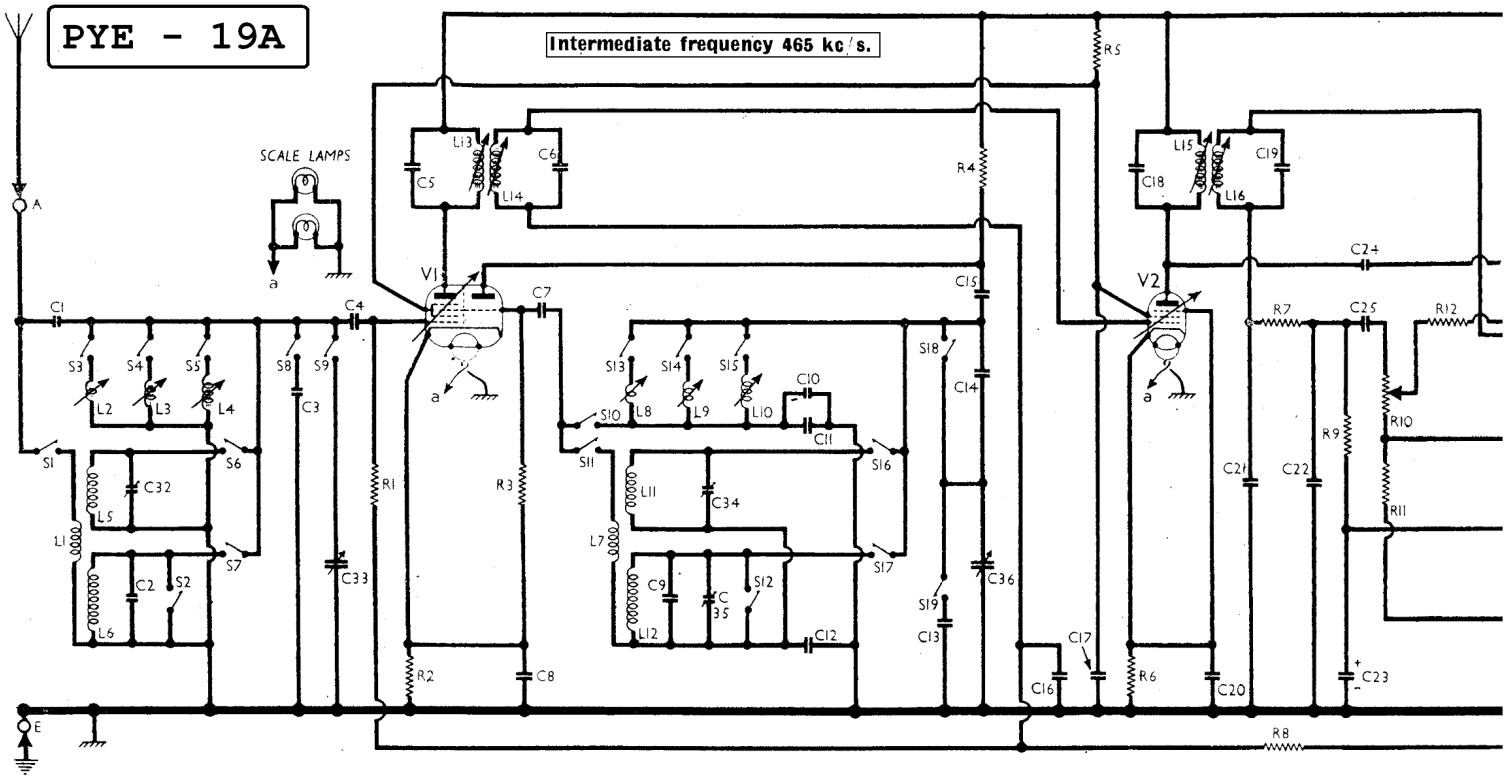
PYE - 19A



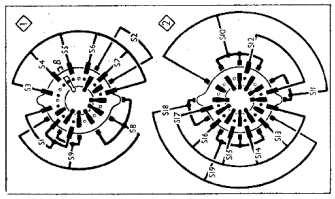
CAPACITORS		Values (μF)	Locations
C1	Aerial S.W. coup.	0·000005	H3
C2	Aerial L.W. trim.	0·00005	A1
C3	Aerial S.W. tuning	0·00002	J3
C4	V1 hex. C.G.	0·00022	B2
C5	1st I.F. transformer tuning	0·0001	B2
C6		0·0001	B2
C7	V1 osc. C.G.	0·0001	K4
C8	V1 cath. by-pass	0·01	K4
C9	Osc. L.W. trim.	0·00033	G4
C10	Osc. S.W. reaction coupling	0·00003	J4
C11		0·00012	J4
C12	Osc. M.W., L.W. tracker	0·00057	G3
C13	Osc. S.W. band-spread capacitors	0·00025	H3
C14		0·00018	H4
C15	Osc. anode coup.	0·0001	J4
C16	A.G.C. decoupling	0·05	B2
C17	S.G's decoupling	0·1	K4
C18	2nd I.F. trans. tun.	0·0001	C2
C19		0·0001	C2
C20	V2 cath. by-pass	0·1	H5
C21	I.F. by-passes	0·0001	H6
C22		0·0001	G6
C23*	V3 cath. by-pass	25·0	F4
C24	A.G.C. coupling	0·00001	H5
C25	A.F. coupling	0·01	G6
C26	Tone corrector	0·001	G5
C27	Parts of tone control circuit	0·1	G3
C28		0·1	G3
C29		0·1	G3
C30*	H.T. smoothing	32·0	C2
C31*		32·0	C2
C32‡	Aerial M.W. trim.	0·00005	A1
C33†	Aerial tuning	0·000532	B1
C34‡	Osc. M.W. trim.	0·00005	H4
C35‡	Osc. L.W. trim.	0·00005	G4
C36†	Oscillator tuning	0·000532	B1

* Electrolytic. † Variable. ‡ Pre-set.

RESISTORS		Values (ohms)	Locations
R1	V1 hex. C.G.	330,000	B2
R2	V1 fixed G.B.	220	K4
R3	V1 osc. C.G.	47,000	K4
R4	Osc. anode load	33,000	J5
R5	S.G.'s H.T. feed	39,000	J5
R6	V2 fixed G.B.	330	H6
R7	I.F. stopper	47,000	H6
R8	A.G.C. decoupling	1,000,000	G5
R9	Sig. diode load	470,000	G6
R10	Volume control	1,000,000	E3
R11	F-B. coupling	2,200	F5
R12	V3 grid stopper	47,000	C2
R13	V3 G.B., A.G.C. delay resistors	220	F6
R14		470	F6
R15	A.G.C. diode load	1,000,000	G6
R16	Part tone control	2,200	G3
R17	H.T. smoothing	2,500	G5

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)	Cathode Voltage (V)
V1 ECH35	250	1·5	93	3·0	1·75‡
	Oscillator				
	114	3·8			
V2 EF39	250	4·8	93	1·4	1·9‡
V3 EBL31	237	27·0	250	3·2	20*
V4 AZ31	323†	—	—	—	357

* 100V meter range.
† Each anode, A.C. ‡ 10V meter range.



Diagrams of the waveband switch units as seen from the rear.

associated table.

Switch	L.W.	M.W.	49m	31m	16m
S1	C	C	—	—	—
S2	—	C	—	—	—
S3	—	—	—	—	C
S4	—	—	—	C	—
S5	—	—	C	—	—
S6	—	C	—	—	—
S7	C	—	—	—	—
S8	—	—	C	C	C
S9	C	C	—	—	—
S10	—	—	C	C	C
S11	C	C	—	—	—
S12	—	C	—	—	—
S13	—	—	—	—	C
S14	—	—	—	C	—
S15	—	—	C	—	—
S16	—	C	—	—	—
S17	C	—	—	—	—
S18	C	C	—	—	—
S19	—	—	C	C	C

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	OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Aerial M.W., L.W. coupling coil ...		55·0	A1
L2	Aerial 16m coil		0·1	B1
L3	Aerial 31m coil ...		0·4	B1
L4	Aerial 49m coil ...		0·6	B1
L5	Aerial M.W. coil		2·5	A1
L6	Aerial L.W. coil ...		14·5	A1
L7	Osc. react. coil ...		2·0	H4
L8	Osc. 16m coil ...		0·2	J4
L9	Osc. 31m coil ...		0·3	J4
L10	Osc. 49m coil ...		0·6	H4
L11	Osc. M.W. coil ...		2·8	H4
L12	Osc. L.W. coil ...		4·5	H4
L13	1st I.F. trans.	Pri.	10·0	B2
L14		Sec.	10·0	B2
L15	2nd I.F. trans.	Pri.	10·0	C2
L16		Sec.	10·0	C2
L17	Speech coil ...		2·8	—
T1	Output trans.	Pri.	415·0	
		Sec. U.V.	0·5	C1
		Sec. W.X.	88·0	
T2	Mains trans.	Pri. total	19·5	D2
		Heat. sec.	Very low	
		Rect. heat. sec.	Very low	
		H.T. sec., total	390·0	
S1-S19	Waveband switches		—	J3
S20-S22	Tone control switches ...		—	F3
S23	Mains sw., g'd R10		—	F4

CIRCUIT ALIGNMENT

I.F. Stages.—Connect signal generator, via an 0.1 μF capacitor in the "live" lead, to control grid (top cap) of **V1** and the **E** socket, after removing the original top cap connector and connecting a 500,000 Ω resistor between the top cap of the valve and the A.G.C. line. Switch set to M.W., turn gang and volume control to maximum, feed in a 465 kc/s (645.16 m) signal, and adjust the cores of **L16, L15, L14** and **L13** (location references C2, H6, B2, J6) for maximum output. Finally, remove the 500,000 Ω resistor and replace the original top cap connector on **V1.**

R.F. and Oscillator Stages.—Since the calibrated glass scale is mounted in the cabinet, and alignment adjustments must be carried out with the chassis on the bench, a substitute scale having 100 divisions is printed on the rear of the scale backing plate. Readings on this scale are taken against the upper edge of the top tongue of the three-tongued drive cord clamp on the cursor carriage.

Thus, with the gang at maximum capacitance, the reading on the substitute scale should be 95 degrees, and if any error is found the cursor carriage may be slid up or down the drive cord to correct it. When the chassis is inserted in the cabinet, the dots above the high wavelength ends of the five scales should coincide with the position of the cursor when the gang is at maximum capacitance. Transfer the "live" signal generator lead to the **A** socket, via a suitable dummy aerial.

M.W.—With set still switched to M.W., tune to 10 degrees on scale, feed in a 200 m (1,500 kc/s) signal, and adjust **C34** (H4) and **C32** (A1) for maximum output. Tune to 81 degrees on scale, feed in a 500 m (600 kc/s) signal, and check that it is receivable at this setting of the cursor carriage.

L.W.—Switch set to L.W., tune to 34 degrees on scale, feed in a 1,200 m (250 kc/s) signal, and adjust **C35** (G4) for maximum output. Tune to 78 degrees on scale, feed in a 1,800 m (166.7 kc/s) signal, and check that it is receivable at this setting of the cursor carriage.

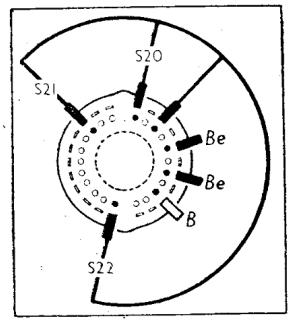
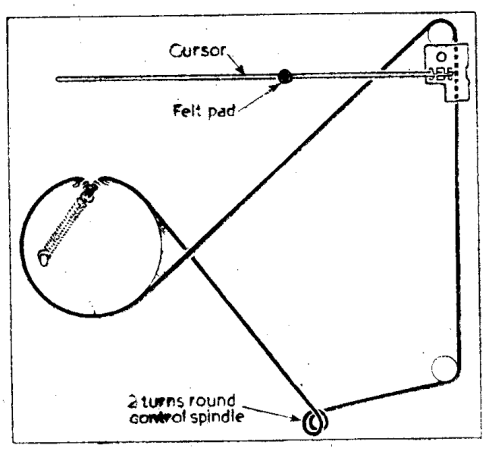


Diagram of the tone control switch unit, as seen from the rear of an inverted chassis. Below is the associated table.

Switch	Fid.	Bri.	M1	M2
S20	—	C	—	—
S21	—	—	—	C
S22	C	C	—	—



Sketch of the drive cord system, drawn as though seen from the front, looking through the scale backing plate.

S.W.—In the following operations the receiver must remain tuned to 52 degrees on scale, and it is desirable, in the interests of accuracy, that the signal generator should incorporate some form of crystal reference circuit. The receiver calibration should be checked, after alignment, against S.W. broadcast stations of known wavelength.

49 m.—Switch set to 49 m, feed in a 49.1 m (6.1 Mc/s) signal, and adjust the cores of **L10** (H4) and **L4** (B1) for maximum output.

31 m.—Switch set to 31 m, feed in a 31.25 m (9.6 Mc/s) signal, and adjust the cores of **L9** (H4) and **L3** (B1) for maximum output.

16 m.—Switch set to 16 m, feed in a 16.85 m (17.8 Mc/s) signal, and adjust the cores of **L8** (J4) and **L2** (B1) for maximum output.

DRIVE CORD REPLACEMENT

Although the drive cord is obscured by the scale backing-plate when viewed from the front, this is the easiest position in which to fit it, so it is drawn as though viewed from the front in our sketch of the drive system in the adjoining column.

Three feet of Nylon braided glass yarn is required for a new cord, this length leaving ample for tying off. Tie a non-slipping loop at one end of the cord, slip it on the loop at one end of the tension spring, and hook the other end of the spring to the anchor tag in the gang drum.

With the gang at maximum, take the cord, in a clockwise direction in our sketch, down to the control spindle, make two turns round it and continue the course indicated in our sketch, pulling on the cord against the gang stop to keep the cord in position.

Tie off with another non-slipping loop so that the tension spring is well extended, and seal the knots with some kind of acetate cement. The makers give the length of the made-up cord as 28¾ inches between the centres of the loops, but the length of our specimen was 29¼ inches, measured as the overall length when held taut between two pins driven into the bench.

Finally, slip the cursor carriage on to the edge of the scale backing plate, engaging the cord in the cord-grip tongues, and adjust the cursor with reference to the dummy scale printed on the back of the scale backing plate as explained under "Circuit Alignment".

Chassis Divergencies.—In some chassis, **C2** may be 0.00006 μF, but in our tables we quote the manufacturers' specified value of 0.00005 μF. In approximately 4,000 chassis bearing serial numbers from 0667301 onwards, the D.C. resistance of the I.F. transformer windings is different from that quoted in our tables. In these chassis, **L13** and **L14** are about 9.4 Ω each, and **L15, L16** are about 6.7 Ω each.