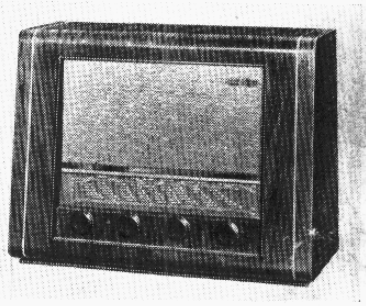
Supplement to Wireless & Electrical Trader, 17 *April* 1954

"TRADER" SERVICE SHEET

1141

PYE P76

A.C. Table Superhet



Appearance of the Pye P76.

THE Pye P76 is a 4-valve (plus rectifier) 4-band table superhet, designed to operate from A.C. mains of 200-250 V, 50 c/s. In addition to the normal manually operated tone control, it employs a complex negative feed-back tone correction circuit between the A.F. stages. The waveband ranges are 16.5-51.5 m, 65.5-200 m, 183-566 m and 975-1,900 m.

Release date and original price: July, 1953; £19 1s 7d. Purchase tax extra.

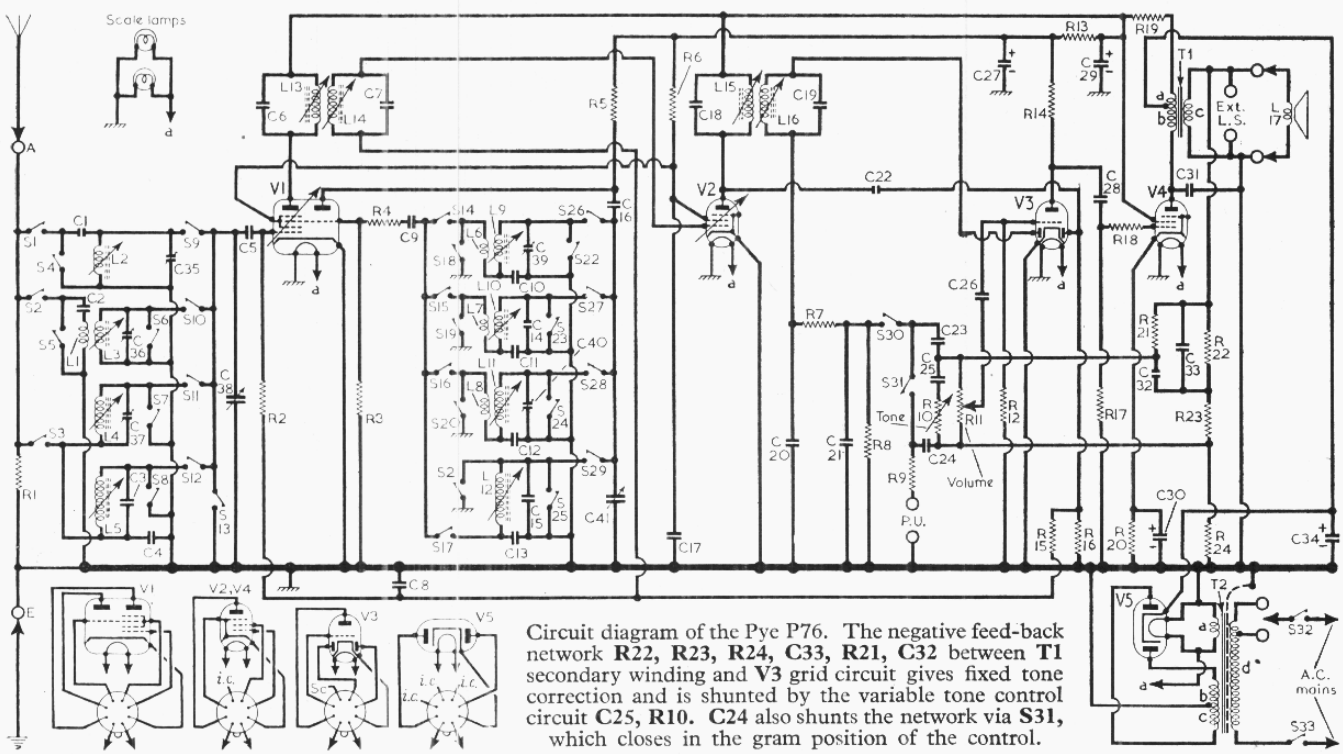
COMPONENTS AND VALUES

	RESISTORS	Values	Locations
R1	Aerial shunt ...	22kΩ	F4
R2	V1 C.G.	1MΩ	F3
R3	V1 osc. C.G. ...	47kΩ	F3
R4	Osc. stabilizer ...	150Ω	F3
R5	Osc. anode feed ...	22kΩ	F3
R6	S.G. H.T. feed ...	27kΩ	E3
R7	I.F. stopper ...	220kΩ	E4
R8	Signal diode load ...	220kΩ	E3
R9	P.U. tone corrector	150kΩ	F4
R10	Tone control ...	1MΩ	D3
R11	Volume control ...	1MΩ	E3
R12	V3 C.G.	10MΩ	E4
R13	H.T. decoupling ...	4·7kΩ	E4
R14	V3 anode load ...	220kΩ	E4
R15	A.G.C. decoupling	1MΩ	E3
R16	A.G.C. diode load	1MΩ	E4
R17	V4 C.G.	470kΩ	E3
R18	V4 C.G. stopper ...	10kΩ	E4
R19	H.T. smoothing ...	1·6kΩ	D3
R20	V4 G.B.	180Ω	E4
R21	Neg. feed-back	4·7MΩ	D4
R22		15kΩ	D4
R23		1·5kΩ	E3
R24		270Ω	E3

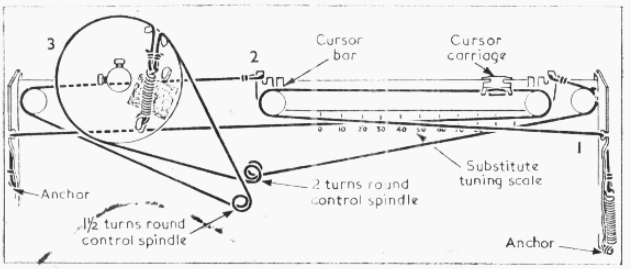
	CAPACITORS	Values	Locations
C1	Aerial coupling	5·6pF	G4
C2	Aerial coupling	100pF	G4
C3	L.W. aerial trim ...	120pF	G4
C4	Aerial coupling ...	0·0024μF	G4
C5	V1 C.G.	100pF	F4
C6	1st I.F. trans.	100pF	B1
C7	tuning	100pF	B1
C8	A.G.C. decoupling	0·05μF	F3
C9	V1 osc. C.G. ...	100pF	G3
C10	S.W.1 osc. tracker	0·0056μF	G3
C11	S.W.2 osc. tracker	0·0017μF	G3
C12	M.W. osc. tracker	360pF	G3
C13	L.W. osc. tracker	160pF	G4
C14	S.W.2 osc. trimmer	27pF	G4
C15	L.W. osc. trimmer	160pF	G4
C16	Osc. anode coup.	100pF	F3
C17	S.G. decoupling ...	0·05μF	F4
C18	2nd I.F. trans.	100pF	B2
C19	tuning ...	100pF	B2
C20	I.F. by-passes	100pF	E4
C21		100pF	E3
C22	A.G.C. coupling ...	47pF	E4
C23	A.F. coupling ...	0·01μF	E3
C24	P.U. tone corrector	470pF	F4
C25	Part tone control	0·002μF	E3
C26	A.F. coupling ...	0·05μF	E4
C27*	H.T. decoupling	2μF	E3
C28	A.F. coupling ...	0·05μF	E4
C29*	H.T. smoothing ...	32μF	C1
C30*	V4 cath. by-pass	50μF	E4
C31	Tone corrector ...	0·005μF	B1
C32	Neg. feed-back	47pF	E3
C33		0·25μF	E4
C34*	H.T. smoothing ...	32μF	C1
C35‡	S.W.1 aerial trim.	50pF	F4
C36‡	S.W.2 aerial trim.	50pF	G4
C37‡	M.W. aerial trim.	50pF	G4
C38†	Aerial tuning ...	528pF§	A1
C39‡	S.W.1 osc. trim.	50pF	F3
C40‡	M.W. osc. trim. ...	50pF	G3
C41†	Oscillator tuning	528pF§	A1

* Electrolytic. † Variable. ‡ Pre-set.
§ "Swing" value, min. to max.

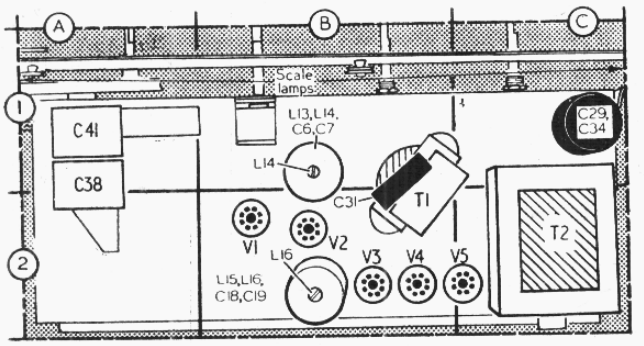
	OTHER COMPONENTS	Approx. Values (ohms)	Locations
L1	S.W.2 aerial coup.	14·0	F4
L2		—	F4
L3	Aerial tuning coils	0·8	F4
L4		3·0	G4
L5		15·0	G4
L6		—	F3
L7	Oscillator reaction coils	—	F3
L8		—	G3
L9		—	F3
L10	Oscillator tuning coils	—	F3
L11		2·0	G3
L12		5·0	G3
L13	1st I.F. trans. Pri.	12·0	B1
L14	1st I.F. trans. Sec.	12·0	B1
L15	2nd I.F. trans. Pri.	12·0	B2
L16	2nd I.F. trans. Sec.	12·0	B2
L17	Speech coil ...	2·5	—
T1	O.P. trans. a	15·0	
	O.P. trans. b	485·0	B1
	O.P. trans. c	—	
T2	Mains trans. a	—	
	Mains trans. b	260·0	C2
	Mains trans. c	270·0	
	Mains trans. d, total	32·0	
S1-S31	Waveband switches	—	G4
S32, S33	Mains sw., g'd R10	—	D3



Circuit diagram of the Pye P76. The negative feed-back network **R22, R23, R24, C33, R21, C32** between **T1** secondary winding and **V3** grid circuit gives fixed tone correction and is shunted by the variable tone control circuit **C25, R10. C24** also shunts the network via **S31,** which closes in the gram position of the control.



Above: Sketch of the drive cord system as seen from the rear with gang at minimum.



Right: Plan view of the chassis.

CIRCUIT ALIGNMENT

The chassis must be removed from its cabinet for the following adjustments

I.F. Stages.—Switch receiver to M.W. and turn gang to maximum. Connect output of signal generator, via an 0.1 μF capacitor in the "live" lead, to control grid (pin 6) of **V1** and chassis. Feed in a 470 kc/s (638.3 m) signal and adjust the cores of **L16** (location reference B2), **L15** (F4), **L14** (B1) and **L13** (F3) for maximum output.

R.F. and Oscillator Stages.—As the tuning scale remains fixed to the cabinet when the chassis is withdrawn, reference must be made during the following alignment to the substitute tuning scale printed on the rear of the scale backing plate. With the gang set at maximum, a pencil mark should be made on the cursor bar opposite the zero mark on this scale. This mark may then be used as a cursor line against the substitute scale. Transfer signal generator leads, via a dummy aerial, to **A** and **E** sockets.

L.W.—Switch receiver to L.W., tune to 46 on substitute scale, feed in a 1,400 m (214 kc/s) signal and adjust the cores of **L12** (G4) and **L5** (G4) for maximum output.

M.W.—Switch receiver to M.W., tune to 20 on substitute scale, feed in a 500 m (600 kc/s) signal and adjust the cores of **L11** (G3) and **L4** (G4) for maximum output. Tune to 89.5 on substitute scale, feed in a 200 m (1,500 kc/s) signal and adjust **C40** (G3) and **C37** (G4) for maximum output.

S.W.2.—Switch receiver to S.W.2 ("TB" on waveband indicator), tune to 23 on substitute scale, feed in a 167 m (1.8 Mc/s) signal and adjust the cores of **L10** (F3) and **L3** (F4) for maximum output. Tune to 83 on substitute scale, feed in a 75 m (4 Mc/s) signal and adjust **C36** (G4) for maximum output.

S.W.1.—Switch receiver to S.W.1 ("SW" on waveband indicator), and replace dummy aerial with a 400 Ω series resistor in "live" lead. Tune to 7.5 on substitute scale, feed in a 49.2 m (6.1 Mc/s) signal and adjust the cores of **L9** (F3) and **L2** (F4) for maximum output. Tune to 94 on substitute scale, feed in a 16.85 m (17.8 Mc/s) signal and adjust **C39** (F3) and **C35** (F4).

Switch Table

Switch	Gram	L.W.	M.W.	S.W.2	S.W.1
S1	—	—	—	—	C
S2	—	—	—	C	—
S3	—	C	C	—	—
S4	—	C	C	—	—
S5	—	C	—	—	—
S6	—	—	—	—	C
S7	—	—	—	C	C
S8	—	—	C	C	C
S9	—	—	—	—	C
S10	—	—	—	C	—
S11	—	—	C	—	—
S12	—	C	—	—	—
S13	C	—	—	—	—
S14	—	—	—	—	C
S15	—	—	—	C	—
S16	—	—	C	—	—
S17	—	C	—	—	—
S18	C	C	C	C	—
S19	C	C	C	—	C
S20	C	C	—	C	C
S21	C	—	C	C	C
S22	C	C	C	C	—
S23	C	C	C	—	C
S24	C	C	—	C	C
S25	C	—	C	C	C
S26	—	—	—	—	C
S27	—	—	—	C	—
S28	—	—	C	—	—
S29	—	C	—	C	—
S30	—	C	C	C	C
S31	C	—	—	—	—

VALVE ANALYSIS.

Valve voltages and currents in the table (next column) are those derived from the manufacturers' information, and were measured with the receiver tuned to the highest wavelength end of M.W. and operating from A.C. mains of 210 V. Voltages were measured on the 10 V and 250 V ranges of a Model 8 Avometer.

Valve	Anode V	Anode mA	Screen V	Screen mA	Cath. V
V1 ECH42	235	1·8	63	3·6	—
	Oscillator				
	95	4·3			
V2 EF41	235	4·0	63	1·3	—
V3 EBC41	80	0·5	—	—	—
V4 EL41	254	31·5	235	3·0	6.3
V5 EZ40	250*	—	—	—	268·0†

* A.C. reading, each anode. † Cathode current, 50 mA.

GENERAL NOTES

Switches.—**S1-S31** are the waveband and radio/gram change-over switches ganged in two rotary units beneath the chassis. The units are indicated in our underside view of the chassis, and are shown in detail in the waveband switch diagrams (col. 1) where they are drawn as seen from the front of an inverted chassis. The associated table shows the switch operations. A dash indicates open, and **C**, closed.

Scale lamps.—These are 6.5 V, 0.3 A lamps.

Drive Cord Replacement.—The tuning drive system is unusual in that there is a two-to-one step-up drive on the cursor section, devised by means of an anchored loop to which the cursor is attached. The complete drive consists of three lengths of nylon braided glass yarn, numbered 1, 2 and 3 in the sketch of the drive cord system (col. 1). Cord 1 is 37 inches long, and cords 2 and 3 are both 23 inches long.

Waveband Indicator Drive.—This consists of a length of fine-gauge Bowden cable made up with soldered end loops to measure 8¾ inches between the centres of the loops.

To fit a new cord, a knot should be tied in the wire 1 7/16 inch from the centre of one of the end loops. After soldering the knot it should be used to key into the notch provided in the indicator spindle. Starting with the end further from the knot, secure it to the bolt in the waveband spindle bush and wind it clockwise three turns round the bush. Then take the wire up to and one turn clockwise round the indicator spindle, finally anchoring it to the tension spring.

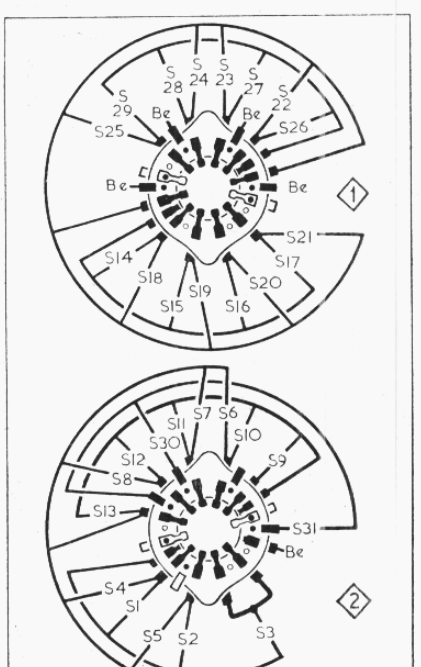
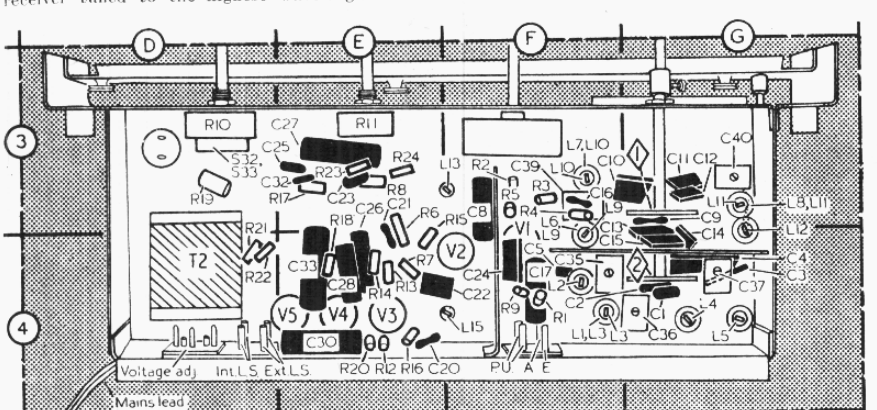


Diagram of the waveband switch units.



Underside view of the chassis showing all the R.F. and oscillator cores and trimmers.

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