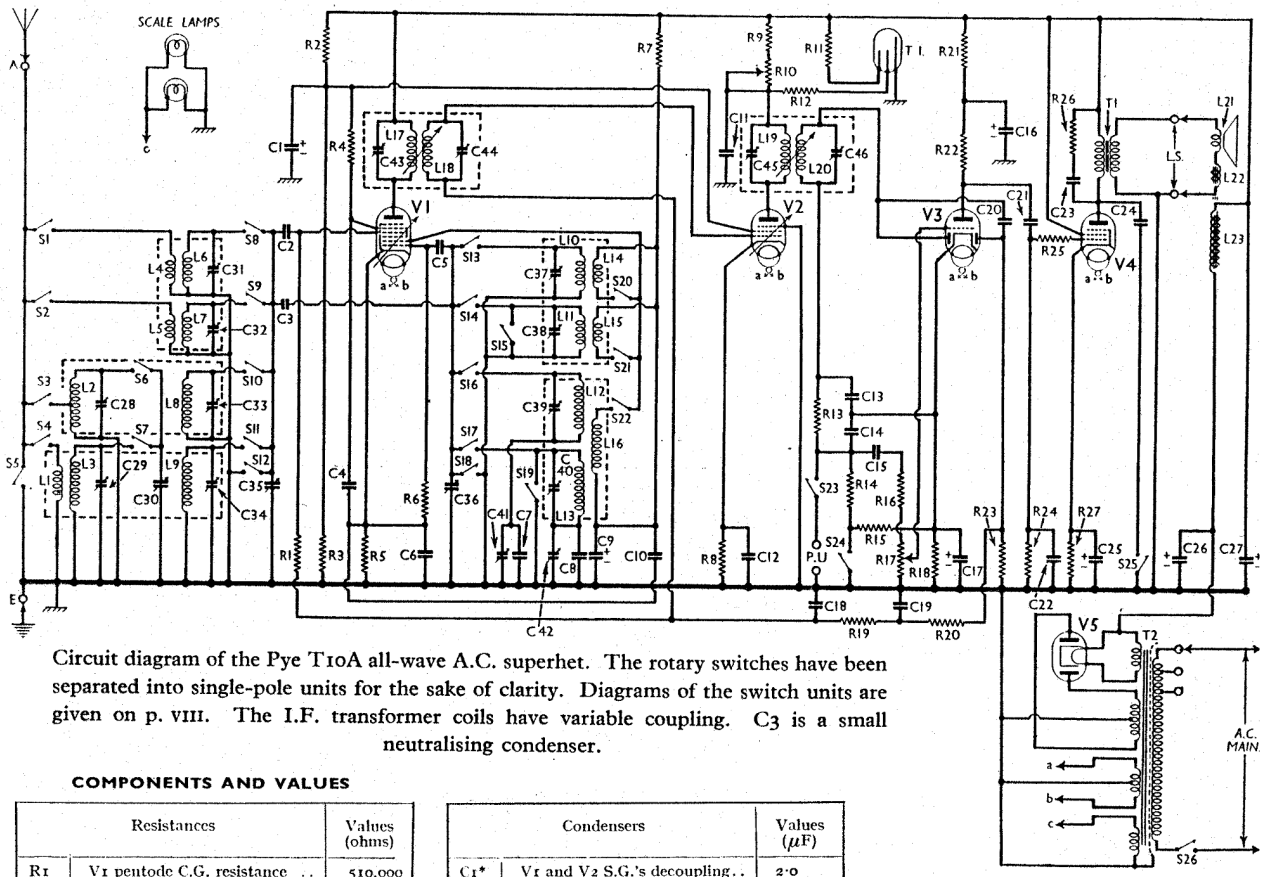
PYE - T10 A



Circuit diagram of the Pye T10A all-wave A.C. superhet. The rotary switches have been separated into single-pole units for the sake of clarity. Diagrams of the switch units are given on p. VIII. The I.F. transformer coils have variable coupling. C3 is a small neutralising condenser.

COMPONENTS AND VALUES

	Resistances	Values (ohms)
R1	V1 pentode C.G. resistance	510,000
R2	V1 and V2 S.G.'s H.T. potential divider	30,000
R3		50,000
R4	V1 S.G.'s H.T. feed	30,000
R5	V1 fixed G.B. resistance	150
R6	V1 oscillator C.G. resistance	26,000
R7	V1 osc. anode decoupling	40,000
R8	V2 fixed G.B. resistance	200
R9	Part V2 anode decoupling	10,000
R10	T.I. adjuster and part V2 anode decoupling	15,000
R11	Neon T.I. exciter resistance	2,000,000
R12	Neon T.I. feed resistance	50,000
R13	I.F. stopper	260,000
R14	V3 signal diode load	260,000
R15	Part inter-station noise suppression circuit	11,000
R16	I.F. stopper	220
R17	Manual volume control	500,000
R18	V3 G.B. resistance	1,000
R19	A.V.C. line decoupling	510,000
R20		510,000
R21	V3 triode anode decoupling	25,000
R22	V3 triode anode load	50,000
R23	V3 A.V.C. diode load	510,000
R24	V4 C.G. resistance	260,000
R25	V4 C.G. I.F. stopper	26,000
R26	Part V4 impedance-limiting network	10,000
R27	V4 G.B. resistance	150

	Condensers	Values (μF)
C1*	V1 and V2 S.G.'s decoupling	2·0
C2	V1 pentode C.G. condenser	0·0001
C3	Neutralising condenser	Very low
C4	V1 S.G. by-pass	0·1
C5	V1 osc. C.G. condenser	0·0001
C6	V1 cathode by-pass	0·1
C7	Osc. M.W. tracker, fixed	0·0004
C8	Osc. L.W. tracker, fixed	0·0002
C9*	V1 osc. anode decoupling	2·0
C10		0·1
C11	V2 anode decoupling	0·1
C12	V2 cathode by-pass	0·1
C13	I.F. by-passes	0·0001
C14		0·0001
C15	L.F. coupling	0·05
C16*	V3 triode anode decoupling	2·0
C17*	V3 cathode by-pass	10·0
C18	A.V.C. line decoupling	0·025
C19		0·025
C20	Coupling to V3 A.V.C. diode	0·0001
C21	V3 to V4 L.F. coupling	0·05
C22	V4 C.G. I.F. by-pass	0·001
C23	Part V4 impedance-limiting network	0·01
C24	Tone control condenser	0·01
C25*	V4 cathode by-pass	50·0
C26*	H.T. smoothing	8·0
C27*		8·0
C28‡	Band-pass primary M.W. trimmer	—
C29‡	Band-pass primary L.W. trimmer	—
C30†	Band-pass primary tuning	—
C31‡	Aerial circuit S.W. trimmers	—
C32‡		—
C33‡	Band-pass secondary M.W. trimmer	—
C34‡	Band-pass secondary L.W. trimmer	—
C35†	Band-pass sec. and S.W. aerial tuning	—
C36†	Oscillator tuning	—
C37‡	Oscillator circuit S.W. trimmers	—
C38‡		—
C39‡	Oscillator M.W. trimmer	—
C40‡	Oscillator L.W. trimmer	—
C41‡	Oscillator M.W. tracker	—
C42‡	Oscillator L.W. tracker	—
C43‡	1st I.F. trans. pri. tuning	—
C44‡	1st I.F. trans. sec. tuning	—
C45‡	2nd I.F. trans. pri. tuning	—
C46‡	2nd I.F. trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

	Other Components	Approx. Values (ohms)
L1	Aerial coupling coil (L.W.)	161·0
L2	Band-pass M.W. primary coil	2·3
L3	Band-pass L.W. primary coil	17·0
L4	Aerial coupling coils (S.W.)	Very low
L5		Very low
L6	Aerial tuning coils (S.W.)	Very low
L7		Very low
L8	Band-pass M.W. secondary coil	2·3
L9	Band-pass L.W. secondary coil	17·0
L10	Oscillator tuning coils (S.W.)	Very low
L11		Very low
L12	Oscillator tuning coil (M.W.)	1·7
L13	Oscillator tuning coil (L.W.)	2·7
L14	Oscillator reaction coils (S.W.)	Very low
L15		Very low
L16	Oscillator reaction coil (M.W. and L.W.)	30·4
L17	1st I.F. transformer Pri.	6·0
L18	1st I.F. transformer Sec.	6·0
L19	2nd I.F. transformer Pri.	6·0
L20	2nd I.F. transformer Sec.	6·0
L21	Speaker speech coil	1·8
L22	Hum neutralising coil	0·2
L23	Speaker field coil	3,000·0
T1	Output trans. Pri.	700·0
	Output trans. Sec.	0·3
T2	Mains. trans. Pri. total	44·0
	Mains. trans. Heater sec.	0·04
	Mains. trans. Rect. heat. sec.	0·2
	Mains. trans. Lamp sec.	0·3
	Mains. trans. H.T. sec. total	350·0
T.I.	Neon tuning indicator	—
S1-S22	Waveband and gram. switches	—
S23	Gram. pick-up switch	—
S24	Noise suppression switch	—
S25	Tone control switch	—
S26	Mains switch	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 225 V, using the 216-235 V tapping on the mains transformer. The volume control was at maximum and the sensitivity control was turned fully in the clockwise direction (minimum sensitivity). The receiver was tuned to the lowest wavelength on the medium band, but there was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 A80A*	255	0·9	50	1·7
V2 A50N	142‡	4·7	95	2·1
V3 A23A	90	2·1	—	—
V4 A70C	230	37·0	258	4·4
V5 A11B	362†	—	—	—

* Osc. anode (G2) 120 V, 3·0 mA.
† Each anode, A.C.
‡ This reading depends on the setting of the neon tuning adjuster.

Control Position				
S.W.2	S.W.1	M.W.	L.W.	Gram.
S1	S2	S3	S4	S5
—	—	S6	S7	—
S8	S9	S10	S11	S12
S15	—	S19	—	—
S13	S14	S16	S17	S18
S20	S21	S22	S22	—
—	—	—	—	S23

S1-S22 are in four ganged rotary units beneath the subsidiary chassis. They are indicated by figures in circles in our under sub-chassis view, the arrows showing the direction in which the units are viewed when referring to the four diagrams of the units.

The diagrams show the individual switches in each unit, and it should be noted that as the shaft is rotated, a moving contact closes one switch in each unit in turn. There is never more than one switch in the closed position in each unit.

The table below gives the switches which are *closed* at each position of the control knob.

Note that in the sixth line of the table, **S22** is shown closing on M.W. and L.W. This is due to the fact that two fixed contacts are joined together in this unit. Certain tags in some of the units are blank, and are marked " B " in the diagram. The whole section to the right of the **S8-S12** unit is not used for switching, though some of the tags are used as bearers.

GENERAL NOTES

Switches.—**S1-S23** are the waveband and gramophone switches. **S23** is attached to the end of the control shaft, at the rear of the subsidiary chassis, and closes in the " gram." position, but is open in all other positions.

S24 is the sensitivity switch, operated by the " SC " control knob. It is *closed* when the knob is anti-clockwise. **S25** is at the front of the chassis behind the " VS " (selectivity) control, and is *closed* when the knob is fully anti-clockwise. **S26** is the Q.M.B. mains switch, ganged with the volume control **R17.**

Coils.—All the signal frequency and oscillator coils are on the deck of the subsidiary chassis, in five screened units, with their appropriate trimmers adjustable through holes in the tops of the cans.

The I.F. transformers and their trimmers are in two screened units on the deck of the main chassis, and the coupling between the primaries and secondaries is varied by rods coupled to the " VS " control spindle.