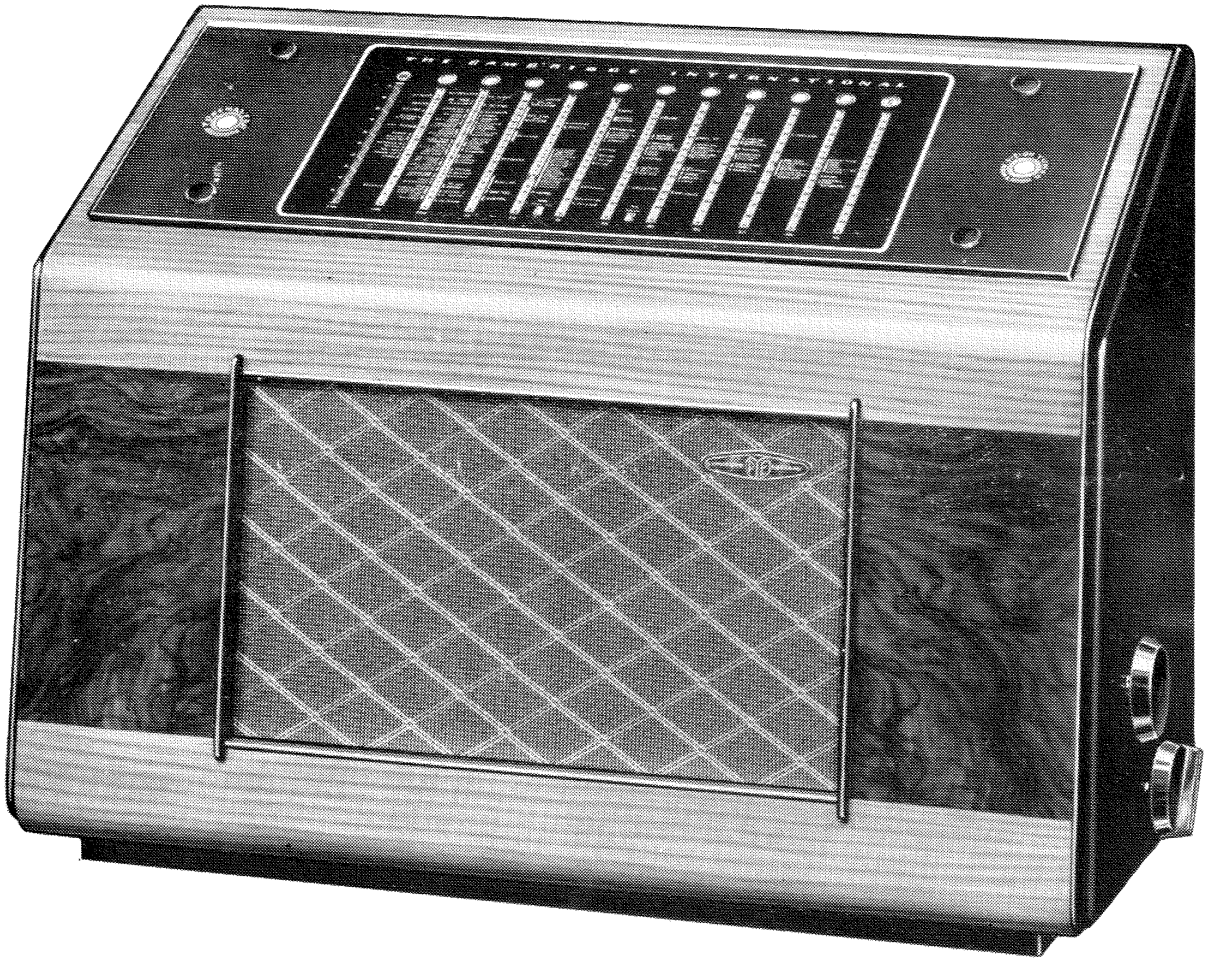
SERVICE SHEET FOR

"Cambridge International"

Model "J" Type PE80

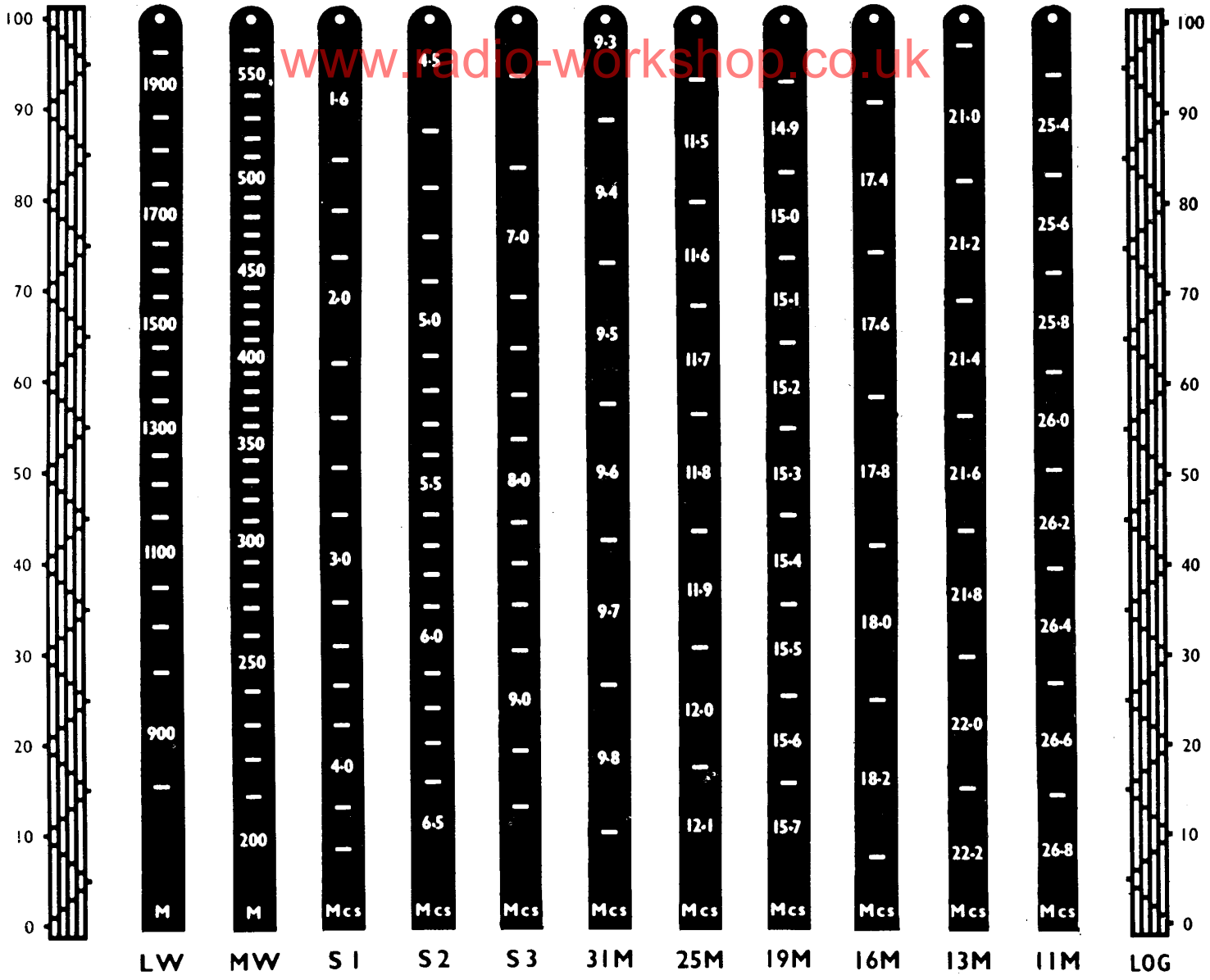


FOR OPERATION ON

90/150 V. AND 195/250 V. A.C. MAINS

PYE LTD · CAMBRIDGE · ENGLAND

CALIBRATION CHART



Notes

1 A 100 Division Trimming Scale is fitted to the scale reflector plate (see Fig. 3) for use when trimming the receiver outside the cabinet; this should agree with the 100 Division Logging Track on the scale when chassis and scale are correctly placed in the cabinet.

The bottom of the pointer carriage serves as an index for the scale.

A Calibration Chart is printed above.

When no accurate frequency standard is available the receiver should be calibrated against a reliable broadcasting station operating on a frequency close to that specified in the trimming instructions.

2 External Speaker 2–4 ohms impedance.

3 Dial and Indicator Bulbs 6·5 volt 0·3 amp. M.E.S.

4 Make sure Mains Voltage Adjuster is in correct position to ensure (*a*) maximum valve and component life and (*b*) full benefit of the Pye Quality reproduction.

5 TO REMOVE TUNING INDICATOR. Loosen two screws "A," see Fig. 1, rotate circular base plate in a clockwise direction to end of slots and pull out.

When replacing Tuning Indicator, reverse the above procedure making sure that the shadows appear vertical. Tighten up two screws "A."

MODEL "J"

TYPE PE80

FOR OPERATION ON 90/150 V. AND 195/250 V. A.C. MAINS

CIRCUIT ANALYSIS

Mains Consumption 70 watts appox. Output 7 watts

	Valve	Mullard	Ea	Ia	Es	Is	Osc. and Target Ea	Osc. and Target Ia	Ek	Ik
V1	R.F. Amplifier	EF.41	180	4·3	80	1·1	—	—	1·75	5·4
V2	Freq. Changer	ECH.42	190	2·2	80	3·4	100	4·2	1·75	9·8
V3	I.F. Amplifier	EF.41	220	4·5	80	1·0	—	—	1·8	5·5
V4	A.V.C. and L.F. Amp.	EBC.41	118	0·25	—	—	—	—	1·6	0·25
V5	Tuning Indicator	EM.34	—	—	—	—	220	—	0	1·3
V6	Det. and Phase Inverter	EBC.41	118	0·25	—	—	—	—	1·6	0·25
V7	Output	EL.41	255	20·5	220	3·0	—	—	7·1	23·5
V8	Output	EL.41	255	20·5	220	3·0	—	—	7·1	23·5
V9	Power Rectifier	EZ.40	Anode to Anode 510 v. A.C.						258	69·5

Note.—Measurements taken on an Avometer Model 8 instrument. All voltages over 250 v. taken on 1,000 v. range. Voltages under 250 v. taken on 250 v. range. All voltages under 10 v. taken on 10 v. range. Receiver tuned to M.W. band 200 metres with no signal input. Mains input 210 v. into 200 to 220 v. tap on transformer.

TRIMMING PROCEDURE

Apply Signal as below	Set Receiver Controls to	Adjust in order for maximum output, except in case of L12
(1) 470 Kc/s. between chassis and control grid of V2 via 0·1 μF condenser	Low frequency end of M.W. band (550 metres)	Iron dust cores of T2 and T1
(2) 470 Kc/s. between chassis and aerial socket via standard dummy aerial	Low frequency end of M.W. band (550 metres)	Iron dust core of L12 for MINIMUM output
(3) As (2) but 214 Kc/s.	L.W. band 1,400 metres	Iron dust cores of L24 and L19
(4) As (2) but 167 Kc/s.	L.W. band 1,800 metres	Iron dust core of L1
(5) As (2) but 333 Kc/s.	L.W. band 900 metres	Trimmer C1
(6) Repeat (4) and (5) until tracking is correct		
(7) As (2) but 600 Kc/s.	M.W. band 500 metres	Iron dust cores of L25, L20 and L2
(8) As (2) but 1,500 Kc/s.	M.W. band 200 metres	Trimmers C35, C18 and C2
(9) Repeat (7) and (8) until calibration and tracking are correct		
(10) 1,800 Kc/s. between chassis and aerial socket via a 400 ohm resistor	S1 band 167 m. Log track 79	Iron dust cores of L26, L21 and L3
(11) As (10) but 4·0 Mc/s.	S1 band 75 m. Log track 17·5	Trimmers C37, C16 and C3
(12) Repeat (10) and (11) until calibration and tracking are correct		
(13) As (10) but 4·9 Mc/s.	S2 band 61·25 m. Log track 71	Iron dust cores of L27, L22 and L4
(14) As (10) but 6·1 Mc/s.	S2 band 49·18 m. Log track 28	Trimmer C38
(15) Repeat (13) (L27) and (14) until calibration is correct		
(16) As (10) but 7·2 Mc/s.	S3 band 41·67 m. Log track 69	Iron dust cores of L28, L23 and L5
(17) As (10) but 9·6 Mc/s.	S3 band 31·25 m. Log track 2	Trimmer C39
(18) Repeat (16) (L28) and (17) until calibration is correct		
(19) As (10) but 9·6 Mc/s.	31 m. band 31·25 m. Log track 50	Slug of L34 and iron dust cores of L13 and L6
(20) As (10) but 11·8 Mc/s.	25 m. band 25·42 m. Log track 50	Slug of L33 and iron dust cores of L14 and L7
(21) As (10) but 15·3 Mc/s.	19 m. band 19·61 m. Log track 50	Slug of L32 and iron dust cores of L15 and L8
(22) As (10) but 17·8 Mc/s.	16 m. band 16·85 m. Log track 50	Slug of L31 and iron dust cores of L16 and L9
(23) As (10) but 21·6 Mc/s.	13 m. band 13·89 m. Log track 50	Iron dust cores of L30, L17 and L10
(24) As (10) but 26·1 Mc/s.	11 m. band 11·49 m. Log track 50	Iron dust cores of L29, L18 and L11

Note.—Adjust all cores and trimmers in the above order, i.e. first, Oscillator; second, R.F. Anode; third, Aerial. In the case of the fully spread bands the only adjustments necessary are at the one frequency stated for each.

In order to facilitate tuning of the aerial and R.F. circuits a resistance 4·7 K ohm in series with a condenser of 0·01 μF must be connected between V2 hexode anode and chassis. This has the effect of reducing the I.F. sensitivity about 30 times.

CODE LIST OF THE PYE MODEL "J" Type PE80

CONDENSERS

	Specification	Volts	±	Fig.	No.
C1	3–50 pF Trimmer			4	800228
C2	3–50 pF Trimmer			4	800076
C3	3–50 pF Trimmer			4	800076
C4	6·8 pF Ceramic		20%	4	666799
C5	390 pF Mica		2%	4	664232
C6	528 pF Swing Gang Condenser			1 & 3	800191
C7	100 pF Ceramic		20%	4	666806
C8	10 pF Swing Gang Condenser			1 & 3	800191
C9	56 pF Mica		2%	4	664064
C10	100 pF Mica		2%	4	664100
C11	0·04 µF Tubular	150		4	669106
C12	47 pF Mica		2%	4	664048
C13	0·05 µF Tubular	350		4	668966
C14	5·6 pF Ceramic		20%	4	666659
C15	39 pF Mica		2%	4	664032
C16	3–50 pF Trimmer			4	800076
C17	39 pF Ceramic		10%	4	666847
C18	3–50 pF Trimmer			4	800076
C19	100 pF Ceramic		20%	4	666806
C20	0·0002 µF Tubular	600		4	669087
C21	390 pF Mica		2%	4	664232
C22	528 pF Swing Gang Condenser			1 & 3	800191
C23	100 pF Ceramic		20%	4	666806
C24	100 pF Ceramic		20%	4	666806
C25	100 pF Mica		2%	4	664100
C26	39 pF Mica		2%	4	664032
C27	10 pF Swing Gang Condenser			1 & 3	800191
C28*	100 pF Mica		2%	1 & 3	666776
C29*	100 pF Mica		2%	1 & 3	666776
C30	50 µF Electrolytic	12		4	667171
C31	0·04 µF Tubular	150		4	669106
C32	180 pF Mica		2%	4	664150
C33	82 pF Mica		2%	4	664092
C34	510 pF Mica		2%	4	664262
C35	3–50 pF Trimmer			4	800076
C36	1,700 pF Mica		5%	4	666795
C37	3–50 pF Trimmer			4	800076
C38	3–50 pF Trimmer			4	800076
C39	3–50 pF Trimmer			4	800076
C40	0·0005 µF Tubular	600		4	669089
C41	0·04 µF Tubular	150		4	669106
C42	15 pF Ceramic N750K		10%	4	666515
C43	528 pF Swing Gang Condenser			1 & 3	800191
C44	330 pF Mica		2%	4	664212
C45	330 pF Ceramic		20%	4	666809
C46	100 pF Mica		2%	4	664106
C47	0·01 µF Tubular	350		4	669096
C48	110 pF Mica		2%	4	664106
C49	100 pF Ceramic		20%	4	666806
C50	45·5 pF Swing Gang Condenser			1 & 3	800191
C51	0·01 µF Tubular	350		4	669096
C52*	100 pF Mica		2%	1 & 3	666776
C53*	100 pF Mica		2%	1 & 3	666776
C54	0·04 µF Tubular	150		4	669106
C55	0·002 µF Tubular	350		4	669093
C56	0·25 µF Tubular			4	668609
C57	0·0005 µF Tubular	600		4	669089
C58	0·001 µF Tubular	350		4	669091
C59	0·04 µF Tubular	150		4	669106
C60	0·02 µF Tubular	150		4	669105
C61	100 pF Ceramic		20%	4	666806
C62	100 pF Ceramic		20%	4	666806
C63	0·01 µF Tubular	150		3	669082
C64	47 pF Ceramic		20%	4	666804
C65	0·01 µF Tubular	150		4	669082
C66	25 µF Electrolytic	12		4	667170
C67	0·05 µF Tubular	350		4	668966
C68	0·05 µF Tubular	350		4	668966
C69	50 µF Electrolytic	12		4	667171
C70	50 µF Electrolytic	12		4	667171
C71	0·002 µF Tubular	300 A.C.		3	669097
C72	0·002 µF Tubular	300 A.C.		3	669097
C73	32 µF +				
C74	32 µF + } Electrolytic	350		1 & 3	667504
C75	16 µF +				
C76	16 µF + } Electrolytic	350		1 & 3	667509
C77	0·002 µF Tubular	300 A.C.		4	669097
C78	0·002 µF Tubular	300 A.C.		4	669097

Note.—* Integral part of I.F. Transformer.

RESISTORS

	Ohms	Watts	±	Fig.	No.
R1	1 Meg.	¼	20%	4	670410
R2	10,000	½	10%	4	670454
R3	330	¼	10%	4	670512
R4	1 Meg.	¼	20%	4	670410
R5	10,000	¼	10%	4	670530
R6	180	¼	10%	4	670509
R7	390	¼	10%	4	670513
R8	47,000	¼	10%	4	670538
R9	22,000	¼	20%	4	670400
R10	47,000	¼	10%	4	670538
R11	100,000	¼	20%	4	670404
R12	47,000	¼	10%	4	670538
R13	220,000	¼	20%	4	670406
R14	47,000	¼	10%	4	670538
R15	18,000	1	10%	4	670153
R16	330	¼	10%	4	670512
R17	4·7 Meg.	¼	20%	4	670414

RESISTORS Cont'd.

	Ohms	Watts	±	Fig.	No.
R18	22,000	¼	20%	4	670400
R19	3,300	¼	20%	4	670395
R20	68,000	¼	10%	3	670540
R21	390	¼	10%	4	670513
R22	220,000	¼	20%	4	670406
R23	220,000	¼	20%	4	670406
R24	1 Meg. Volume Control			3	810251
R25	100	¼	10%	4	670506
R26	100	¼	10%	4	670506
R27	2·2 Meg.	¼	20%	4	670412
R28	1 Meg.	¼	20%	1 & 3	670410
R29	1 Meg.	¼	20%	1 & 3	670410
R30	1 Meg.	¼	20%	4	670410
R31	1 Meg.	¼	20%	4	670410
R32	3,300	¼	20%	4	670395
R33	100,000	¼	20%	4	670404
R34	68,000	¼	10%	4	670540
R35	330,000	¼	10%	4	670548
R36	390,000	¼	10%	4	670549
R37	22,000	¼	20%	4	670400
R38	22,000	¼	20%	4	670400
R39	330	¼	10%	4	670512
R40	330	¼	10%	4	670512
R41	1,500	1	10%	4	670140
R42	2,200	½	10%	4	670446
R43	10,000	½	10%	4	670454
R44	100,000	¼	20%	4	670404

INDUCTANCES

	Specification	Ref.	Fig.	No.
L1	L.W. Aerial Coil	L.W.16	4	780629
L2	M.W. Aerial Coil	M.W.7	4	780246
L3	S.1 Aerial Coil	T.B.4	4	780605
L4	S.2 Aerial Coil	S.W.7	4	780275
L5	S.3 Aerial Coil	S.W.5	4	780277
L6	31 m. Aerial Coil	S.W.6	4	780276
L7	25 m. Aerial Coil	S.W.5	4	780277
L8	19 m. Aerial Coil	S.W.3A	4	780574
L9	16 m. Aerial Coil	S.W.3	4	780272
L10	13 m. Aerial Coil	S.W.2	4	780279
L11	11 m. Aerial Coil	S.W.1	4	780280
L12	I.F. Filter Coil		4	780149
L13	31 m. R.F. Coil	S.W.6	4	780276
L14	25 m. R.F. Coil	S.W.5	4	780277
L15	19 m. R.F. Coil	S.W.3A	4	780574
L16	16 m. R.F. Coil	S.W.3	4	780272
L17	13 m. R.F. Coil	S.W.2	4	780279
L18	11 m. R.F. Coil	S.W.1	4	780280
L19	L.W. R.F. Coil	L.W.15	4	780628
L20	M.W. R.F. Coil	M.W.17	4	780627
L21	S.1 R.F. Coil	T.B.4	4	780605
L22	S.2 R.F. Coil	S.W.7	4	780275
L23	S.3 R.F. Coil	S.W.5	4	780277
L24	L.W. Osc. Coil	L.W.1	4	780241
L25	M.W. Osc. Coil	M.W.1	4	780234
L26	S.1 Osc. Coil	T.B.1	4	780249
L27	S.2 Osc. Coil	S.W.7	4	780275
L28	S.3 Osc. Coil	S.W.5	4	780277
L29	11 m. Osc. Coil	S.W.1A	4	780906
L30	13 m. Osc. Coil	S.W.2	4	780279
L31	16 m. Osc. Coil	S.W.4	4	780278
L32	19 m. Osc. Coil	S.W.5	4	780277
L33	25 m. Osc. Coil	S.W.6	4	780276
L34	31 m. Osc. Coil	S.W.7	4	780275

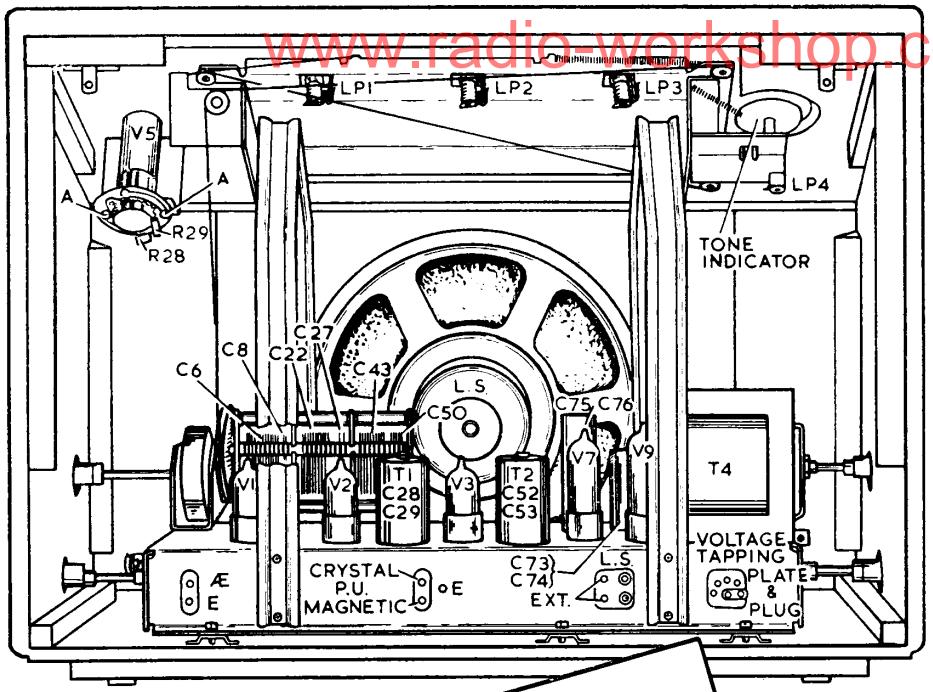
TRANSFORMERS

	Specification	Fig.	No.
T1	1st I.F. Trans. { Prim. 11 Ω / Sec. 11 Ω }	1 & 3	770369/A
T2	2nd I.F. Trans. { Prim. 11 Ω / Sec. 11 Ω }	1 & 3	770369/A
T3	Output Trans. { Prim. Start to Finish 650 Ω / Sec. — }	3	077039
T4	Mains Trans. { Prim. Start to Finish 30 Ω / Sec. H.T. Wdg. Start to Tap 120 Ω / Start to Finish 250 Ω }	1 & 3	077008

SWITCHES, LAMPS, ETC.

	Specification	Fig.	No.
S1A	Front Bank 1 } Aerial Section		
S1B	Rear Bank 2 } Aerial Section		
S1C	Rear Bank 1 } Aerial Section		
S1D	Front Bank 2 } Aerial Section		
S1E	Rear Bank 4 } Aerial Section		
S1F	Front Bank 3 } R.F. Section — Gram and Wavechange Switch 12 position	4	830394
S1G	Rear Bank 3 } R.F. Section — Gram and Wavechange Switch 12 position		
S1H	Front Bank 4 } R.F. Section — Gram and Wavechange Switch 12 position		
S1J	Front Bank 5 } R.F. Section — Gram and Wavechange Switch 12 position		
S1K	Rear Bank 6 } Osc. Section		
S1L	Rear Bank 5 } Osc. Section		
S1M	Front Bank 6 } Osc. Section		
S1N	Front Bank 7 } Gram. Section		
S1P	Rear Bank 7 } Gram. Section		
S2A	Front Bank } Tone Control and ON/OFF Switch 8-position	4	083040
S2B	Rear Bank } Tone Control and ON/OFF Switch 8-position		
S2C	ON/OFF Switch } Tone Control and ON/OFF Switch 8-position		
LP1	Dial Bulb 6·5 volt 0·3 amp.	1 & 3	700494
LP2	Dial Bulb 6·5 volt 0·3 amp.	1 & 3	700494
LP3	Dial Bulb 6·5 volt 0·3 amp.	1 & 3	700494
LP4	Tone Indicator Bulb 6·5 volt 0·3 amp.	1 & 3	700494
LS	Loudspeaker 10 inch P.M.	1	850098

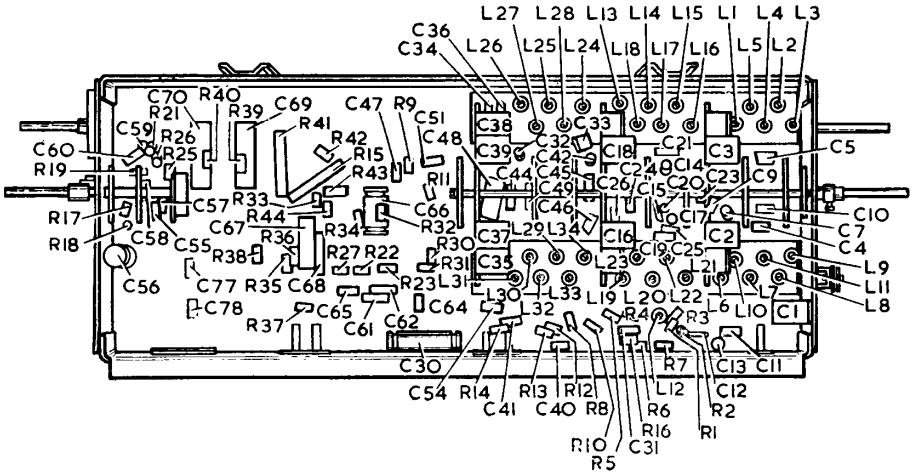
NOTE: Wood screws securing the two transit brackets to top of cabinet must be removed before removal of chassis from cabinet.

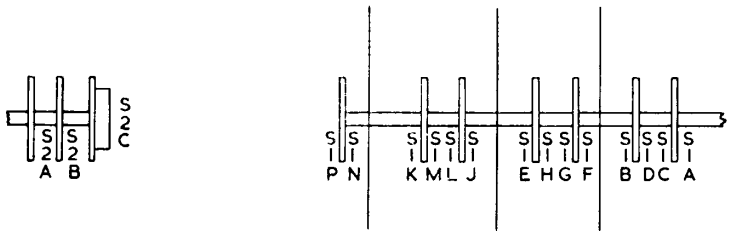


TO REMOVE CHASSIS

1 REMOVE BACK OF SET
2 PULL OFF KNOBS
3 PULL OUT LOUDSPEAKER PLUGS
4 REMOVE TUNING INDICATOR
5 REMOVE THE THREE CHASSIS FIXING SCREWS
6 WITHDRAW CHASSIS

FIG. 1





CODING FOR SWITCH UNITS

FIG. 4

THE DRIVE CORD SHOULD BE OF NYLON BRAIDED GLASS YARN
LENGTH 72"

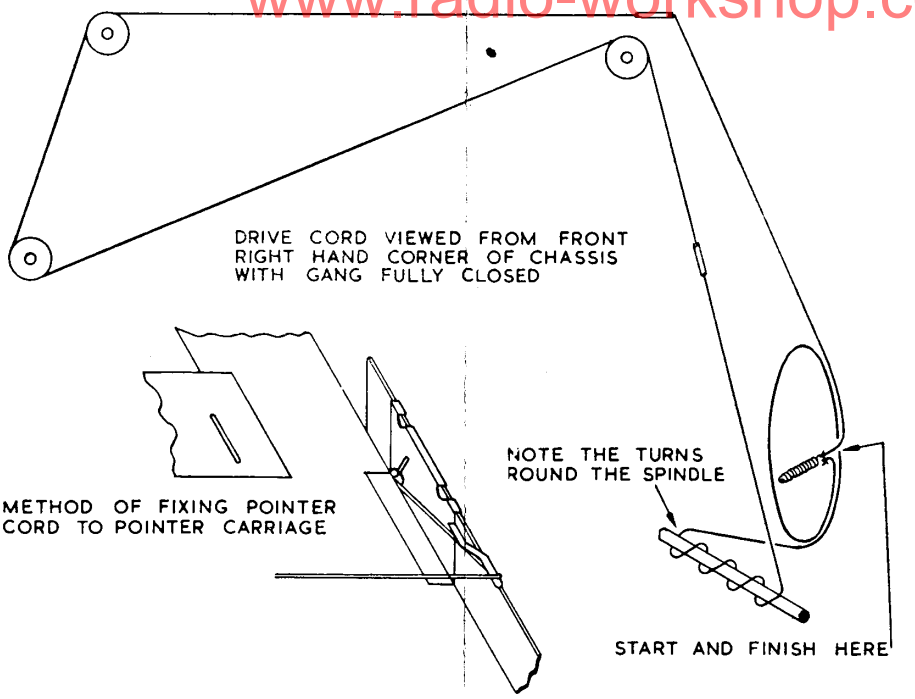
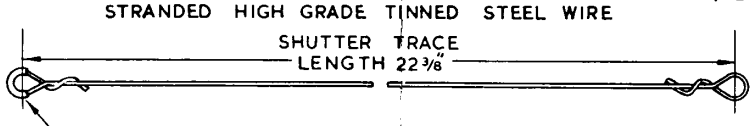


FIG. 2

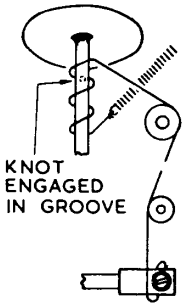
THE SHUTTER AND TONE INDICATOR TRACE SHOULD BE OF 7/42 SWG. STRANDED HIGH GRADE TINNED STEEL WIRE

SHUTTER TRACE
LENGTH 22 3/8"

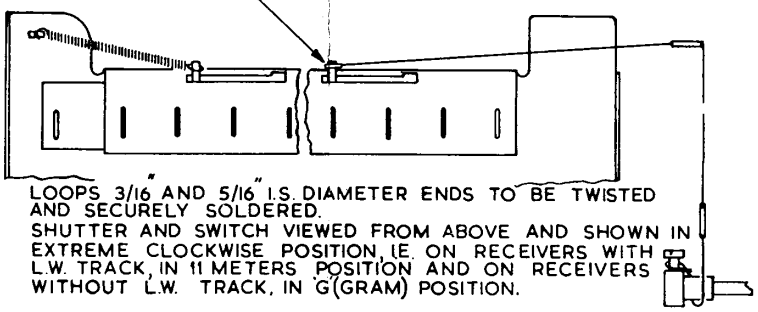


THIS LOOP (3/16" I.S. DIAMETER) TO BE COVERED WITH SLEEVING BEFORE TWISTING AND SOLDERING

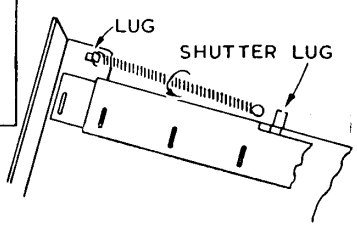
TONE INDICATOR SHOWN IN POSITION 7



TONE INDICATOR TRACE LENGTH 17 3/4" BETWEEN CENTRES OF LOOPS. KNOT FORMED 2 3/16" FROM ONE END



LOOPS 3/16" AND 5/16" I.S. DIAMETER ENDS TO BE TWISTED AND SECURELY SOLDERED.
SHUTTER AND SWITCH VIEWED FROM ABOVE AND SHOWN IN EXTREME CLOCKWISE POSITION, I.E. ON RECEIVERS WITH L.W. TRACK, IN 11 METERS POSITION AND ON RECEIVERS WITHOUT L.W. TRACK, IN G(GRAM) POSITION.



ATTACH ONE END OF SPRING LUG ON SCALE BACKPLATE THEN IN ORDER TO PREVENT THE SHUTTER FROM DROPPING THE SRING MUST BE TURNED FOR AT LEAST TWO COMPLETE TURNS IN THE DIRECTION SHOWN IN DRAWING THEN ATTACHED TO THE SHUTTER LUG

FIG. 5

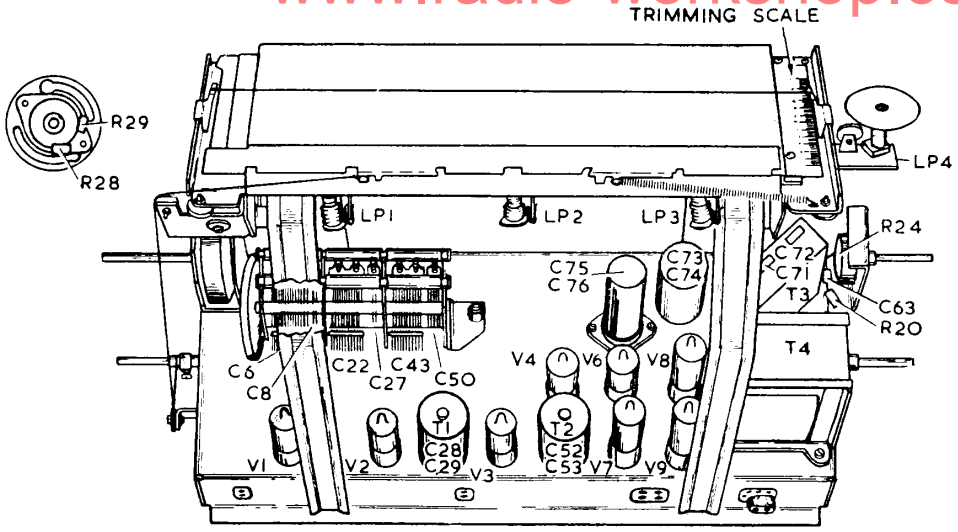
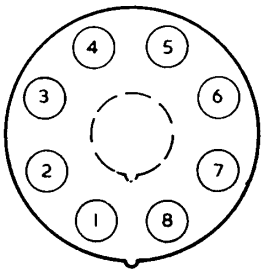


FIG. 3

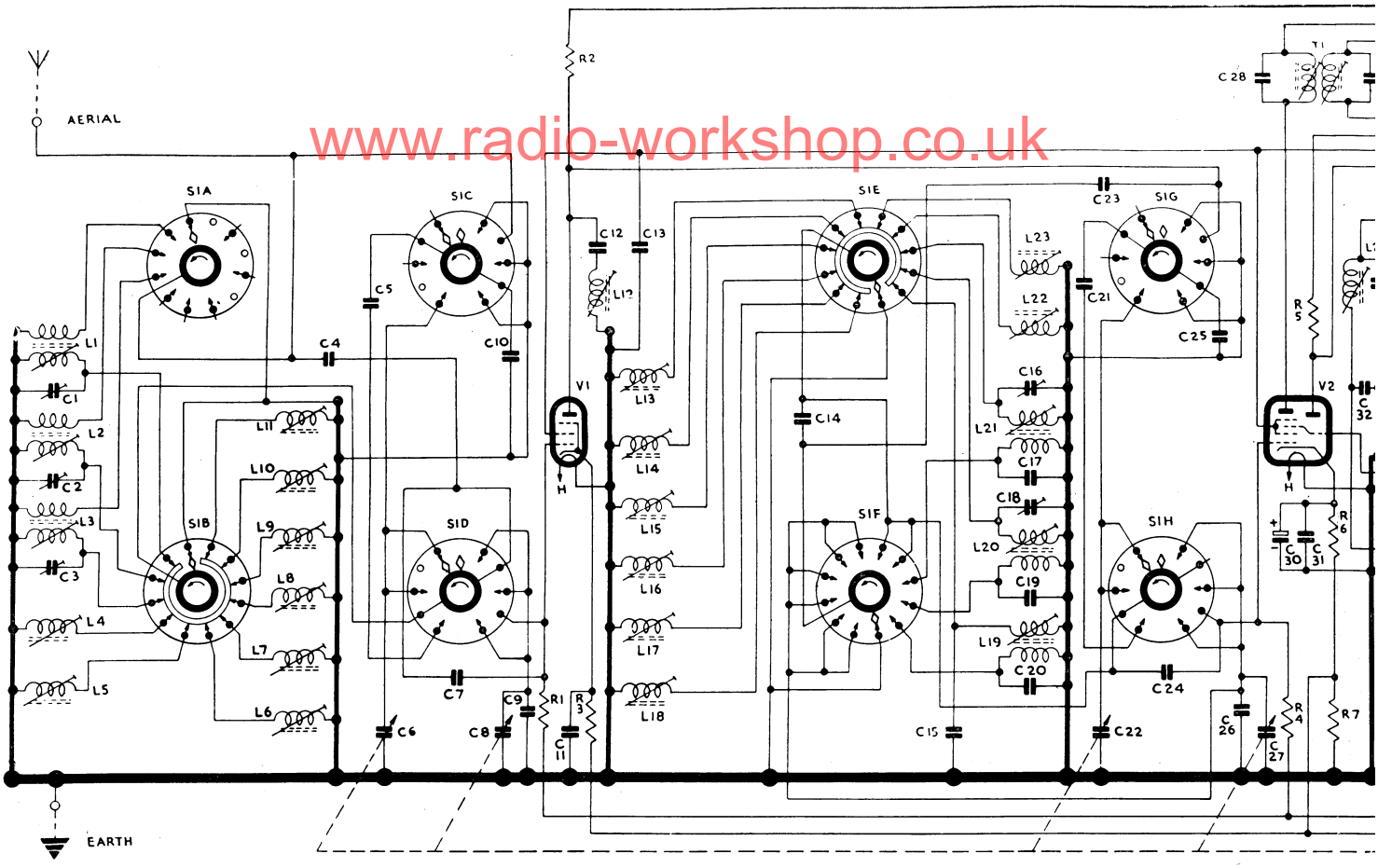
VALVE BASE CONNECTIONS

	1	2	3	4	5	6	7	8
V1	H	A	K G3 S	K G3 S	G2	G1	K G3 S	H
V2	H	A	AT	GT G3	G2 G4	G1	K	H
V3	H	A	K G3 S	K G3 S	G2	G1	K G3 S	H
V4 & V6	H	A	G	S	D2	D1	K	H
V5	———	H	A1	G	T	A2	H	K
V7 & V8	H	A	K G3	———	G2	G1	K G3	H
V9	H	A1	———	———	———	A2	K	H



VIEW LOOKING AT PINS

FIG. 6



To improve sensitivity of the Tuning Indicator, a resistor R45, 1·5kΩ ¼w ±10% Ref. 670520, has been added between Cathode of V5 and chassis.

CIRCUIT DIAGRAM

of the

"Cambridge International"

Model "J" Type PE80

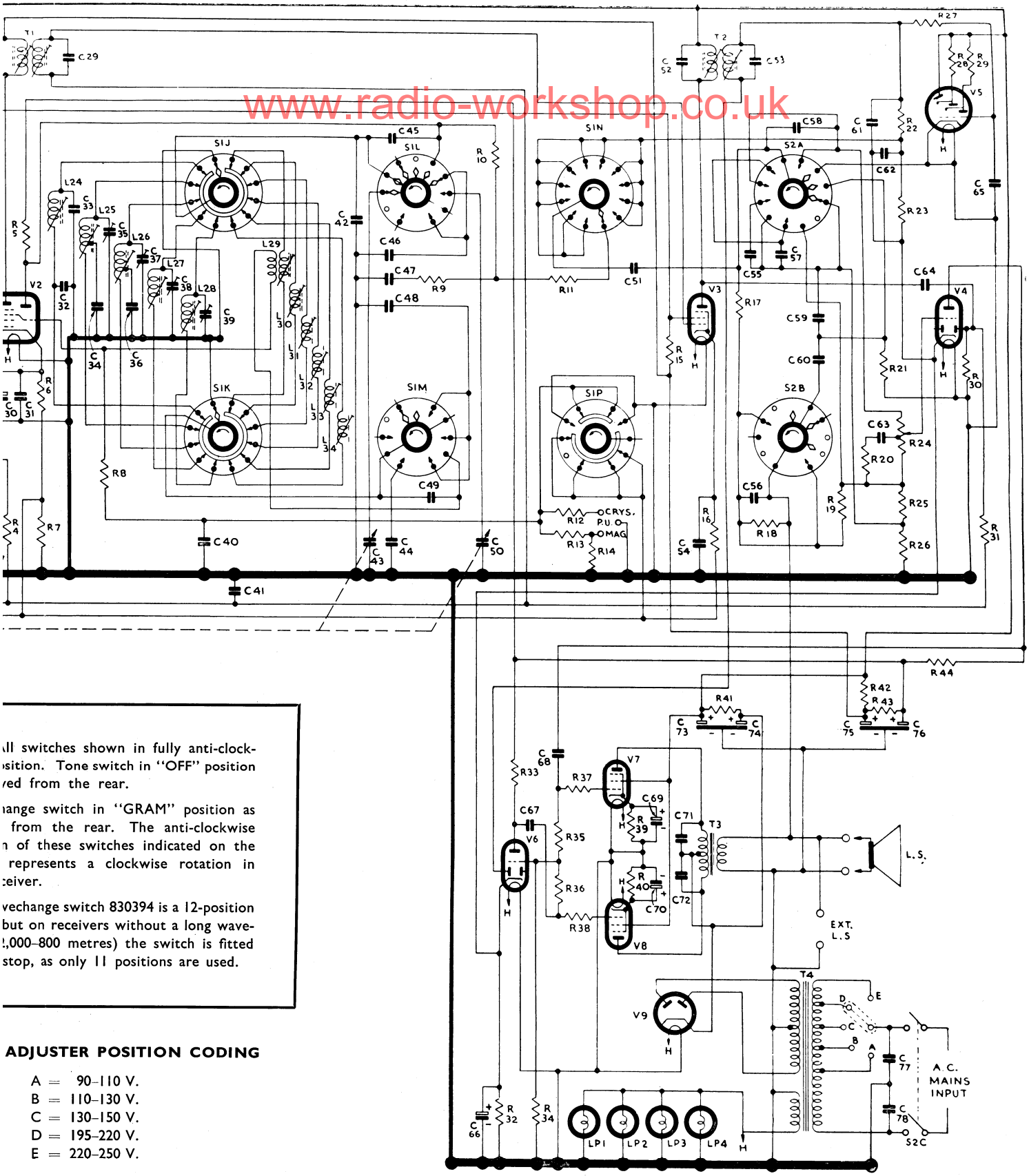
NOTE.—All switches wise position. To as viewed from t

Wavechange switc viewed from the rotation of these circuit represents the receiver.

The wavechange sw switch but on rec band (2,000–800 r with a stop, as or

VOLTAGE ADJUSTI

A =
B =
C =
D =
E =



ıll switches shown in fully anti-clock-
ısition. Tone switch in "OFF" position
ved from the rear.

ıange switch in "GRAM" position as
from the rear. The anti-clockwise
ı of these switches indicated on the
represents a clockwise rotation in
ceiver.

vechange switch 830394 is a 12-position
but on receivers without a long wave-
!,000–800 metres) the switch is fitted
stop, as only 11 positions are used.

ADJUSTER POSITION CODING

A = 90–110 V.
B = 110–130 V.
C = 130–150 V.
D = 195–220 V.
E = 220–250 V.