watts.

An extension speaker should have an impedance of 2-4 ohms.

The makers state a pick-up should be a high output (2-3 volts) Piezo electric type; otherwise a transformer should be employed.

GANGING

I.F. Circuits.—Inject 465 kc. between V1 control grid and chassis via .1 mfd. Remove grid lead and connect grid to A.V.C. line via a .5 meg. resistance. Observe readings on an output meter and throughout adjustments keep the input low to prevent operation of the A.V.C.

Move the outer coils only on each former for maximum output. When adjusted, seal with coil dope (Celanese 202 solution).

The I.F.s should not be adjusted unless the circuit has been changed, and it is suspected they are well "out."

M.W. Band (200–560 m.).—Tune to and inject 210 m. to A and E via dummy aerial. Adjust T1 and T2.

Inject 520 m. and check calibration. There is no padder.

L.W. Band (800–2,100 m.).—Tune to and inject 1,300 m. Adjust T3 while slightly rocking gang.

S.W.2 Band (13.5–50 m.).—Inject 15 m., tune to 15 m., and adjust T4 while rocking gang slightly.

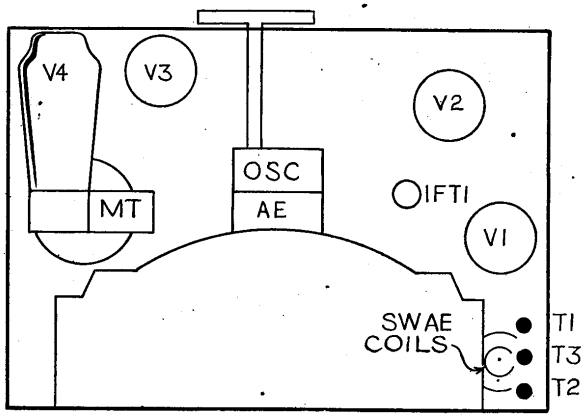
Tune to and inject 50 m. Adjust spacing of winding of V1 grid coil (in parallel with T4). Calibration can be adjusted by altering spacing of the oscillator tuned coil.

S.W.1 Band (50–200 m.).—Tune to and inject 60 m. Adjust spacing of V1 grid coil for output and spacing of oscillator tuned coil for calibration.

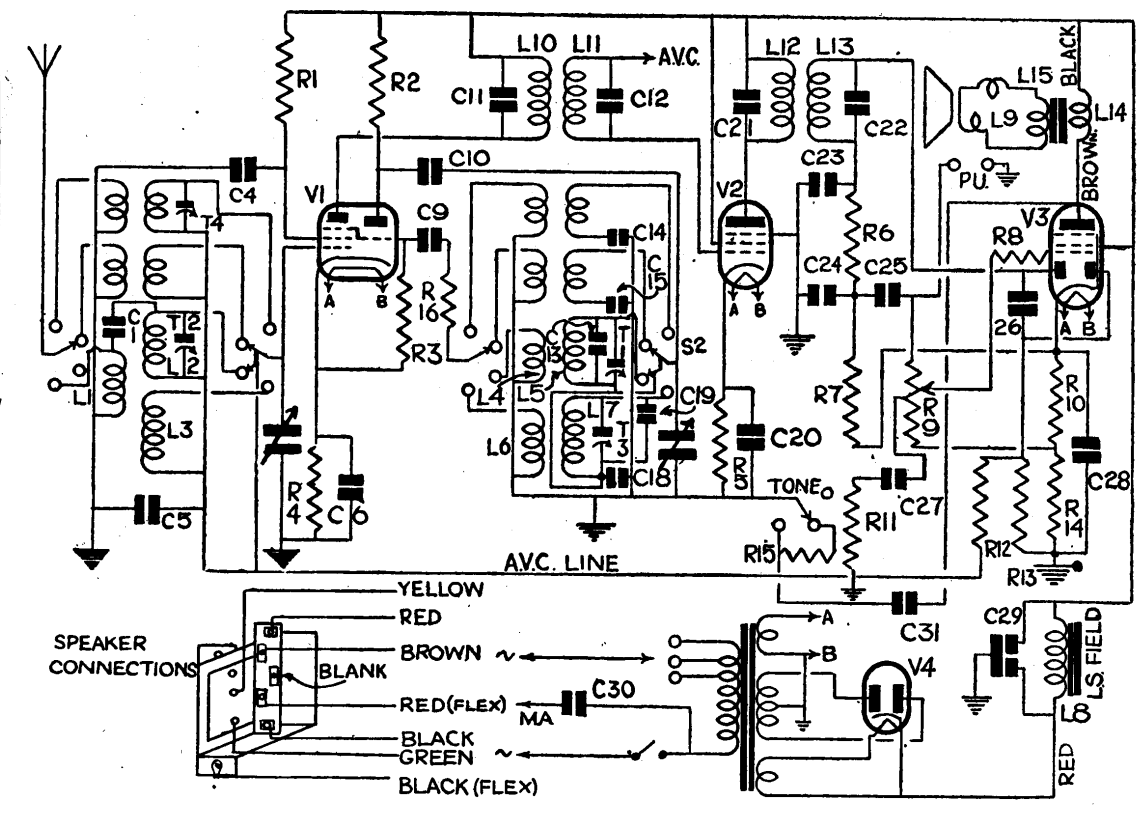
VALVE READINGS

V.	Type	Electrode	Volts	Ma.
1	TH4B	Anode	195	4.6
		Screen	110	4.9
		Osc. anode	66	6.4
		Cathode	3	15.9
2	VP4B	Anode	192	9.5
		Screen	195	3.6
		Cathode	1.9	13.1
3	Pen4DD	Anode	185	21.5
		Screen	195	4.5
		Cathode	15	26
4	DW4/350	Anodes	350AC	—
	or			
	UU/120/350A	Cathode	390	60

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



Layout diagram of the top of the Pye chassis. Trimmers T1 and T2 are accessible from below.



The four wavebands provide continuous coverage from 13.5—560 and from 800 — 2,100 metres. The circuit uses a combined double-diode output pentode and fixed-tuned I.F. transformers.

WINDINGS

L.	Ohms	L.	Ohms
1	64.7	8	3,000
2	2.75	9	2
3	13.1	10	8.52
4	13.5	11	8.77
5	1.61	12	8.74
6	20.1	13	8.8
7	1.97	14	436
		15	.268

CONDENSERS

C.	Mfds.	C	Mfds.
1	6 mmfds.	20	.1
4	.1	21	150 mmfds.
5	.1	22	150 mmfds.
6	.1	23	150 mmfds.
9	150 mmfds.	24	150 mmfds.
10	150 mmfds.	25	.05
11	150 mmfds.	26	150 mmfds.
12	150 mmfds.	27	.005
13	20 mmfds.	28	20
14	5,000 mmfds.	29	8+8
15	1,300 mmfds.	30	.001
18	657 mmfds.	31	.01
19	250 mmfds.	32	150 mmfds.

RESISTANCES

R.	Ohms	R.	Ohms
1	20,000	9	1 meg. tapped .5 meg.
2	20,000	10	200
3	20,000	11	60,000
4	200	12	1 meg.
5	150	13	1 meg.
6	100,000	14	150
7	500,000	15	250,000
8	100,000	16	25

MURPHY —Continued from opposite page

for both bands the conventional system may be used as follows:—

Tune to 1,500 m., inject 1,500 m. and adjust T4.

Tune to 1,000 m., inject 1,000 m., and adjust T5 and T6 until no further improvement results.

Image Filter.—Inject powerful 333 m. signal to aerial and earth. Tune to 453 m. or thereabouts where image is heard.

With insulated screwdriver, adjust erinoid screw on top of band-pass secondary coil for minimum signal.