

PYE 802 THREE-BAND A.C. FIVE

CIRCUIT.—The aerial input to the grid of V1, an octode frequency changer, is via transformer aerial coils on all bands. A small-capacity condenser, C9, connected between signal and oscillator grids, effects a reduction in general noise level.

V1 is coupled to V2, an H.F. pentode, operating as the I.F. amplifier, by means of an I.F. transformer tuned to 465 kc. The I.F. transformer does not incorporate trimming condensers and is adjusted by varying the coupling between the coils.

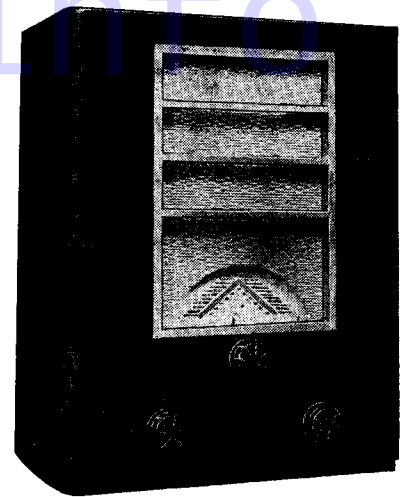
Another transformer of similar construction effects the coupling between V2 and the demodulating diode of V3, a double diode valve. An H.F. stopper resistance and bypass condenser filter circuit is interposed between the transformer and demodulating diode load.

A manual volume control is included in the grid circuit of the triode section of V3, whilst a tapping from the volume control in conjunction with a fixed condenser accentuates the bass response. This circuit can be cut out if desired by the tone switch. The other diode of V3 fed by C22 operates the A.V.C. network to V1 and V2.

V3 is resistance capacity coupled to V4, an output pentode, and a negative feed-back circuit (C29 and C32) operated by the tone control switch enables tone to be varied. A pentode compensator condenser, C31, is connected across the primary of the speaker transformer.

Mains equipment consists of a mains transformer, a full-wave rectifying valve, V5, electrolytic smoothing condensers and a smoothing choke (the speaker field coil).

Chassis Removal.—The cabinet has a false bottom secured by four wood screws,



An inexpensive all-wave A.C. super-het, the Pye model 802 is a five-valve three-band with several interesting features.

VALVE READINGS

No signal. Volume maximum. MW min. cap 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	6A8G ..	Anode ..	232	5.4
		Screen ..	80	3.4
		Osc. anode ..	110	6
2	6K7G ..	Anode ..	238	7.2
		Screen ..	80	1.8
3	6Q7G ..	Anode ..	98	.78
4	6F6G ..	Anode ..	220	26.6
		Screen ..	240	4.7
5	5Y3G ..	Heater	360	—

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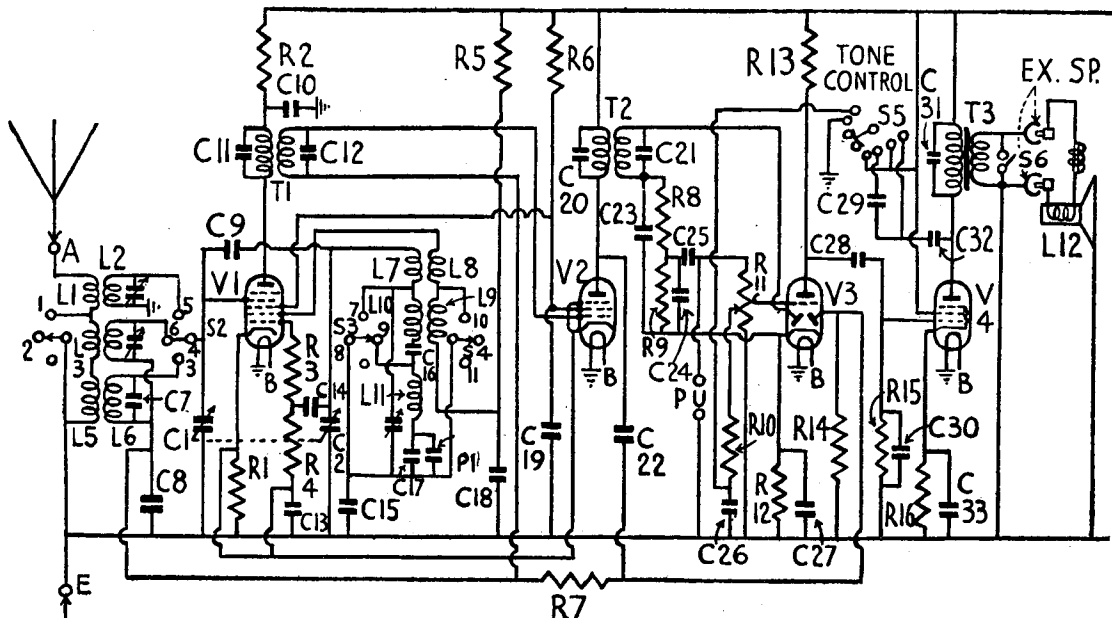
CONDENSERS

C.	Purpose.	Mfds.
7	LW aerial fixed trimmer ..	.00005
8	V1 A.V.C. decoupling ..	.05
9	V1 osc. grid—signal grid coupling ..	.00001
10	V1 anode decoupling ..	.1
11	IFT1 primary fixed trimmer ..	.00014
12	IFT1 sec. fixed trimmer ..	.00014
13	V1 and V2 cathode bias shunt ..	.25
14	Osc. grid ..	.00015
15	Osc. fixed padder ..	.005
16	MW osc. fixed padder ..	.00072
17	LW osc. fixed padder ..	.00019
18	Osc. anode decoupling ..	.8
19	V1 and V2 screen decoupling ..	.1
20	IFT2 prim. fixed trimmer ..	.00012
21	IFT2 sec. fixed trimmer ..	.00014
22	A.V.C. diode coupling ..	.00002
23	HF bypass ..	.0001
24	HF bypass ..	.0001
25	LF coupling ..	.005
26	Bass tone control ..	.01
27	V2 cathode bias shunt ..	.20
28	LF coupling ..	.01
29	Negative feed back ..	.0005
30	V4 grid shunt ..	.001
31	Pentode compensator ..	.025
32	Negative feed back ..	.20
33	V4 cathode bias shunt ..	.16
34	HT smoothing ..	.8
35	HT smoothing ..	.8

RESISTANCES

R.	Purpose.	Ohms.
1	V1, V2 cathode bias shunt ..	150
2	V1 anode decoupling ..	1,000
3	Osc. grid stabiliser ..	50
4	Osc. grid leak ..	50,000
5	Osc. anode decoupling ..	20,000
6	V1 and V2 screen decoupling ..	30,000
7	V1 and V2 A.V.C. decoupling ..	1 meg.
8	HF stopper ..	110,000
9	Demodulating diode load ..	510,000
10	Bass tone control ..	50,000
11	Volume control ..	1.1 meg.
12	V3 cathode bias ..	2,000
13	V3 anode load ..	160,000
14	A.V.C. diode load ..	1.1 meg.
15	V4 grid leak ..	510,000
16	V4 cathode bias ..	500

There are two variably tuned circuits, but efficient design throughout gives good sensitivity and selectivity (see Test Report panel on opposite page).



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removal of which enables the underside of the chassis to be inspected and replacements effected.

To take out chassis first remove back of cabinet and the three spring-fixed control knobs from the front. Remove the four chassis-securing bolts from the base, and, finally, unclasp the speaker cable from the side of the cabinet.

The speaker and electrolytic condensers, secured by four nuts and two screws, respectively, may be removed if desired.

Special Notes.—Wander plugs at the rear of the chassis enable an extension speaker to be operated either with or separate from the internal speaker. The plugs from the extension speaker can be plugged into socketed plugs on the speaker panel or, if it is desired to cut out the internal speaker, the extension speaker plugs should be inserted directly into the sockets at the rear of chassis. The extension speaker should have an impedance of between 2 and 4 ohms.

The mains adjustment device on the side of the mains transformer takes the form of sockets marked with voltage values and a flying lead.

The electrolytic smoothing condenser pack, C34 and C35, is secured to the cabinet and located near the speaker.

A pair of sockets at the rear of the chassis provide connections for a pick-up.

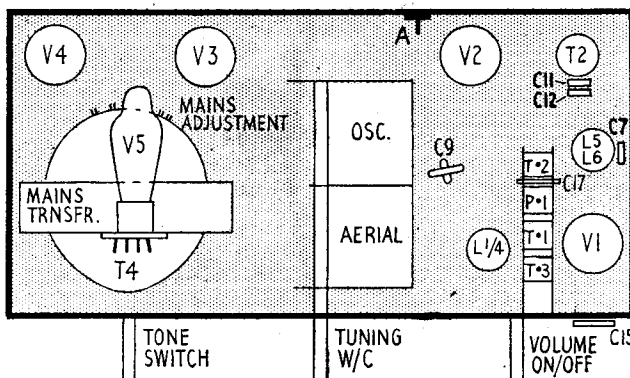
The single dial illuminating light is located in a screw-in holder clamped to the gang behind the dial. The bulb is rated at 6.2 volts .3 amp., and has an M.E.S. base.

The wave-selection switch is of unorthodox construction and consists of sets of contacts mounted upon a curved strip of paxolin near the dial. Shorting contact strips mounted on the sides of the dial and rotating with the dial bring into circuit the corresponding contacts in accordance

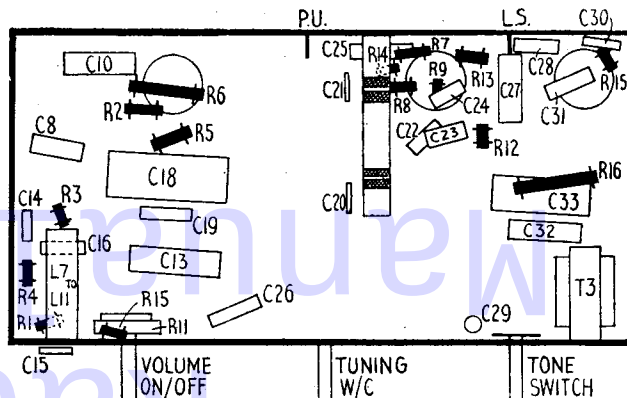
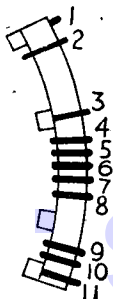
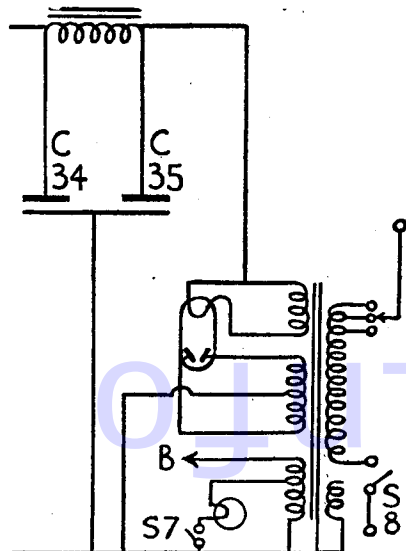
WINDINGS (D.C. Resistances)

Windings.	Ohms.	Range.	Measured between
L1 ..	1	SW	Aerial socket and 1
L2 ..	1	SW	5 and chassis
L3 + L5 ..	102	MW	1 and 2.
L4 ..	6.2	MW	6 and C8.
L6 ..	11.7	LW	3 and C8.
L7 ..	.1	SW	C14 and 7.
L8 ..	22	SW	Osc. anode V1 and 10.
L9 ..	7.3	MW	10—C18.
L10 ..	2.3	MW	7 and C16
L11 ..	4.5	LW	9 and C17.
T1 prim. ..	6	—	Across C11.
T1 sec. ..	6	—	Across C12.
T2 prim. ..	6	—	Across C20.
T2 sec. ..	7	—	Across C21.
T3 prim. ..	740	—	Across C31.
T4 prim. ..	20	—	Across mains plug pins.
Total H.T. sec	690	—	Across anode pins V5.

Right, the top "deck" layout diagram for the Pye chassis. Construction is neat and logical and the trimmers are easily accessible.



Below, are the switch and under chassis diagrams. The switch is of unusual design and consists of a curved strip of paxolin mounted near the dial. The contacts are numbered to correspond with the circuit diagram.



Pye 802 on Test

MODEL 802.—Standard model for A.C. mains, 200-250 volts, 40-100 cycles. Price, 9 gns.

DESCRIPTIONS.—Four-valve, plus rectifier, table model superhet covering three wavebands.

FEATURES.—Separate scales calibrated in wavelengths and station names for each band brought into visibility by rotation of combined concentric tuning and wave selection switch. Other controls are combined volume and master switch and tone control switch. Sockets for low impedance extension speaker and pick-up.

LOADING.—62 watts.

Sensitivity and Selectivity

SHORT WAVES (13.8-52 metres).—Very good gain and representative selectivity. No appreciable drift and easy handling. Gain well maintained over entire band.

MEDIUM WAVES (196-567 metres).—Representative gain for the coil and valve combination. Reasonable background. Local station spread small and no bad whistles for a two-circuit tuner.

LONG WAVES (900-2,035 metres).—Very good performance with all main stations easily received and only little interference on Deutsch-landsender.

Acoustic Output

Tone crisp and clean in the most brilliant position. Good attack and well-balanced reproduction on speech and music. Tone very good in maximum position.

with the waveband to which the receiver is switched.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Switch receiver to medium waveband, turn gang to maximum capacity, volume to maximum and tone switch to "high" position.

Connect a service oscillator between the top grid cap of V1 and chassis, shunting the connections with a 500,000-ohms resistance and also with a .25 mfd. condenser,

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Pilot U106 Six-Band

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turn gang to maximum and tone controls to "high" position.

Connect a service oscillator via a .1 mfd. condenser to the top grid cap of V5 and chassis. Tune oscillator to 456 kc. and adjust the trimmers of I.F.T.3 for maximum response. Only feed sufficient input from the service oscillator to obtain definite peaks in the output meter, so as to prevent operation of the A.V.C.

Connect the service oscillator to the top grid cap of V4, adjust the trimmers of I.F.T.2, then connect the oscillator to the top grid cap of V2 and adjust the trimmers of I.F.T.1 for maximum.

Signal Circuits.—Connect the service oscillator to the A and E terminals of the receiver, only feeding sufficient input to obtain reliable peaks. Make sure that the metal connecting bar is between the E. and A2 terminals.

Long Waves.—Tune set and oscillator to 800 metres (375 kc.) and adjust T1, T2 and then T3 for maximum.

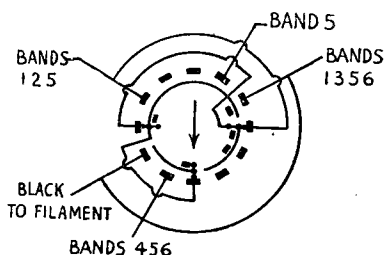
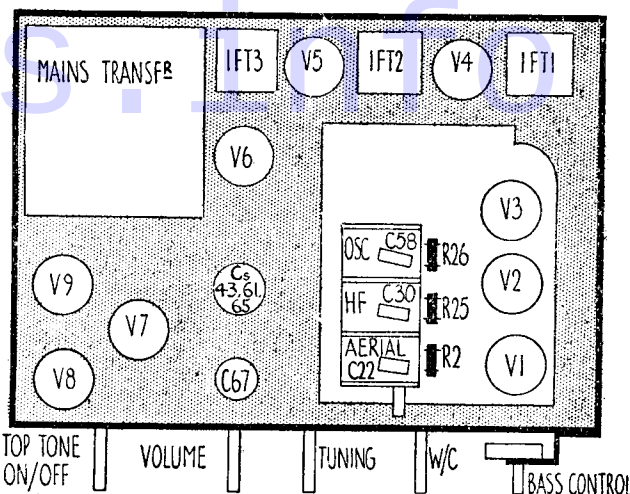
Tune oscillator to 2,000 metres (150 kc.), tune in on receiver, then adjust P1 for maximum, simultaneously rocking the gang.

Re-check at 800 metres.

Medium Waves.—Tune set and oscillator to 200 metres (1,500 kc.) and adjust T4, T5 and then T6 for maximum.

Tune oscillator to 500 metres (600 kc.), tune in on receiver, then adjust P2 for

This diagram (right) enables all parts on the top of the U106 chassis to be identified. Below, is the bank on the front of the band switch which controls the dial lights. Wave switch diagrams are not given because of the inaccessibility of the tuning pack.



maximum, simultaneously rocking the gang.

Re-check at 200 metres.

Short Waves.—Band 4. Tune set and oscillator to 70 metres (4.3 mc.) and adjust T7, T8 and T9 for maximum response, simultaneously rocking the gang.

Band 3. Tune set and oscillator to 27 metres (11.1 mc.) and adjust T10, T11, and then T12 for maximum response, simultaneously rocking the gang.

Band 2. Tune set and oscillator to 13 metres (23.077 kc.) and adjust T13, T14 and then T15 for maximum response, simultaneously rocking the gang.

Band 1. Tune set and oscillator to 5 metres (60 mc.) and adjust T16 for maximum.

Replacement Condensers.

Exact replacement condensers for the U106 available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18, are: For either C42 or C58, unit number 2985, price 1s. 4d.; for C67, 354d, 7s. 6d.; for the block containing C43, C61 and C66, unit 4112 8s.; and for C66, 2632, 2s. 6d.

move, by means of a pin, the name-tag of the button and inset the prongs of the special tool provided into the two holes in the centre of the button. Press the button and rotate the dial (both ways) until the button engages with the slot behind dial, then rotate the special tool one turn counter-clockwise sufficient to loosen button, but not beyond this.

Still keeping button depressed, take out the tool and insert the blade into the centre of the button. Turn this screw, which will rotate the dial, until the desired station is again tuned in. Then, keeping the blade of the tool pressed in and held steady with one hand, tighten the button by clockwise rotation with finger and thumb of other hand. Then insert the appropriate name-tag.

Pye 802 A.C. Five

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if necessary to prevent the valve oscillating.

Tune service oscillator to 465 kc. and adjust the outer coils only of the I.F. transformers with an insulated spacer tool until a maximum peak is obtained in the output meter. After adjustment re-seal the coils with ordinary coil dope and if possible leave for approximately two hours to dry before carrying out any signal trimmer adjustments.

Signal Circuits.—Connect the service oscillator to the A. and E. sockets via a dummy aerial, only feeding sufficient input to obtain reliable peaks in the output meter so as to keep the A.V.C. inoperative.

Short Waves.—Tune set and oscillator to 15 metres (20 mc.) and adjust T1 for maximum.

Inject a 50 metres (6 mc.) signal and tune in on receiver. The oscillator circuit must be adjusted to make the calibration correct in moving the lead to the oscillator section of the gang in relation to the short wave winding on the oscillator coil.

Similarly the aerial circuit must then be adjusted for optimum signal strength by moving the black lead to the S.W. aerial coil in relation to this winding. (Note that the gang must be retuned each time a lead is moved.) If much adjustment is required repeat the trimming adjustment at 15 metres.

Medium Waves.—Tune set and oscillator to 210 metres (1,425 kc.) and adjust T2 and then T3 for maximum.

The medium wave calibration is fixed, but check at 500 metres (600 kc.), and if necessary compensate with T2 afterwards retrimming T3 on a 210 metres signal.

Long Waves.—Tune set and oscillator to 1,800 metres and adjust P1 for maximum, simultaneously rocking the gang.

Replacement Condensers

Exact replacement condensers for the Pye 802 are made by A. H. Hunt, Ltd. These are: For the block containing C34 and C35, unit 3990, price 9s. 3d.; for C18, 4049, 1s. 9d.; C33, 2935, 1s. 9d.; and for C27, 4015, 1s. 6d.

VALVE READINGS

Screen and anode voltages measured to cathode.

V.	Type.	Electrode.	Volts.
1	6U7G	Anode	216
		Heaters	6.3
2	6L7G	Screen	94
		Anode	228
		Heaters	6.3
3	6J7G	Screen	94
		Anode	170
		Heaters	6.3
4	6U7G	Anode	224
		Heaters	6.3
		Screen	94
5	6A8G	Anode	222
		Cathode	3.7
		Heaters	6.3
		Screen	94
6	6Q7G	Anode	180
		Cathode	43
		Heaters	6.3
7	6N6G	Anode	350
8		Heaters	6.3
		Driver anode ..	305
9	SU46	Unsmoothed D.C. ..	420

Philco D521 Empire Automatic

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receiver (corresponding to dot under letter "t" in word "Budapest") and adjust P2 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

Automatic Buttons.—The receiver is sent out adjusted to receive a selected number of stations. If a station not mentioned on the button name tags is desired, then the button nearest the slot (at the back of the dial) when the station is tuned in should be used.

With the desired station tuned in, re-