

PYE MP THREE-BAND FOUR

Three valve, plus rectifier, three waveband table superhet for 200-250 volts, 40-100 cycle supplies, price 8½ gns.

CIRCUIT OUTLINE

COUPLED circuits are used on all three bands for the input to V1, a triode hexode, which has AVC and a conventional oscillator circuit. Inductance adjusted intermediate frequency transformers are used, the primary of the first being in the anode circuit of V1.

The secondary winding of this transformer works into the grid of V2, a "sliding screen" pentode, AVC again being provided. A second IF transformer couples the IF amplifier to the signal diode, which is part of V3, a double diode pentode.

Use is made of a conventional demodulation circuit and filter. The other diode is used for AVC. Signal voltages from the diode load are taken through a coupling condenser to the volume control which works in the grid circuit of the pentode portion. The volume control is of the tone compensated type with a tapping and a fixed network.

The anode circuit of V3 contains the speaker output transformer and has a shunt compensating condenser and a tone control circuit comprising an optional network of either a further condenser and resistance or the condenser alone.

Power supply is by means of a full-wave rectifier, V4, in conjunction with the speaker field and fixed condensers for smoothing.

CONSTRUCTIONAL FEATURES

THERE are several slight variations in the receiver when compared with the makers' circuit. It will be noticed that there is a grid stopper in the lead to the grid of V3. This will be found adjacent to the grid terminal.

The oscillator coil arrangements are different from the original circuits, the un-

tuned windings being returned to the coupling condenser and not the chassis as shown in the Pye diagram.

Wave-change Switches.

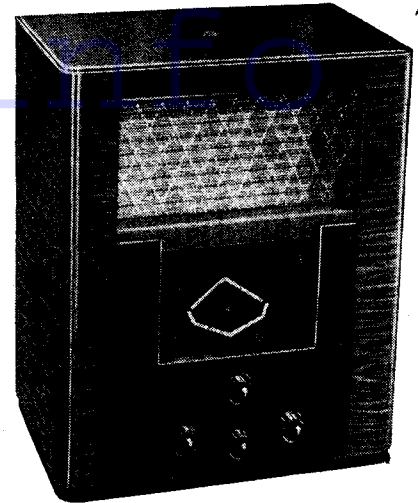
All the switching is accomplished by a single wafer. The first wipe selects the tuned input circuit and the second wipe is used for shorting the unused coils. The third and fourth wipes select the untuned and tuned oscillator wipes respectively, the fifth wipe again being used for shorting purposes.

It will be noticed that the additional wipes are provided by special moving contacts on the rotor disc to which flexible leads are connected.

Chassis Removal.

Chassis removal is extremely simple. The chassis is retained by four bolts which, on removal, leave it completely free. It can then be withdrawn after removing the four knobs. These are held by grub screws.

The speaker and transformer are mounted separately, and some care is necessary in removing the connections. On the transformer there are four tags. Reading from the top to the bottom, the colours of the leads are as follow: Black, rose, green, yellow. The top tag with the black lead is also connected to one terminal on the



speaker and the other is connected to the red lead from the set.

The speaker itself can be released by four nuts, or if desired, the complete baffle board with the transformer screwed to it can be removed.

Alignment

IF Circuits. (Intermediate frequency 462 kcs.)

Connect output meter to set and generator to V1 grid and chassis, through a 0.1 mfd. condenser, and return the grid to the AVC line through a .5 megohm resistance. Inject a modulated 462 kcs. signal and move the outer coils on the inductance-adjusted intermediate transformers in either direction until maximum output is obtained.

Make the adjustment on the second transformer first and use a low input below the AVC level.

Medium Waves. (200-550 metres.)

Connect the generator to the aerial and earth sockets and tune set and generator to 210 metres.

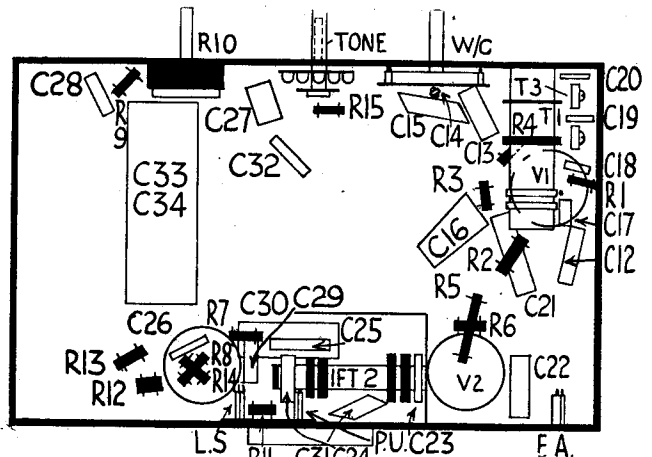
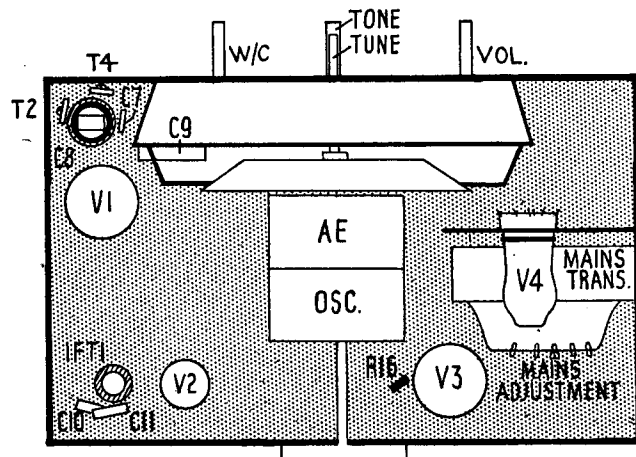
Adjust T1 for resonance and T2 for maximum output.

Tune generator and receiver to 520 metres and check the calibration.

(Continued in col. 3, opposite page.)

VALVE READINGS

V.	Type.	Electrode.	Volt.	Ma.
<i>All Mullard "E" series.</i>				
1	ECH2	Anode	272	3
		Screen	90	6.8
		Osc. anode	82	3.6
2	EF9	Anode	272	6.1
		Screen	90	1.9
3	EBL1	Anode	250	30
		Screen	272	5
	AZ1	Heater	380	—
	Pilot lamps	—	6.2	300
	<i>(Ever Ready)</i>			



Layout diagrams of the MP chassis (underside on right) identifying components. Condensers are in outline and resistors in solid black to aid reference.

For more information remember
www.savoy-hill.co.uk

10-MINUTE FAULT-FINDER

PYE MP

Power Test.—This test reveals any main H.T. circuit or output valve faults. The measurement points, *A* and *B*, in common with all the test points given below, are indicated on the circuit. In the receiver they will be found on the speaker field strip, *A* being red and *B* black.

Voltages: *A-E* (chassis), 380; *B-E*, 272. Resistance: *A-B*, 2,000 ohms.

Total feed: $330-272 \div 2,000 = 54$ ma.

If defective, check V4 anode volts. This should be approx. 325 A.C.

Only when power test is correct, proceed to following tests. When an injection test is satisfactory, proceed at once to injection test on the next stage. Apply voltage

and resistance measurements only when faulty stage has been located.

Output Stage, V3.—Inject 2 volts AF V3 grid and *E*. If defective, check:—

Voltages: *C-E*, 250; *D-E*, 272.

Resistances: *C-B*, 700; *F-E*, 650 ohms; *G-E*, 1 megohm.

If still defective examine speaker. When correct, proceed to:—

Demodulation Stage.—Inject strong modulated 462 kcs. signal V2 anode. If defective, check:—

Resistances: L16, 7; L17, 7; *H-E*, 620,000 ohms.

I.F. Stage, V2.—Inject 462 kcs. V2

grid. If defective, check:—

Voltages: *I-E*, 272; *K-E*, 90.

Resistance: *K-B*, 20,000 ohms.

Hexode Section, V1.—Inject 462 kcs. V1 anode. If defective, check:—

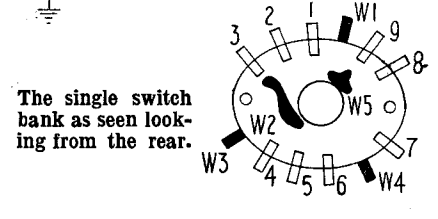
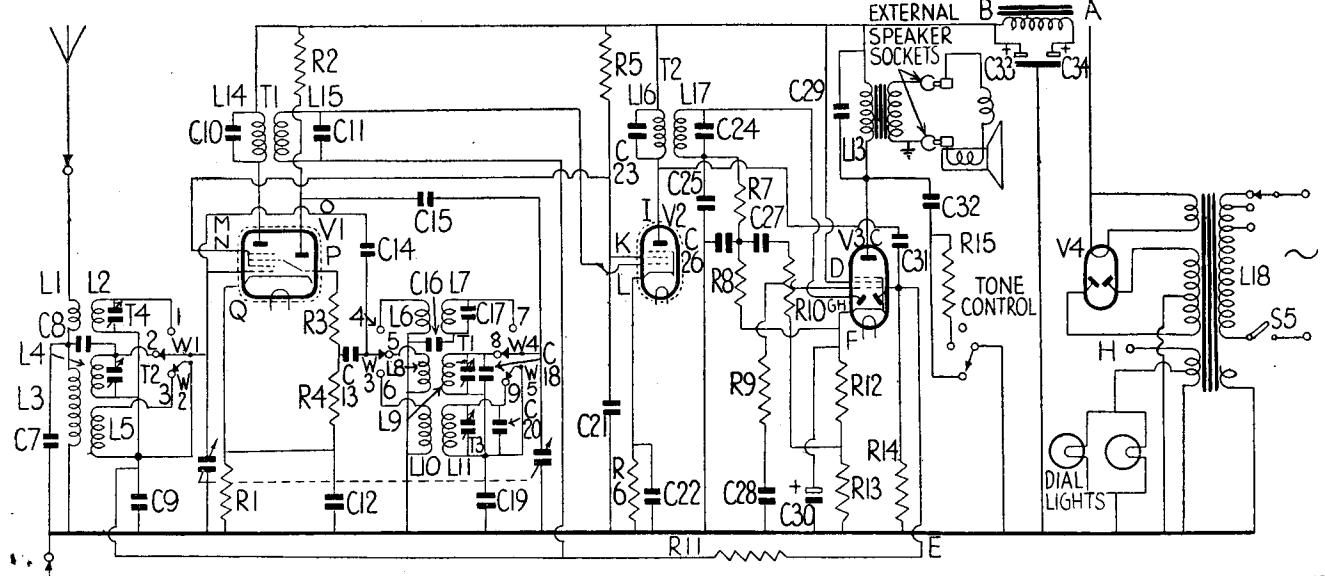
Resistances: L15, 7; L14, 7; *L-E*, 250 ohms.

Inject 462 kcs. V1 grid. If defective, check:—

Voltage: *O-E*, 82.

Resistances: *O-B*, 40,000; *P-E*, 20,000; *Q-E*, 150 ohms.

Input Circuits.—Inject at *P* 462 kcs. plus local station frequency. Tune set to local station. If not received, check input circuit resistances and switches.



The single switch bank as seen looking from the rear.

Windings (continued)			
5	..	14	.. LW .. V1 grid and C9.
6	..	36	.. SW .. W3 and earth.
7	..	Low	.. SW .. W4 and C5+C17.
8	..	12	.. MW .. W3 and E.
9	..	1.45	.. MW .. W4 and C18+19.
10	..	17.6	.. LW .. W3 and E.
11	..	1.9	.. LW .. W4 and C19+C20.
12	..	2,000	.. — .. On tags on speaker strip.
13	..	700	.. — .. Black and puce tags on O.T. strip.
14	..	7	.. — .. V1 anode and H.T. +
15	..	7	.. — .. Across C11.
16	..	7	.. — .. V2 anode and H.T. +
17	..	7	.. — .. Across C24.
18	..	23	.. — .. Mains plug.

Condensers (continued)			
24	..	IFT2 secondary tune	.. .00014
25	..	HF filter	.. .0001
26	..	HF filter	.. .0001
27	..	LF coupling	.. .005 (.002)
28	..	Tone compensation	.. .01
29	..	V3 anode shunt	.. .001
30	..	V3 cathode bias shunt	.. 20
31	..	AVC coupling	.. .00001
32	..	Tone control	.. .01
33	..	HT smoothing	.. 8
34	..	HT smoothing	.. 8

RESISTANCES			
L.	Ohms.	Range.	Where measured.
1	..	V1 cathode bias	.. 150
2	..	V1 osc. anode load	.. 40,000
3	..	Regeneration modifier	.. 50
4	..	V1 osc. grid leak	.. 20,000
5	..	V1, V2 screen feed	.. 20,000
6	..	V2 cathode bias	.. 250
7	..	HF filter	.. 110,000
8	..	Signal diode load	.. 510,000
9	..	Tone compensation	.. 50,000
10	..	Volume control	.. 1 meg.
11	..	AVC decoupling	.. 1,100,000
12	..	V3 cathode bias part	.. 150
13	..	V3 cathode bias, part	.. 500
14	..	AVC diode load	.. 1,100,000
15	..	Tone control	.. 25,000
16	..	V3 grid stopper	.. 10,000

CONDENSERS			
L.	Ohms.	Range.	Where measured.
7	..	LW aerial shunt	.. .00005
8	..	MW top coupling	.. .000005
9	..	V1 AVC decoupling	.. .1
10	..	IFT1 primary tune	.. .00014
11	..	IFT1 secondary tune	.. .00014
12	..	V1 cathode bias shunt	.. .1
13	..	V1 osc. grid	.. .0002
14	..	Neutralising	.. .000001
15	..	V1 anode coupling	.. .0002
16	..	SW fixed padder	.. .005
17	..	SW osc. fixed trimmer	.. .000005
18	..	MW osc. fixed trimmer	.. .00003
19	..	MW, LW fixed padder	.. .0007
20	..	LW osc. fixed trimmer	.. .00023
21	..	V2 screen decoupling	.. .1
22	..	V2 cathode bias shunt	.. .1
23	..	IFT2 primary tune	.. .00014

WINDINGS			
L.	Ohms.	Range.	Where measured.
1	..	Low	.. Aerial and C7+C8.
2	..	Low	.. SW .. V1 grid and C9.
3	..	65	.. — .. Aerial and earth.
4	..	2.6	.. MW .. V1 grid and C9.

(Continued from opposite page.)

Long Waves. (850-2,200 metres.)

Tune set and generator to 1,300 metres and adjust T3, simultaneously rocking the gang.

Short Waves. (13.5-54 metres.)

Tune set and generator to 15 metres and adjust T4 for maximum output. Tune set and generator to 50 metres.

Check the tracking and, if necessary, adjust the spacing of the short wave aerial winding L2.

Calibration can be adjusted, if necessary, by adjusting the SW oscillator winding, L7, if the error is appreciable.

Replacement Condensers are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18. For the block containing C33 and C34 there is unit 1,573, 6s. 6d., and for C30, unit 2,935, 1s. 9d.